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Navitas Midstream New Mexico, LLC
Delaware Basin Natural Gas Cryogenic Processing Plant & Pipeline Project

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ACRONYMS

3-D	Three-dimensional
ACHP	Advisory Council on Historic Preservation
AIS	Aquatic Invasive Species
AQB	Air Quality Bureau
AQRV	Air Quality Related Values
AUM	Animal Unit Months
BACT	Best Available Control Technology
BEU	Big Eddy Unit
BISON-M	Biota Information System of New Mexico
BLM	Bureau of Land Management
BMP	Best Management Practice
BSC	Biological Soil Crust
CAA	Clean Air Act
CCA	Candidate Conservation Agreement
CCAA	Candidate Conservation Agreement Assurances
CEHMM	Center of Excellence for Hazardous Materials Management
CEQ	Council of Environmental Quality
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFO	Carlsbad Field Office
CFR	Code of Federal Regulations
CI	Certificate of Inclusions
CO	Carbon Monoxide
COA	Condition of Approval
CMRP	Construction Management and Reclamation Plan
CMA	Core Management Area
CWA	Clean Water Act
CP	Certificate of Participation
dB	Decibel
dBA	A-weighted Decibel
DDT	Dichlorodiphenyltrichloroethane
DOT	Department of Transportation
DSL	Dunes Sagebrush Lizard
ECP	Environmental Compliance Program
EA	Environmental Assessment
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FLMPA	Federal Land Policy and Management Act
GHG	Greenhouse Gas
GIS	Geographic Information Systems
HAP	Hazardous Air Pollutants
HDD	horizontal directional drilling
HEA	Habitat Evaluation Areas
HUC	Hydrologic Unit Code
IMPROVE	Interagency Monitoring of Protected Environments
IPA	Isolated Population Area
IPCC	Intergovernmental Panel on Climate Change
JRU	James Ranch Unit
K	Soil Erodibility Factor
LPC	Lesser Prairie Chicken

MBTA	Migratory Bird Treaty Act
MMSCFD	Million Standard Cubic Feet per Day
MSDS	Material Safety Data Sheet
NAAQS	National Ambient Air Quality Standards
NATA	National Scale Air Toxics Assessment
NEPA	National Environmental Policy Act
NGL	Natural Gas Liquid
NHPA	National Historical Preservation Act
NM AAQS	New Mexico Ambient Air Quality Standards
NM AC	New Mexico Administrative Code
NMDGF	New Mexico Department of Game and Fish
NMED	New Mexico Environment Department
NM OCD	New Mexico Oil Conservation Division
NMPIF	New Mexico Partners in Flight
NM RPTC	New Mexico Rare Plant Technical Council
NMSLO	New Mexico State Land Office
NO_2	Nitrogen Dioxide
NOAA	National Oceanic Atmospheric Administration
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NWS	National Weather Service
O_3	Ozone
OHWM	Ordinary High Water Mark
PA	Programmatic Agreement
Pb	Lead
PCB	Polychlorinated Biphenyls
PFYC	Potential Fossil Yield Classification
PM	Particulate Matter
POD	Plan of Development
PPA	Primary Population Area
PRPA	Paleontological Resources Preservation Act
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
RMP	Resource Management Plan
RMPA	Resource Management Plan Amendment
ROD	Record of Decision
ROW	Right-of-Way
Sec.	Section
SMA	Special Management Area
SO_2	Sulfur Dioxide
SSPA	Sparse and Scattered population Area
TMDL	Total Maximum Daily Load
US	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
VRM	Visual Resource Management
WQCC	Water Quality Control Commission
WRCC	Western Regional Climate Center

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1. PURPOSE AND NEED FOR ACTION

1.1. Background

Navitas Midstream New Mexico, LLC (Navitas New Mexico), a wholly owned subsidiary of Navitas Midstream Partners, LLC, has applied to obtain a Right-of-Way (ROW) Grant from the Bureau of Land Management (BLM) Carlsbad Field Office (CFO) requesting long-term use of public lands for the purpose of constructing and operating the Navitas New Mexico Delaware Basin Natural Gas Cryogenic Processing Plant and Pipeline Project (herein referred to as Project or Proposed Action). The BLM has assigned this Project the ROW case file number: NM-133018. The CFO will serve as the lead Federal agency for the Project.

The proposed Project is located in Eddy and Lea Counties, New Mexico. The proposed location for the natural gas cryogenic processing plant (Cryo Plant) is approximately 32 miles northeast of Carlsbad, New Mexico. The Project would affect BLM-managed lands within the jurisdiction of the CFO. Additionally, the Project crosses New Mexico State Trust Lands (herein referred to as State Lands), which are owned and managed by the New Mexico State Land Office (NMSLO). State Lands crossed by the Project are interspersed among BLM lands. Table 1.1-1 provides a summary of impacts to BLM and State Lands crossed by the Project. Approximately 79 percent of the Project is proposed on BLM-managed lands and 21 percent of the Project is on State Lands. The location and the quarter by quarter descriptions of the pipelines and facilities are depicted on the maps and the table presented in Appendix A**.**

Table 1.1-1
Summary of Impacts to Federal and State Lands crossed by the Project

County	Total		BLM-Managed Lands		State Lands	
	Miles[1]	Acres	Miles[1]	Acres	Miles[1]	Acres
Eddy	45.6	494.6	35.8	410.0	9.7	84.6
Lea	1.2	10.9	1.2	10.9	---	---

[1] includes miles of pipeline only and not aboveground facilities

The Project would consist of one 24-inch diameter high pressure pipeline (Trunk line) and three smaller diameter laterals (BEU CS-1 East, BEU CS-2 East HP Line, and JRU CS-1 HP Line) that would connect production gas from the BLM's Big Eddy Unit (BEU) and James Ranch Unit (JRU) to the Trunk line. The Trunk line would deliver the natural gas to the Cryo Plant for processing/extraction of natural gas liquids (NGLs). One 16-inch residue pipeline (RES-EPG) and one 8-inch NGL pipeline (NGL-DCP) would be constructed from the Cryo Plant to third party interconnects (residue gas would connect to existing El Paso Natural Gas and Transwestern pipelines and the NGL pipeline would connect to the proposed 12-inch DCP Midstream Sandhills pipeline). The legal descriptions of the pipelines are shown in Table 1.1-2.

Table 1.1-2 Legal Descriptions of Pipelines				
Name	**Commodity**	**Length (miles)**	**Legal Description**	**County**
Trunk line	Natural Gas	35.53	T. 19 S., R. 31 E., Sec. 26, 27, 28, 32, 33 T. 20 S., R. 30 E, Sec. 33, 34, 35, 36 T. 20 S., R. 31 E., Sec. 5, 8, 17, 19, 20, 30, 31, T. 21 S., R. 29 E., Sec. 3, 10, 14, 15, 23, 24, 25 T. 21 S., R. 30 E., Sec. 29, 30, 32 T. 22 S., R. 30 E., Sec. 4, 5, 9, 16, 21, 22, 26, 27, 35 T. 23 S., R. 30 E., Sec. 2, 11, 14, 22, 23, 26, 27, 35 T. 24 S., R. 30 E., Sec. 2, 3	Eddy
NGL-DCP	NGLs	3.97	T. 19S., R. 31 E., Sec. 23, 24, 26 T. 19 S., R.32 E. Sec. 19	Eddy / Lea
RES-EPG	Residue	4.21	T. 19S., R. 31 E., Sec. 23, 24, 26 T. 19S., R. 32 E., Sec. 18, 19	Eddy / Lea
BEU CS-1 East	Natural Gas	2.19	T. 21 S., R. 30 E., Sec. 28, 29, 32	Eddy
BEU CS-2 East HP Line	Natural Gas	0.78	T. 20S., R. 31 E., Sec. 17	Eddy
JRU CS-1 HP Line	Natural Gas	0.08	T. 22S, R.30 E., Sec. 27	Eddy

In addition to the pipelines, Navitas New Mexico proposes to construct one Cryo Plant, three third-party interconnects, six compressor stations. The legal descriptions and proposed size for these facilities are shown in Table 1.1-3.

There would be two mainline valves (MLV) associated with the Trunk line. One valve would be located adjacent to compressor station BEU CS-2 Site at latitude 32°33'06"N and longitude 103°54'20"W (T. 20 S., R. 31 E., Section (Sec.) 19). The second valve site would be located near compressor station site JRU CS-1 Site at latitude 32°22'02"N longitude 103°52'06"W (T. 22 S., R. 30 E., Sec. 27). Launcher and receiver sites needed to facilitate pigging would be located at the Cryo Plant and at each compressor station (BEU CS-1, BEU CS-2 Site, BEU CS-3 Site, BEU CS-4 Site, JRU CS-1 Site, and PLU CS-2 Site).

Table 1.1-3 Legal Description of Aboveground Facilities					
Facility Name	Connecting Pipeline	Facility Size		Legal Description	County
		Feet	Acres		
Cryo Plant	Trunk line, NGL-DCP, RES-EPG	2,135 x 2,135	100	T. 19 S., R. 31 E., Sec. 26	Eddy
DCP Interconnect	NGL-DCP	218 x 208	1	T. 19 S., R. 32 E., Sec. 19	Lea
El Paso Interconnect	RES-EPG	300 x 300	2	T. 19 S., R. 32 E., Sec. 18,	Lea
Transwestern Interconnect	RES-EPG	300 x 300	2	T 19, S., R. 31 E., Sec. 23, 26	Eddy
BEU CS-1 Site	BEU CS-1 East	390 x 365	3	T. 21 S., R. 30 E., Sec. 28	Eddy
BEU CS-2 Site	Trunk line	395 x 355	3	T. 20 S., R. 31 E., Sec. 19	Eddy
BEU CS-3 Site[1]	BEU CS-2 East HP LIne	485 x 285	3	T. 20 S., R. 31 E., Sec. 16, 17, 20 & 21	Eddy
BEU CS-4 Site[2]	Trunk line	418 x 321	0	T. 19 S., R. 31 E., Sec. 26	Eddy
JRU CS-1 Site	JRU CS-1 HP LIne	390 x 370	3	T. 22 S., R. 30 E., Sec. 27	Eddy
PLU CS-2 Site	Trunk line	395 x 340	3	T. 24 S., R. 30 E., Sec. 3	Eddy

[1] Approximately one acre of BEU CS-3 Site is located on State Trust Lands. The legal description for the State Lands portion is T. 20 S., R. 31 E., Sec 16.

[2] BEU CS-4 Site will be constructed within the cryogenic processing plant facility. Therefore, the amount of BLM land needed is included in the total requested for the plant facility.

As part of the application process, a Plan of Development (POD) is required and has been prepared and is included as Attachment 10 in the SF 299 Application submitted on December 10, 2014. The appropriate information from the POD has been incorporated into the Proposed Action for 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 Navitas New Mexico as part of the Proposed Action.

Cienega Environmental (Cienega) conducted a biological survey of the proposed disturbance areas and the results of that survey are included in the Biological Survey Report, which is included as Appendix B. Portions of the pipelines and facilities that are within the area covered by the Permian Basin Programmatic Agreement (PA) were evaluated by the BLM under the terms and conditions of the PA. Cienega prepared a cultural inventory for the proposed Project area and conducted an archeological survey for portions of the pipelines and facilities on BLM-managed lands not covered under the PA and on State Lands. The biological and cultural field surveys were conducted between August and December 2014.

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 EA was prepared in compliance with the requirements of the NEPA (40 CFR Parts 1500-1508). This EA is a site specific analysis of potential impacts that may results from the implementation of the Proposed Action or alternatives to the Proposed Action. The EA will assist the BLM in Project planning and ensuring compliance with NEPA. The EA will also determine whether any significant impacts could result from the analyzed actions. “Significance” is defined by NEPA and is found in regulation 40 CFR 1508.27. An EA provides evidence for the BLM to prepare and issue a Decision Record and a Finding of No Significant Impact (FONSI) for determining whether an Environmental Impact Statement (EIS) must be prepared.

1.2. Purpose and Need for Action

The BLM's purpose is to provide Navitas New Mexico with the legal use of, and access across, public lands managed by the BLM by granting long term use of public lands to construct and operate the Project pipelines and facilities.

The BLM's mandate for multiple uses 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 (FLMPA) to respond to an application for a ROW grant for use of Federal Land.

1.2.1. Purpose and Need for the Project

For Navitas New Mexico, the purpose of this Project is to provide needed infrastructure in the Permian/Delaware Basins to accommodate increased volumes of natural gas, which will exceed currently available capacity of existing gathering and processing infrastructure in Southeastern New Mexico.

Economic Feasibility

a) The installed cost of the Project is estimated to be about $142 Million. Annual operation and maintenance costs are estimated to be about $6 Million.

b) There is no feasible next best alternative to this Project, given the environmental, economic, and engineering limitations of the other alternatives investigated.

c) The Project will link a growing and reliable supply of natural gas and NGLs within the growing Permian Basin with rising North American demand for energy.

In addition to its expected supply benefits, the Project would provide substantial economic benefit to the Permian Basin Region and the local communities that would be traversed by the Project.

Over the long-term, the Project would pay annual business, income, and property taxes to local, state, and Federal governments. Some regional jobs would also be created to operate and maintain the Project. During construction, many communities would enjoy short-term economic benefits resulting from construction-related jobs and local expenditures on food, lodging, fuel, spare parts, and other services.

Supply Component

According to the Energy Information Administration (EIA), New Mexico is one of the top ten natural gas producers in the United States (US). With combined petroleum and natural gas production estimates, New Mexico is in the fourth largest net supplier of energy to the nation (EIA *New Mexico State Profile and Energy Estimates*).

Demand Component

The Project would initiate at the southernmost compressor station in Eddy County, New Mexico and terminate at the Cryo Plant in Eddy County, New Mexico, with the NGL and residue interconnections extending into Lea County, New Mexico (See Figure 1). The need for the Project is dictated by a number of factors including:

- Critical needed infrastructure to connect the existing discovered and ready to deliver gas production available to US markets;
- Increasing demand for natural gas by-products that will be produced in the processing of the natural gas; and
- Meeting the current demand of producers that need to safely delivery their product.

Transportation Component

Shippers, including producers and marketers, evaluate the merits of various pipeline proposals and ultimately decide which projects to support to carry their supplies. Shippers have expressed significant interest in securing pipeline capacity on the Project.

1.3. Conformance with Applicable Land Use Plan(s)

Under the FLPMA, the BLM is mandated to prepare Resource Management Plans (RMPs) under their jurisdiction. According to BLM policy, all actions authorized subsequent to the issuance of the RMP must conform to the approved RMP. To be in conformance, an action must be specifically mentioned in the RMP or be clearly consistent with the decisions of the RMP. To be clearly consistent, an action must comply with:

1) All stipulations, conditions, and constraints listed in the RMP; and

2) All stipulations developed specifically for the proposed Project for the purpose of avoiding or reducing impacts on sensitive resources identified in the RMP.

1.3.1. Carlsbad Resource Management Plan

The Proposed Action is within the area covered by the 1988 Carlsbad RMP (BLM, 1988). The 1988 RMP complies with the multiple use mandates established by the FLMPA and the 43 CFR 1600 regulations governing multiple use planning. The RMP 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 actions is necessary to protect other resource values” (BLM, 1998).

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) were developed to address management of oil and gas resources (BLM, 1997). The 2008 Special Status Species Approved RMPA and ROD were developed to address management of the lesser prairie chicken (LPC; *Tympanuchus pallidicinctus*) and the dunes sagebrush lizard (DSL; *Sceloporus arenicolus*) (BLM, 2008). The 1988 RMP, as amended, provides for the integrated multiple use and sustained yield of resources for the planning area.

The Pecos District Office, which includes the CFO, 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 RMPA and ROD (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. To comply with Section 368 of the Energy Policy Act of 2005, the Pecos District Office designates 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 3.3 and in the Biological Survey Report (see Appendix B). In addition, the Proposed Action would not be located in a ROW avoidance area. Therefore, the Proposed Action would be in conformance with the RMP, and its amendments.

1.4. Relationship to Statutes, Regulations, or Other Plans

This EA is prepared under the authority of NEPA of 1989 and its regulations (40 CFR Parts 1500-1508) for implementation. Various Federal and state agencies regulate different aspects of oil and gas infrastructure development. Environmental permits, approvals, and clearances applicable to the Proposed Action are summarized in Table 1.4-1.

Table 1.4-1
Permits, Approvals, and Clearances Applicable to the Project

Permit Notification	Issuing Agency	Status
FEDERAL		
ROW Grant	Bureau of Land Management, Carlsbad Field Office	Navitas New Mexico submitted a SF 299 Application for the Project on December 10, 2014
ROW Grant	New Mexico State Land Office	Navitas New Mexico would submit a permit application in April 2015
Clearance under Section 7 of the Endangered Species Act Migratory Bird Treaty Act	US Fish and Wildlife Service	Surveys were conducted along the proposed pipeline routes and facility locations. Findings are described in Section 3.7 and 3.8 and in the Biological Survey Report (Appendix B). Any consultation with the USFWS would be managed by the BLM.
Clean Water Act Section 404 Permit (Nationwide Permit 12 for Utility Line Activities)	US Army Corps of Engineers	No jurisdictional water bodies or wetlands would be impacted by the Project. Therefore, a Nationwide Permit would not be required .
Clearance under Section 106 of the National Historic Preservation Act	Bureau of Land Management, Carlsbad Field Office	Surveys were conducted on portions of the BLM-managed lands that were not covered under the PA. Findings are described in Section 3.9.
STATE		
Air Permit	New Mexico Environment Department, Air Quality Bureau	Permit application for construction and operation would be submitted in July 2015.
Clearance under Section 106 of the National Historic Preservation Act	State Historic Preservation Office New Mexico State Land Office	Surveys were conducted on State. Findings are described in Section 3.9. Any consultation with the State Historic Preservation Office would be managed by the BLM and NMSLO.
Tribal Communications	Native American Tribes	Any consultations with Native American Tribes would be managed by the BLM. The BLM has determined that based on the location of the Project, consultations with Native American Tribes is not required.
Clean Water Act Section 401 Water Quality Certification	New Mexico Environment Department, Water Resources and Management	No state-regulated water bodies or wetlands would be impacted by the Project. Therefore, a Section 401 permit would not be required.

Table 1.4-1 Permits, Approvals, and Clearances Applicable to the Project		
Permit Notification	**Issuing Agency**	**Status**
Clean Water Section 402 General Construction (Stormwater) Permit	New Mexico Environment Department, Surface Water Quality Bureau	The Project would meet the exemption under the Amendments to the Storm Water Regulations for Discharges Associated with Oil and Gas Construction effective June 12, 2006.
Hydrostatic Test Permit	New Mexico Oil Conservation District	Navitas New Mexico would submit an application prior to any discharge of hydrostatic test water. Permit application is planned for submission in July 2015..
Road Crossing and Railway Permits	Eddy and Lea Counties Burlington Northern Santa Fe Railroad New Mexico Department of Transportation	All necessary permits would be obtained by Navitas New Mexico prior to construction activities.

1.4.1. Council on Environmental Quality Regulations

Parts 1500 through 1508 of the Council on Environmental Quality (CEQ) regulations 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; and
- 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 US 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. The Proposed Action would not likely jeopardize the continued existence of any threatened and endangered species or adversely modify critical habitat from the proposed Project activities.

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 Environment Department (NMED) Air Quality Bureau (AQB) 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. The Proposed Action would be in compliance with the NAAQS for potential air pollution from the proposed Project activities.

1.4.4. National Historic Preservation Act

Section 106 of the NNPA, as amended, requires BLM to take account the effects of its undertakings on historic properties, and provide the Advisory Council on Historic Preservation (ACHP) an opportunity to comment. Historic properties, and properties of traditional religious or cultural importance, are protected by the 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 Proposed Action would not likely affect any historic properties, or properties of traditional religious or cultural importance, from the proposed Project activities.

1.4.5. Clean Water Act

The Federal Clean Water Act (CWA, 33 USC 1251 *et seq*.) requires in Section 301 that "*except as in compliance with this section and sections 302, 306, 318, 402, and 404 of this Act, the discharge of any pollutant by any person shall be unlawful*." Section 404 of the Act establishes the Dredge or Fill Permit Program. The Dredge or Fill Permit Program is administered in New Mexico by the US Army Corps of Engineers (USACE). Section 401 of the CWA requires "state certification" of permits issued by a federal agency under the Act. Section 401 further requires the states to have procedures to certify the federally issued permits. The purpose of such certification is to reasonably ensure that the permitted activities will be conducted in a manner that will comply with applicable State water quality standards, including the antidegradation policy, and applicable statewide water quality management plans. All Federal consultations, including the ESA, must be completed prior to USACE issuance of Section 404 authorizations.

The Proposed Action would not cross any jurisdictional wetlands or waterbodies that would require a Section 404 permit and Section 401 water quality certification. The Proposed Action would cross twenty ephemeral streams that are not jurisdictional under Section 404.

Due to the Amendments to the Storm Water Regulations for Discharges Associated with Oil and Gas Construction, effective June 12, 2006, Navitas New Mexico would be exempt from needing a National Pollution Discharge Elimination System Permit; however, best management practices (BMPs) would be used to prevent erosion and sedimentation into waters of the US under Section 402 of the Clean Water Act.

1.5. Scoping, Public Involvement, and Issues

Scoping is the process by which the BLM solicits internal and external input on the issues, impacts, and potential alternatives that will be addressed, along with the extent to which those issues and impacts will be analyzed in a NEPA document. Internal scoping is used by BLM and cooperating agency staff to help determine what needs to be analyzed in a NEPA document. External scoping involves notification and opportunities for feedback from other agencies, organizations, tribes, local governments, and the public. While NEPA regulations (40 CFR 1500-1508) do not require external scoping for an EA, to encourage public participation, the BLM opted to provide a public scoping comment period.

For the external scoping, the BLM posted a press release on the BLM CFO website [http://www.blm.gov/style/medialib/blm/nm/field_offices/carlsbad/docs.Par.92357.File.dat/Navitas_Public_Notice.pdf] on February 17, 2015. The public notice was also posted in the Carlsbad Current-Argus newspaper on February 15, February 22, March 1, and March 8, 2015. Additionally, informational notices were mailed to 8 interested parties. During the comment period, one comment letters/email was received, as described below.

The City of Carlsbad submitted a comment to the BLM on March 10, 2015. The City of Carlsbad indicated that the Project crosses the City of Carlsbad's Double Eagle Water System pipeline at three locations. Two crossings occur in township 19S and range 32E (one crossing is with the RES-EPG pipeline and one crossing is with the NGL-DCP pipeline) and one crossing occurs in township 20S and

range 30E (crossing is with the Trunk line) on the north side of Highway 62. The City of Carlsbad requires the submission of a *City of Carlsbad Notification Form for Municipal and Double Eagle Water System Pipeline Crossings* for each crossing of the Double Eagle Water System and that approval needs to be received prior to the start of construction. Additionally, the City of Carlsbad requires that the pipeline at each crossing be constructed according to standard City policy.

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 receiving existing published and unpublished literature and reviewing BLM's cultural resources program regarding the presence of Traditional Cultural Properties. The Proposed Action would not impact any known Traditional Cultural Properties, prevent access to sacred sites, prevent the possession of sacred objects, nor 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.

Paleontological Resources

Paleontological resources are fossilized remains, traces, or imprints of organisms that are preserved in geologic deposits or on the surface, and provide information about the history of plant and animal life on Earth. Fossil remains may include bones, teeth, tracks, shells, leaves, and wood. Paleontological resources include not only the actual fossils but also the geological deposits that contain them and are recognized as nonrenewable scientific resources protected by federal statutes and policies.

The primary federal legislation for the protection and conservation of paleontological resources occurring on federally administered lands are the American Antiquities Act of 1906 and the Paleontological Resources Preservation Act of 2009 (PRPA). BLM has also developed policy guidelines for addressing potential impacts to paleontological resources (BLM, 1998a,b; 2008, 2009). In addition, paleontological resources on state trust lands are protected by state policy from unauthorized appropriation, damage, removal, or use.

The fossil type of concern for this area is the remains of vertebrates, which includes some species of fish, amphibians, and mammals. The Potential Fossil Yield Classification (PFYC) is a GIS desktop tool that predicts the likelihood of paleontological resources with a numeric system of 1-5, with one having little to no likelihood and five having the highest likelihood of vertebrate fossil deposits.

Direct and Indirect Impacts

Direct impacts would result in the immediate physical loss of scientifically significant fossils and their contextual data. Impacts indirectly associated with ground disturbance could subject fossils to damage or destruction from erosion, as well as improved access and increased visibility, potentially resulting in unauthorized collection or vandalism. However, not all impacts of construction are adverse to paleontology. Excavation can and often does reveal significant fossils that would otherwise remain buried and unavailable for scientific study. In this manner, ground disturbance can result in beneficial impacts. Such fossils can be collected properly and catalogued into the collection of a museum repository so that they can be available for scientific study.

The location of the Proposed Action is within a Class 2 Potential Fossil Yield Classification (PFYC) area. Class 2 areas indicate a low potential to encounter vertebrate fossils or scientifically significant nonvertebrate fossils. Class 2 areas are described as:

- Vertebrate or significant invertebrate or plant fossils not present or very rare.
- Geologic units that are generally younger than 10,000 years before present.
- Recent eolian deposits

- Sediments that exhibit significant physical and chemical changes (i.e., diagenetic alteration).

The Proposed Action would be located in an area predominately composed of Quaternary (recent) colluvium with valley fill and piedmont alluvium and discontinuous eolian deposits (Griffith et al., 2006). As a result, a pedestrian survey for paleontological resources was not necessary as it is unlikely that there would be impacts to paleontological resources.

Mitigation Measures

No paleontological resources would be impacted as a result of the proposed Project. Therefore, there are no mitigation measures for this project, as currently proposed.

2. PROPOSED ACTION AND ALTERNATIVE(S)

2.1. Proposed Action

Navitas New Mexico is seeking authorization to construct and operate one new 24-inch Trunk line and three lateral pipelines that would connect production gas from the BLM's BEU and JRU to the Trunk line. The Trunk line would deliver the natural gas to the Cryo Plant for processing/extraction of NGLs. One 16-inch residue pipeline and one 8-inch NGL pipeline would be constructed from the Cryo Plant to third party interconnects. If completed, the Project would contribute an additional 60 million standard cubic feet per day (MMSCFD) of natural gas supply to markets. The Project would be located in Eddy and Lea Counties, New Mexico. The majority of the land that would be crossed by the Project is managed by the BLM; however, 9.7 miles of pipeline and approximately one acre of compressor station BEU CS-3 Site would be located on State Lands (Figure 2.1-1). The Project would not impact any privately owned land. Construction of the proposed pipelines and facilities would begin following approval of the Project and granting of the ROW by the BLM and NMSLO. Table 2.1-1 shows the Project's proposed acreage impacts.

Table 2.1-1
Acreage of Proposed ROW and Surface Disturbance

Project Element	Land Ownership	Acreage Included in Permanent ROW	Short-term Disturbance Acres	Long-term Disturbance
Cryo Plant	BLM	100	100	100
Trunk line	BLM	100	250	100
	NMSLO	28	41	28
Trunk line / RES-EPG / NGL-DCP - Collocated	BLM	1	2	1
RES-EPG / NGL-DCP - Collocated	BLM	19	28	19
RES-EPG Pipeline	BLM	3	6	3
NGL-DCP Pipeline	BLM	3	4	3
Lateral Pipelines	BLM	4	7	4
	NMSLO	7	12	7
Compressor Stations	BLM	14	14	14
	NMSLO	1	1	1
Interconnect Facilities	BLM	5	5	5
Contractor Yard	BLM	---	30	---
Access Roads	BLM	1	1	1
Additional Temporary Workspace	BLM	---	6	---
	NMSLO	---	2	---
Total Acreage of ROW		286	509	286

2.1.1. Description of the Proposed Pipeline Gathering System

Navitas New Mexico has submitted a SF 299 ROW application to the BLM CFO for the installation of gathering lines consisting of 35.53-miles of Trunk line, 4.21-miles of residue pipeline, 3.97-miles of NGL pipeline, and 3.05-miles of lateral pipeline. For the Project, Navitas New Mexico would require the following ROWs:

- From MP0.0 to MP35.36 the 24-inch Trunk line would require a 75-foot-wide corridor, consisting of a 30-foot-wide permanent ROW and a temporary 45-foot-wide construction ROW.
- The Trunk line (from MP35.36 to MP35.53), 16-inch residue pipeline (from MP0.0 to MP0.17) and 8-inch NGL pipeline (from MP0.0 to MP0.17) will run parallel to one another for 0.17-miles from the Cryo Plant to where the Trunk line will turn and run to the west and the residue and NGL lines will turn and run to the northeast. The three pipelines would require a 95-foot corridor, consisting of one 60-foot-wide permanent ROW and a temporary 35-foot-wide construction. The pipelines would be constructed with 15-feet of separation between each line.
- From MP0.17 to MP3.28 the NGL and residue line would require a 75-foot-wide corridor, consisting of one 50-foot permanent ROW and a temporary 25-foot-wide construction ROW. From that point, the NGL line will continue east toward the DCP interconnect facility and the residue line will continue northeast toward the El Paso Natural Gas interconnect facility.
- From MP3.28 to the DCP interconnect facility, the NGL line would require a 50-foot-wide corridor, consisting of both a 30-foot permanent ROW and temporary 20-foot-wide construction ROW.
- From MP 3.28 to the El Paso Natural Gas interconnect facility, the NGL line would require a 50-foot-wide corridor, consisting of both a 30-foot-wide permanent ROW and temporary 20-foot-wide construction ROW. The 20-foot-wide temporary work space will be utilized on only one side of the trench.
- The lateral pipelines would require a 50-foot wide corridor, consisting of a 30-foot permanent ROW and a temporary 20-foot construction ROW. The 20-foot-wide temporary work space will be utilized on only one side of the trench.

To access the pipeline construction corridor and staging areas, Navitas New Mexico would use existing public and non-public roads, where available. Improvements (turn lanes, extensions, etc.) to existing roads may be necessary and would be determined during preliminary design. Navitas New Mexico would obtain agreements from appropriate parties prior to use of all non-public access roads. Construction of new temporary access roads would not be anticipated for access to the proposed pipeline ROWs.

New permanent access roads would be constructed to access the Cryo Plant, compressor stations, and interconnect facilities The permanent access roads would be constructed prior to the start of construction at each facility, in order to provide access to each facility. The permanent access roads would be 20-feet wide, all weather access roads that meet or exceed the current roads in the area. Navitas New Mexico is proposing to construct the permanent access roads listed in Table 2.1-2.

Table 2.1-2 Proposed Permanent Access Roads	
Facility Site	**Length in Feet**
PLU CS-1 Site	225
JRU CS-1 Site	135
BEU CS-1 Site	75
BEU CS-2 Site	40
BEU CS- Site3	30
Cryo Plant	1,200
TW Interconnect	380
EPG RES Interconnect	25
DCP Interconnect	130

The locations of the proposed access roads are shown on maps included in Appendix A.

2.1.2. Description of the Natural Gas Cryogenic Processing Plant (Cryo Plant)

For the construction and operation of the Cryo Plant, Navitas New Mexico would require 100-acres of BLM-managed land (Figure 2.2-1). The legal description of the Cryo Plant location would be: NW¼ and SW ¼, Sec. 26, Township 19S, Range 31E, Eddy County, New Mexico. The permanent footprint of the plant facility would measure 2,135-feet by 2,135-feet.

One compressor station, BEU CS-4 Site, would be constructed within the boundaries of the Cryo Plant and would be 3-acres (418-feet × 321-feet) in size. During construction, Navitas New Mexico would use the Cryo Plant location for materials and staging.

The Cryo Plant would be located in unincorporated Eddy County with no residential or commercial areas nearby. Construction access to the plant site would be from Temporary Access Road (TAR) 4, which is an existing unnamed dirt road, and a new permanent access road, referred to as Cryo Plant. TAR 4 can be accessed from Shugart Road. The new permanent access road would be 1,200-feet long and would be built from TAR 4 to the Cryo Plant location.

The boundaries of the Cryo Plant would be marked with a 6-foot high chain link fence with three strand barb wire on top. The area within the fence line would be cleared of vegetation and covered with 2–3 inches of ¾-inch road base and would slope 1–3 percent.

2.1.3. Construction Phase

Navitas New Mexico would implement an Environmental Compliance Program (ECP) for the Project. Construction of the Project on Federal Lands would begin in June 2015 after all applicable state and Federal ROW grants and permits have been acquired for the Project.

Navitas New Mexico would design, construct, test, and operate all proposed natural gas pipelines (Trunk line, residue pipeline and lateral pipelines) and facilities (Cryo Plant and compressor stations) in accordance with all applicable requirements included in 49 CFR, 192, *Transportation of Natural and Other Gas by Pipeline, Minimum Federal Safety Standards*, and other applicable Federal and state regulations. The NGL pipelines and associated interconnect facilities will be designed, constructed, tested, and operated in accordance with all applicable requirements included in 49 CFR 195, *Transportation of Hazardous Liquids by Pipeline*, and other applicable Federal and state regulations. These requirements are intended to ensure adequate protection for the public and to prevent pipeline accidents and failures.

Among other design standards, 49 CFR 192 and 195 specify pipeline material and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion.

To manage construction impacts, Navitas New Mexico would implement the procedures detailed in its BLM-Specific Construction Management and Reclamation Plan (CMRP) (See the POD, Appendix B). The CMRP contains construction procedures, environmental requirements, site-specific project plans, and mitigation procedures that would be implemented throughout the Project. Navitas New Mexico would also follow the Oil and Gas Development Guidelines published by the New Mexico Department of Game & Fish (NMDGF) (August, 2007). These guidelines provide a very broad, yet useful, framework for oil and gas development statewide, and are intended for the informational and discretionary use by regulatory agencies, concerned citizens, and oil and gas industry. Oil and gas development can adversely impact native wildlife and habitat, primarily through fragmentation and degradation of habitat. These guidelines promote wildlife and habitat conservation while continuing the development of energy resources.

Navitas New Mexico would develop and implement a Spill Prevention, Control, and Countermeasures (SPCC) Plan prior to the start of construction to avoid or minimize the potential for harmful spills and leaks during construction. The plan would provide spill prevention practices, emergency response procedures, emergency and personal protection equipment, release notification procedures, and cleanup procedures.

Pipeline Construction

Pipeline construction would generally proceed as a moving assembly line as summarized below. Standard pipeline construction is composed of specific activities including:

- Survey and staking of the ROW;
- Clearing and grading;
- Pipe stringing;
- Bending;
- Trenching;
- Welding;
- Lowering in;
- Backfilling;
- Hydrostatic testing; and
- Cleanup.

In addition to standard pipeline construction methods, special construction techniques would be used where warranted by site-specific conditions. These special techniques would be used when constructing across steep terrain, paved roads, highways, and railroads.

All streams that would be crossed by the Project have been classified as ephemeral and were dry during the biological field surveys. It is anticipated that open cut crossing methods would be used at each water crossing. However, the crossing method may be amended or changed based on site-specific conditions (i.e., depth, and rate of flow at the time of construction, subsurface soil conditions, and the expected time and duration of construction) at the time of crossing. Alternative waterbody crossings that may be utilized during construction include:

- Flowing Stream Crossing – Dry Flume Method; or
- Flowing Stream Crossing – Dry Dam-and-Pump Method.

Surveying and Staking

The first step of construction would involve marking the limits of the approved work area (i.e., the construction ROW boundaries and any temporary work spaces) and flagging the location of approved access roads and existing utility lines. Before clearing and grading activities commence, fences would be braced and cut and temporary gates and fences would be installed by the fence crew to contain livestock, if present. Environmentally sensitive areas would be marked or fenced for protection at this time. Before the pipeline trench is excavated, a civil survey crew would stake the centerline of the proposed trench.

Clearing and Grading

A clearing crew would follow the fence crew and would clear the work area of vegetation and obstacles (e.g., trees, brush, and rocks). Temporary erosion control measures, such as silt fence, would be installed prior to, or immediately following, vegetation removal down slopes into streams or other environmentally sensitive areas.

Following the clearing crew, the grading crew would perform earthmoving to create a safe and level workspace. Where there is a clear distinction between A and B Horizons in the topsoil, the topsoil would be separated from the subsoils. Salvage depths of the topsoils would typically be a minimum of 4 inches to a maximum of 12-inches depending on the depth of topsoil present in the area. Topsoil would be salvaged over the trench-line only; the trench and working side, in limited areas where topography allows and where it is important to maintain root structures in place to minimize impacts to specific soil or vegetation resources; or from the full construction ROW. In cases where topographic constraints prevent topsoil salvaging, Navitas New Mexico would provide BLM with those areas prior to the start of construction.

Grading would be kept to a minimum but would be conducted where necessary to provide a reasonably level work surface. Where the ground is relatively flat and does not require grading, rootstock would be left in the ground. More extensive grading would be required on steep side slopes or vertical areas and, where necessary, to avoid excessive bending of the pipe.

The minimum clearing and grading equipment that would be utilized is as follows:

- 3 Mulchers;
- 3 Dozers; and/or
- 1 Motor Grader.

Trenching

Trenching activities would be completed using track trenchers, excavators, or conventional ditching machines. Typically, the trench for the 24-inch Trunk line would measure 5-feet deep and 4-feet wide in stable soils. In most locations, the depth of cover over the pipeline would be a minimum of 36-inches. The trench would be to one side of the construction right-of-way to allow for spoil to be placed on the wider working side.

In areas where the topsoil would be segregated from subsoils (i.e., areas where there is a clear distinction between the A and B soil horizons), one of the following mitigating measures would be implemented:

- Topsoil would be separated from subsoil over the trench;
- Topsoil would be separated over the trench and spoil side;
- Topsoil would be separated over the trench and working side; or
- Topsoil would be separated over the full width of ROW.

Where topsoil is segregated from the subsoil, topsoil could be stored on either side of the trench depending on volume and would be kept separate from the subsoil to allow for proper restoration of the soil during backfilling. In areas where the ROW would be graded to provide a level working surface and where there is another need to separate topsoil from subsoil, topsoil would be removed from the entire area to be graded and stored separately from the subsoil. Topsoil would not be stored in riparian or floodplain areas expected to flood during construction.

The minimum trenching equipment would be as follows:

- 3 track trenchers or excavators.

Navitas New Mexico does not anticipate that blasting would be required during pipeline construction. Access would be provided for landowners and grazing permittees to move vehicles, equipment, and livestock across the trench where necessary. Livestock operators would be contacted and adequate crossing facilities would be provided as needed to ensure livestock are not prevented from reaching water sources because of the open trench. The contractor would keep wildlife and livestock trails open and passable by leaving hard plugs (short lengths of unexcavated trench) or adding soft plugs (areas where the trench is excavated and replaced with minimal compaction) during the construction phase. Hard plugs or soft plugs with ramps on either side would be left at all well-defined livestock and wildlife trails, all sharp changes in direction of the trench, all obstacle features such as foreign pipeline crossings, and at no more than 0.5-mile intervals (or as stipulated by the BLM) along the open trench to allow passage across the trench and provide a means of escape for livestock and wildlife that could fall into the trench. If shallow groundwater is encountered during trenching activities, trench breakers would be installed to impede the groundwater from flowing down the trench. The trench breakers would generally be spaced according to the following, unless directed otherwise by an authorized company representative:

Slope Percent	Spacing (feet)
10-15	500
15-20	300
20-30	150
>30	100

Prior to or following trenching, sections of externally-coated pipe, 40 to 60-feet long (also referred to as “joints”), would be transported by truck to the ROW and placed or “strung” along the right of way in a continuous line and arranged so they would be accessible to construction personnel.

At the end of each construction day, the ends of the strung pipe would be covered to prevent animals from gaining access to the pipe and becoming trapped. At the start of each construction day, the uncovered sections of pipe would be inspected to ensure no animals have gained access.

Pipe Stringing

After the pipe sections are strung, individual sections of the pipe would be bent to conform to the contours of the trench by a track-mounted, hydraulic pipe-bending machine. The mechanical pipe-bending machine would bend individual joints of pipe to the desired angle at locations where there are substantial changes in the natural ground contours or where the pipeline route changes direction.

Welding and Coating Pipe

After stringing and bending are complete, the sections would be aligned, welded together, and placed on temporary supports along the edge of the trench. All welds would be visually inspected by a qualified inspector. Non-destructive radiographic inspection methods would be conducted in accordance with current requirements. A specialized contractor would be employed to perform this work. Any weld defects would be repaired or cut out as required under the specified regulations and standards. To prevent corrosion, the pipe would be externally coated with fusion bonded epoxy coating prior to delivery. After welding, field joints would be coated with a tape wrap, shrinkable sleeve wrap, or field-applied fusion bond epoxy. Before the pipe is lowered into the trench, the pipeline coating would be visually inspected and tested with an electronic detector and any faults or scratches would be repaired.

Prior to lowering the pipe into the trench, multiple sections of pipe would be welded together above the trench. These welded pipe strings may be greater than one mile in length. Navitas New Mexico would lower these sections of pipeline into the trench using side boom tractors.

The minimum equipment for stringing, bending, and welding equipment would be as follows:

- 1 track excavator;
- 1 stringing truck;
- 1 bending machine;
- 2 side booms; and
- 12 welding rigs.

Lowering and Backfilling

Before the pipeline is lowered in, the trench would be inspected to be sure it is free of rock and other debris that could damage the pipe or protective coating. In areas where water has accumulated, dewatering may be necessary to permit inspection of the bottom of the trench. The pipeline could then be lowered into the trench.

On sloped terrain, trench breakers (stacked sand bags or foam) would be installed in the trench at specified intervals to prevent subsurface water movement along the pipeline. The trench would then be backfilled using the excavated material.

The trench bottom would be filled with padding material (e.g., finer grain sand, sifted soil fines, or gravel) to protect the pipeline. Sandbags may be used to pad the bottom of the trench instead of, or in combination with padding material. Topsoil would never be used as padding material.

The minimum equipment for lowering in and backfilling would be as follows:

- 2 Dozers;
- 4 Side booms; and
- 2 Track Excavators.

Hydrostatic Testing

The pipeline would be hydrostatically pressure tested in sections determined by the pipe elevation to ensure the system is capable of withstanding the operating pressure for which it is designed. This process would involve isolating the pipe segment with test manifolds, filling the line with water, pressurizing the section to pressures that meet code requirements for the operating pressures of the pipeline, and maintaining that pressure for the period defined by the code (typically 8 hours for buried installations). The hydrostatic test for natural gas would be conducted in accordance with 49 CFR 192, and for liquids in accordance with 49 CFR 195.

Navitas New Mexico would obtain water for hydrostatic testing from local sources. The pipeline would be hydrostatically tested after backfilling and all construction work that will directly affect the pipe is complete. If leaks are found, they would be repaired and the section of pipe retested until specifications are met. Water used for the testing could then be transferred to another pipe section for subsequent hydrostatic testing. The water would be disposed of within compliance of the general discharge permit in compliance with NPDES requirements, treated if necessary, and discharged. The discharge of hydrostatic test water would follow state permit requirements, which would reduce potential effects on water quality or aquatic organisms. Energy dissipaters would be used to prevent erosion at discharge locations.

Following successful hydrostatic testing, test manifolds would be removed and the final pipeline tie-in welds would be made and inspected.

After the final tie-ins are complete and inspected, the pipeline would be cleaned, dewatered, and dried. Commissioning would involve verifying that equipment has been installed properly and is working, that controls and communications systems are functional, and that the pipeline is ready for service. In the final step, the pipeline would be prepared for service by filling the line with natural gas or liquid product as applicable.

Clean-up and Restoration

Final cleanup (including final grading and installation of permanent erosion control devices) would begin as soon as possible after backfilling. Final cleanup would be completed within approximately 30 days after backfilling the trench. During cleanup, construction debris on the ROW would be removed and disposed of, and work areas would be final graded and preconstruction contours would be restored as closely as possible. Segregated topsoil would be returned and spread over the surface of the ROW and permanent erosion controls would be installed.

After permanent erosion control devices are installed and final grading is complete, all disturbed work areas would be seeded as soon as possible. Seeding is intended to stabilize the soil, revegetate areas disturbed by construction, and restore native vegetation. Timing of the reseeding efforts would depend upon weather and soil conditions and be subject to the prescribed dates, seed mixes, and locations specified by land management agency recommendations. The minimum cleanup and restoration equipment would be as follows:

- 3 Track Excavators;
- 3 Dozers; and
- 1 Motor Grader.

Additional Construction Spread Requirements

In addition to the equipment described above, the following resources typically would be deployed on each spread, though the number of personnel and equipment would be limited at any given time:

- 160 construction personnel;
- 40 inspection personnel; and
- 50 pickups, water trucks, tractor trailers.

Navitas New Mexico would complete MLV construction concurrently with the construction of the Trunk line. Two MLVs would be constructed for this Project. One MLV would be located at MP8.3 and the other would be located at MP 27.8. Construction activities would include clearing, grading, and trenching as well as piping installation, fencing, cleaning, and restoring the area.

2.1.4. Aboveground Facility Construction Procedures

Site development would be initiated by surveying of the boundaries and a topographic survey of contours. Engineering would develop an equipment and structural layout, so site specific soil borings could be located for geotechnical evaluation of the site. Based on the topographic contours and the geotechnical evaluation the site grading plan could then be developed. The site grading plan is developed to determine; the required cut and fill, to determine the appropriate stabilization required, and to determine the appropriate water management and drainage plan.

Construction would begin with setting surveyed control points for the grading plan. The topsoil would be stripped from the site and stock piled in a designated location. The remaining portion of the site would then be stabilized per the site grading plan. The stabilization would be accomplished with either existing site materials or with the addition of selected fill material. The site would be brought up to the final contours with mixing and compacting to achieve a stable site that would shed rain in a managed/controlled manner. The completed site would be able to support; construction equipment, heavy trucks, and other vehicles.

Civil construction would begin following completion of the site grading/stabilization. The foundations would be designed based on the geotechnical report developed from the initial soil borings and the equipment to be installed on the specific foundation. The foundation locations would be staked by survey controls and then excavated to the appropriate depth based on the design. The excavated materials would be stockpiled on the site, but segregated from the topsoil. The excavated materials

would be utilized for site maintenance during construction. In some cases, and for specific equipment, deep piles would be installed for subsoil support. The foundations would be formed, rebar installed, and concrete poured. Foundations would vary in depth from 18-inches up to several feet in depth.

The next phase of construction would be to set all equipment and piping, conduct structural fabrication and installation, and then installation of conduit and cable. As the structural pipe racks are completed and installed, the fabricated piping systems would be installed. Upon completion of each piping system, hydro-testing would be conducted. The medium used for the testing (water, air, or nitrogen) would be determined by the service of the system. Where water is utilized, it would be disposed of based upon permit requirements. The instruments, wiring, and tubing would be installed to complete the systems. Once all systems are tested and brought online, the facility would be ready for full operations.

2.1.5. Special Construction Methods

In addition to standard pipeline construction methods, Navitas New Mexico would use special construction techniques where warranted by site-specific conditions. These special techniques would be used when crossing paved roads, highways, railroads, steep terrain, and when blasting through rock, if necessary. These special techniques that would be anticipated on BLM lands are described in the following sections.

Foreign Pipelines, Road and Railroad Crossings

The crossing of foreign pipelines would generally require the pipeline to be buried at greater depths. Where practicable, 12-inches of clearance would be maintained when crossing foreign pipelines or other existing underground utilities.

Construction across roads and railroads would be in accordance with the requirements in crossing permits and approvals obtained by Navitas New Mexico. Paved roads and railroads would generally be crossed with conventional bore technology. Horizontal directional drilling (HDD) would also be used if construction requirements call for extended lengths or depths at the crossing. Unpaved roads and driveways would typically be crossed using open cut methodology, some may be conventionally bored to meet specific permit requirements. Navitas New Mexico would take measures, such as posting signs to ensure safety and minimize traffic disruptions and prepare traffic control plans in accordance with the applicable regulations as necessary.

Fencing and Grazing

Fences would be crossed or paralleled by the construction ROW. Before cutting any fence for pipeline construction, each fence would be braced and secured to prevent the slacking of the fence and a temporary gate would be installed. To prevent the passage of livestock the gates would be closed when construction crews leave the area. If gaps in natural barriers used for livestock control are created by pipeline construction, the gaps would be fenced according to land management agency or lessee's requirements. All existing improvements, such as fences, gates, irrigation ditches, cattle guards, livestock water pipelines, drinking troughs, and reservoirs would be maintained during construction and repaired to pre-construction conditions or better upon completion of construction activities.

2.1.6. Operations Phase

Navitas would operate and maintain the Project's facilities in accordance with 49 CFR 192 and 195, and other applicable Federal and state regulations.

2.1.7. Project Construction and Operation Design Features

The environmental protection design features provided below would be incorporated into the project design of the Proposed Action for the construction and operations phases to lessen or avoid impacts to resources. 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 BMPs, which are industry- or agency-recommended construction methods that are routinely implemented to minimize impacts to resources. Where practical, Navitas New Mexico would incorporate these BMPs into the Project's design features.

Air Quality

- BMPs would be implemented to prevent fugitive dust generated during construction from becoming airborne. The BMPs may include:
  - Using water or chemicals to control dust, where possible;
  - Covering open bodies trucks at all times while transporting materials likely to produce airborne dusts; and/or
  - Removing soils or material from paved streets.
  - Re-establishing vegetation in temporary work areas as quickly as possible
- Emissions from the Cryo Plant and compressor facilities would all be controlled under the Best Available Control Technology (BACT).

Stabilization and Rehabilitation of the Plant and Other Aboveground Facilities

- The boundaries of the Cryo Plant, compressor facilities, and interconnect facilities would be marked with a 6-foot high chain link fence with three strand barb wire on top.
- The area within the fence line would be covered with 2 to3-inches of ¾-inch road base and would slope 1 to 3-percent.
- All vegetation within the fence line would be managed through the use of herbicides.

Soils and Vegetation

- To minimize sedimentation and erosion during construction of the project, BMPs, including installing erosion and sediment control devices, using proper grading techniques, conducting periodic inspections, and stabilizing disturbed areas in a timely manner, would be utilized. Following construction, permanent BMPs would be used to prevent sedimentation and erosion. The BLM's "Gold Book" standards and guidelines (BLM 2007) or Navitas New Mexico's internal standards would be followed depending, on whichever is more stringent.
- Existing public and non-public roads would be utilized as temporary access roads to lessen new surface disturbance and habitat fragmentation. No new temporary access roads would be built.
- The construction ROW would be delineated and clearly marked to prevent accidental disturbance of any unnecessary acreage.

Stabilization and Rehabilitation of the Pipeline ROWs

- Stabilization and rehabilitation activities would be completed in accordance with BLM and NMSLO 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, would involve re-grading the disturbed area to near pre-disturbance contour, re-spreading topsoil, applying soil amendments if necessary, applying a prescribed seed mixture as per BLM, and placing runoff and erosion control structures, such as water bars, erosion control mats, and wattles (slope interruption devices). The goal of final reclamation would be 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.
- 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. These areas would

be reseeded as soon as possible to minimize erosion. 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.

Noxious Weeds and Invasive Species

Where an individual or population is identified within the construction ROW, suitable techniques would be implemented pursuant to the CMRP to control the spread and establishment of noxious and invasive weed species. Noxious weed treatments may include mechanical, biological, or chemical methods, as appropriate, and would be implemented as needed. Navitas New Mexico would confer with the BLM and applicable county weed boards to ensure that noxious weed management practices enacted for the ROW are in compliance with BLM and county standard.

Water Resources

- Hydrostatic test water would be discharged to an upland area in compliance with required permits from the NMOCD. Appropriate erosion control measures would be utilized to minimize sedimentation and erosion during discharge.

Cave/Karst Resources

- A trench monitor would be required along some sections of the southern portion of the Trunk line; BLM will coordinate with Navitas New Mexico regarding these identified areas.
- In the event that any underground voids are encountered during construction activities, construction activities would be halted and the BLM would be notified immediately.
- In the event that any leaks would be detected during pipeline operation, the pipeline would be shut down, the source of the leak would be determined, shut offs would occur, and the appropriate agencies would be notified immediately.

Wildlife and Special-Status Species

The Project area lies within the Special-Status Species ROD and Approved RMPA zoning area established by the BLM (BLM, 2008a). The RMPA zoning area was designated to provide greater protection for the LPC and the DSL habitat. Conservation measures and other protective criteria have been established by the BLM for installation of new pipelines within the RMPA, which include the following BMPs for construction and revegetation and implementation of controlled surface use stipulations (BLM, 2008a):

- 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 (NMDGF, 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 1–August 31). If construction activities are to occur during the migratory bird season, pre-construction nest surveys would be recommended.
- Dunes should be avoided during development if possible. If avoidance is not possible or practical, then protocol surveys for DSL may need to be performed and mitigation measures followed.

Within the RMPA area, strict regulations apply for LPC and DSL and trenching during construction (BLM, 2013). Regulations for trenching include not allowing trenches to remain uncovered for more than eight hours without an agency approved monitor, restricting construction work to certain hours of the day during the avian breeding season, and covering evaporation ponds to keep birds out, if applicable. The RMPA is currently being updated, and before construction begins it is advisable to verify with the BLM which regulations apply to this specific Project.

Dunes Sagebrush Lizard (DSL) Protective Design Features

The Project area crosses the known distribution for the DSL. Approximately 54 acres of potential DSL habitat exist within the proposed Project area. Established regulations in the RMPA and trenching guidelines would be closely adhered to in order to ensure the Project would not contribute to a trend towards Federal listing or cause a loss of viability to the population or species.

BMPs must be followed, as required by the BLM in the RMPA (BLM, 2013), and by the NMDGF Habitat Handbook trenching guidelines (NMDGF, 2003). Biological monitors present during pipeline trenching would reduce DSL mortality from entrapment. All personnel working on the construction of the proposed Project would be instructed to avoid intentionally harassing all animals.

The proposed Project area is enrolled in the Candidate Conservation Agreement (CCA) and Candidate Conservation Agreement with Assurances (CCAA). Impacts to the DSL would be mitigated by following the conservation measures listed in the CCA and CCAA certificates. Within the RMPA strict regulations apply and those regulations are included in the CCAA conservation measures. Before construction begins it is advisable to verify with the BLM which regulations apply to this specific Project.

Conservation measures listed in the Certificate of Participation (CP) and Certificate of Inclusions (CI) in the CCA/CCAA for DSL are as follows (CEHMM, 2014):

1. To the extent determined by the USFWS or CEHMM representative at the POD stage, all infrastructures supporting the development of a well (including roads, power lines, and pipelines) will be constructed within the same corridor.
2. On enrolled parcels that contain inactive wells, roads and/or facilities that are not reclaimed to current standards, the Participating Cooperator shall remediate and reclaim their facilities within 3 years of executing the CP, unless the Cooperator can demonstrate they will put the facilities back to beneficial use for the enrolled parcel(s). If an extension is requested by the Cooperator, they shall submit a detailed plan (including dates) and receive USFWS or CEHMM approval prior to the 3-ear deadline. All remediation and reclamation shall be performed in accordance with USFWS or CEHMM requirements and be approved in advance by staff from the USFWS and/or CEHMM Authorized Officer.
3. Allow no new surface occupancy within 30 meters (98.4 feet) of areas designated as occupied or suitable unoccupied DSL complexes or within delineated shinnery oak corridors. The avoidance distance is subject to change based on new information received from peer-reviewed science.
4. Utilize alternative techniques to minimize new surface disturbance when required and as determined by the USFWS or CEHMM representative at the POD stage.
5. Provide escape ramps in all open water sources under the Participating Cooperator's control.
6. Allow no 24-hour drilling operations or three-dimensional (3-D) geophysical exploration during the period from March 1 through June 15, annually, on lands enrolled by the Participating Cooperator that are located within Zone 1 (timing/noise/markers). Other activities that produce noise or involve human activities, such as geophysical exploration (other than 3-D operations) and pipeline, road, and well pad construction will be allowed during these dates except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring or pumping, which do not require a human presence during this period. Normal vehicle use on existing roads will not be restricted. Exceptions to these

requirements will be considered in emergency situations, such as mechanical failures, but would not be considered for routine planned events.

7. Noise abatement during the period from March 1 to June 15, annually. Noise from facilities (e.g., pumpjack, compressor) under the control of the Participating Cooperator that service enrolled lands located within Zone 1 will be muffled or otherwise controlled so as not to exceed 75 dB measured at 9.1 m (30 feet) from the source of the noise.
8. Limit seismic exploration to areas outside of occupied and suitable shinnery dune complexes to protect DSL habitat.
9. Submit a routine monitoring and inspection schedule for oil, gas, and produced water pipelines and facilities to ensure accidental pollution events are avoided in sensitive habitats for the DSL.
10. Inside the BLM RMPA DSL polygon, the following will apply:
    a. Any trench left open for 8-hours or less is not required to have escape ramps; however, before the trench is backfilled, an agency approved monitor shall walk the entire length of the open trench and remove all trapped wildlife and release them at least 91-meters (100-yards) from the trench.
    b. For trenches left open for 8-hours or more, earthen escape ramps (built at no more than a 30-degree slope and placed no more than 152.4-meters [500-feet] apart) shall be placed in the trench. The open trench shall be monitored each day by an agency approved monitor during the following three time periods: 1) 5:00 am to 10:00 am, 2) 11:00 am to 2:00 pm, and 3) 3:00 pm to sunset. All trapped wildlife shall be released at least 91 m (100 yards) from the trench.
    c. One agency approved monitor shall be required for every mile of open trench. A daily report (consolidate if there is more than one monitor) on the wildlife found and removed from the trench shall be provided to the BLM (email is acceptable) the following morning.
    d. This stipulation shall apply to the entire length of the project in the DSL habitat regardless of land ownership.
11. Management recommendations may be developed based on new information received from peer-reviewed science to mitigate impacts from H2S and/or the accumulation of sulfates in the soil related to production of gas containing H2S on the DSL. Such management recommendations will be applied by the Participating Cooperator as Conservations Measures under the CI/CP in suitable occupied DSL habitat where peer-reviewed science has shown that H2S levels threaten the DSL (Appendix F).
12. Upon the plugging and subsequent abandonment of a well with Zone 1, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well unless otherwise precluded by law or private surface owner.

Lesser Prairie-Chicken (LPC) Protective Design Features

The Project area crosses the known distribution for the LPC. Approximately 31-acres of potential LPC habitat exist within the proposed Project area. Established conservation measures would be closely adhered to in order to ensure the Project would not cause a loss of viability to the population or species.

The habitat categories for LPC in New Mexico are defined in the 2008 RMPA as the following:

- PPA = Primary Population Area;
- CMA = Core Management Area;
- HEA = Habitat Evaluation Area;
- SSPA = Sparse and Scattered Population Area; and
- IPA = Isolated Population Area.

Conservation measures listed in the CP and CI in the CCA/CCAA for LPC are as follows (CEHMM 2014):

1. To the extent determined by the USFWS or CEHMM representative at the POD stage, all infrastructures supporting the development of a well (including roads, power lines, and pipelines) will be constructed within the same corridor.
2. On enrolled parcels that contain inactive wells, roads, and/or facilities that are not reclaimed to current standards, the Participating Cooperator shall remediate and reclaim their facilities within 3 years of executing the CP, unless the Cooperator can demonstrate they will put the facilities back to beneficial use for the enrolled parcel(s). If an extension is requested by the Cooperator, they shall submit a detailed plan (including dates) and receive USFWS or CEHMM approval prior to the 3-year deadline. All remediation and reclamation shall be performed in accordance with USFWS or CEHMM requirements and be approved in advance by staff from the USFWS and/or CEHMM Authorized Officer.
3. Allow no new surface occupancy within 30-meters (98.4-feet) of areas designated as occupied or suitable shinnery oak corridors. The avoidance distance is subject to change based on new information received from peer-reviewed science.
4. Utilize alternative techniques to minimize new surface disturbance when required and as determined by the USFWS or CEHMM representative at the POD stage.
5. Provide escape ramps in all open water sources under the Participating Cooperator's control.
6. Install fence markings along fences owned, controlled, or constructed by the Participating Cooperator that cross through occupied habitat within 2-miles of an active LPC lek.
7. Bury new power lines that are within 3.22-kilometers (2-miles) of LPC lek sites active at least once within the past 5 years (measured from lek). The avoidance distance is subject to change based on new information received from peer-reviewed science
8. Bury new power lines that are within 1.61-kilometers (1-mile) of historic LPC lek sites where at least one chicken has been observed within the past 3 years (measured from the historic lek). The avoidance distance is subject to change based on new information received from peer reviewed science.
9. Allow no 24-hour drilling operations or 3-D geophysical exploration during the period from March 1 through June 15, annually, on lands enrolled by the Participating Cooperator that are located within Zone 1 (timing/noise/markers). Other activities that produce noise or involve human activities, such as geophysical exploration (other than 3-D operations) and pipeline, road, and well pad construction will be allowed during these dates except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring or pumping, which do not require a human presence during this period. Normal vehicle use on existing roads will not be restricted. Exceptions to these requirements will be considered in emergency situations, such as mechanical failures, but would not be considered for routine planned events.
10. Noise abatement during the period from March 1 to June 15, annually. Noise from facilities (e.g., pumpjack, compressor) under the control of the Participating Cooperator that service enrolled lands located within Zone 1 will be muffled or otherwise controlled so as not to exceed 75 dB measured at 9.1-meters (30-feet) from the source of the noise.
11. Management recommendations may be developed based on new information received from peer-reviewed science to mitigate impacts from hydrogen sulfide (H_2S) and/or the accumulation of sulfates in the soil related to production of gas containing H_2S on the LPC. Such management recommendations will be applied by the Participating Cooperator as Conservations Measures under the CI/CP in suitable occupied LPC habitat where peer-reviewed science has shown that H2S levels threaten the LPC (Appendix F).

The conservation measures would be implemented where appropriate for the Project. In addition, Navitas New Mexico would also implement the following recommendations from the NMDGF Oil and Gas Development Guidelines:

- Existing public and non-public roads would be utilized as much as possible to lessen new surface disturbance and habitat fragmentation;
- Long-term facilities would not be constructed in wildlife migration routes; and
- Any new powerlines would be constructed following the Avian Power Line Interaction Committee guidance documents: Suggested Practices for Avian Protection on Power Lines and Mitigating Bird Collisions with Power Lines.

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 pipelines, all disturbed areas would be revegetated and the CFO buried pipeline stipulations would be followed.
- The boundaries of the permanent aboveground facilities would be marked with a 6-foot high chain-link fence with three strand barb wire on top. Fencing would be similar in nature to the oil and gas infrastructure that already exists in the vicinity.
- Aboveground facilities would be painted to BLM specifications to blend with the surrounding landscape and infrastructure typical in the area.
- Route over Livingstone Ridge (VRM III) measures:
  - Line was re-routed to parallel an existing ROW and reduce impacts to area, seeding, erosion control, and soil matching camouflage techniques required in this area.
- Proper spacing would occur between this Project and others to eliminate potential safety and operation/maintenance conflicts

Recreation

- All Pipelines (including temporary lines) shall be buried a minimum of 36- inches under all roads, "two-tracks," and trails.
- Burial of the pipe will continue for 20 feet on each side of each crossing.
- Power poles and associated ground structures (poles, guy wires) will not be placed within 20 feet of recreation trails.
- Guy wires must be equipped with a sleeve, tape or other industry approved apparatus that is highly visible during the day and reflective at night.
- Appropriate safety signage will be in place during all phases of the project.
- Upon completion of construction, roads shall be returned to pre-construction condition with no bumps or dips.
- All vehicle and equipment operators will observe speed limits and practice responsible defensive driving habits.

Public Health and Safety

Navitas would operate and maintain the Project facilities in compliance with the Pipeline Safety Act regulations contained in 49 CFR Part 192 and 195 as administered by the USDOT. During all phases of this Project, the applicable requirements of the Occupational Safety and Health Act would be followed.

2.2. No Action

The 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, the proposed Project would not be built, and the associated surface disturbance would not occur. Also, the beneficial impacts of the Project, including increased employment, and increased tax revenues, would not occur for the proposed Project. 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 were 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. Consistent with BLM NEPA Handbook H-1790-1, the agency "need only analyze alternatives that would have a lesser effect than the proposed action" (BLM, 2008b:80). Those alternatives with greater adverse resource impacts, or those that are not feasible because of existing physical constraints or infrastructure, are not brought forward for detailed analysis in this EA.

Prior to siting the preliminary routes for the pipelines and facilities, a desktop analysis was conducted by the BLM to identify sensitive areas to avoid. Once the preliminary route was identified, cultural resource and biological resource surveys 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 pipeline routes and design would meet the BLM's purpose and need while minimizing environmental impacts to the greatest extent possible. The route was ultimately planned to minimize impacts to habitat for both the LPC and the DSL. Cultural and historic sites were also avoided where applicable (see Section 3.9 for details regarding avoidance of cultural sites).

Any other proposed pipeline routes would likely result in greater surface impacts and environmental impacts. As a result, the alternative analysis was not carried forward in detail. For example, an alternative location for the Cryo Plant was considered. The alternative location was referred to as Option 7 which also included short segments of alternative pipeline routes for the Trunk line, RES-EPG pipeline, and DCP-NGL pipeline, and an alternate facility location for the TransWestern interconnect facility. The alternative facility and pipeline were similar in scope and design to the proposed facilities and pipeline routes. Biological and cultural field surveys were conducted at the Option 7 cryogenic plant location and along the alternate pipeline routes. A colony of burrowing owls (*Athene cunicularia*) was observed on the Option 7 Cryo Plant location. The presence of the burrowing owl would require the Option 7 Cryo Plant location to be moved to avoid the owl colony. In addition, a cultural site was identified at the southwest corner of the Option 7 Cryo Plant location, and DSL habitat was identified within the ROW for the Trunk line alternative.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter discusses the affected environment, construction and operational impacts, and mitigation for the following resources:

- Air Quality (Section 3.1);
- Soil Resources (Section 3.2);
- Water Resources (Section 3.3);
- Cave/Karst (Section 3.4);
- Vegetation (Section 3.5);
- Noxious Weeds and Invasive Species (Section 3.6);
- General Wildlife (Section 3.7);
- Threatened and Endangered Species (Section 3.8);
- Cultural Resources (Section 3.9);
- Geological Resources (Section 3.10);
- Visual Resources (Section 3.11);
- Recreational Resources (Section 3.12)
- Livestock Grazing (Section 3.13);
- Social and Economic Conditions (Section 3.14); and
- Public Health and Safety (Section 3.15).

This chapter is organized by major resources or issues as presented in Section 1.5.1 above. Based on CEQ guidance and the BLM NEPA Handbook H-1790-1, the following sections discuss resources that could be impacted by the Project. Each resource section includes the following subsections:

Affected Environment:

This section describes the existing conditions and elements of the environment that would be affected by implementing the Proposed Action or an alternative, as described in Chapter 2 above. For the purposes of providing baseline data for the affected environment, a Project area for each resource was delineated. Typically this area is defined as a 200-foot wide corridor extending 100-feet from the centerline of pipelines and the total estimated acreage for facilities (cryogenic plant, compressor stations, interconnect points, access road, and laydown yards).

Impacts from the No Action Alternative:

Direct and Indirect Impacts: The No Action alternative describes current conditions within the Project area and serves as the baseline for comparing the environmental impacts of the Proposed Action.

Cumulative Impacts: A description 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 as required by NEPA. Pursuant to 40 CFR 1508.28 and 1502.21, this EA addresses 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; and
- 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 Project construction, and assume 1 year for construction with 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 operational life of the Project through 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 proposed action when added to other past, present, and reasonably foreseeable actions.

The cumulative impact area of analysis can vary by resource. For this EA, the cumulative impact area is defined as a 200-foot wide corridor extending 100-feet from the centerline of pipelines and the total estimated acreage for facilities (Cryo Plant, compressor stations, interconnect points, access road, and pipe storage yards). The cumulative area was established to identify any other actions within close proximity of the Proposed Action that might affect nearby surface acreage. For resources that use other indicators for impacts analysis, the resource sections below define the cumulative impact area of analysis.

Past and Present Actions: 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.

Reasonably Foreseeable Future Actions: Reasonably foreseeable future actions include pending applications to the BLM 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, currently there are no pending actions that fall within the identified cumulative area of analysis.

Mitigation Measures and Residual Impacts: As outlined in 40 CFR 1508.20, mitigation measures are measures that could reduce or avoid adverse impacts and have not already been incorporated into the Proposed Action. These measures may:

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

Residual impacts are those remaining after mitigation measures have been implemented. These impacts may be to the subject resource or a different resource.

3.1. Air Quality

This section of the EA addresses the construction and operation emissions from the proposed Project, as well as Project impacts and compliance with regulatory requirements. 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 focal meteorological conditions.

The existing, affected environment and the environmental consequences of the Proposed Action 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 Cryo Plant and one mile from the ROW for the associated pipeline infrastructure. A 31-mile radius for the Cryo Plant was chosen in order to be consistent with minimum air quality analysis for major source air quality permitting. Impacts to Carlsbad Caverns National Park (46-miles to the southwest of the facility) are also 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 Eddy and Lea 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 [NOAA], 1985).

The terrain surrounding the gas plant facility is moderately flat with an elevation ranging from 900 to 1,200 meters above mean sea level. The climate is characterized as an arid steppe region or semiarid region. 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 (Western Regional Climate Center [WRCC], 2014a). 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-percent of the annual total in and near the Proposed Action area. Winter is the driest season (WRCC, 2014a).

The prevailing wind within the Project area is from the south-southeast. Representative temperature and precipitation measurements within the Project area were gathered from Carlsbad, 31-miles southwest of the Cryo Plant at an elevation of 3,120-feet. This station is a National Weather Service (NWS) co-op station, and the averages were obtained from the Western Regional Climate Center (WRCC). The data have been quality checked by the NWS and are fit for representing the meteorology of the area. The representative climate conditions are presented in Table 3.1-1.

Table 3.1-1 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	66.0	59.2	47.6	35.5	28.6	47.2
Average Total Precipitation (inches)	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

Source: WRCC, 2014b.

°F = degrees Fahrenheit

Max. = maximum

Min. = minimum

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.

Legal and Regulatory Requirements

This section summarizes the legal and regulatory framework governing air pollution and air quality in the analysis area, as well as the technical information related to determining air quality and climate change effects.

National Ambient Air Quality Standards

Title I of the Clean Air Act (CAA) requires the Environmental Protection Agency (EPA) to establish 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 carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (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 3.1-2.

Table 3.1-2 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 ug/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 u g/m^3	24 hour[g]	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

Source: EPA, 2014b.

[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 I-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 I-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: part per million

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 (NM AC), administered by the 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 (NM AAQS) are shown in Table 3.1-3.

Table 3.1-3 New Mexico Ambient Air Quality Standards		
Pollutant	**Averaging Time**	**Level**
CO	1 hour 8 hour	13.1 ppm 8.7 ppm
NO_2	24 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[b]	0.010 ppm

Source: NM AC, 2014.
[a] Annual geometric mean.
[b] For the Pecos-Permian Intrastate Air Quality Control Region. Not to be exceeded more than once per year.
µg/m^3: microgram per cubic meter.
ppm: parts per million.

Hazardous Air Pollutants

Toxic air pollutants, also known as hazardous air pollutants (HAPs), are those pollutants that are known 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.

Oil and natural gas production facilities emit pollutants such as HAPs and volatile organic compounds (VOCs). Of the 187 toxic air pollutants, oil and natural gas production emits benzene, toluene, ethylbenzene, and xylenes (BTEX), as well as n-hexane and VOCs. Of the HAPs emitted from natural gas system, VOCs are the largest group, and typically evaporate easily into the air. The most common HAPs in natural gas systems are n-hexane, the BTEX compounds (benzene, toluene, ethylbenzene, and xylenes), and hydrogen sulfide. HAPs are emitted from equipment leaks and from various processing, compressing, transmission, distribution, or storage operations (see Table 3.1-7 and Table 3.1-8).

A major source of HAPs is one with the potential to emit in excess of 10-tons per year (tpy) of any single HAPs or 25-tpy of two or more HAPs combined. The pollutants of concern in the oil and gas sector are primarily the BTEX compounds, formaldehyde, and n-hexane.

Prevention of Significant Deterioration

Prevention of Significant Deterioration (PSD), enacted by Congress in the 1977 CAA, applies to new major sources or major modifications at existing sources for pollutants where the area is located is attainment or unclassifiable with the NAAQS. The Cryo Plant would be a major source of pollutants and would be permitted under the PSD increment which prevents the air quality designated as an attainment or unclassifiable areas from deteriorating to the level set by the NAAQS. Title 40 CFR 52.21(c) defines the "Ambient Air Increments" as the "increases in pollutant concentration over the baseline concentration." Increment standards exist for three pollutants: PM_{10} (24-hour and annual averages), NO_x (annually average only), and SO_2 (3-hour, 24-hour and annual averages) (see Table 3.1-4). 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 Ill areas. Class I areas are areas of special national or regional natural, scenic, recreational, or historic value. The tightest increments apply in Class I areas. Class II areas are all areas not established as Class I areas. The largest increments and the least stringent restriction on growth, apply in Class III areas. States must request and receive EPA approval for Class III areas. No Class III designations have been approved. Class Ill areas are areas that do not have any air quality standards. To date, no Class Ill areas have been established. The applicable PSD increment standards are presented in Table 3.1-4. Class I and II PSD increments are listed for reference.

Table 3.1-4
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 Annual	8 µg/m^3 4 µg/m^3	30 µg/m^3 17 µg/m^3
$PM_{2.5}$	24 hour Annual	2 µg/m^3 1 µg/m^3	9 µg/m^3 4 µg/m^3
SO_2	3 hour 24 hour Annual	25 µg/m^3 5 µg/m^3 2 µg/m^3	512 µg/m^3 91 µg/m^3 20 µg/m^3

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

Air Quality-Related Values

The CAA amendments of 1977 give Federal Land managers an "affirmative responsibility" to protect the natural and cultural resources of Class I areas from the adverse impacts of air pollution. Air quality related values (AQRVs) are used by Federal Land managers to determine the impact of pollution to Federal Lands. An AQRV is a resource that may be adversely affected by a change in air quality. The resource may include visibility or a specific scenic, cultural, physical, biological, ecological, or recreational resource identified by the Federal Land manager for a particular area. The CAA specifically identifies visibility as an AQRV in Class I wilderness areas. Visibility is monitored on an annual basis under Interagency Monitoring of Protected Visual Environments (IMPROVE) program. Federal agency actions must not adversely affect AQRVs at the nearest Class I area.

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 3.1-5.

Table 3.1-5
Background Concentrations

Pollutant	Period	Background Concentration	Units
CO	1 hour 8 hour	2.1[1] 1.5[1]	ppm ppm
NO_2	1 hour Annual	37[2] 5[2]	ppb ppb
Total suspended particulates	24 hour Annual	46.2[2] 21.1[2]	µg/m^3 µg/m^3
PM_{10}	24 hour Annual	46.2[2] 21.1[2]	µg/m^3 µg/m^3
$PM_{2.5}$	24 hour Annual	12.4[2] 6.2[2]	µg/m^3 µg/m^3
SO_2	1 hour 3 hour 24 hour Annual	20.35[3] 8.65[3] 1.86[3] 0.29[3]	ppb
O_3	8 hour	0.076[2]	ppm

Source (except where stated): NMED AQB (2011).

Note: There are no monitors for total suspended particulates, total reduced sulfur, Pb, or H_2S in New Mexico. Pb can be assumed to be zero. All background concentrations are from New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines 2014.

[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] Average of 3-year 100% maximum concentration from 5ZP Artesia (6/3/2006-6/2/2009).

ppm = parts per million.

ppb = parts per billion.

µg/m^3 = micrograms per cubic meter.

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 3.1-6.

Table 3.1-6 Lea and Eddy County Emissions Inventory in Tons per Year								
Source	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**VOC**	**HAPs**	**CO_2e[3]**
Eddy County								
Agriculture	---	---	---	656	131	---	---	---
Biogenics[1]	13,620	1,423	---	---	---	57,192	13,000	---
Dust	---	---	---	18,905	1,928	---	---	---
Fires	13,153	268	127	1,424	1,198	3,100	385	200,873
Fuel Combustion	956	1,378	48	89	84	201	28	---
Industrial Processes	9,662	8,247	2,413	1,919	708	48,338	941	---
Miscellaneous[2]	9	0	0	23	21	822	232	---
Mobile	7,690	1,694	8	94	77	1,030	247	395,226
Waste Disposal	632	21	1	82	66	48	5	---
Subtotal	45,722	13,031	2,597	23,192	4,203	110,731	14,838	596,099
Lea County								
Agriculture	---	---	---	2,031	406	---	---	---
Biogenics[1]	10,791	2,906	---	---	---	36,402	10,329	---
Dust	---	---	---	23,685	2,407	---	---	---
Fires	4,919	152	63	591	473	1,067	195	85,971
Fuel Combustion	3,571	11,758	56	317	308	776	304	---
Industrial processes	9,479	7,194	10,373	259	242	43,116	799	---
Miscellaneous[2]	9	0	0	23	22	838	271	---
Mobile	6,609	1,372	7	70	56	572	142	342,671
Waste Disposal	1,098	35	1	130	104	78	7	---
Subtotal	36,476	23,417	10,500	27,106	4,018	82,849	12,047	428,642
Total Emissions, Lea and Eddy Counties	82,198	36,448	13,097	50,298	8,221	193,580	26,885	1,024,741

Source: EPA, 2013.

[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.

[3] CO_2e = carbon dioxide equivalent.

Note: "-" denotes that there is no data available.

Based on a review of the existing background source inventory data, there are 643 regional air emission sources within 60 miles of the Cryo Plant within New Mexico (NMED AQB, 2013). Many of these sources 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 46-miles southwest of the proposed Cryo Plant. There is no interagency monitoring of protected visual environments (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, 2013). 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 Project would not be built. Presently, production at well sites in the Permian Basin is outpacing available processing infrastructure. Construction and operation of the Cryo Plant 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. Air quality in the region would be expected to degrade as additional wells are drilled and additional flaring activities are anticipated to occur.

3.1.3. Impacts from the Proposed Action

Direct and Indirect Impacts

Under the FLPMA 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 NM AAQS 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 Cryo Plant).

Emissions from the construction of the Proposed Action would be expected to be short-term. During construction, impacts to air quality would generally be 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, 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 that are anticipated to occur from the Proposed Action are presented in Table 3.1-7.

Table 3.1-7 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	1.963	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	*0.4%*	*0.01%*	*0.1%*	*2.5%*	*1.4%*	*0.01%*	*0.01%*	*2.1%*
Percent of Total Lea County Emissions	*0.2%*	*0.001%*	*0.1%*	*2.2%*	*1.5%*	*0.01%*	*0.01%*	*2.9%*

[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) would be below 3-percent of each county inventory. Emissions of fugitive dust would be greatest in 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 Cryo Plant, construction emissions would be localized around the vicinity of the plant.

The Cryo Plant 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 Cryo Plant operations and operational worker commuting are presented in Table 3.1-8. The Cryo Plant emissions, presented in Table 3.1-8, include emergency acid gas flare emissions. These pollutant emissions are compared to the percent of total emissions for Eddy and Lea Counties.

Table 3.1-8 Operation Related Emissions in Tons per Year Resulting from the Proposed Action										
Source	**NO_x[1]**	**SO_x[1]**	**CO[1]**	**TSP[1]**	**PM_{10}[1]**	**$PM_{2.5}$[1]**	**H_2S[1]**	**VOC[1]**	**HAPs[1,2]**	**CO_2e[1,3]**
Cryo Plant	210.33	113.59	204.90	18.4	18.4	18.4	2.30	376.11	35.00	367,537
Operational worker commute	0.24	0.0	2.39	0.03[4]	0.03	0.02	---[5]	0.25	0.03	400
Total Operational Emissions	210.57	113.59	207.29	18.43	18.43	18.42	2.30	376.36	35.03	367,937
Percent of Total Eddy County Emissions	1.6%	4.4%[6]	0.5%	0.1%	0.1%	0.4%	---	0.3%	0.2%	61.7%
Percent of Total Lea County Emissions	0.9%	1.1%	0.6%	0.1%	0.1%	0.5%	---	0.5%	0.3%	85.8%

[1] Emissions estimates are preliminary based off of proposed equipment.

[2] Emissions of HAPs for Delaware Basin Natural Gas Cryogenic Processing Plant from Notice of Air Quality Permit Application. Emissions of HAPs from operational worker commute assumed to be 10% of VOC emissions.

Table 3.1-8
Operation Related Emissions in Tons per Year Resulting from the Proposed Action

Source	NO_x[1]	SO_x[1]	CO[1]	TSP[1]	PM_{10}[1]	$PM_{2.5}$[1]	H_2S[1]	VOC[1]	HAPs[1,2]	CO_2e[1,3]

[3] Emissions of CO_2e from preliminary air emission calculations for controlled emissions (Navitas 2014).

[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_2 for the purposes of comparison.

At the Cryo Plant, waste acid gases would be generated during operation from natural gas processing. The Cryo Plant would rely on an acid gas flare system to dispose of the waste acid gases generated from the gas processing if necessary. 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.

Modeling results for the Cryo Plant are directly comparable to the NAAQS, NM AAQS, and PSD increments. A comparison of the Cryo Plant modeling results and the ambient air quality standards and increments are presented in Table 3.1-9.

Table 3.1-9
Delaware Basin Natural Gas Cryogenic Processing Plant NAAQS, NM AAQS, and PSD Increment Analyses

Pollutant	Period	NAAQS and NM AAQS[1]				PSD Increment Analysis[1]	
		Maximum Modeled SIL[2]	Background Concentration	NAAQS	NM AAQS	Maximum Modeled Increment[3]	PSD Increment
CO	1 hour	106.26	1374.0	3.7% (40,075)	9.9% (14,999.5)	---	---
	8 hour	70.47	801.5	8.5% (10,305)	8.8% (9961.5)	---	---
NO_2	1 hour	94.93	75.2	90.5% (188)	---	---	---
	24 hour	37.41	---	---	19.9% (188)	---	---
	Annual	6.42	9.4	15.9% (99.64)	16.8% (94)	6.42	25.7% (25)
Total suspended particulate	24 hour	3.67	46.2	---	53.8% (150)	---	---
	Annual	0.69	21.1	---	55.0% (60)	---	---
PM_{10}	24 hour	3.67	46.2	41.1% (150)	---	3.67	12.2% (30)
	Annual	0.69	21.1	---	---	0.69	4.1% (17)
$PM_{2.5}$	24 hour	3.67	12.4	65.1% (35)	---	3.67	91.8% (4)
	Annual	0.69	6.2	88.3% (12)	---	0.69	7.7% (9)
SO_2	1 hour	55.57	20.35	38.6% (196.5)	---	---	---
	3 hour	41.01	8.65	---	---	41.01	8.0% (512)
	24 hour	20.87	1.86	---	8.6% (262)	20.87	22.9% (91)
	Annual	3.40	0.29	---	7.0% (52.4)	3.40	17.0% (20)
H_2S	1 hour	1.13	---	---	0.8% (139.3)	---	---

[1] Concentrations are in ug/m^3.

[2] Maximum modeled significant impact levels are the highest first high (H1H) of the modeled concentrations.

[3] To be conservative the H1H was used for the increment analysis.

Note: For NAAQS, NM AAQS, and PSD increment values, the first value is the percent of the standard and the second value (in parentheses) is the standard.

Modeling determined that the emissions from the Cryo Plant would not exceed any ambient air quality standard or Class I or Class II PSD increment. Furthermore, no adverse impact to air quality related values in the nearest Class I area were found (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 greenhouse gas (GHG) emissions in Lea and Eddy Counties.

In Carlsbad, ozone concentrations have increased approximately 6-percent 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-percent of VOCs inventoried (BLM, 2014). Point source emissions account for 40-percent of anthropogenic VOC emissions in the area, solvent use accounts for 15-percent, and fire accounts for 8-percent. Oil and gas area sources produce only 1.4-percent of VOCs in the area, while pipeline transport of oil and gas accounts for 1.7-percent.

NO_x emissions in the Carlsbad area are largely anthropogenic, and account for 88-percent of the 2007 inventory. Of the total human-caused NO_x emissions, industrial point sources account for 84-percent, on-road mobile sources account for 7-percent, oil and gas area sources account for 5-percent, non-road mobile sources account for 2-percent, and residential heating with natural gas and propane account for 1-percent (BLM, 2014).

New Mexico shows a trend in reduction of CO concentrations, which mirrors the national trend. In Chavez, Lea, and Eddy Counties, anthropogenic sources account for 65-percent of CO emissions and biogenic sources 35-percent. Of the anthropogenic sources, 47-percent are from on-road mobile sources, 24-percent from industrial point sources, 14-percent from non-road mobile sources, 9-percent from fire, and 2-percent each from oil and gas area sources and waste disposal burning (BLM, 2014).

PM concentrations (including PM_{10} and $PM_{2.5}$) have decreased from 2001 to 2010 (EPA, 2012b). The bulk of emissions for both PM_{10} and $PM_{2.5}$ are from dust from unpaved roads (88-percent and 65-percent, respectively). For PM_{10}, the next three highest categories are point sources at 2.8-percent, tilling and harvesting at 2.6-percent, and paved roads at 2.4 percent. Oil and gas area sources account for only 0.1-percent of PM_{10} emissions. For $PM_{2.5}$, the next three highest categories are point sources at 17 percent, fire at 4.3-percent, and tilling and harvesting at 2.8-percent. Oil and gas area sources account for 0.8- percent of $PM_{2.5}$ emissions in the area (BLM, 2014).

Nationally, SO_2 concentrations have decreased 83-percent since 1980 and have decreased 6-percent from 2000 to 2010 (EPA, 2012c). 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-percent of all SO_X emissions with most of the remainder (25-percent) accounting for industrial point sources (BLM, 2014).

Levels of lead have decreased 94-percent nationwide between 1980 and 1999 (EPA, 2013a). Airports account for 95-percent of the Pb emission in New Mexico (BLM, 2014).

The NMED has no routine monitors for H_2S. In a recent study by the US Forest Service (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.

Reasonably Foreseeable Actions

Reasonably foreseeable future actions in the area are generally those serving the oil and gas industry. The DCP Midstream Lea County Lateral Pipeline Project, DCP Midstream Zia II Gas Plant, Western Refining and Centurion crude oil pipelines, would all be located in the area. Additional oil and gas well pads, electric transmission lines, access roads and projects typical of an area with a growing population would also be expected.

Construction and operation of the Proposed Action would result in emissions of regulated pollutants. As discussed in the above sections, impacts from construction would be considered short term and minor and the operation of the pipeline would result in minor, long-term emissions. Emissions from the Cryo Plant would all be controlled under the BACT. Once built, the Proposed Action would have a minimal impact on air resources.

Climate Change

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, 2014). 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. While uncertainties 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.

Climate change will impact regions differently and warming will not be equally distributed. Natural internal variability will continue to be a major influence on climate, and both observations and computer model predictions indicate that increases in temperature are likely to be greater at higher latitudes, where the temperature increase may be more than double the global average. Warming of surface air temperature over land will very likely be greater than over oceans. There is also high confidence that warming relative to the reference period will be larger in the tropics and subtropics than in mid-latitudes. Frequency of warm days and nights will increase, and frequency of cold days and cold nights will decrease in most regions. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures. Models predict increases in the duration, intensity, and extent of extreme weather events. The frequency of both high and low temperature events is expected to increase (Intergovernmental Panel on Climate Change [IPCC], 2013).

It is important to note that GHGs will have a sustained climatic impact over different temporal scales. For example, while CO_2's lifetime in the atmosphere is poorly defined, some excess emissions of CO_2 will remain in the atmosphere for thousands of years, due in part to the very slow process by which carbon is transferred to ocean sediments (EPA, 2014).

Current research suggests that climate change will have several effects on the Project area and throughout New Mexico (USFS, 2010). Temperature levels in the Southwest are anticipated to rise as a result of global climate change. By the end of the twenty-first century, temperatures could rise by 5°F to 8°F. Overall precipitation levels in the Southwest are anticipated to fall by as much as 10-percent as a result of global climate change. The effects of these changes on the Project area are expected to be an increased risk of drought and wildfire.

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).

Climate change analyses consist of several factors, including GHGs, land use management practices, and the albedo effect (a measure of how much of the sun's energy is reflected back into space). The tools necessary to quantify incremental climatic impacts of specific activities associated with those factors are presently unavailable. As a consequence, impact assessment of effects of specific anthropogenic activities cannot be performed. Additionally, specific levels of significance have not yet been established. Qualitative and/or quantitative evaluation of potential contributing factors within the Project area is included where appropriate and practicable. When further information on the impacts to climate change in southeast New Mexico is known, such information will be incorporated into the BLM’s NEPA documents as appropriate.

Environmental and economic climate change impacts from commodity consumption are not effects of the proposed planning decisions and thus are not required to be analyzed under NEPA. They are not direct effects, as defined by the CEQ, because they do not occur at the same time and place as the action. Nor are they indirect effects because the proposed plan actions and resulting GHG emissions production are not a proximate cause of the emissions or other factors resulting from consumption. The BLM does not determine the destination of the resources produced from Federal Lands. The effects from consumption are not only speculative, but beyond the scope of agency authority or control. Therefore, this document does not include analysis of the consumption of resources produced as a result of planning decisions.

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. It is also 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.

Construction (and, to a lesser extent, operation and maintenance) activities would result in GHG emissions, well below the CEQ threshold of 25,000-metric tons of GHGs requiring a further GHG emissions analysis. While the cumulative effect of climate change in the air quality analysis area would be major and long term, the contribution of the proposed Project to this change would be negligible.

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 2.1.7). No additional mitigation measures have been recommended.

3.2. Soil Resources

This section provides a description of the soil resources in the Project area and a description of the affected environment, including sensitive soil types, erosion potential, and flooding hazards. Potential impacts to soil resources under the No Action and Proposed Action alternatives, as well as mitigation measures to impacted soils along the ROW, are also described. Data from this section were compiled using recent aerial photography, biological field surveys, and publicly available scientific literature.

3.2.1. Affected Environment

Potential impacts to soils from construction and operation of the proposed Project were evaluated by examining the type, extent of occurrence, and physical and chemical characteristics of the soils. Field observations, Geographic Information System (GIS), and a Web Soil Survey (Natural Resource Conservation Service [NRCS], 2014) were used to locate areas of the proposed ROW and related facilities that may be disturbed by the Project.

Approximately 17 soil types are located within the Project area. Much of the Project area is dominated by Kermit-Berino fine sands and Simona-Bippus complex soils (Figure 3.2-1). Kermit-Berino associations

consist of sandy soils on undulating plains and within low hills of eastern New Mexico. These soils are typically highly susceptible to wind and water erosion with little to no surface water holding capacity (USDA, 1971). The Simona soils are comprised of darker sands that occur in drainage ways and small playas. These dry lakes hold surface water for short periods of time (USDA, 1971).

Sensitive Soils: Sensitive soils have qualities that cause fragility, sensitivity, vulnerability, and may be rare, endangered, or threatened (New Mexico Wilderness Alliance, 2012). These soils are often difficult to reclaim due to the inherent properties of the soil (e.g., ponding, flooding, and dunes). Two soil types, gypsum and dunes, may occur within the Project area and are considered sensitive soils by the BLM (New Mexico Wilderness Alliance, 2012).

The vegetation and wildlife resources that depend on sites containing gypsum soils are also significant in that they provide meaning and distinctiveness to the landscape and house species that are otherwise fragile, sensitive, rare, or threatened (New Mexico Wilderness Alliance, 2012). Gypsum is also significant in the formation of caves, sinking streams, springs, and sinkholes, which create recreational activities and provide sensitive habitat for cave-adapted animal species (New Mexico Wilderness Alliance, 2012).

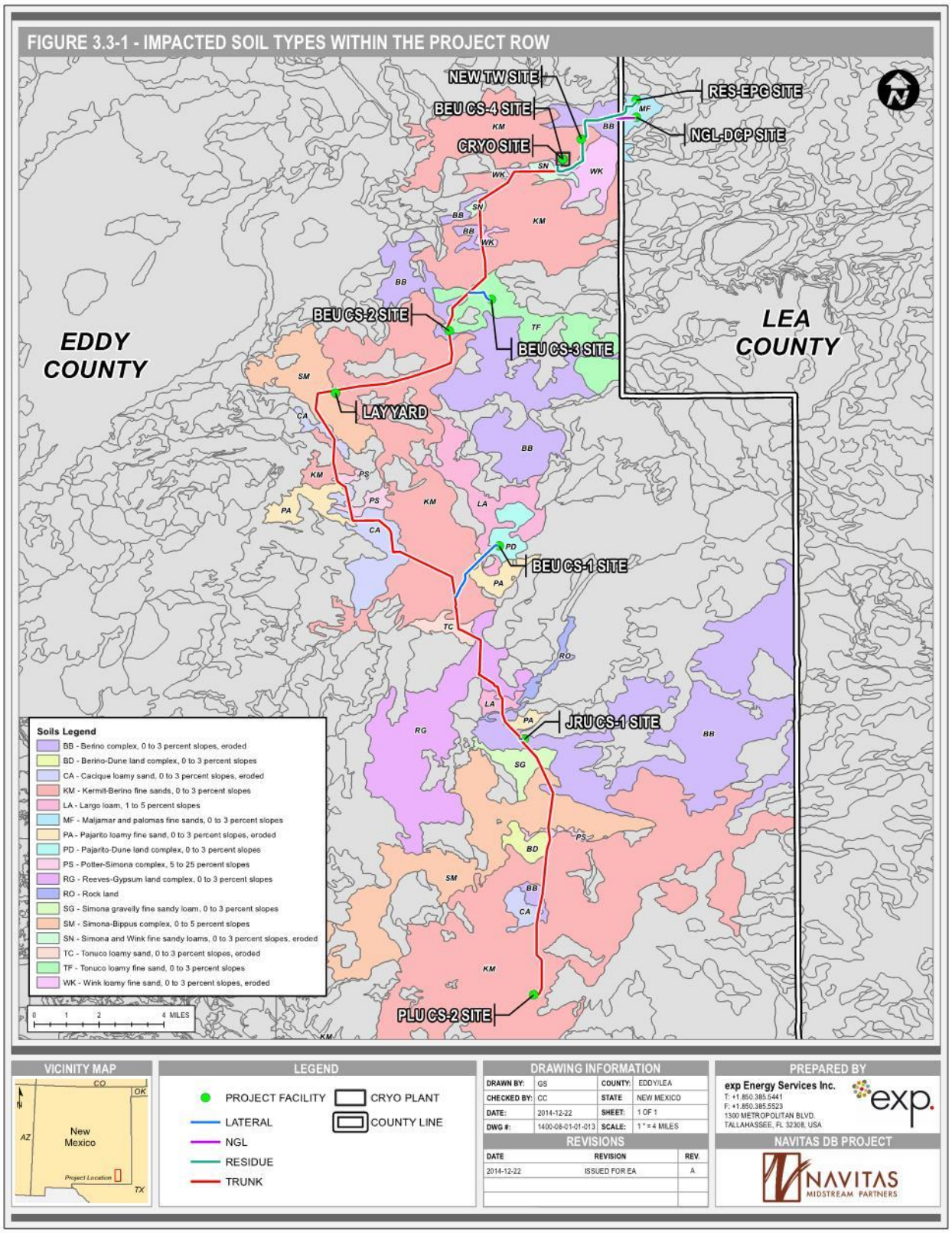


Figure 3.2-1 Soil Types within the Project Area

Dune soils, such as those found in the Berino-Dune Land Complex and Pajarito-Dune Land Complex, were observed within 1,000-feet of the Project area. These areas exist within the Chihuahuan Stabilized Coppice Dune and Sand Flat Complex, as well as within the North American Desert (active and stabilized Dune Complex). Listed species including LPC, DSL, and the burrowing owl, among others, are known to exist within dune sand habitats.

Soil Erosion: Soils with fine sand or loamy sand textures are susceptible to high wind erosion potential. Wind erosion can impact air quality and cause visual impacts, such as dune formation/erosion and plant desiccation. Much of the Project area is comprised of fine sandy soils, and is therefore susceptible to wind erosion.

Soil erosion is also due to the influence of water. The soil erodibility factor (K) is defined as the inherent erodibility of a particular soil, as measured by the susceptibility of soil particles to detach and transport via rainfall and runoff. Typical soil erodibility ranges from low to high, 0.02 to 0.69, respectively (Table 3.2-1) (Stewart et al., 1975). The majority of the soils within the Project area are fine sands and loamy sands. According to Stewart et al. (1975), soil erodibility due to hydrologic influences is low, with K factors between 0.16 and 0.12 in fine and loamy sands, respectively.

Table 3.2-1
Soil Erodibility Factor K^{fact}*

Textural Class	Organic Matter Content		
	<0.5%	2%	4%
Sand	0.05	0.03	0.02
Fine sand	0.16	0.14	0.1
Very fine sand	0.42	0.36	0.28
Loamy sand	0.12	0.1	0.08
Loamy fine sand	0.24	0.2	0.16
Loamy very fine sand	0.44	0.38	0.3
Sandy loam	0.27	0.24	0.19
Fine sandy loam	0.35	0.3	0.24
Very fine sandy loam	0.47	0.41	0.33
Loam	0.38	0.34	0.29
Silt loam	0.48	0.42	0.33
Silt	0.6	0.52	0.42
Sandy clay loam	0.27	0.25	0.21
Clay loam	0.28	0.25	0.21
Silty clay loam	0.37	0.32	0.26
Sandy clay	0.14	0.13	0.12
Silty clay	0.25	0.23	0.19
Clay		0.13-0.2	

Source: Stewart et al., 1975

*The values shown are estimated averages of broad ranges of specific-soil values. When a texture is near the borderline of two texture classes, use the average of the two K values.

Biological Soil Crusts (BSCs): BSCs are lichen-bryophyte microbial associations which support soil and vegetation communities in early successional or disturbed communities (Bowker, 2007). BSCs can physically and chemically change the soil environment (Benlap et al., 2003), and often thrive in arid and semi-arid lands. They reduce water erosion, fix atmospheric nitrogen, and contribute to soil organic matter. BSCs are a large component of gypsum soils and sagebrush communities and contribute to the biomass, carbon and nitrogen fixation, albedo, seed germination, and plant establishment of arid environments. BSCs also help trap water, thereby influencing infiltration rates and surface permeability, and tend to be highly intolerant of mechanical and chemical disturbances (United States Department of the Interior [USDI], 2001).

Soil Compaction: Soil compaction results in reduced infiltration, permeability, and gas and nutrient exchanges within the soil, as well as limited root growth of impacted vegetation. Soil compaction can be exacerbated when construction activities occur when soils are wet. 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. A majority of the soils within the Project area are not highly susceptible to compaction because of their large particle size (sands).

Steep Slopes: Slopes within the Project area generally range from 0-3-percent (United States Department of Agriculture [USDA], 1971, 1974). These are not considered steep and generally do not alter hydrologic regimes.

Restrictive Layers: Restrictive layers (e.g. bedrock) affect soil type and vegetation classes by influencing available water capacities, cation-exchange capacities, erosion factors, and root restrictive layer penetration. According to the Eddy and Lea County Soil Surveys (USDA, 1971, 1974) and the Biological Survey Report (see Appendix B), there are no soils that characteristically containing restrictive layers within the Project area.

Flood Hazard: Flooding can cause runoff from nearby slopes, leading to scouring, ponding, damage to agricultural crops, and soil stratification, depending on flood frequency and duration. Due to the large component of sandy soils within the Project area, flooding and ponding potentials are low.

3.2.2. Impacts from No Action Alternative

Under the No Action alternative, the proposed Project would not be built. No impacts would occur as a result of the No Action Alternative.

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

Direct impacts from construction related activities, including clearing of vegetation, grading, and excavation, including trenching, would directly impact soils resources in the Project area. Direct impacts to soils include damages to BSCs, increased erosion from the removal of vegetative cover, contamination from potential accidental spills or leaks, and compaction of soil from heavy equipment resulting in a loss of structure and porosity. These impacts can lead to increased runoff and subsequently increase erosion. Because bare soils characterize most desert ecosystems, particulates produced following disturbance is a concern. Dust (including associated salts) generated during clearing and grading activities, the use of access roads, or wind erosion from exposed soils, could temporarily decrease air quality.

Indirect impacts to soil resources may include short-term changes to overall productivity from the mixing of the topsoil with subsoil during grading activities. Soils with shallow profiles, most notably sensitive soils, are most susceptible to decreased productivity due to mixing activities. Longer-term impacts could include the spread of noxious weeds that may occur following construction and operation. Without proper

management, noxious weeds could outcompete native species, as these plants typically thrive in soils with low water content, poor nutrient availability, and coarse textures. Noxious weed impacts are further discussed in Section 3.6.

Cumulative Impacts

Most of the pipeline ROW would not incur significant cumulative impacts with respect to soil resources, due to the linear nature of the pipeline and location of the facilities. There is a low probability that the implementation of the Proposed Action, including the BMPs for other future planned activities, would result in overall cumulative impacts to soils.

Mitigation Measures and Residual Impacts

Provided that the environmental conditions are favorable (e.g. normal to high seasonal precipitation levels), disturbed areas would likely be reclaimed to or above pre-disturbance conditions after 2 to 3 growing seasons of good precipitation. Due to the arid climate of the region, measures to ensure successful reclamation of drought-prone soils would be taken.

Specific mitigation measures for soil resources will follow the Project CMRP, which is included in Appendix B of the POD. Those measures may include:

- Topsoil would be separated from subsoils, where possible, to avoid mixing topsoil with subsoil. In cases where topographic constraints prevent topsoil salvaging, those areas would be identified prior to construction for BLM approval.
- Reseeding and restoration would be conducted according to the Oil and Gas Development Guidelines (2007). The implementation of erosion control measures and monitoring of revegetation requirements would allow affected sites to return to pre-disturbance condition. In addition, the treatment of soil is necessary to preserve the approximate pre-construction capabilities and stabilization in a manner consistent with the initial land use.
- Compaction would be relieved in subsoils prior to replacing and spreading topsoil. Particular attention would be paid to soil type, topsoil separation, and storage to ensure successful vegetation reclamation.
- Rocks would be removed after topsoil replacement.
- Soil additives and seeding would be implemented following the approval of the landowner and local agency.
- Permanent soil BMPs and ROW and pipeline markers may also be implemented following backfilling, clean-up, and restoration.
- The final seed mix would be based on BLM BMPs on Federal Lands, Restore New Mexico recommendations, NRCS recommendations and the availability of seed at the time of reclamation. Navitas New Mexico would consult with the NMSLO to determine appropriate seed mixes on State Lands.

3.3. Water Resources

This section describes the existing surface water and groundwater resources within the Project area and assesses the potential effects to these resources that would result from construction and operation of the proposed Project. This section also identifies appropriate mitigation measures to avoid or minimize potential adverse effects to groundwater, surface waterbodies, and wetland resources.

3.3.1. Affected Environment

Potential impacts due the construction and operation of the proposed Project to water resources were evaluated by comparing the location of these features (ponds, streams, wetlands, etc.) to the surface

disturbance. The analysis in this section was based on the examination of Carlsbad BLM RMP 1988 and evaluation of data and on-site field identification conducted by Cienega. The Biological Survey Report is included as Appendix B.

Surface Hydrology

New Mexico is characterized by high mountains, expansive plains and plateau, river gorges, and broad valley. The High Plains aquifer, also known as the Ogallala aquifer, is a regional aquifer system that underlies 450,660-km^2 (174,000-mi^2) in parts of eight States: Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming (USGS, 2010a; McGuire et al., 2003). Surface water within the proposed Project area is affected naturally by geology, precipitation, and water erosion. About half of the annual precipitation is received during a period with brief intense storms, commonly referred to as the "Monsoon season." New Mexico's surface waters consist of rivers, streams, lakes and reservoirs, and wetlands.

The proposed Project area lies within the Upper Pecos River watersheds. Eddy County is part of the Pecos River Basin, and the major stream flowing through the county is the Pecos River. Surface water in the Pecos River Basin comes from three main sources: snow melt in the Sangre de Cristo Mountains, flood inflow from storms events, and groundwater base inflow (Peter Burck, Brian Wahlin). The Pecos River bisects Eddy County and runs through the heart of the City of Carlsbad. Pecos River is dammed by Brantley Dam and by Avalon Dam 10-miles northwest and 5-miles north of Carlsbad, respectively (Hazard Mitigation Plan Eddy County, NM).

Anthropogenic activities that currently affect surface water resources include livestock grazing management, oil and gas development, recreation, and brush control treatments. Surface water for the Project area would flow generally southwest into washes and tributaries of the Pecos River, located at its closest, approximately 11-miles of the Project area. Two large lakes, Lindsey Lake and Salt Lake, are located approximately 4-and 7-miles west, respectively, from the southern end of the survey area. A treatment reservoir, located in Clayton Basin, is located approximately 6-miles of milepost 31 (Biological Survey Report). There are several intermittent ponds located 1 to 2-miles north of milepost 23 and 34.

Twenty-one non-jurisdictional waters of the US, 20 streams and one playa, were delineated during the biological field surveys (see Biological Survey Report, Appendix B). The streams were classified as ephemeral meaning that they are shallow and have flowing water for brief period in response to rainfall or snowmelt. The ordinary high water mark (OHWM) within these drainages ranged from a few inches to several feet in width. The playa is located outside of the proposed construction ROW and will not be impacted during construction.

Water Quality Classification

New Mexico's Water Quality Standards (Standards), codified at 20.6.4 NM AC, define water quality goals by designating uses for rivers, streams, lakes, and other surface waters, setting criteria to protect those uses, and establishing anti-degradation provisions to preserve water quality. The Standards are adopted by the Water Quality Control Commission (WQCC), and then approved by the EPA under the Federal Clean Water Act (CWA). Section 305(b) of the Federal CWA requires that states and other entities prepare and submit a Watershed Assessment Report to EPA on April 1 of every even numbered year. EPA is required to summarize these reports and prepare a report of their own to Congress. The 305(b) reports and monitoring data are used to compile a list of impaired waters, commonly referred to as the 303(d) list. The term "303(d) list" is short for the list of impaired and threatened waters (stream/river segments, lakes) that the CWA requires all states to submit for EPA approval every two years on even-numbered years. The states identify all waters where required pollution controls are not sufficient to attain or maintain applicable water quality standards, and establish priorities for development of total maximum daily loads (TMDLs) based on the severity of the pollution and the sensitivity of the uses to be made of the waters, among other factors (40C.F.R. §130.7(b)(4)). States then provide a long-term plan for completing TMDLs within 8 to 13 years from first listing.

The Integrated List identifies whether or not a particular surface water of the state is currently meeting its designated uses as detailed in the standards for Interstate and Intrastate Surface Waters (20.6.4 NM AC) through application of the State's Assessment Protocols. "Category 5" waters on the Integrated List specifically constitute the CWA Section §303(d) List of Impaired Waters. The Project area occurs within surface drainage sub-basins, as defined by the eight-digit Hydrologic Unit Codes (HUCs). The Upper Pecos-Black Sub-basin (HUC 13060011) is part of the Pecos River drainage system. The Pecos River is the only water quality impaired stream presently found within the CFO as per the 2010-2012 State of New Mexico Integrated Clean Water Act 303(d) and 305 (b) Report.

EPA policy allows states to remove waterbodies from the list after they have developed a TMDL or after other changes to correct water quality problems have been made. Occasionally, a waterbody can be taken off the list as a result of a change in water quality standards or removal of designated uses; however, designated uses cannot be deemed unattainable and removed until a thorough analysis clearly shows that they cannot be attained.

Floodplain

Executive Order 11988 (Floodplain Management) requires Federal agencies to take action to reduce the risk of flood loss, to minimize the impact of floods on Human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains. Floodplains are relatively low, flat areas of land that surround some rivers and waterbodies and convey overflows during flood events. Floodwater energy is dissipated as flows spread out over a floodplain, and significant storage of floodwater can occur through infiltration and surficial storage in localized depressions on a floodplain.

Current management provides protection from permitted surface-disturbing activities within up to 200-meters of the Federal Emergency Management Agency (FEMA) 100-year floodplain. Aboveground facilities shall avoid floodplains and waterbodies to the maximum extent possible. Eddy County oil and gas ordinance does not require specific management practice, but does have a setback provision: Drilling location requiring that oil and natural gas wells be located at least 300-feet away from "a residence, mercantile establishment, school or church" without written consent of the owner." It should be noted that any oil or gas well in a floodplain must comply with Eddy County's Flood Plain Management Ordinance (New Mexico County and Municipal Law).

The proposed Project area is not located within the 100-year floodplain. No potential impacts would occur to the 100-year floodplain within the Project area.

Wetland and Riparian Areas

Wetlands are defined as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of wetland vegetation typically adapted for life in saturate soil condition" (USACE, 1987). Section 404 of the CWA provides for the protection of water of the US through regulations of the discharge of dredged or fill materials. Wetlands occur in spaces between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water (Cowardin et al. 1979). Wetlands must have one or more of the following three attributes:

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

No wetlands were identified within the proposed Project area during the field surveys (see Biological Survey Report, Appendix B). Therefore, there would be no potential impacts to wetlands within the proposed Project area.

Upper Pecos-Black Sub-basin (HUC 13060011)

The proposed gathering pipeline, residue pipeline, and plant site lie near 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 10-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 data collected during the field surveys (Biological Survey Report), 2 ponds were identified approximately 4 and 7-miles west of the proposed Project area.

There is one impaired water body 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 (see Table 3.3-1). 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 012).

Groundwater Hydrology

Groundwater is defined as water which drains through saturated areas beneath the earth's surface into saturated zones where all the pores and fractures are filled with water (Bluemie, 1991). Typically groundwater resources include aquifer, water wells, and springs. Alluvial gravel, sand, and silt deposited by the Pecos River and its tributaries underline much of the Carlsbad, New Mexico area. Three major water-bearing basins exist within the Pecos River Basin: Fort Sumner, Rowell Artesian, and Carlsbad.

The proposed Project area occurs primarily within two groundwater basins: the Carlsbad and Capitan Basins. The Carlsbad Groundwater Basin which encompasses 2,347-square miles, is located in the southern region of Eddy County. This basin extends into Lea County south of Carlsbad to the state line and west to the Guadalupe Mountains. The Pecos River enters the basin in the northwest corner and exits the basin near the south-central region. The Capitan Groundwater Basin includes the east-central section of Eddy County and some parts of Lea County. The Capitan Basin begins approximately one mile northeast of Lake Avalon and five miles east of Carlsbad and extends east to the Eddy County Boundary line.

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 Capitan aquifer is the only aquifer that does not contain a major drainage to the Pecos River. There is no perennial surface water in this basin. Groundwater pumpage in this basin effects groundwater supplies in the Carlsbad Groundwater Basin. Some recharge to the Pecos River may occur from the aquifers within the basin. Storm runoff throughout the basin travels to playas lakes and/or the Pecos River via small drainage systems.

The northern portion of the Trunk line, the residue pipeline, and the Cryo Plant 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). Water of the freshest quality is located on and near areas of recharge where the reef is exposed at the surface in the Guadalupe and Glass Mountains. The city of Carlsbad, New Mexico, uses Capital water for a municipal supply.

Table 3.3-1
Upper Pecos-Black (13060011) Integrated and Intrastate Surface Water CWA Section 303(d)/305(b) Report (2010-2012)

8-digit USGS HUC	HUC Name	AU Name	Water Size	Size Unit	WQS Reference	Cause Name	Impairment Status	IR Category (by AU)	Cycle
13060011	Upper Pecos-Black	Pecos River (TX border to Black River)	30.18	Miles	20.6.4.201	Boron	303(d) list	5/5C	2006
13060011	Upper Pecos-Black	Pecos River (TX border to Black River)	30.18	Miles	20.6.4.201	Oxygen, Dissolved	303(d) list	5/5C	2006
13060011	Upper Pecos-Black	Pecos River (TX border to Black River)	30.18	Miles	20.6.4.201	PCBs in Fish Tissue	303(d) list	5/5C	2010
13060011	Upper Pecos-Black	Pecos River (Black River to Lower Tansil Lake)	19.18	Miles	20.6.4.202	PCBs in Fish Tissue	303(d) list	5/5C	2010
13060011	Upper Pecos-Black	Pecos River (Lake Carlsbad to Avalon Reservoir)	5.86	Miles	20.6.4.203	Low flow alterations	Not Listed for this cause	4C	
13060011	Upper Pecos-Black	Lower Tansil Lake/Lake Carlsbad (Carlsbad Municipal Lake)	136	Acres	20.6.4.218	PCBs in Fish Tissue	303(d) list	5/5C	2010
13060011	Upper Pecos-Black	Avalon Reservoir	497.7	Acres	20.6.4.219	Mercury in Fish Tissue	303(d) list	5/5C	2004
13060011	Upper Pecos-Black	Brantley Reservoir	3058.67	Acres	20.6.4.205	DDT[1] in Fish Tissue	303(d) list	5/5C	2006
13060011	Upper Pecos-Black	Pecos River (Brantley Reservoir to Rio Peñasco)	13.56	Miles	20.6.4.206	DDT in Fish Tissue	303(d) list	5/5C	2010
13060011	Upper Pecos-Black	Pecos River (Brantley Reservoir to Rio Peñasco)	13.56	Miles	20.6.4.206	PCBs in Fish Tissue	303(d) list	5/5C	2010

Source: New Mexico Environmental Department Surface Water Quality Bureau, List of Assessed Surface Water
[1]Dichlorodiphenyltrichloroethane

Groundwater Levels

Groundwater supplies are derived from several geological formations including the Delaware Mountain Group, the Carlsbad and Capitan Limestones, the Castile, the Rustker and Dockum Formations and alluvium deposits. The two major aquifers that yield large supplies of water are the Capitan and Carlsbad Limestone Reef Aquifer (Capitan Reef) and the shallow-water aquifer found in the alluvium and terrace deposits. There are relatively few groundwater level measurements in the vicinity of the proposed Project area. The few that are available indicate relatively deep groundwater levels, ranging from 100 to 400 feet below ground the surface (New Mexico Office of the State Engineer, 2013a, 2013b). The nearest groundwater level to the plant site is approximately 100-feet below the ground surface.

3.3.2. Impacts from No Action Alternative

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

3.3.3. Impacts from the Proposed Action

Direct and Indirect Impacts

The Proposed Action would avoid critically important habits areas such as wetlands, playas, and riparian areas. In the event of a re-route that crosses riparian zones, the contractor would install sediment control structures along the construction ROW edges prior to vegetation removal where practicable. Direct impacts from the Proposed Action during construction would be limited to the construction ROW at each ephemeral stream crossing.

Depth to groundwater in the area is at least 100-feet so there would be no direct impact from the proposed Project construction activities on groundwater resources. Trenching of the pipelines would only penetrate to approximately 5 to 6-feet below ground surface and excavation for the facility foundations would not exceed 10-feet.

The potential to impact water resources primarily lies with the indirect impacts that could occur due to stormwater runoff from Project 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 2.1.7, including Navitas New Mexico's established BMPs, would be likely to limit any movement of contaminants or sediment and limit any indirect impacts to the salt playas. Because there are no major channels that drain toward the Pecos River, 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, it is not likely that there would be any direct or indirect impacts to any waters of the US, playas, or groundwater resources.

Cumulative Impacts

The Proposed Action would be 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 2.1.7). During construction, silt fence would be utilized where longer sediment barriers are required in the CMRP (see Appendix B of the POD). In addition, at all the ephemeral stream crossings, the contractor would install flagging across the construction ROW at least 10-feet from the identified OHWM prior to clearing and ensure that riparian cover, if present, is maintained where practicable during construction. 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. Cave/Karst

3.4.1. Affected Environment

Karst topography is a geological formation shaped by the dissolution of a layer or layers of soluble bedrock, usually carbonate rock such as limestone or dolomite, but has also been documented for weathering resistant rocks, such as quartzite, given the right conditions. This project is located in gypsum karst terrain, a land form that is characterized by underground drainage through solutionally enlarged conduits. Gypsum karst terrain may contain sinkholes, sinking streams, caves, and springs. Sinkholes leading to underground drainages and voids are common. These karst features, as well as occasional fissures and discontinuities in the bedrock, provide the primary sources for rapid recharge of the groundwater aquifers of the region.

Approximately 1/4 of the project area (mileposts 0.0 to 0.3 and mileposts 16.4 to 22.7) is located in a region designated as having a high potential for having caves or karsts (UDSI BLM/CFO 2014).

The BLM categorizes all areas within the CFO as having either low, medium, high or critical cave potential based on geology, occurrence of known caves, density of karst features, and potential impacts to fresh water aquifers. This project occurs within high, medium and low karst zones (Figure 3.4). A high karst zone is defined as an area occurring in known soluble rock types and containing a high frequency of significant caves and karst features such as sinkholes, bedrock fractures that provide rapid recharge of karst aquifers, and springs that provide riparian habitat.

Sinkholes and cave entrances collect water and can accumulate rich organic materials and soils. This, in conjunction with the stable microclimate near cave entrances, support a greater diversity and density of plant life which provides habitat for a greater diversity and density of wildlife such as raptors, rodents, mammals, and reptiles.

The interior of the caves support a large variety of troglobitic, or cave environment-dependent species. The troglobitic species have adapted specifically to the cave environment due to constant temperatures, constant high humidity, and total darkness. Many of the caves in this area contain fragile cave formations known as speleothems.

3.4.2. Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action alternative, there would be no impacts to the cave/karst resource, because the ROW would not be granted.

Cumulative Impacts

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

3.4.3. Impacts from Proposed Action

Direct and Indirect Impacts

Cave and karst features provide direct conduits leading to groundwater. These conduits can quickly transport surface and subsurface contaminants directly into underground water systems and freshwater aquifers without filtration or biodegradation as a result of the development of oil and gas leases. In addition, contaminates spilled or leaked into or onto cave/karst zone surfaces and subsurfaces may lead directly to the disruption, displacement, or extermination of cave species and critical biological processes. In extreme or rare cases, a buildup of hydrocarbons in cave systems due to surface leaks or spills could potentially cause underground ignitions or asphyxiation of wildlife or humans within the cave. One sink hole was observed during the biological field surveys on the Trunk line at MP 11.5 and one was identified on the residue line at MP 1.3. Neither location occurs within the proposed permanent ROW or temporary construction ROW.

In cave and karst terrains, rainfall and surface runoff is directly channeled into natural underground water systems and aquifers. Changes in geologic formation integrity, runoff quantity/quality, drainage course, rainfall percolation factors, vegetation, surface contour, and other surface factors can negatively impact cave ecosystems and aquifer recharge processes. Heavy vibrations, and focusing of surface drainages can lead to slow subsidence, sudden collapse of subsurface voids, and/or cave ecosystem damage.

The construction of roads, pipelines, and utilities can impact bedrock integrity and reroute, impede, focus, or erode natural surface drainage systems. Increased silting and sedimentation from construction can plug downstream sinkholes, caves, springs, and other components of aquifer recharge systems and result in adverse impacts to aquifer quality and cave environments. Any contaminants released into the environment during or after construction can impact aquifers and cave systems. A possibility exists for slow subsidence or sudden surface collapse during construction operations due to collapse of underlying cave passages and voids. This would cause associated safety hazards to the operator and the potential for increased environmental impact. Subsidence processes can be triggered by intense vibrations, rerouting of surface drainages, focusing of surface drainage, and general surface disturbance.

Cementing operations may plug or alter groundwater flow, potentially reducing the water quantity at springs and water wells. Inadequate subsurface cementing, casing, and cave/aquifer protection measures can lead to the migration of oil, gas, drilling fluids, and produced saltwater into cave systems and freshwater aquifers.

Production facilities such as transfer stations and pipelines may fail and allow contaminants to enter caves and freshwater systems. Downhole casing and cementing failures can allow migration of fluids and/or gas between formations and aquifers. Facilities may also be subject to slow subsidence or sudden collapse of the underlying bedrock.

Cumulative Impacts

Any industrial activities that take place upon or within karst terrains or freshwater aquifer zones have the potential to create both short-term and long-term negative impacts to freshwater aquifers and cave systems. While a number of mitigation measures can be implemented to mitigate many impacts, it is still possible for impacts to occur from containment failures, accidents, spills, and structural collapses. It is therefore necessary to implement long-term monitoring studies to determine if current mitigations measures are sufficient enough to prevent long-term or cumulative impacts.

Mitigation Measures and Residual Impacts

Mitigation measures have been built-in to the Proposed Action and are detailed in Section 2.1.7. The Proposed Action would be located away from these features whenever possible. Proposed roads, facilities, and pipelines would be routed around cave and karst features at an adequate distance to mitigate adverse impacts.

3.5. Vegetation

This section provides an assessment of the upland vegetation communities that may be affected by the proposed Project construction and operation activities. Impacts to vegetation would be primarily associated with clearing of the ROW, topsoil removal and storage, and potential infestations of noxious weeds into native populations. Mitigation measures for the reclamation of vegetation on impacted lands are also discussed. Data from this section were compiled using USGS topographic and NWI maps, recent aerial photography, biological field surveys, and publicly available scientific literature.

3.5.1. Affected Environment

Climate: The Project is located within a semiarid continental climate regime, where, despite maximum summer rainfall, evaporation typically exceeds precipitation. Monthly average temperatures range from a low of approximately 22°F to a high of 93°F. Severe but brief precipitation events occur throughout the Project area during the monsoon season of late July, August, and September. The growing season varies across the state, lasting an average of 170 days (NMDGF, 2006).

Ecoregions: Level I and II ecoregions are large divisions between the regions of the continent that denote a general similarity in ecosystem type and function. Levels III and IV ecoregions provide detail on a smaller scale, and Levels III and IV describe the dominant native vegetation communities of a particular area (Omernik et al., 1987). The proposed Project would cross one Level IV ecoregion, the Chihuahuan Desert Grasslands, within the Chihuahuan Desert Level III ecoregion.

The Chihuahuan Desert Grasslands occur in areas of fine-textured soils in elevated basins between mountain ranges. Heavy grazing and soil erosion has caused these habitats to decline. In areas where the ecoregion remains intact, the vegetation is comprised largely of grasses and shrubs, including black, blue, and sideoats grama, various species of dropseed, bush muhly, tobosa, and cacti species.

Potential Natural Vegetation: The potential natural vegetation of the Project area consists of two main vegetative types, the subtropical shrublands and temperate grasslands (Küchler, 1964). Subtropical shrublands are characterized by low precipitation with high air and soil temperatures. Several xerophytic plants, including spiny shrub, cacti, and grass species are characteristic of this environment. Portions of the proposed Project area are also located within the historic range of the mixed-grass prairie. The mixed-grass prairie is one of the most floristically complex of the prairie types, as it is a transition zone between the tall and short-grass regions (Hansen, 2008; Barbour et al., 2001).

Vegetation Types within the ROW: During the biological field surveys, a total of 136 plant species in five vegetation types were identified within the survey corridor (see Biological Survey Report, Appendix B). All vegetation types within the Project area are detailed in Figures 3.5-1.1, 3.5-1.2, and 3.5-1.3.

Apacherian-Chihuahuan Mesquite Upland Scrub: This was the most dominant community (Photograph 3.5-1) in the proposed Project area, comprised of honey mesquite (*Prosopis glandulosa*), catclaw mimosa (*Mimosa aculeaticarpa*), mesa dropseed (*Sporobolus flexuosus*), lotebush (*Ziziphus obtusifolia*), and soapweed yucca (*Yucca glauca*), among others.

Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub: This is the second-largest community type in the proposed Project area (see Photograph 3.5-2), dominated by honey mesquite (*Prosopis glandulosa*), relatively high occurrences of Harvard oak (*Quercus harvardii*), sand sagebrush (*Artemisia filifolia*), soapweed yucca (*Yucca glauca*), broom snakeweed (*Gutierrezia sarothrae*), and mesa dropseed (*Sporobolus flexuosus*).

Figure 3.5-1.1 Vegetation Types within the Project ROW

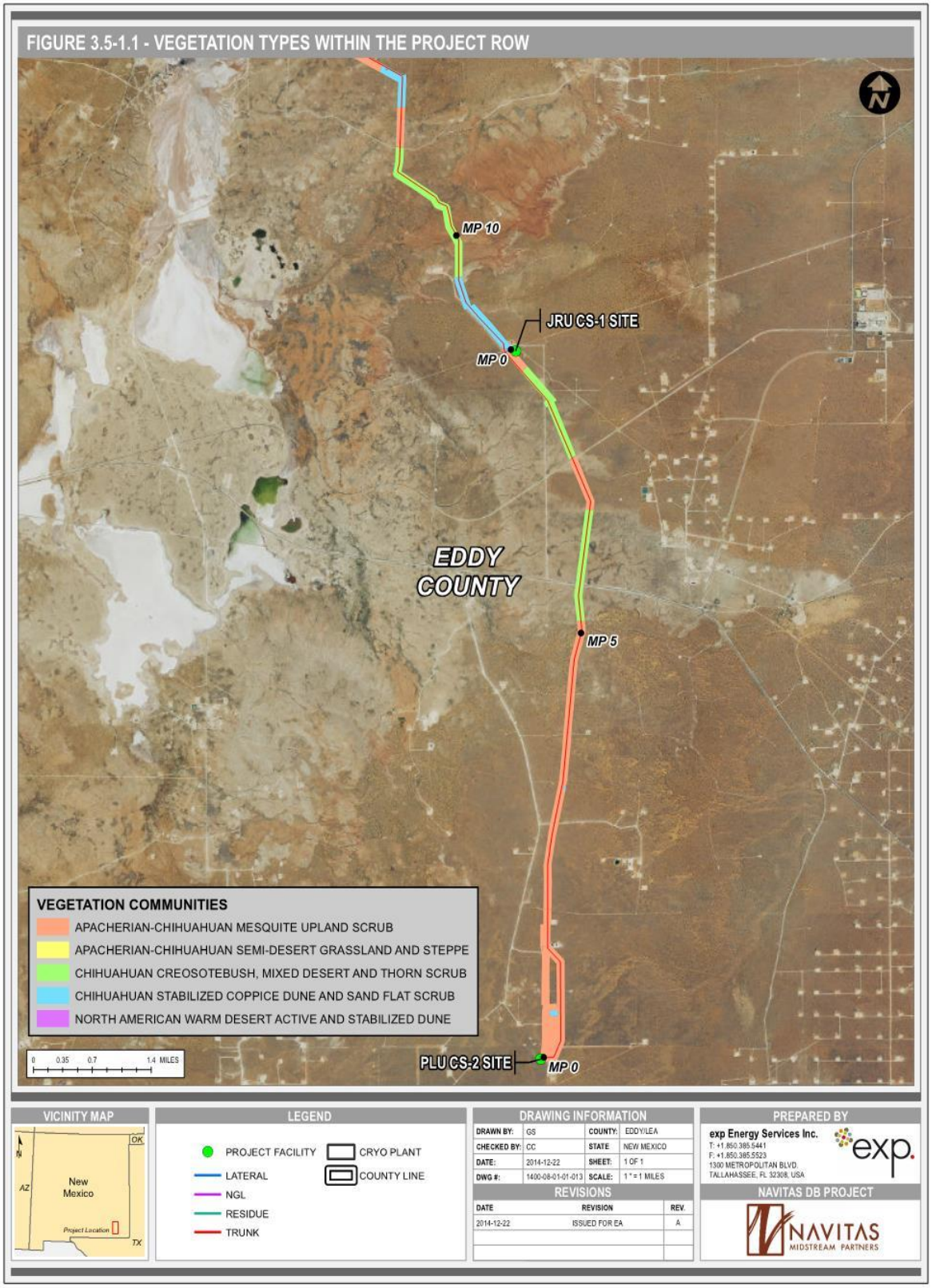


Figure 3.5-1.2 Vegetation Types within the Project ROW

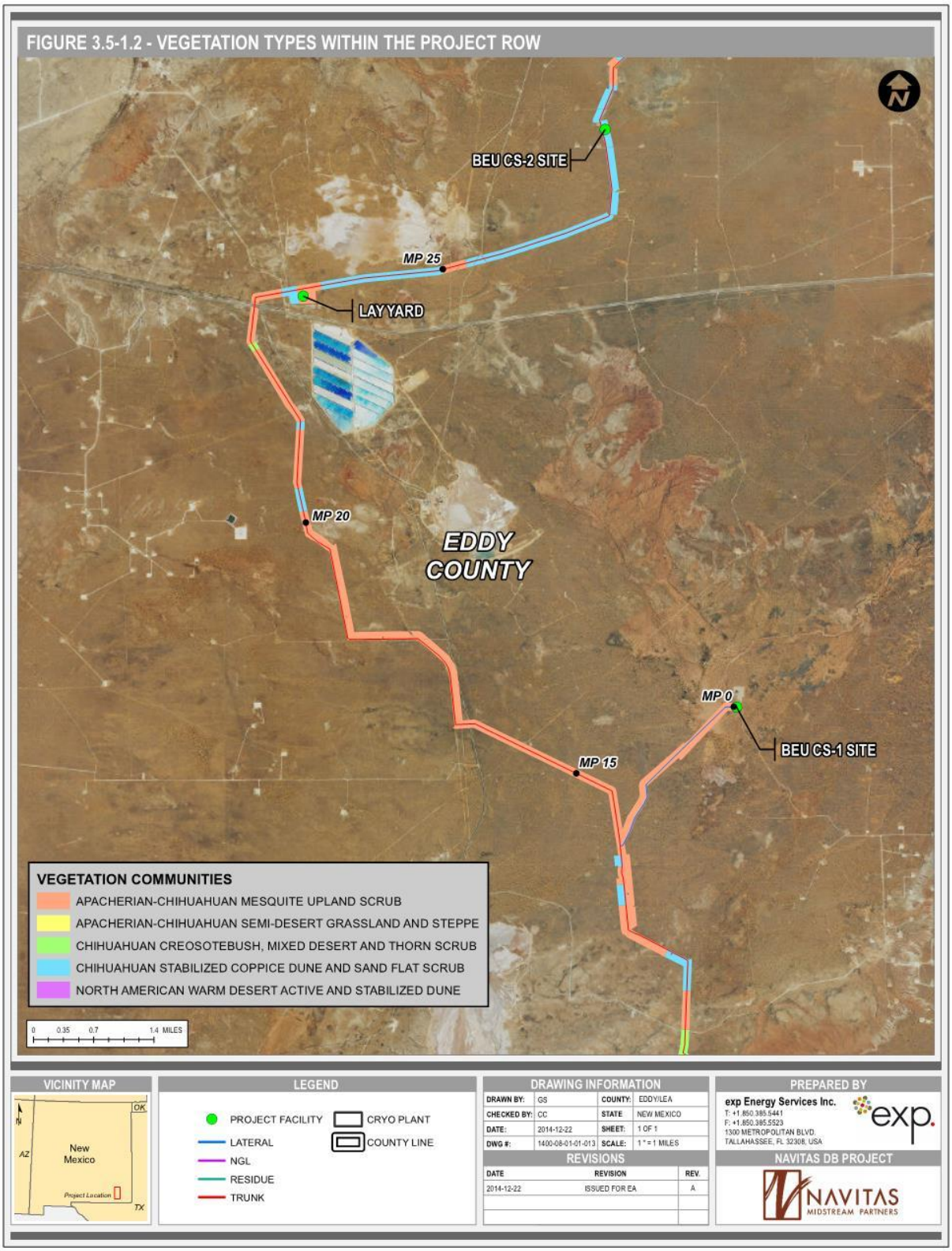
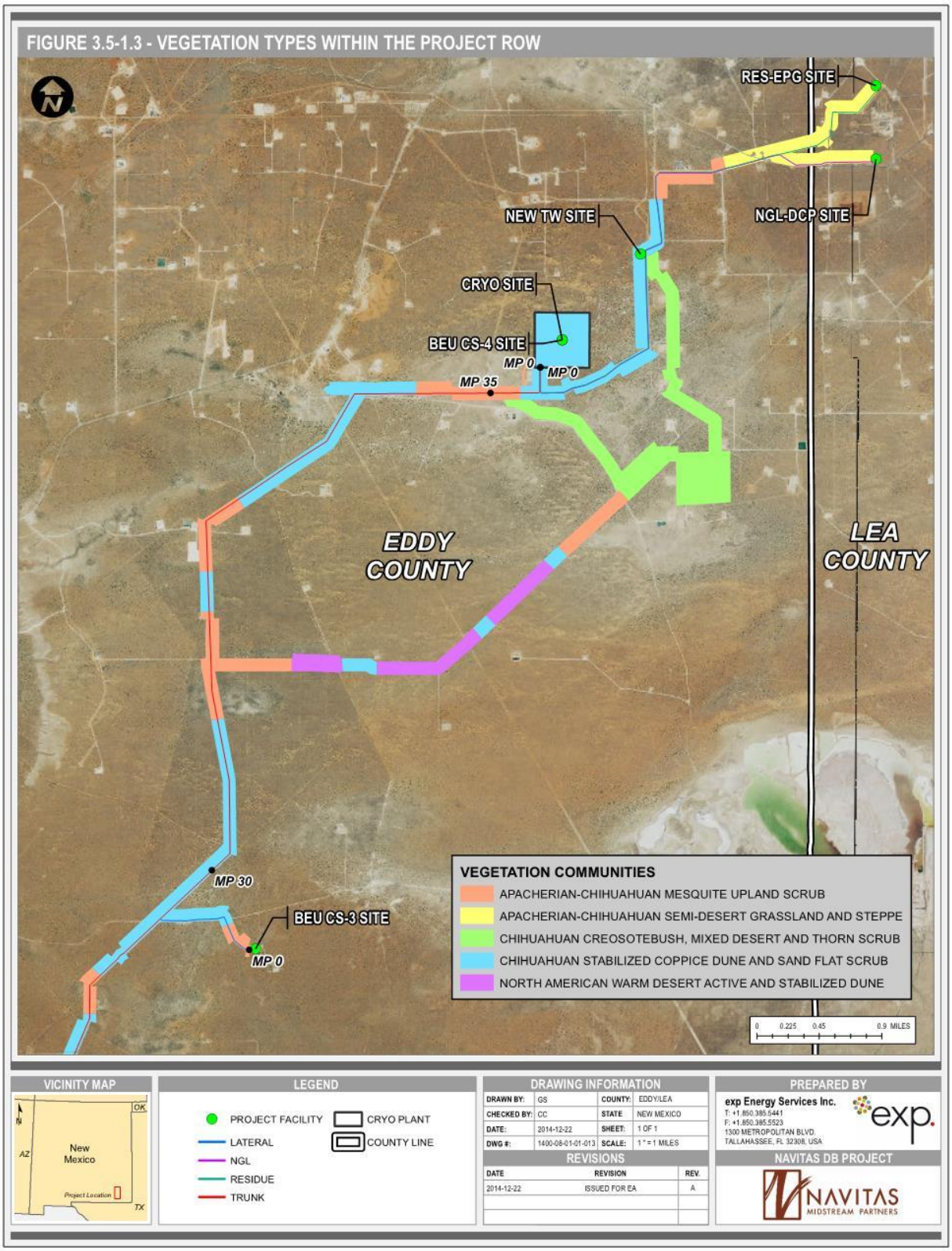


Figure 3.5-1.3 Vegetation Types within the Project ROW



Photograph 3.5-1.1. Examples of the Apacherian-Chihuahuan Mesquite Upland Scrub

Photograph 3.5-2. Example of the Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub habitat,

Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub: This vegetation cover type comprises approximately 17-percent of the proposed Project area and is present in two ecological systems, the Chihuahuan Creosotebush Xeric Basin Desert Scrub and the Chihuahuan Mixed Desert Thorn Scrub. Xeric creosotebush basins as well as plains and mixed desert scrub are present in the foothill transition zone and sometimes extending up to the lower montane woodlands. Dominant vegetation was primarily composed of creosote bush (*Larrea tridentata*) and other desert shrubs. Other species observed during the field survey included broom snakeweed (*Gutierrezia sarothrae*), tulip pricklypear (*Opuntia phaeacantha*), prickly dogweed (*Thymophylla acerosa*), low woollygrass (*Dasyochloa pulchella*), Fendler's sandmat (*Chamaesyce fendleri*), and hoary sandmat (*Chamaesyce lata*).

Apacherian-Chihuahuan Piedmont Semi-Desert Grassland/Steppe: This vegetation cover type was comprised of desert grassland/savanna species. It was located at the northern terminus of the proposed Project area. Shrubs are nearly completely lacking from this vegetation type. A dense and diverse herbaceous layer of grasses and forbs is present, including black grama (*Bouteloua eriopoda*), hairy grama (*B. hirsuta*), sideoats grama (*B. curtipendula*), blue grama (*B. gracilis*), plains lovegrass (*Eragrostis intermedia*), Porter's muhly (*Muhlenbergia porter*), curlyleaf muhly (*M. setifolia*), James' galleta (*Pleuraphis jamesii*), tobosagrass (*P. mutica*), and alkali sacaton (*Sporobolus airoides*).

North American Warm Desert Active and Stabilized Dune: This ecological system occurs across the warm deserts of North America and is composed of sparsely vegetated active dunes and sandsheets derived from quartz or gypsum sands. Dune "blowouts" and subsequent stabilization through succession are characteristic processes found in this system. This community type was present within approximately three percent of the proposed Project area.

3.5.2. Impacts from No Action Alternative

Under the No Action alternative, the proposed Project would not be built. No impacts to vegetation would occur as a result of the No Action Alternative.

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

Construction of the Project including the ROW, ATWS, facilities, valves and access roads, would temporarily disturb approximately 536-acres of land. Approximately 287-acres would be permanently impacted from the Project. Impacts to the vegetation types along the ROW are outlined in Table 3.5.3-1 below. All restoration and revegetation following construction would be in compliance with BLM standards and would also include the guidance provided by the NMDGF Oil and Gas Development Guidelines (August, 2007).

Direct impacts to vegetation would be from the clearing of the ROW, excavation of the pipeline trenches and foundations for the facilities, potential releases of product, and increased risk of soil erosion. These impacts would likely result in short-term disturbances. With proper reclamation management, pre-disturbance conditions would be restored along the pipeline temporary ROW. Longer term direct impacts may be associated with habitats adjacent to the project area that may become fragmented or isolated as a result of construction of the facilities. Biodiversity may also subsequently be reduced in fragmented or isolated habitats.

Indirect impacts would be limited to topsoil disturbances, if the segregation of topsoil is not properly mixed and/or becomes compacted. The vegetation types within the Project area do not typically require more than one to five years to fully recover. Shorter-term impacts to vegetation composition, structure, and the expansion of noxious weed populations throughout the ROW may result from construction and operation activities. Longer term indirect impacts would be associated with perennial herbaceous cover, including the clearing of trees within upland and riparian forest communities and impacts to shrub lands because of the woody component. Long-term impacts would occur within the permanent easements centered on the pipeline, and any impacts associated with the Cryo Plant, compressor stations, and interconnect facilities, which would also permanently impact vegetation.

Table 3.5.3-1 Impacted Vegetation Types within the Project ROW (in acres)						
Vegetation Type	**Pipeline Easement (Temporary)**	**Pipeline Easement (Permanent)**	**ATWS**	**Permanent Facilities**	**Temporary Facilities**	**Permanent Access Roads**
Apacherian-Chihuahuan Mesquite Upland Scrub	112.6	83.7	4	9.5	21.1	0.6
Apacherian-Chihuahuan Semi-desert Grassland and Steppe	5.0	8.1	0.8	2.6	0.0	0.1
Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	23.5	15.7	0.9	0.0	0.0	0.0
Chihuahuan Sandy Plains Semi-Desert Grassland	0.1	0.2	0.0	0.4	0.0	0.0
Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	69.5	56.7	2.3	107.9	8.8	0.3
Totals	**210.7**	**164.4**	**8.0**	**120.4**	**29.9**	**1.0**
Source: GIS analysis; field survey.						

Cumulative Impacts

Provided that revegetation of the temporary construction pipeline ROW are successful through the implementation of the Project's design features and implementation of BMPs, the overall cumulative impact to vegetation would be low.

Approximately 287-acres of vegetation would be permanently impacted as a result of construction and operation of the permanent pipeline ROW and facilities.

Mitigation Measures and Residual Impacts

Areas impacted during construction would be returned to pre-disturbance condition as soon as possible after construction is completed. Measures to minimize impacts to vegetation would include relieving compaction prior to reapplying topsoil, the application of soil additives if the site-specific conditions and/or landowner agreements are warranted, permanent erosion and sediment control to conserve and improve soils, reseeding impacted vegetation types with native seed mixes following topsoil replacement, consultation with landowners prior to tree removal in the ROW, specifications surrounding sensitive soils within the ROW, and specifications pertaining to tree cutting and removal.

Maintenance impacts would be limited to infrequent traffic along the pipeline ROW. Routine vegetation clearing of the ROW generally will not occur more frequently than every 1 to 3 years. Operation and maintenance of the Project may contribute to the presence of noxious weeds; however, efforts will be made to prevent their spread. According to the Project POD (See Attachment 10 of the SF 299 Application), temporarily impacted areas would be restored in the same manner as other temporarily disturbed project areas.

Per the Project CMRP (See Appendix B of the POD), agency consultation, and all necessary plans and permits, Navitas New Mexico would employ the following mitigation measures with respect to vegetation that include but are not limited to:

- Temporary erosion and sediment control measures would be installed immediately after initial disturbance of the soil, maintained throughout construction (on a daily basis), and

reinstalled as necessary until replaced by permanent erosion control structures or restoration of the construction right-of-way is complete;

- Sediment barriers would be constructed of silt fence, composite filter socks or fiber rolls, compacted earth (e.g., drivable berms across travel lanes), sand bags, or other appropriate materials;
- Conserving topsoil would occur for future replacement and reclamation as well as to minimize the degradation of topsoil from compaction, rutting, loss of organic matter, or soil mixing so that successful reclamation of the right-of-way can occur:
    - In areas where topsoil segregation would be required (i.e., the presence of a definitive A and B horizon), the actual depth of the topsoil, to a minimum of 4 inches and a maximum depth of 12 inches, would be stripped from the permitted bladed area, which is limited to the permanent easement for the pipeline segments.
    - As required by applicable permit agreements with the land manager or as dictated by site-specific conditions, stripped topsoil would be stockpiled in a windrow along the edge of the right-of-way. The contractor would perform work in a manner to minimize the potential for subsoil and topsoil to be mixed where BLM right of way constraints allow. Navitas New Mexico would make every effort to minimize mixing of topsoil and subsoil;

- Following final cleanup activities, the appropriate seed mix would be used to revegetate the corridor. Monitoring associated permits and approvals may include;
    - Limiting traffic along the construction ROW, existing roads, newly constructed roads, and approved private roads.
    - Staking of the construction ROW boundaries to prevent disturbance to unauthorized areas.
- Preparation of a seed mix following input from the BLM Carlsbad office, the NRCS, and Restore New Mexico recommendations. The final seed mix would depend on the availability of particular seeds at the time of reclamation. The landowner may also request specific seeding requirements during easement negotiations;
- Visual survey to determine the density and cover of native vegetation, reseeding and reclamation success, and yield of planted vegetation would be implemented;
- Soil reclamation techniques, including seeding requirements and weed control, per the recommendations of relevant agencies, depending on permits and approvals, would be implemented; and
- Noxious weed control is further discussed in Section 3.6.

3.6. Noxious Weeds and Invasive Species

This section defines the noxious weeds and invasive species in New Mexico and discusses the present distribution of these species within the proposed Project area. The section also discusses the potential impacts of noxious weeds to the existing environment and mitigation measures to prevent further infestations. Data from this section were compiled using recent aerial photography, biological field surveys, and publicly available scientific literature.

3.6.1. Affected Environment

Under the Federal Plant Protection Act, a noxious weed is defined as “any plant or plant product that can directly or indirectly injure or cause damage to crops, livestock, poultry, or other interests of agriculture, irrigation, navigation, and the natural resources of the US, the public health, or the environment.” The Federal Plant Protection Act contains a list of 137 federally restricted and regulated noxious weeds, as

per CFR Title 7, Chapter III, Part 360, including 19 aquatic and wetland weeds, 62 parasitic weeds, and 56 terrestrial weeds. Each state is federally mandated to uphold the rules and regulations set forth by the Federal Plant Protection Act and to manage its lands accordingly.

The Director of the NMDA released a list of 37 noxious weeds by category, the least ubiquitous ranges in Class A, ranges in portions of the state only in Class B, and widespread species in Class C, pursuant to the Noxious Weed Management Act of 1998 (Table 3.6-1). Eight species were placed on the Watch List. Aquatic invasive (nuisance) species (AIS) are also a growing concern in New Mexico. AISs are aquatic and terrestrial organisms poised to cause ecological, economical, and human health problems. Several agencies within the state have composed the New Mexico State Aquatic Invasive Species Management Plan (NM Plan) to identify, control, and prevent the spread of AISs (New Mexico Aquatic Invasive Species Advisory Council, 2008). Approximately 100 AISs occur in New Mexico as of 2008.

Table 3.6-1
Noxious Weeds in New Mexico

Class	Common Name	Scientific Name
Class A	Alfombrilla	*Drymaria arenariodes*
	Black henbane	*Hyoscyamus niger*
	Camelthorn	*Alhagi psuedalhagi*
	Canada thistle	*Cirsium arvense*
	Dalmation toadflax	*Linaria dalmatica*
	Diffuse knapweed	*Centaurea diffusa*
	Dyer's woad	*Isatis tinctoria*
	Eurasian watermilfoil	*Myriophyllum spicatum*
	Giant salvinia	*Salvinia molesta*
	Hoary cress	*Cardaria* spp.
	Hydrilla	*Hydrilla verticllata*
	Leafy spurge	*Euphorbia esula*
	Oxeye daisy	*Leucanthemum vulgare*
	Parrotfeather	*Myriophyllum aquaticum*
	Purple loosestrife	*Lythrum salicaria*
	Purple starthistle	*Centaurea calcitrapa*
	Ravenna grass	*Saccharum ravennae*
	Scotch thistle	*Onopordum acanthium*
	Spotted knapweed	*Centaurea biebersteinii*
	Yellow starthistle	*Centaurea solstitialis*
	Yellow toadflax	*Linaria vulgaris*

Table 3.6-1 Noxious Weeds in New Mexico		
Class	**Common Name**	**Scientific Name**
Class B	African rue	*Peganum harmala*
	Chicory	*Cichorium intybus*
	Halogeton	*Halogeton glomeratus*
	Malta starthistle	*Centaurea melitensis*
	Musk thistle	*Carduus nutans*
	Perennial pepperweed	*Lepidium latifolium*
	Russian knapweed	*Acroptilon repens*
	Poison hemlock	*Conium maculatum*
	Teasel	*Dipsacus fullonum*
	Tree of heaven	*Ailanthus altissima*
Class C	Bull thistle	*Cirsium vulgare*
	Cheatgrass	*Bromus tectorum*
	Jointed goatgrass	*Aegilops cylindrica*
	Russian olive	*Elaeagnus angustifolia*
	Saltcedar	*Tamarix* spp.
	Siberian elm	*Ulmus pumila*
Source: Miley Gonzales, 2009; field survey data.		

Only one noxious weed was observed within the proposed Project area during the biological field surveys, African rue (*Peganum harmala*) (32.4666N and -103.956033W) (Figure 3.6-1). African Rue would likely be present in the area where the Trunk line crosses Cimarron Road (near MP 7.8). This area has been treated for the noxious weed.

African rue is a Class B weed, meaning that the species is confined to select portions of the state. Measures to control African rue will be handled at the local level and are further discussed in Section 3.6.3 below.

3.6.2. Impacts from the No Action Alternative

Under the No Action alternative, 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.

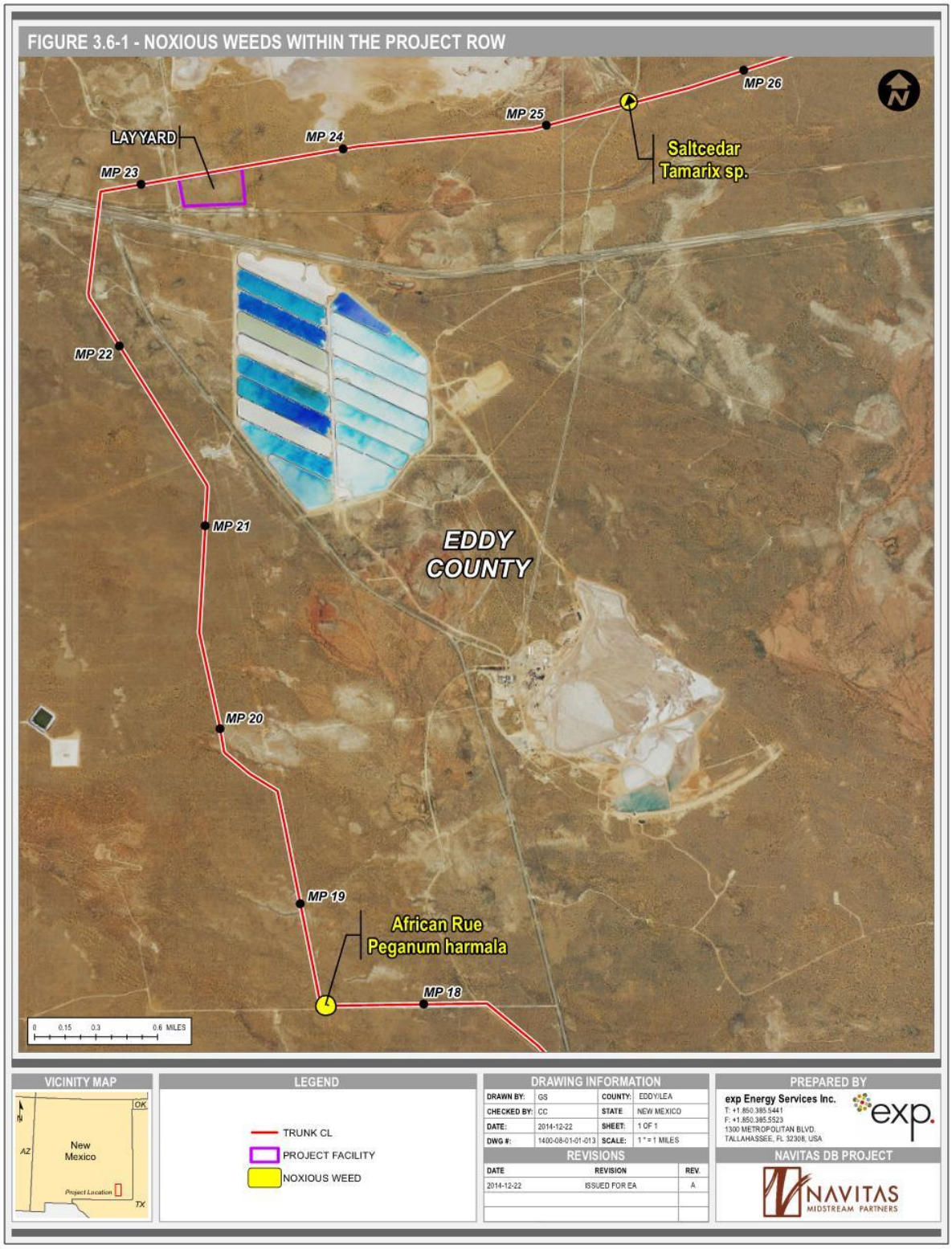
3.6.3. Impacts from the Proposed Action

Direct and Indirect Impacts

Due to the gradual nature of plant invasion, direct impacts as a result of noxious weed infestations would not be anticipated by the Project. However, indirect impacts from construction and operation activities may occur. Disturbance from construction could facilitate the spread of existing populations and introduce new noxious weeds into the area, which will outcompete native populations over time, if not controlled.

Short-term impacts may include the transportation of seeds into the Project area from infested sites by heavy equipment or other vehicles. Longer term impacts associated with the Proposed Action could result from earth moving activities, contaminated fill, and/or erosion control products that contribute to the spread of noxious weeds.

Figure 3.6-1 Noxious Weeds within the Project ROW



Cumulative Impacts

Due to the mitigative procedures, BMPs, and reclamation plans associated with the Project, cumulative impacts to native species and habitats from noxious weeds would not be anticipated.

Mitigation Measures and Residual Impacts

Areas of the Project ROW containing infestations of noxious weeds would be marked. Pre-construction treatments, including mowing, would be implemented prior to clearing, grading, trenching, or other soil disturbing work to prevent further invasion. Uncontaminated topsoil would be stored separately from contaminated soils, and mulch, straw, or hay used for temporary erosion and sediment control would be noxious weed free. All construction equipment would be cleaned with high-pressure washing equipment prior to moving to the next job site.

According to the POD (See Attachment 10 of the SF 299 Application), where individuals or populations of noxious weeds are identified within the construction ROW, suitable techniques would be implemented pursuant to the CMRP (See Appendix B in the POD) to control the spread and establishment of noxious and invasive weed species. Noxious weed treatments may include mechanical, biological, or chemical methods, as appropriate, and would be implemented as needed. Navitas New Mexico would confer with the BLM and applicable state and/or county weed boards to ensure that noxious weed management practices enacted for the ROW are in compliance with BLM, state and county standard. According to the CMRP, Navitas New Mexico would:

- Prepare a weed management plan for the Project, as required;
- Prior to mobilization for the Project, the contractor would clean all construction equipment with high-pressure washing equipment;
- Prior to construction, Navitas New Mexico would mark all areas of the ROW which contain infestations of noxious, invasive species or soil-borne pests;
- In areas of isolated weed populations, the contractor would stockpile cleared vegetation and store the stockpile separately from other topsoil and subsoil;
- The contractor would use mulch and straw or hay bales that are free of noxious weeds for temporary erosion and sediment control;
- The contractor would implement pre-construction treatments such as mowing prior to seed development or herbicide application to areas of noxious weed infestation prior to other clearing, grading, trenching, or other soil disturbing work at locations identified in the construction drawings;
- Navitas New Mexico would implement BMPs for conducting vegetation control where necessary before and after construction. Typical agricultural herbicides, developed in consultation with county or state regulatory agencies, would be used, though herbicides in or within 100 feet of a waterbody would not be implemented;
- After pipeline construction, Navitas New Mexico would retain control over the surface use of the land (i.e., valve sites, metering stations, pump stations, etc.). Navitas New Mexico would provide for weed control to limit the potential for the spread of weeds onto adjacent lands used for agricultural purposes. Any weed control spraying performed by Navitas New Mexico would be done by a state-licensed pesticide applicator; and
- Navitas New Mexico would be responsible for reimbursing all reasonable costs incurred by owners of land adjacent to aboveground facilities when the landowners must control weeds on their land which can be reasonably determined to have spread from land occupied by Navitas New Mexico's aboveground facilities.

3.7. General Wildlife

This section provides a description of the general wildlife within the Project area, including known species distributions and habitats within the state and within the proposed Project area. Potential impacts to wildlife or wildlife habitat under the No Action and Proposed Action alternatives, as well as mitigation measures to reclaim wildlife habitat loss, are also described. Data from this section were compiled using recent aerial photography, biological field surveys, and publicly available scientific literature.

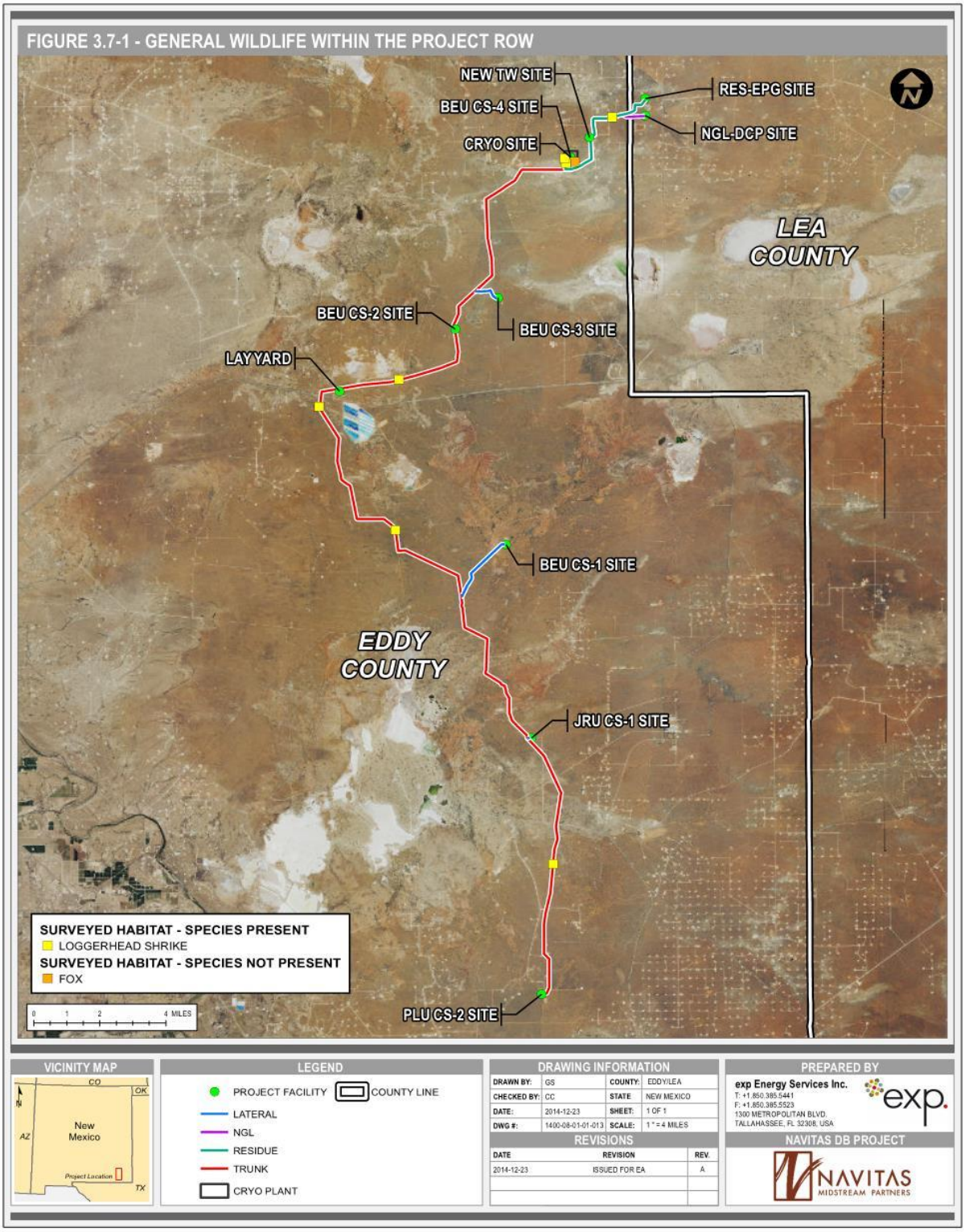
3.7.1. Affected Environment

The proposed Project area is inhabited by a variety of wildlife species, including mammals, reptiles, amphibians, raptors, and waterfowl. Approximately 87 wildlife species were observed within the proposed Project area during the field surveys (see Figure 3.7-1), either by identifying an individual species or its presence within the area (e.g., scat, tracks, and burrows). Wildlife species within the Project area inhabit five habitat types, as listed in Section 3.5 (Figure 3.5-1) of this EA.

Mammals: Common mammal species using the area include mule deer (*Odocoileus hemionus)*, pronghorn (*Antilocapra Americana)*, coyote (*Canus latrans)*, gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus)*, striped skunk (*Mephitis mephitis)*, porcupine (*Erethizon dorsatum*), raccoon (*Procyon lotor*), badger (*Taxidea taxus*), jackrabbit, cottontail (*Sylvilagus audubonii)*, white-footed mouse (*Peromyscus leucopus*), deer mouse (*Peromyscus maniculatus*), grasshopper mouse (*Onychomys leucogaster*), kangaroo rat (*Dipodomys spectabilis)*, spotted ground squirrel (*Xerospermophilus spilosoma*), and woodrat (*Neotoma micropus canescens*) (Biodiversity Support Program et al., 1995; see Appendix B). During the field surveys, 24 mammals, or evidence of their presence, were observed, including the banner-tailed kangaroo rats (*Dipodomys spectabilis baileyi*) and black-tailed jackrabbits (*Lepus californicus*), bobcat and coyote, and deer and cattle. Other mammals or evidence of presence included desert cottontails, foxes, mule deer, pronghorn, and skunk.

Avian Species: Within Eddy and Lea counties near the proposed Project area, common bird species include mourning dove (*Zenaida macroura*), mockingbird (*Mimus polyglottos*), various species of sparrow, western meadowlark (*Sturnella neglecta*), and the roadrunner (*Geococcyx californianus*). Raptors include northern harrier (*Circus cyaneus*), Swainson's hawk (*Buteo swainsoni*), American kestrel (*Falco sparverius*), and occasionally golden eagle (*Aquila chrysaetos*) and ferruginous hawk (*Buteo regalis*). Several bird species of conservation concern, including the LPC and burrowing owl, are also known from the region.

Figure 3.7-1: General Wildlife within the Project ROW



Approximately 68 birds were encountered within the Project area during the field surveys. These included the ash-throat flycatcher (Myiarchus cinerascens), the barn owl (*Tyto alba*), Bewick's wrens (*Thryomanes bewickii*), sparrows, cactus wrens (*Campylorhynchus brunneicapillus*), common

nighthawks (*Chordeiles minor*), dove species, and the horned lark (*Eremophila alpestris*), among others. In addition, nests and individual burrowing owls were observed during the field survey, as well as LPC habitat and one nest. The burrowing owl, LPC, and migratory bird species observed during the field survey are further discussed in Section 3.8.

Reptiles: Reptiles have the potential to occur in the proposed Project area, including but not limited to the DSL, grey-banded kingsnake (*Lampropeltis alterna*), plainbelly water snake (*Nerodia erythrogaster*), mottled rock rattlesnake (*Crotalus lepidus Lepidus*), and arid land ribbon snake (*Thamnophis proximus*) (Biodiversity Support Program et al., 1995; see Appendix B). During the field survey, six reptiles were observed within the proposed Project area, including a box turtle (*Terrapene ornate*), eastern fence lizards (*Sceloporus undulates*), the New Mexico whiptail lizard (*Cnemidophorus neomexicanus*), and the Western Diamondback rattlesnake (*Crotalus atrox)*. No amphibians were observed during the field surveys (Biological Survey Report, Appendix B).

Fisheries: No waterbodies containing exceptional recreational or commercial fisheries, specially designated streams or rivers, and/or waterbodies supporting special-status species and/or spawning habitat would be crossed by the Project.

3.7.2. Impacts from No Action Alternative

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.

3.7.3. Impacts from the Proposed Action

Direct and Indirect Impacts

Avoiding and minimizing any direct or indirect impacts to wildlife or wildlife habitat is a goal of Navitas New Mexico. In order to accomplish this goal, Navitas New Mexico would follow all conditions established by BLM associated with impacts to wildlife and wildlife habitat within the Project impact zone, and the NMDGF Oil and Gas Development Guidelines conserving New Mexico's wildlife habitat (August, 2007). This would avoid or minimize impacts to wildlife to the extent practicable.

Impacts to wildlife would result from actions that alter wildlife habitats, including vegetation removal and soil disturbance, as well as the placement of temporary and permanent facilities. Direct impacts such as habitat loss from surface disturbance or indirect impacts involving the reduction in habitat quality caused by increased noise levels and increased human activity may occur as a result of Project construction and operation. Ground disturbances caused by drilling, constructing road networks, installing pipelines, and other associated infrastructure, may also disrupt wildlife dispersal, breeding, and nesting behaviors.

Ground disturbance from construction of the Project would directly impact approximately 425-acres of habitat in the short-term and approximately 287-acres of permanent impacts. Construction of the pipeline would cause short-term impacts by temporarily removing vegetation from 20-feet of the temporary workspace. 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 exposure of wildlife to hazards such as open trenches and Project-related vehicle traffic.

The increased human presence, traffic, noise levels, and dust dispersion during construction of the proposed Project and reclamation of temporarily disturbed areas may also indirectly disturb or displace adults from nests and foraging habitats within, and surrounding, the proposed Project area in the short term (approximately 10 months of construction and one year of reclamation).

The footprint of the cryogenic processing plant, compressor facilities, and interconnect facilities area would cause long-term impacts from the permanent removal of vegetation for each facility and use of the permanent access roads. The facilities would be fenced to restrict access by wildlife.

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. 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 proposed Project area; however, the existing habitat fragmentation in the Project area is considered high.

Mitigation Measures and Residual Impacts

The following measures to minimize impacts to wildlife, as identified in the CMRP or as required by the USFWS, state, or other Federal agency, would be implemented:

- Remove shavings, litter, and garbage produced during pipe bevel operations to ensure that livestock and wildlife do not ingest this material;
- Prohibit feeding or harassment of livestock or wildlife;
    - Prohibit construction personnel from having firearms or pets on the construction ROW.
    - Ensure all food and wastes are stored and secured in vehicles or appropriate facilities.
- Control unauthorized off-road vehicle access to the construction ROW through use of signs, slash and timber barriers, pipe barriers, boulders, or planted conifers or other appropriate trees or shrubs in accordance with landowner or manager request;
- To prevent unauthorized access, and to the extent permitted by landowners, secure/lock temporary gates when construction activities are not occurring. Also to the extent permitted by landowners, make reasonable efforts to restrict access to the pipeline corridor via access roads after construction to minimize increased human use in formerly inaccessible areas;
- Inspect open trenches for wildlife and return any wildlife found to the appropriate suitable habitat; and
- Prior to construction, Navitas New Mexico would re-survey the proposed Project area for migratory bird and raptor nests. If migratory birds are present and nesting in the Project area, Navitas New Mexico would contact the local USFWS Ecological Services Field Office for guidance as to appropriate next steps to take to minimize effects.

The BLM will continue to require oil and gas lessees to operate in a manner that will minimize adverse impacts to wildlife and special status species. Leasing with requirements for PODs to ensure orderly development within a minimum of surface impact in LPC and DSL habitats will be considered on a case-by-case basis, providing impacts from exploration and development will not cause unnecessary or undue impact to efforts to restore habitat.

3.8. Threatened and Endangered Species

This section compares the known distributions of threatened and endangered species within New Mexico to the observed distributions within the proposed Project area. A review of the status of each species is also provided. Potential impacts to threatened and endangered species or habitat are discussed, in addition to mitigation measures to avoid or minimize potential adverse effects. Data for this section were compiled based on a review of the proposed construction design plans, USGS topographic maps, aerial photography, biological field surveys, and available scientific literature.

3.8.1. Affected Environment

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 FLPMA; and Department of the Interior Manual 235.1.1A.

The special status species evaluated in this EA are described in the Biological Survey Report (see Appendix B) and consist of:

- All federally protected (i.e., endangered and threatened) species;
- Additional species listed by the USFWS as candidate and proposed species, and species under review (USFWS 2013a);
- State listed endangered and threatened species; and
- BLM sensitive species, some of which are also listed as candidates or are under the review by the USFWS and/or are state listed.

Approximately 20 listed species are known from Lea and Eddy Counties and could potentially occur within the proposed Project area. Nine are currently federally listed, seven with a state status, and eight with a BLM status. Of the nine listed birds, five are protected by the Migratory Bird Treaty Act (Table 3.8-1).

Table 3.8-1
Distributions of Listed Species within the Project Area

Taxonomic Group	Common Name	Scientific Name	Status			
			Federal	State	BLM	MBTA
Birds	Aplomado falcon	*Falco femoralis*	E	-	Special Mgmt	Protected
	Baird's sparrow	*Ammodramus bairdii*	-	T	Sensitive	Protected
	Burrowing owl*	*Athene cunicularia*	SOC	-	Sensitive	-
	Chestnut-collared longspur	*Calcarius ornatus*	-	-	Sensitive	Protected
	Least Tern	*Sternula antillarum*	E	E	-	-
	Lesser prairie-chicken	*Tympanchus pallidicinctus*	T	Special Status	Sensitive	-
	Loggerhead shrike	*Lanius ludovicianus*	-	-	Sensitive	-
	Sprague's pipit	*Anthus spragueii*	C	-	Sensitive	Protected
	Varied bunting	*Passerina versicolor*	-	T	-	Protected

Table 3.8-1 Distributions of Listed Species within the Project Area						
Taxonomic Group	**Common Name**	**Scientific Name**	**Status**			
			Federal	**State**	**BLM**	**MBTA**
Plants	Kuenzler's hedgehog cactus	*Echinocereus fendleri* var. *kuenzleri*	E	E	-	NA
	Lee's pincushion cactus	*Escobaria sneedii* var. *leei*	T	-	-	
	Sneed pincushion cactus	*Escobaria sneedii* var. *sneedii*	E	-	-	
	Scheer's beehive cactus*	*Coryphantha robustispina* ssp. *scheeri*	-	E	-	
	Tharp's blue-star	*Amsonia tharpii*	E	-	-	
Reptiles	Dunes sagebrush lizard	*Sceloporus arenicolus*	-	E	Sensitive	

Source: BISON-M, 2014.
*Observed during field survey.

Federally Listed Species

Nine federally listed species have the potential to occur in the proposed Project area, including five federally endangered species, two federally threatened species, one candidate species, and one Species of Concern (Table 3.8-1). One federally listed species, the burrowing owl, was observed within the Project area during field survey, and habitat for the LPC was observed, though no individuals were identified. All listed species within the Project ROW can be seen in Figure 3.8-1.

Burrowing Owl: The burrowing owl is currently federally listed as a Species of Concern and as a BLM sensitive species, however; it is not currently protected by the MBTA (Table 3.8-1). The range of the owl currently exists from south-central British Columbia south through the Western US and northern Mexico. The species prefers open areas or low-stature vegetation for nesting and cover. Four suitable habitat types for the burrowing owl were located within the proposed Project area (Photograph 3.8-1). During the field survey, two adults were flushed from a burrow and several potential owl burrows were observed. An additional adult was observed near Mile Post (MP 17).

LPC: The LPC was listed as federally threatened in March 2014. It is state-listed as Special Status and BLM sensitive, but not protected by the MBTA. The current population is known from Roosevelt and northern Lea Counties, with a few populations occurring in eastern Chaves County, and portions of De Baca, Quay, and Curry Counties. The species prefers High Plains Bluestem habitat and tall grass interspersed with shinnery oak (*Quercus havardii*). During the field survey, approximately 31-acres of potential LPC habitat were identified in six areas (Photograph 3.8-2), however no LPC individuals were observed.

Special Status Species

The ranges of seven species are listed by the state and eight by the BLM as potentially occurring within the proposed Project area. One state- or BLM-listed species, Scheer's beehive cactus (*Coryphantha robustispina ssp. scheeri*), was observed within the proposed Project area during the field survey (Table 3.8-1) (Figure 3.8-1). Habitat for the DSL was also observed in the proposed Project area but individuals were not located.

Scheer's beehive cactus: The cactus is restricted to the Pecos River drainage in southeastern New Mexico and west Texas. The species was found in two locations, around MP 7.55 (single site endemic) and 22.6 (five individuals). Scheer's beehive cactus characteristically occurs at very low densities, therefore additional survey during flowering (April-September) may be necessary (Flora of North America Committee, 2014). Where occurrences of the state endangered Scheer's beehive cactus were observed

during field survey (Photograph 3.8-3), the BLM and other partnering entities are prepared to transplant the individuals. These agencies would be consulted prior to construction of the Project.

DSL: The DSL is listed as endangered by the state and sensitive by the BLM. It is supported by dune habitat (Photograph 3.8-4). Approximately 54-acres of suitable habitat for the DSL were located in the proposed Project area. Though no site-specific DSL surveys were conducted, no individuals were located during the field survey.

Figure 3.8-1 Threatened and Endangered Species within the Project ROW

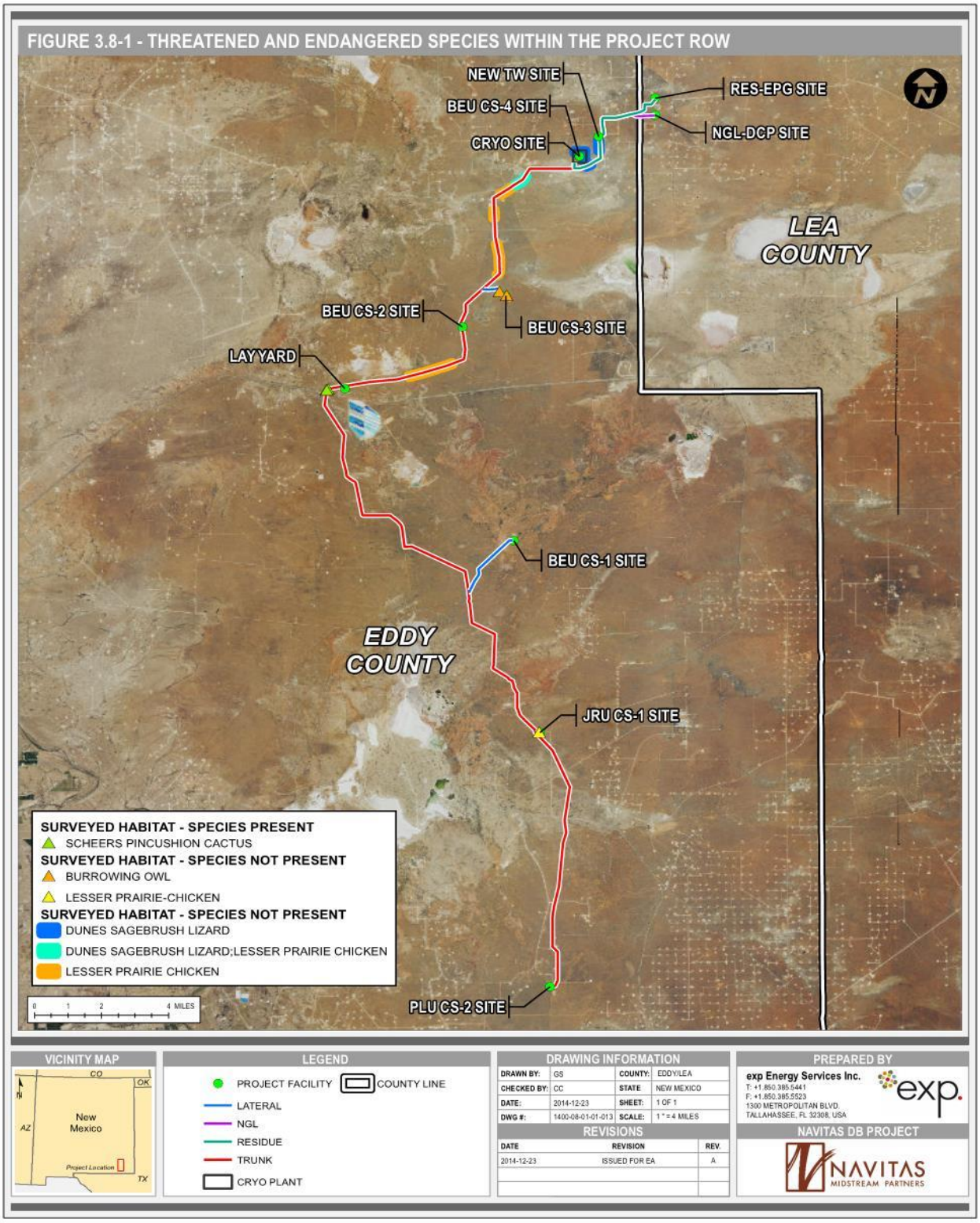
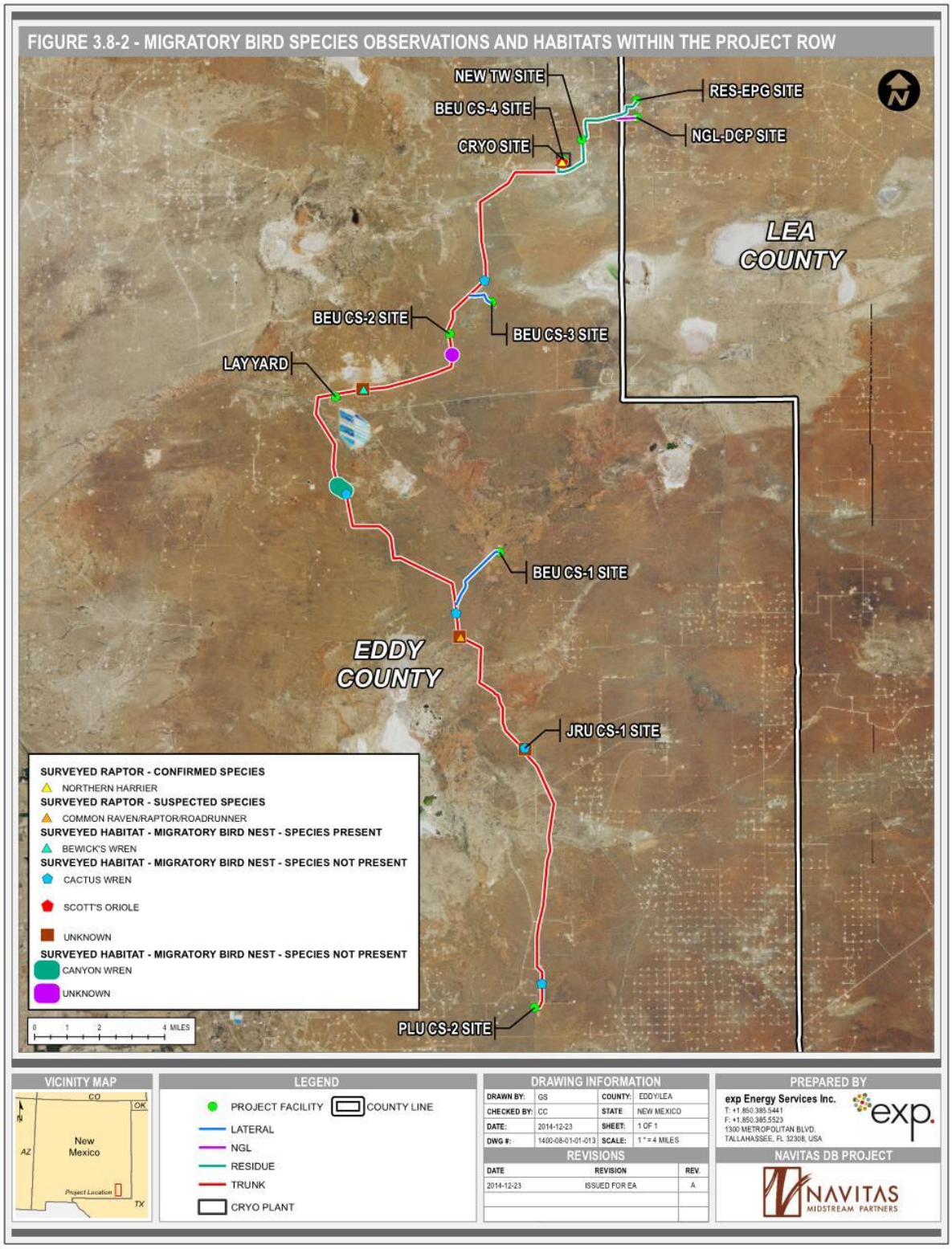


Figure 3.8-2 Migratory Birds Species Observations and Habitats within the Project ROW



Migratory Bird Treaty Act

The MBTA of 1918 was enacted to prohibit activities involving the pursuit, hunting, killing, capture, possession, selling, purchase, or barter of any migratory bird, including the feathers (parts), nests, eggs, or products. In addition, Executive Order 13186 entitled, "Responsibilities of Federal Agencies to Protect Migratory Birds" permits federal agencies to further implement the provisions of the MBTA by allowing bird conservation practices and by ensuring agency evaluation of migratory birds. Most bird species native to North America are covered by the MBTA (USFWS 2013b).

While all migratory birds are protected by law, certain species have been determined to be at greater conservation risk than others. The USFWS and New Mexico Partners in Flight (NMPIF) have identified bird species with special conservation considerations (NMPIF 2007; USFWS 2008, 2014). The USFWS Birds of Conservation Concern list identifies bird species that are not currently federally listed, but are considered a high conservation priority. The NMPIF has designated priority species by major habitat type within New Mexico. Approximately 55 migratory bird species were observed during the field survey and 60 nests were identified. Of those, priority species include scaled quail (*Callipepla squamata*), aplomado falcon (*Falco femoralis*), Botteri's sparrow (*Peucaea botterii*), black-throated sparrow (*Amphispiza bilineata*), varied bunting (*Passerina versicolor*), lesser prairie-chicken (*Tympanuchus pallidicinctus*), and bank swallow (*Riparia riparia*) (NMPIF 2007). More information on the species of migratory birds within the proposed Project area can be found in the Biological Survey Report (Appendix B).

Areas of Conservation Interest

As mentioned in Section 2.1.7, strict regulations apply to the LPC, DSL and their habitat found within the RMPA area. The proposed Project lies within the RMPA planning area. The RMPA identifies requirements for trenching, including restrictions on trench covers, hours of construction during avian breeding seasons, and pond accessibility. The New Mexico CCA/CCAA is organized and managed cooperatively by the Center of Excellence for Hazardous Materials Management (CEHMM), the CFO, and the United States Fish and Wildlife Service (USFWS), in cooperation and consultation with landowners and industries to implement conservation measures on Federal and non-Federal Lands for the LPC and DSL. Conservation projects are funded by fees or contributions, largely from the oil and gas industry, and are contracted and managed by the CEHMM.

Photograph 3.8-1, Federal SOC, burrowing owl (*Athene cunicularia)* habitat, observed during the biological survey (see Appendix B).

Photograph 3-8-2, Potential habitat for the LPC, observed during the biological survey (see Appendix B).

Photograph 3.8-3, State endangered Scheer's beehive cactus (*Coryphantha robustispina* ssp. *scheeri*), observed during the biological survey (see Appendix B).

Photograph 3.8-4. Suitable habitat within the Project area for the DSL.

Impacts from No Action Alternative

Under the No Action alternative, the proposed Project would not be built. Under the No Action alternative, no listed species or habitat would be impacted.

Cumulative Impacts

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

3.8.2. Impacts from the Proposed Action

Direct and Indirect Impacts

The proposed Project route was designed to avoid listed species whenever possible and minimize contact when unavoidable. Direct, short-term impacts to special status species may be incurred during construction and operation of the Project, including mortality and displacement. In the unlikely event that a species comes into direct contact with construction or operation equipment, mortality may occur. Following agency consultation, BLM may transplant listed species from the Project footprint, which may also result in unanticipated mortality. Displacement of wildlife species due to Project activities near nesting and foraging areas, disruption of activity patterns due to construction and increased human activity, and increased predation on sensitive species due to displacement, are also unanticipated but may impact sensitive species or habitat during construction and operation.

Indirect impacts to migratory birds may result from the construction and operation of the Project, which is currently scheduled during the migratory bird breeding season. These include the loss of breeding and foraging habitat within the disturbed areas, the potential avoidance of directly adjacent habitats due to noise and visual impacts from restoration activities, habitat loss, alteration, and fragmentation. Loss of habitat habitats used by migratory birds for cover, forage, and nesting would be short-term, as vegetation is generally re-established within 1 to 3 years after restoration. Losses of woody vegetation such as trees and shrubs may result in longer-term impacts because of the relatively long (5 to 20 years or more) regeneration time of woody vegetation. Any nests, juveniles, or eggs within the Project area at the time of construction, may be directly impacted during construction and vegetation removal. The primary

vegetation within the proposed Project area that would be impacted by the Proposed Action would be Chihuahuan desert grasslands. Due to an abundance of similar habitat in the surrounding area, the impact to the bird populations that utilize these habitats would be low and short term.

Cumulative Impacts

Cumulatively, the Proposed Action may 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.

Several populations of Scheer's beehive cactus were observed along the ROW. Several ongoing projects within the current range of Scheer's beehive cactus may compound the cumulative impact to the species. The distribution is confined to the Pecos River drainage in southeastern New Mexico and west Texas, with occurrences known in Arizona and northern Mexico. Little is known about the species, but populations seem to be spread over large areas in low densities. According to the NM RPTC (NMRPTC, 1999), the cactus may be in need of protection in the future, but seems to be in no immediate danger. Per request, Navitas New Mexico would be prepared to perform additional surveys to locate the species and transplant the cactus, in addition to other measures necessary to ensure the protection of Scheer's beehive cactus. Due to transplantation and the designation of no critical habitat for the species in the immediate area, the construction and operation of the proposed Project would not likely affect the continued existence of the species.

Three burrowing owls were also observed during the field surveys. Due to the location of current oil and gas development activities, several ongoing projects may compound the cumulative impact to burrowing owls. As mentioned above, burrowing owls currently exists from south-central British Columbia south through the Western US and northern Mexico in open areas. For portions of the Project to be constructed during the nesting season (October through May), pre-construction spot checks for suitable nesting burrows would be conducted, using the locations found during the field surveys (Appendix B) as a guide. Navitas New Mexico would avoid active burrows until the young have fledged

Habitat and one nest for the federally listed LPC was observed as well as habitat for the DSL, though no individuals of either species were observed. Portions of the Project would be located within the boundary of the DSL habitat area as determined in the BLM RMPA (2008). Due to the amount of oil and gas development in the region, the proposed Project may compound cumulative impacts to the species, if not properly monitored.

Mitigation Measures and Residual Impacts

Similar mitigation measures presented in Section 3.7 would be applied to listed species and habitat to reduce the potential impact to these species during construction and operation of the Project. The following are additional mitigation measures that Navitas New Mexico has identified to further reduce direct and indirect impacts to Federal- and state-listed species. Additional language may be added to this EA following agency consultation regarding potential impacts to special status species and possible mitigation measures to reduce impacts.

To minimize impacts to migratory birds, it is recommended that vegetation be removed outside of the migratory bird breeding season (March-August). Due to project scheduling constraints, construction would begin in April. Vegetation removal during the migratory bird breeding season would be preceded by pre-removal nesting surveys to identify any occupied nests and establish avoidance buffers until young have fledged (Biological Survey Report, Appendix B).

Additional mitigation measures, as outlined in the Project CMRP (Appendix B of the POD) would include:

- Prevention of discharge into state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate Federal, state, and local permitting agencies grant written permission;

- To avoid impacts from introduced species, no inter-basin transfers (discharge) of hydrostatic test water would occur;
- The contractor would minimize noise during non-daylight hours and honor all seasonal restrictions imposed for threatened and endangered species, BLM species of concern, migratory species, and recreational BLM lands users;
- Navitas New Mexico would abide by all applicable noise regulations. The contractor would provide notice to Navitas New Mexico if noise levels are expected to exceed regulatory limits or lease stipulations for a short duration;
- Navitas New Mexico would give advanced notice to land managers and lessees within 500 feet of the ROW prior to construction, limit the hours during which construction activities with high-decibel noise levels are conducted, coordinate work schedules, and ensure that construction proceeds quickly through such areas; and
- The contractor would minimize noise in the immediate vicinity of herds of livestock or poultry operations, which are particularly sensitive to noise.

Specific mitigation measure for DSL and LPC habitat would follow the conservation measures listed in the CCA and CCAA certificates, as stated in Section 2.3.1. Within the RMPA area, strict regulations apply and those regulations are included in the CCAA conservation measures. Before construction begins it is advisable to verify with the BLM which regulations apply to this specific Project. Conservation measures are summarized below:

- All infrastructures supporting the development of a well (including roads, power lines, and pipelines) will be constructed within the same corridor;
- No new surface occupancy within 30 meters (98.4 feet) of areas designated as occupied or suitable shinnery oak corridors will be permitted;
- Provide escape ramps in all open water sources;
- Install fence markings along fences owned, controlled, or constructed that cross through occupied habitat within two miles of an active LPC lek;
- Bury new power lines that are within 3.22-kilometers (2-miles) of LPC lek sites active at least once within the past 5 years (measured from lek);
    - Bury new power lines that are within 1.61-kilometers (1-mile) of historic LPC lek sites where at least one chicken has been observed within the past 3 years (measured from the historic lek).
- Allow no 24-hour drilling operations or 3-D geophysical exploration during the period from March 1 through June 15, annually, on specified lands;
    - Other activities that produce noise or involve human activities, such as geophysical exploration (other than 3-D operations) and pipeline, road, and well pad construction will be allowed during these dates except between 3:00 am and 9:00 am.
    - The 3:00 am to 9:00 am restriction will not apply to normal operations, such as venting, flaring or pumping, which do not require a human presence during this period.
    - Normal vehicle use on existing roads will not be restricted.
- Management recommendations may be developed based on new information received from peer-reviewed science to mitigate impacts from hydrogen sulfide (H2S) and/or the accumulation of sulfates in the soil related to production of gas containing H2S on the LPC.

3.9. Cultural Resources

This section provides a description of known and potential cultural resource sites in the proposed Project area. Potential impacts to known and potential cultural resource sites are discussed in addition to mitigation measures to avoid or minimize potential adverse effects. Data for this section were compiled based on a review of the Museum of New Mexico Archaeological Records Management System (ARMS) and cultural resource field surveys.

3.9.1. Affected Environment

There are several Federal laws and regulations that apply to the evaluation and protection of cultural resource properties and cultural standards. The most applicable 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).

Compliance with Section 106 responsibilities of the NHPA are adhered to by following the Protocol Agreement between New Mexico BLM and New Mexico SHPO for facilities and pipeline projects that will impact a 30-foot or less permanent ROW, which is authorized by the National PA between BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers, and other applicable BLM handbooks (BLM, 2013). For the proposed Project, the Trunk line, residue and NGL pipelines entering and exiting the cryogenic processing plant facility would parallel one another for 0.17 miles. A 60-foot permanent easement would be required for these pipelines. Additionally, the residue and NGL pipelines would parallel one another for approximately 3.11 miles (from MP 0.17 to MP 3.28) and would require a 50-foot permanent ROW. As a result, these segments could not be covered under the PA, and cultural resource field surveys were performed in December 2014.

Management of cultural resources on BLM lands is determined by policies outlined 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.

Cultural Resource Surveys on New Mexico State Trust Lands

Parsons Brinkerhoff archaeologists conducted a pedestrian survey of the area of potential effect (APE). Field surveys were conducted over three sessions between August and October 2014. The field surveys were limited to the proposed Project area that impacts New Mexico State Trust Lands and were conducted under New Mexico State Permit No. 14-079-5. The surveyed area included 410.84 acres, consisting of a 100-foot survey width on either side of the proposed pipeline centerlines, for a total survey width of 200-feet. Additionally, surveys were conducted on one compressor station site (BEU CS-1).

Seven newly recorded sites, four previously recorded sites, and eighteen isolated occurrences were documented. Of the newly recorded archaeological sites: LA 180088, LA 180089, LA 180091, LA 180092, LA 180093, and LA 180094 are recommended as eligible to the NRHP under Criterion D. LA 180090 is recommended as not eligible to the NRHP. Of the four previously recorded archaeological sites: LA 164784 and LA 179216 have been previously recommended as eligible to the NRHP and LA 149333 and LA 163311 have been determined eligible to the NRHP (HPD Log Nos. 75748 and 91398, respectively). Upon discovery of the sites, the pipelines were re-routed to avoid impacts.

Complete site descriptions are provided in the *A Cultural Resources Survey for the Proposed Navitas New Mexico Delaware Basin Pipeline on State Land Office Managed Lands in Eddy County, New Mexico* (Lawrence et al., 2015).

Cultural Resource Surveys on Bureau of Land Management Lands

Parsons Brinckerhoff archaeologists conducted a pedestrian survey of the APE on BLM managed lands in December of 2014. The field surveys were conducted where the proposed Trunk line, residue, and NGL pipelines parallel one another under New Mexico State Permit No. NM 14-079-S and BLM Permit No. 166-2920-14-J. The surveyed area included 120.14 acres, consisting of a 3.3-mile long and an approximate 295-foot wide survey corridor.

One newly recorded site, one previously recorded site, and six isolated manifestations were documented during the field surveys. Both LA 79074 and LA 180749 are recommended as eligible to the NRHP under Criterion D. Both sites will be avoided by using HDD methods to construct the pipelines.

A description of the cultural resource surveys on BLM lands is provided in the *A Class III Archaeological Survey of a 3.3 Mile Pipeline Corridor on Bureau of Land Management Lands for the Proposed Navitas New Mexico Delaware Basin Pipeline, Eddy County, New Mexico* (Lawrence et al., 2015).

3.9.2. Impacts from the No Action Alternative.

Under the No Action Alternative, there would be no impacts to cultural resources because the Project 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.

3.9.3. Impacts from the Proposed Action

Direct and Indirect Impacts

Direct impacts to a cultural site, if disturbed by construction or operations, would include alterations to the physical integrity of the site. Adjustments were made to the proposed pipeline routes, facility locations and to the proposed pipeline construction methodology to avoid the sites recommended or determined eligible to the NRHP. Seven of the eligible sites would be avoided by pipeline re-routes, two sites would be avoided by boring beneath the site, and one site would be monitored during construction.

The one newly recorded site and one previously recorded site on BLM lands that were recommended as eligible by Parson Brinckerhoff would be avoided by using HDD methods to construct the pipelines.

As a result of these adjustments, the sites on State Lands and BLM-managed lands would not be affected by construction of the proposed Project.

A potential indirect impact from the Proposed Action is that the increase in human activity could potentially contribute to the unauthorized removal or other alteration to cultural sites in 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 the table below.

Table 3.9-1 Cultural Resource Site Summary, Eligibility, and Mitigation Recommendations				
LA No.	**Landowner**	**Site Type/Cultural Affiliation and Dates**	**Eligibility Recommendation**	**Recommended Mitigation**
LA 180088	NMSLO	Prehistoric Artifact and FCR Scatter	Eligible, D	Avoided by re-route
LA 180089	NMSLO	Prehistoric Artifact Scatter with Feature	Eligible, D	Avoided by re-route
LA 180090	NMSLO	Historic Artifact Scatter with Feature	Not Eligible	Outside of APE
LA 180091	NMSLO	Prehistoric Artifact Scatter	Eligible, D	Avoided by re-route
LA 180092	NMSLO	Prehistoric Artifact Scatter with Feature	Eligible, D	Avoided by re-route
LA 180093	NMSLO	Single Prehistoric Feature with 1 Artifact	Eligible, D	Avoided by re-route
LA 180094	NMSLO	Prehistoric Artifact Scatter with Feature	Eligible, D	Avoided by re-route
LA 149333	NMSLO	Single Prehistoric Feature	Eligible, D (HPD Log No. 75748)	Outside of APE
LA 163311	NMSLO	Historic Railroad	Not Eligible (HPD Log No. 91398)	Avoided with HDD
LA 164784	NMSLO	Prehistoric Artifact Scatter with Feature	Eligible, D	Monitoring During Construction
LA 179216	NMSLO	Prehistoric Artifact Scatter	Eligible, D	Avoided by re-route
LA 180749	BLM	Prehistoric Artifact Scatter with Feature	Eligible, D	Avoided with HDD
LA 79074	BLM	Prehistoric Artifact Scatter with Feature	Eligible, D	Avoided with HDD

3.10. Geological Resources

This section discusses the geological resources in the proposed Project area, including mineral resources and geologic hazards. This section also identifies appropriate mitigation measures to avoid or minimize potential adverse effects to these resources.

3.10.1 Affected Environment

The proposed Project area is located in Eddy and Lea counties in the southeast portion of New Mexico. Eddy and Lea counties are part of the Pecos River Basin and the major stream flowing through the two counties is the Pecos River. Most of the area is in the Pecos Valley section of the Great Plains physiographic province; it also includes the southern margin of the Llano Estacado (Alexander Nicholson, Jr. and Alfred Clebsch, Jr.). Rocks of Quaternary, Tertiary, and Triassic age are exposed and contain the principal aquifers. The most important aquifer is the Ogallala formation, which underlies the Llano Estacado. The Ogallala formation consists of valley-fill deposits of clay, silt, fine to coarse grained sand, gravel, and caliche (hardened calcium carbonates), the distributions of which vary both vertically and horizontally.

The Llana Estacado is an isolated mesa that slopes gently to the east-southeast and covers a large part of eastern New Mexico and western Texas. The Mescalero Ridge escarpment, which defines the southwestern limit of the Llana Estacado crosses the western and central portions of Lea County as a nearly perpendicular cliff (Nicholson and Clebsch, 1961).

The proposed Project area is in a seismically quiet region, with local earthquakes of relatively small magnitude (moment magnitude of less than 2 on the Modified Mercalli-Revised 1931 scale [MM]).

Seismic activity in southeastern New Mexico is typically of small magnitudes and generally caused by oil field injection activities.

Most of the surface drainage is intermittent due to the seasonal nature of the rainfall. The Pecos River, which at its closest, is approximately 11 miles west of the proposed Project area. The High Plains aquifer, also known as the Ogallala aquifer, is a regional aquifer system that underlies 450,660-km^2 (174,000-mi^2 in parts of eight States: Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming (USGS, 2010a; McGuire et al., 2003). Because of its large size, the High Plains aquifer has been geographically subdivided into three aquifer regions: the southern High Plains, central High Plains, and the northern High Plains. About 27-percent of the irrigated land in the US overlies this aquifer system, which yields about 30-percent of the nation's groundwater for irrigation. In addition, the aquifer system provides drinking water to 82-percent of the population within the aquifer boundary (USGS, 2010a). Section 3.4, Water Resources section, provides additional information regarding the aquifers within the proposed Project area.

Soils within this area are primarily covered by eolian sands, eroded from river valley alluvium and re-deposited during Quaternary times (see Section 3.3). Geology underlying the proposed Project area and vicinity comes mainly from quaternary colluvium with valley fill and piedmont alluvium and discontinuous eolian deposits. Bedrock consists of Permian sandstone, siltstone, gypsum, dolomite, and limestone (Griffith et al., 2006).

Rocks of the Precambrian through the Cenozoic age underlie much of the area. Rock formations of the Cenozoic are known to contain areas of usable potable ground water (USGS, 1963). The Project will be located in areas where the surface geology consists of alluvium, carbonate rock, and sandstone.

3.10.1. Impacts from No Action Alternative

Under the No Action Alternative, there would be no impacts to geological resources because the Project 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.

3.10.2 Impacts from the Proposed Action

Direct and Indirect Impacts

Under the Proposed Action, there would be no direct or indirect impacts to geological resources. Impacts from the construction of the proposed Project would result in surface soil impacts only. The pipeline installation will involve an excavation of three to five feet below the surface. The Cryo Plant, compressor stations, and interconnect facilities will require excavation, but depths are not expected to exceed 10-feet below ground level. Excavation depths this shallow are not expected to impact geologic resources**.**

Cumulative Impacts

Although the proposed Project would not impact geological resources, the Trunk line would deliver product from production wells in the BLMs BEU and JRU to the Cryo Plant. The Trunk line and lateral pipelines would also be designed to accept additional capacity. The Cryo Plant would also be designed to accept additional product for processing. With the potential of the Project to accept additional capacity, it is likely that additional production wells would be developed. These wells would undoubtedly impact the various depths and shale plays within the Permian Basin. Vertical and horizontal gas drilling would impact regional geology adjacent to the proposed Project area.

Mitigation Measures and Residual Impacts

No geologic resources would be impacted as a result of the proposed Project. No mitigation measures are proposed.

3.11. Visual Resources

This section describes the visual resources in the proposed Project area and assesses the potential effects that would result from construction and operation of the Project. This section also identifies appropriate mitigation measures to avoid or minimize potential adverse effects to visual resources.

3.11.1 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 public 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. 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 majority of the Project is located within VRM Class IV. The objective for VRM Class IV lands is to provide for activities that require major modification of the landscape. The portion of the Project that crosses the Livingstone Ridge falls within VRM Class III. The objective for the VRM Class III lands is to partially retain the existing character 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 should be lower and activities should not dominate the view of the casual observer.

The proposed Project area occurs within two EPA ecoregions, Chihuahuan Desert Grasslands and Shinnery Sands (Griffith et al. 2006). Vegetation impacted by the Project is primarily sparse grasslands (see Section 3.5). 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. Dominant colors are tans and browns from the sandy soils, and light greens from the vegetation. Photograph 3.11-1, 3.11-2 and 3.11-3 provide a visual depiction of the representative landscape at the proposed Project area.

Photograph 3.11-1. Typical view of grassland landscape occurring throughout the proposed Project area.

Photograph 3.11-2. Typical view of grassland and scrub/shrub landscape occurring in the general vicinity of the proposed Cryo Plant.

Photograph 3.11-3. View of one of several existing BLM roads crossing the proposed Project area. Navitas New Mexico would use these existing roads during project construction for temporary access.

3.11.1. Impacts from No Action Alternative

Under the No Action alternative, the proposed Project would not be built. No impacts to visual resources would occur as a result of the No Action Alternative.

Cumulative Impacts

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

3.11.2 Impacts from the Proposed Action

Direct and Indirect Impacts

The proposed Project area is located within a rural and low-use recreation area. Given the terrain, the pipeline corridors would not be readily visible from ground level. The most frequent viewers would be residents of Lea and Eddy Counties traveling past the cryogenic processing plant or compressor stations, and oil and gas employees working in area.

The Proposed Action would be 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 observer.Construction of the pipelines would have short-term direct visual impacts from the removal of existing vegetation. Construction of the Cryo Plant and compressor stations would create a long-term visual impact.

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 occur, re-establishment of vegetation may take as long as two years, which is a short-term impact. 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.

The Cryo Plant would draw the attention of viewers and the plant would dominate the viewshed, but the duration would be brief as viewers pass by. Similarly, the compressor stations would draw the attention of viewers, but the duration would be brief. 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. Overall the proposed Project would create contrasts to the existing landscapes form, line, color, and texture. Contrasts in form would come from the structural element of the gas plant and fencing added to the relatively 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.

Cumulative Impacts

There are other pending oil and gas projects 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. In addition, linear projects would include cleared vegetation and disturbed soils associated with ROWs. 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 2.1.7). Areas impacted during construction would be returned to their pre-disturbance condition as soon as possible after final construction is completed.

Additional mitigative measures would include facilities being 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. These guidelines are outlined in detail in the BLMs Gold Book and the NMDGF Oil and Gas Development Guidelines.

3.12. Recreational Resources

This section describes recreational resources in the proposed Project area and assesses the potential effects that would result from construction and operation of the Project. This section also identifies appropriate mitigation measures to avoid or minimize potential adverse effects to recreational resources.

Affected Environment

The Proposed Action falls within the boundary of the Hackberry Lake OHV Special Recreation Management Area. This area is a partially developed recreation area with trails and dunes for off highway riding. At its closest (near MP 31.8), the Trunk line is approximately 1,000-feet of a developed or known trail (BLM, 2015). Visitor use is prominent year round. Recreation visitors regularly travel the same roads, often when there is heavy industry traffic on the roads. The Hackberry Lake Special Recreation Management Area is also the site of the Annual Desert 100 Race, usually held in April.

3.12.1. Impacts from No Action Alternative

Under the No Action alternative, the proposed Project would not be built. No impacts to recreational resources would occur as a result of the No Action Alternative.

Cumulative Impacts

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

3.12.2. Impacts from the Proposed Action

Direct and Indirect Impacts

During construction, some access roads for off-highway vehicles (OHVs) may be temporarily closed. These impacts would be temporary and short in duration. The closures likely would not occur during peak use times. The displacement of dispersed recreation during construction would be a minimal impact because no known trails are crossed by the Project and because no existing access would be permanently obstructed. No impacts to recreational resources are anticipated after the completion of construction.

Portions of the Trunk line and BEU-CS-2 lateral pipeline, pipe storage yard, and BEU-CS-2 and BEU-CS-3 compressor stations would pass through the Hackberry Lake Special Recreation Management Area. Approximately 195 acres would be subject to surface disturbance from the Project.

Cumulative Impacts

There are other pending oil and gas projects proposed in the cumulative area of analysis. Some of these actions would directly impact trails within the Hackberry Lake Special Recreation Management Area. 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 recreational resources would be low.

Mitigation Measures and Residual Impacts

Measures to minimize impacts to recreational resources are described in the Proposed Action's project design features (see Section 2.1.7). Areas impacted during construction would be returned to their pre-disturbance condition as soon as possible after final construction is completed. Temporary closure of access roads to OHV areas will be short in duration to limit impacts.

3.13. Livestock Grazing

The BLM allows livestock grazing on the majority of their management units. Several thousand acres are allotted for livestock grazing in Eddy and Lea counties. The following sections describe the affected environment and potential impacts from the Proposed Action.

3.13.1. Affected Environment

Livestock grazing is common in the proposed Project area, with the most common livestock operations consisting of cattle and calf operations. The Project would coincide with several BLM allotments within the CFO, summarized in Table 3.12-1. The Cryo Plant and associated pipelines and facilities would cross 8 separate BLM grazing allotments. The Proposed Action would cross 16 boundary fences, 18 pasture fences, and 9 livestock pipelines (Figure 3.12-1),

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. The range studies in the SWNW of section 19, T. 19 S., R. 31 E. and the NESW of section 14, T. 21 S., R. 29 E. will be avoided.

Figure 3.12-1 Boundary Fences, Pasture Fences, and Livestock Pipelines

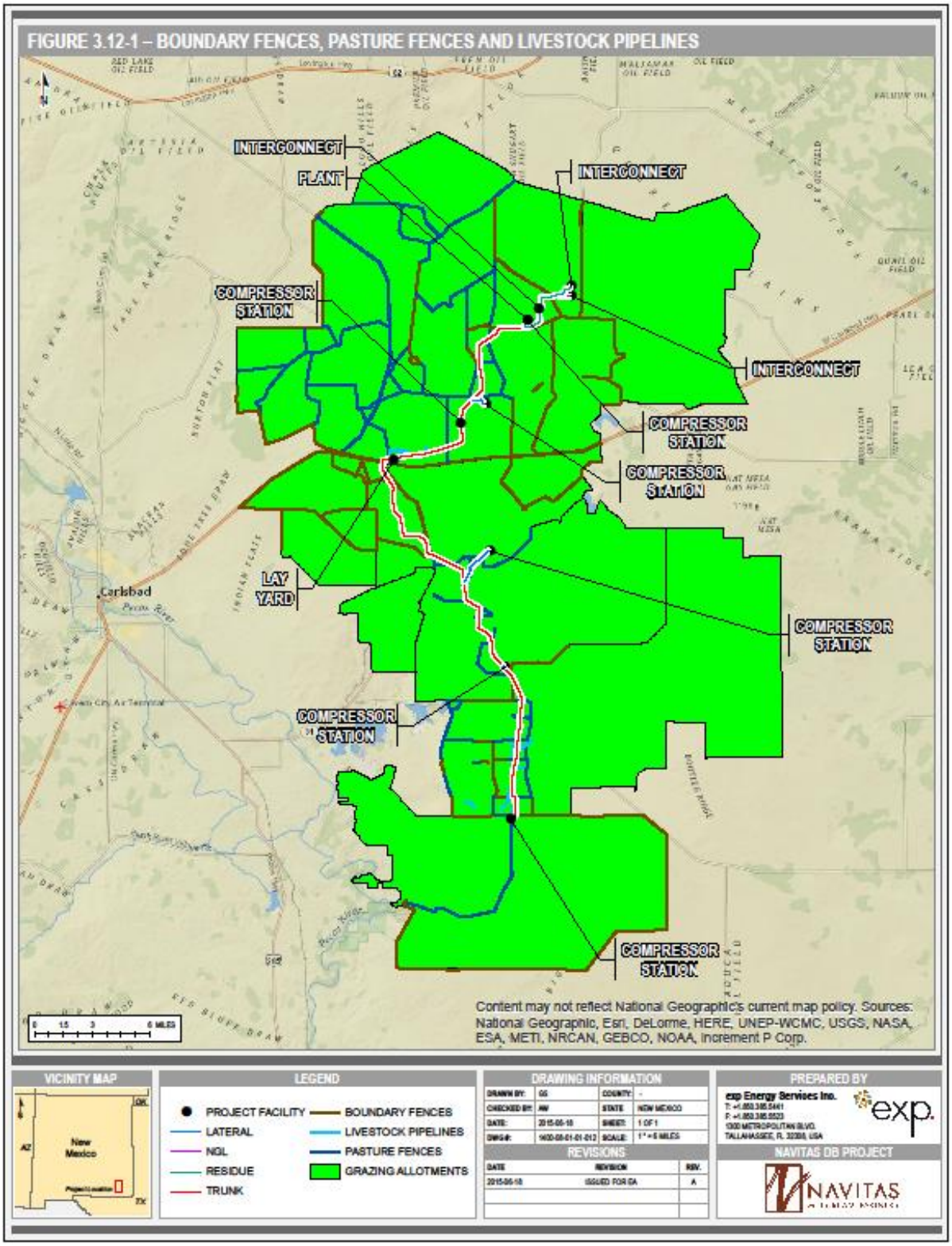


Table 3.13-1 Project Area Range Allotment Project Impacts					
Project Section	Allotment	Surface Ownership	Impact Acreage		
			Permanent Easement	Temporary Easement	Additional Temporary Workspace
TRUNK LINE	Pierce Canyon (No. 77036)	BLM	0.169	0.261	0.082
TRUNK LINE	Twin Wells (No. 77042)	BLM	0.057	0.081	0.021
TRUNK LINE	Twin Wells (No. 77042)	STATE	0.778	1.104	0.195
TRUNK LINE	Nash Draw (No. 77033)	BLM	18.587	25.480	0.908
TRUNK LINE	Nash Draw (No. 77033)	STATE	3.678	4.904	0.283
TRUNK LINE	Antelope Ridge (No. 77032)	BLM	4.998	6.700	0.098
TRUNK LINE	Antelope Ridge (No. 77032)	STATE	0.001	0.001	0.000
TRUNK LINE	Livingston Ridge (No. 77027)	BLM	9.003	13.400	0.689
TRUNK LINE	Livingston Ridge (No. 77027)	STATE	18.098	27.350	0.467
JRU CS-1 HP LINE	Livingston Ridge (No. 77027)	BLM	0.225	0.149	0.027
BEU CS-1 EAST LINE	Livingston Ridge (No. 77027)	BLM	0.594	0.419	0.000
BEU CS-1 EAST LINE	Livingston Ridge (No. 77027)	STATE	5.310	3.498	0.251
TRUNK LINE	Maroon Cliffs (No. 77022)	BLM	4.167	6.166	0.267
BEU CS-1 EAST LINE	Maroon Cliffs (No. 77022)	STATE	2.056	1.392	0.129
TRUNK LINE	Mimosa (No. 77049)	BLM	21.201	31.793	0.910
TRUNK LINE	Mimosa (No. 77049)	STATE	1.650	2.544	0.000
TRUNK LINE	Twin Wells North (No. 77012)	BLM	28.888	43.100	1.150
TRUNK LINE	Twin Wells North (No. 77012)	STATE	3.149	4.242	0.285
BEU CS-2 EAST HP LINE	Twin Wells North (No. 77012)	BLM	2.837	1.883	0.204
RES-EPG LINE	Twin Wells North (No. 77012)	BLM	4.911	4.914	0.612
NGL-DCP LINE	Twin Wells North (No. 77012)	BLM	3.987	1.640	0.136
TRUNK LINE	Clayton Basin (No. 77013)	BLM	13.943	20.928	0.144
RES-EPG LINE	Clayton Basin (No. 77013)	BLM	10.419	4.343	0.728
NGL-DCP LINE	Clayton Basin (No. 77013)	BLM	10.475	5.516	0.040
PLU CS-2 SITE	Pierce Canyon (No. 77036)	BLM	3.00	-	-
JRU CS-1 SITE	Livingston Ridge (No. 77027)	BLM	3.10	-	-
BEU CS-1 SITE	Maroon Cliffs (No. 77022)	STATE	3.09	-	-
PIPE STORAGE YARD	Twin Wells North (No. 77012)	BLM	-	29.91	-
BEU CS-2 SITE	Twin Wells North (No. 77012)	BLM	3.00	-	-
BEU CS-3 SITE	Twin Wells North (No. 77012)	BLM	3.03	-	-
RES EPG SITE	Twin Wells North (No. 77012)	BLM	2.04	-	-
NGL-DCP SITE	Twin Wells North (No. 77012)	BLM	1.03	-	-
CRYO SITE	Clayton Basin (No. 77013)	BLM	100.20	-	-
BEU CS-4 SITE	Clayton Basin (No. 77013)	BLM	3.02	-	-
NEW TW SITE	Clayton Basin (No. 77013)	BLM	2.00	-	-

3.13.2. Impacts from No Action Alternative

Under the No Action alternative, the proposed Project would not be built. No impacts to grazing resources would occur as a result of the No Action Alternative.

Cumulative Impacts

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

3.13.3. Impacts from the Proposed Action

Direct and Indirect Impacts

Forage removal from the facilities and pipeline areas and new fencing restricting livestock from the 100-acre plant site would be the main impact to grazing resources in eight allotments affected by the Proposed Action.

Direct impacts to livestock occur when holes or ditches are not covered properly. Any type of hole or ditch is potentially a hazard to livestock while grazing. Injuries may occur if animals fall into an open hole or ditch. Livestock can step into the hole and break or injure a leg.Construction of the pipeline would temporarily remove or impact vegetation from the 30-foot-wide permanent ROW (except in areas where the wider permanent ROW is required for Trunk line, residue pipeline, and NGL pipeline will parallel one another). Construction and fencing of the Cryo Plant and other facilities would cause permanent removal of vegetation from approximately 120-acres.

Additional short-term impacts may include displacement of livestock during construction activities or exposure of livestock to hazards. Movement of livestock may also be temporarily impeded in areas of active construction. The Proposed Action has the potential to temporarily impact natural or man-made barriers to livestock movement, such as fencing or ditches and range improvements such as watering troughs or livestock pipelines (water delivery systems). Impacts to livestock may occur when containment of livestock is compromised (e.g., fencing cutting) or access to pastures is cut-off by construction activities. This could result in injury to livestock or individuals (e.g., vehicular accident or trampling)

After construction, livestock should become acclimated to the Cryo Plant and pipeline. 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.

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

Cumulative Impacts

Overall, approximately 322-acres of vegetation would be permanently impacted by the construction of the proposed Project. 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 would include reclamation of the disturbed pipeline areas and would likely return those affected areas to pre-construction herbaceous production and forage levels within two to three growing seasons. Additionally, the following mitigation measures would be implemented in accordance with the CMRP (included in Appendix B of the POD):

- Shavings produced during pipe bevel operations would be removed immediately to ensure that livestock and wildlife do not ingest the material

- Temporary gates would be installed at fence lines for access to the construction ROW. These gates would remain closed at all times. Upon Completion of construction, the temporary gates would be removed and the permanent fence replaced.

- Areas of disturbance in native range would be seeded with a native seed mix after topsoil replacement.

Improved pasture would be seeded with a seed mix approved by individual landowners.

3.14. Social and Economic Conditions

This section describes the potential impacts to both minority and low-income populations that would occur from construction and operation of the proposed Project. In addition, this section identifies the appropriate mitigation measures to avoid or minimize potential adverse impacts on low-income and minority communities, including dust, noise, and potential disruption to traffic patterns due to construction and operation of the proposed Project.

3.14.1. Affected Environment

According to the US Census Bureau's American Community Survey estimates, minority populations account for 64.4-percent of New Mexico's total population (US Census Bureau, 2013). Important state industries include Federal government spending, education and health care services, tourism, mining, and oil and gas production and processing (New Mexico Economic Development Department, 2013). New Mexico is ranked as the sixth largest producer in crude oil in the US, typically producing just over 3-percent of the nation's total output. New Mexico's natural gas production totaled 5.3-percent of all US marketed natural gas production in 2011, with less than one-tenth consumed within the state (Energy Information Administration, 2013).

Population

Population densities in Eddy and Lea Counties are below the New Mexico state average of 17.0 persons per square mile, with 14.7 persons per square mile in Lea County and 12.9 persons per square mile in Eddy County (US Census Bureau 2012b, 2012c). The growth rate of Lea County was 16.6-percent, exceeding the state average. The growth rate of Eddy County was 4.2-percent between 2000 and 2010, a slower rate of growth than the state growth average of 13.2-percent. 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).

Income

Personal income is defined as the sum of net earnings, property income, and personal current transfer receipts (US 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-percent, while Eddy County's rose by 50-percent and Lea County's rose by 59-percent (BBER, 2013a). New Mexico's per capita income in 2011 was $34,133, approximately 82-percent 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 percent of the New Mexico per capita income and over 99-percent of the national per capita income. The 2011 per capita income for Lea County is 91 percent of the national per capita income and 111 percent of the state per capita income (BBER, 2012c). Table 3.14-1 shows the per capita income for New Mexico and Eddy and Lea Counties.

Table 3.14-1 Per Capita Income in New Mexico, Eddy and Lea Counties, 2001-2011		
	Estimated Per Capita Income for 2001	**Estimated Per Capita Income for 2011**
New Mexico	$24,751	$34,133
Eddy County	$24,410	$41,539
Lea County	$22,742	$37,898
Source: Bureau of Business and Economic Research. 2012c. Per Capita Personal Income, New Mexico Counties, 2001–2011. Available at: http://bber.unm.edu/econ/co-pci.htm. Accessed December 2014		

Environmental Justice

On February 11, 1994, President Clinton issued an EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (59 FR 7629)." Therefore, Federal agencies are required under EO 12898 to analyze the environmental effects of proposed actions, including such effects on minority and low-income communities, which such analysis is required by NEPA. Each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. Environmental justice refers to the "fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" (EPA, 2007).

CEQ's guidelines developed for the EO 12898 recommend that "minority" be define as members of American Indian or Alaska Native, Asian or Pacific Islander, Black, non-Hispanic, and Hispanic Populations (CEQ 1997). According to the US Office of Management and Budget's (OMB), "Black or African American" refers to a person having origins in any of the Black racial groups of Africa. For low-income, the US Census Bureau established a set of income cutoffs/thresholds to determine the poverty status of families. These poverty thresholds are based on family size and the number of family members under 18 years old. The US Census Bureau determines poverty by comparing the total income of each family against it corresponding threshold. If the total family income is less than the corresponding cutoff, the family is classified as "below the poverty level."

Table 3.13-2 provides data depicting the demographic characteristics of Eddy and Lea Counties affected by the proposed Project. As shown in Table 3.14.2, no minority population exceeds 50-percent of the counties within the proposed Project area.

The African American population is the highest percentage minority population for both counties [Table 3.13-2 (US Census, 2013)]. Eddy County has the lowest percentage of people living below the poverty level (12.5 percent) and a median household income of $49,165. Lea County has a poverty level of 15-percent and median household income of $50,694. The US Census Bureau data were used to determine the minority and low-income characteristics.

TABLE 3.14.2 Minority and Low-Income Populations as a Percentage by Census Tract and County Populations within the Project Area US Bureau									
Census Tract	**African American/ Black (percent)[1] (2013)**	**Asian (percent)[1] (2013)**	**American Indian (percent)[1] (2013)**	**Pacific Islander (percent)[1] (2013)**	**White alone (percent)[1] (2013)**	**Two or More Races (percent)[1] (2013)**	**Hispanic (percent)[1] (2013)**	**Median Household Income (2009 – 2013)**	**Persons Below Poverty Level (percent) (2009-2013)**
New Mexico	**2.5**	**1.6**	**10.4**	**0.2**	**39.4**	**2.4**	**47.3**	**$44,927**	**20.4**
Eddy County	**1.9**	**0.8**	**2.3**	**0.1**	**50.3**	**1.6**	**45.7**	**$49,165**	**12.5**
Lea County	**4.3**	**0.6**	**1.9**	**0.1**	**39.9**	**1.5**	**54.3**	**$50,694**	**15.0**

Source: US Census Bureau

Note: [1] Numbers do not total 100% because of persons reporting multiple races and because Hispanics may be of any race, so they are also included in applicable race categories.

The proposed Project is located in a remote portion of the state and is in an area where there is already considerable oil and gas development. There were no identified issues regarding environmental justice within the proposed Project area.

Industry Employment and Wages

Resident non-governmental employees 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 (US Census Bureau, 2013a, 2013b). The oil and gas industries are a subset of the mining sector and are primary sources of employment for residents of Eddy and Lea Counties. As of the first quarter of 2014, the mining sector employed an average of 6,870 persons in Eddy County and 8,521 persons in Lea County (New Mexico Department of Workforce Solutions, 2014).

Average weekly wages reported in the first quarter of 2014 within the mining sector ranged from $1,654 in Eddy County to $1,420 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 percent, 15 percent lower than the national unemployment rate of 8.1 percent (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 percent and Lea County maintained an unemployment rate of 4.3-percent. These rates are 51-percent to 53-percent lower than the national unemployment rate.

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-percent of the state's net taxable value, non-residential property accounted for 30-percent, and ad valorem production accounted for 13-percent. Between 2004 and 2012 net taxable property values in Eddy and Lea Counties increased by 200- percent and 108-percent, respectively. This was primarily due to the 125-percent value increase of mineral extractions (New Mexico Taxation and Revenue Department, 2004; New Mexico Department of Finance and Administration, 2012).

3.14.2. Impacts from No Action Alternative

Direct and indirect impacts to socioeconomics would be impacted by the No Action alternative. Employment opportunities and income, as well as, increased revenues from property and sales taxes associated with the Proposed Action would not occur.

Cumulative Impacts

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

3.14.1. Impacts from the Proposed Action

Direct and Indirect Impacts

Socioeconomic impacts from the Proposed Action would primarily be derived from the workforce opportunities affiliated with the proposed Project and the duration of Project activities. Navitas New Mexico estimates that construction of the plant and 47-miles of pipeline would involve an average workforce of 200 workers over a 10-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 10 to 25 new full-time positions.

Population

The workforce associated with the Proposed Action would primarily be temporary. Navitas New Mexico, through its construction contractors and subcontractors, would attempt to hire temporary construction staff from the local population, where practical.

Employment and Income

The majority of employment associated with the Proposed Action would be short term. Navitas New Mexico estimates the need for approximately 200 laborers over the course of a possible 10-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 approximately 10 to 25 full-time, local, permanent positions for the life of the proposed 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 presence of pipeline construction workers.

Another potential beneficial and indirect impact would be created from the proposed plant's capacity to process natural gas. 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 Cryo Plant and an undetermined portion of the natural gas produced would likely be sold within New Mexico and generate sales tax revenues. Eddy and Lea Counties would be crossed by the Proposed Action and 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 Cryo 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 could also expect increases to sales tax revenues during the 10-month construction period.

Cumulative Impacts

Due to the limited duration of the Proposed Action's construction phase (10-months), cumulative effects to local populations, employment, and wages would not be anticipated. Cumulative socioeconomic effects would be possible, due to the ongoing staffing of the Cryo Plant, but these effects would not be quantifiable since they would be minimal.

Mitigation Measures and Residual Impacts

No mitigation measures have been provided for the Proposed Action, as there are no negative impacts to the social and economic environments.

3.15. Public Health and Safety

The following section describes the potential impacts on public health and safety associated with construction and operation of the proposed Project.

3.15.1. 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 Project is primarily located in Eddy and Lea Counties, New Mexico. The majority of the land crossed by the proposed Project is managed by the BLM; however, 9.7 miles of pipeline and approximately one acre of compressor station BEU CS-3 Site are located on State Lands. The proposed Cryo Plant and associated pipelines and facilities would be 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 open trenches would be present.

No residential dwellings are located in the vicinity of the proposed gas plant. The closest community or population center to the proposed plant is the City of Carlsbad, New Mexico which is located

approximately 31 miles southwest of the Cryo Plant. 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 proposed Project area. However, these users would be warned about possible hazardous conditions in the Project area through posted signs, would have no access to the facilities and limited access to the pipeline ROW during construction, and would be restricted from the Cryo Plant, compressor stations, and interconnect facilities 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 that all chemicals stored must be handled according to label directions for each chemical. All chemicals present 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 must have an MSDS added to the existing catalog. All lists of hazardous substances which may be stored 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.

Navitas New Mexico would be committed to operating their facilities in a safe and environmentally sound manner. To achieve this goal, the company would have numerous systems and procedures in place ranging from written operating procedures, required internal policies and standards, and compliance audits and inspections.

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 NM OCD 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.

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.

3.15.2. Impacts from No Action Alternative

Under the No Action alternative, the proposed Project would not be built. No impacts to public health and safety would occur as a result of the No Action Alternative.

Cumulative Impacts

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

3.15.3. Impacts from the Proposed Action

Direct and Indirect Impacts

Numerous laws and safeguards would be employed during Project construction and operation to protect workers and residents. 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. There is also potential for releases of hazardous materials from the pipeline and plant facility during operation.

When significant amounts of chemicals are stored on-site, governmental agencies would be notified as required under the RCRA. The notification of releases such as natural gas, NGLs, and petroleum outside the facility site is required under CERCLA. All facilities must have informational signs, as directed under 43 CFR 3160. Hazardous substances planned for use in association with operations of the Cryo Plant would be gasoline, diesel, lube oil, used oil, produced water, and natural gas liquids.

Navitas New Mexico anticipates using approximately 200 contractors during the 10-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 proposed Project area and drivers would be warned of possible hazards by appropriate signage, and would be expected to follow all standard driving rules. This impact to area roads would be short term for construction of the plant and pipelines, and would lessen considerably during the operational phase of the plant.

Cumulative Impacts

No cumulative impacts to public health and safety would be expected as a result of the Proposed Action. 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

Navitas New Mexico would operate and maintain the Project facilities in compliance with the Pipeline Safety Act regulations contained in 49 CFR 192 and 195 as administered by the USDOT. In addition, Emergency preparedness and planning measures would be in place at the facility in the event that a pipeline incident occurs. Navitas would also work closely with local emergency response organizations to

educate them regarding the pipeline and Cryo Plant. Measures to protect the public's health and safety would be implemented as described in the Proposed Action's Project design features.

4. SUPPORTING INFORMATION

4.1. List of Preparers

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

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APPENDIX A – MAPPING and QUARTER BY QUARTER DESCRIPTIONS

APPENDIX B – BIOLOGICAL SURVEY REPORT (CONFIDENTIAL