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Natural Gas Pipeline Company of America

Docket No. CP19-99-000

Gulf Coast Southbound Project

Environmental Assessment

Washington, DC 20426

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TECHNICAL ACRONYMS AND ABBREVIATIONS

CAA	Clean Air Act
CEQ	Council on Environmental Quality
Certificate	Certificate of Public Convenience and Necessity
CFR	Code of Federal Regulations
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
Commission	Federal Energy Regulatory Commission
CS	Compressor Station
Dth	dekatherms
dBA	decibels on the A-weighted scale
ECMP	Environmental Compliance Management Plan
EI	environmental inspector
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FERC Plan	FERC's <i>Upland Erosion Control, Revegetation, and Maintenance Plan</i>
FERC Procedures	FERC's <i>Wetland and Waterbody Construction and Mitigation Procedures</i>
GHG	greenhouse gases
GWP	global warming potential
HAP	hazardous air pollutant
HUC	Hydrologic Unit Code
L _{eq}	24-hour equivalent sound level
L _{dn}	day-night sound level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NGA	Natural Gas Act
Natural	Natural Gas Pipeline Company of America
NO ₂	nitrogen dioxide
NOI	<i>Notice of Intent to Prepare an Environmental Assessment for the Proposed Gulf Coast Southbound Project and Request for Comments on Environmental Issues</i>
NO _x	nitrogen oxides
NRCS	Natural Resources Conservation Service
NSA	noise sensitive area
NSPS	New Source Performance Standards
NSR	New Source Review
OEP	Office of Energy Projects

PM _{2.5}	particulate matter less than or equal to 2.5 microns in aerodynamic diameter
PM ₁₀	particulate matter less than or equal to 10 microns in aerodynamic diameter
Project	Gulf Coast Southbound Project
PSD	Prevention of Significant Deterioration
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO ₂	sulfur dioxide
SPRP	Spill Prevention and Response Procedure
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TPWD	Texas Parks and Wildlife Department
TXDOT	Texas Department of Transportation
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compound

A. PROPOSED ACTION

1. Introduction

The staff of the Federal Energy Regulatory Commission (FERC or Commission) prepared this environmental assessment (EA) to address the environmental impacts of the construction and operation of the proposed Gulf Coast Southbound Project (Project). On February 28, 2019, Natural Gas Pipeline Company of America (Natural) filed an application with the Commission in Docket No. CP19-99-000 under Sections 7(b) and 7(c) of the Natural Gas Act (NGA) and Part 157 of the Commission's regulations to abandon certain existing compressor units and to construct, own, operate, and maintain new facilities as part of the Project.

Natural seeks to obtain a Certificate of Public Convenience and Necessity (Certificate) to modify existing compressor stations in Victoria, Wharton, Harrison, Angelina, and Cass counties, Texas. As part of the Project, Natural is also seeking approval to abandon in place certain existing compressor units at Natural's Victoria and Harrison county facilities and replace them with newer, larger-horsepower compressor units. The proposed new facilities would allow Natural to provide incremental firm capacity for the Project shipper, Corpus Christi Liquefaction, to transport an incremental 300,000 dekatherms (Dth) per day to an existing delivery point with Cheniere Corpus Christi Pipeline, L.P. in San Patricio County, Texas.

We¹ prepared this EA in compliance with the requirements of the National Environmental Policy Act (NEPA); the Council on Environmental Quality's (CEQ) regulations for implementing NEPA (Title 40 Code of Federal Regulations, Parts 1500-1508 [40 CFR 1500-1508]); and the Commission's regulations at 18 CFR 380. The EA is an integral part of the Commission's decision-making process on whether to issue Natural a Certificate to construct and operate the proposed facilities and abandonment authorization. Our principal purposes in preparing this EA are to:

- identify and assess potential impacts on the natural and human environment that could result from implementation of the proposed action; and
- identify and recommend reasonable alternatives and specific mitigation measures, as necessary, to avoid or minimize Project-related environmental impacts.

Natural has requested a Certificate by March 1, 2020 to meet an in-service date of March 1, 2021.

¹ "We," "us," and "our" refer to the environmental staff of the FERC's Office of Energy Projects (OEP).

2. Project Purpose and Need

Section 7(b) of the NGA specifies that no natural gas company shall abandon any portion of its facilities subject to the Commission's jurisdiction without the Commission first finding that the abandonment will not negatively affect the present or future public convenience or necessity. Under Section 7(c) of the NGA, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate to construct and operate them. The Commission bases its decisions on financing, rates, market demand, gas supply, environmental impact, and other issues concerning a proposed project.

Natural states that the proposed new facilities are necessary to meet the 300,000 Dth per day of firm transportation capacity contracted to its customer Corpus Christi Liquefaction. Natural also states that the abandonment of facilities at its Victoria and Harrison counties compressor stations would not result in any impact on the certificated parameters of Natural's system or in a reduction of service to any existing customers. According to Natural, the natural gas being transported by the Project would supply the Corpus Christi Liquefaction export facility.

In addition to the firm transportation capacity subscribed by Corpus Christi Liquefaction, the new compressor units to be installed for the Project would create 28,000 Dth per day of incremental firm transportation capacity on Segment 26 of Natural's system. Natural states it plans to market this additional capacity pursuant to the terms of its FERC Gas Tariff.

3. Scope of this Environmental Assessment

The resources and topics addressed in this EA include geology, soils, groundwater, surface waters, wetlands, fisheries, wildlife, vegetation, species of special concern, land use, recreation, visual impacts, socioeconomics and environmental justice, cultural resources, air quality, noise, reliability and safety, and cumulative impacts. This EA describes the affected environment as it currently exists and the anticipated environmental consequences of the Project, and compares the Project's potential impact with that of various alternatives. This EA also presents our recommended mitigation measures.

As the lead federal agency for the Project, FERC is required to comply with Section 7 of the Endangered Species Act and Section 106 of the National Historic Preservation Act. These statutes have been considered in the preparation of this EA. In addition to FERC, other federal, state, and local agencies may use this EA in approving or issuing any permits necessary for all or part of the Project. Permits, approvals, and consultations for the Project are discussed in section A.11 of this EA.

4. Proposed Facilities

The Project would consist of the construction or abandonment of facilities within the fenced operational areas of existing Natural compressor stations in Victoria, Wharton, Angelina, Harrison, and Cass counties, Texas. Natural states that all facilities would be accessed by existing paved or graveled facility access driveways connecting to public roads, and that no off-premises contractor or pipe yards would be required for the Project.

The Project facilities are summarized in table 1, below.

Table 1. Description of Gulf Coast Southbound Project Facilities		
Compressor Station Facility	County	Description ^a
CS 300	Victoria	Abandon in place two existing 3,000 horsepower (hp) Ingersoll-Rand KVT reciprocating units. Install one 10,000 hp electric motor driven centrifugal compressor unit, one filter separator, and two gas coolers. Install a new compressor building, yard and station piping, and various valves, fittings, and other auxiliary facilities.
CS 301	Wharton	Install one 15,900 hp Solar Mars 100 Turbine/C65 gas compressor unit, two new gas coolers, and replace two existing filter separators. Extend an existing compressor building, and install yard and station piping, and various valves, fittings, and other auxiliary facilities including one lube oil cooler, a unit control panel, an air intake and exhaust system, a catalytic fuel heater, and various valves for pressure control.
CS 303	Angelina	Install one filter separator, one gas cooler, and additional motor control center units within an existing building. Install yard and station piping, and various valves and fittings.
CS 304	Harrison	Abandon in place nine existing reciprocating horsepower units totaling 30,850 hp. Install two new 23,470 Solar Titan 130 Turbine/C65 gas compressor units (total of 46,940 hp), three filter separators, one lube oil cooler, a unit control panel, air intake and exhaust systems, an emergency generator, a catalytic fuel heater, and seven gas coolers. Install a new compressor building, yard and station piping, and various valves, fittings, and other auxiliary facilities.
CS 394	Cass	Install one gas cooler, one filter separator, and additional motor control center units within an existing auxiliary building. Install yard and station piping, and various valves and fittings.
^a All station piping and auxiliary facilities would be constructed and operated within the existing fenced operational area of the corresponding compressor station without the need for new temporary or permanent workspace outside the fenced operational area. During construction and operation, the Project facilities would be accessed using existing facility paved and gravel driveways and public roads roads; no modifications to existing roads/driveways would be required.		

Figure 1 illustrates the general Project location; detailed maps and drawings of the Project are included in appendix A.

5. Construction and Operation Procedures

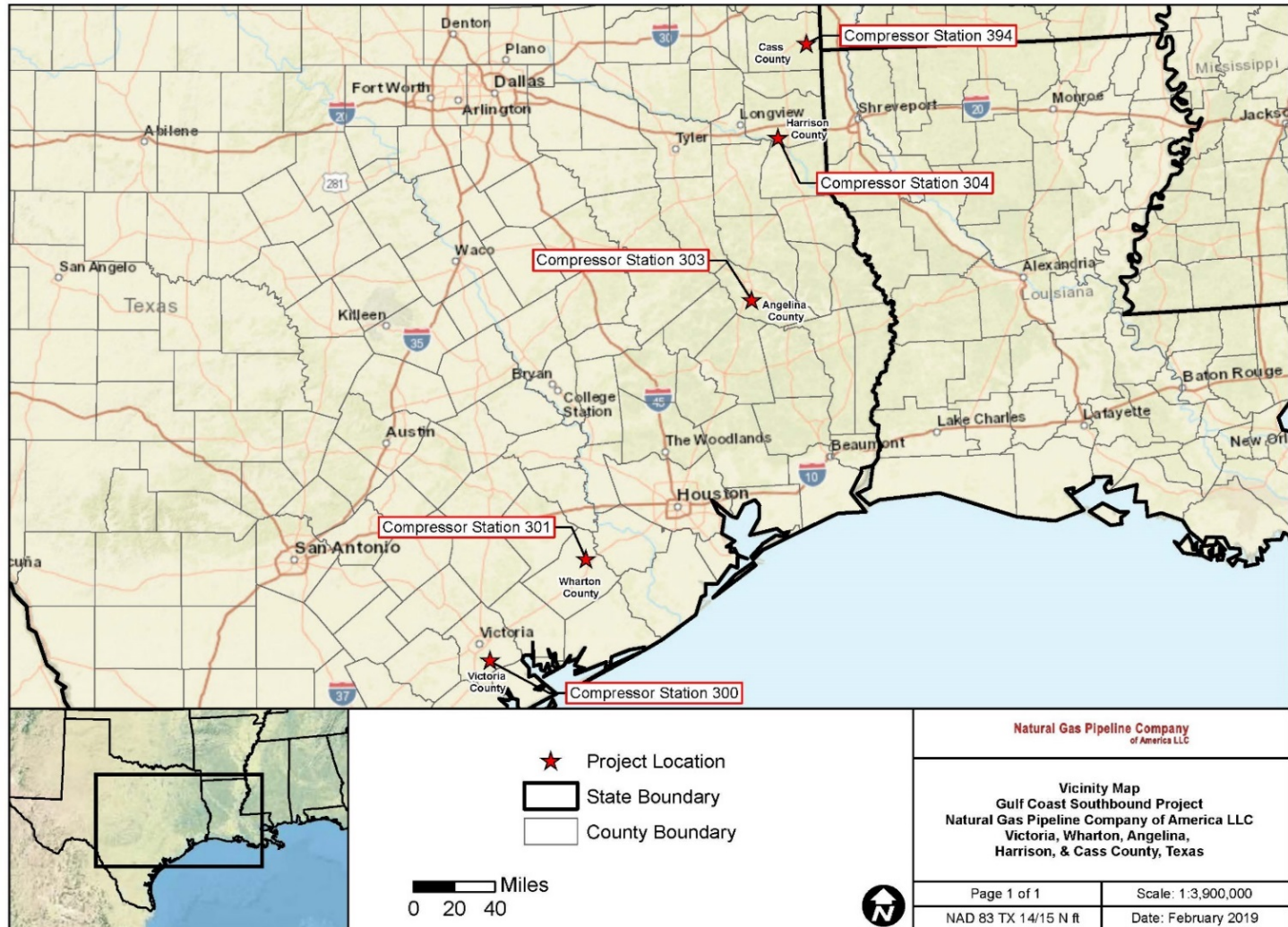
The Project would be constructed, tested, operated, and maintained according to all applicable federal, state, and local laws, regulations, and requirements. These laws and regulations include the Natural Gas Pipeline Safety Act of 1968, as amended, the U.S. Department of Transportation's (USDOT) *Transportation of Natural Gas or Other Gas by Pipeline, Minimum Federal Safety Standards* contained in 49 CFR 192, and the Commission's regulations at 18 CFR 380.15, *Siting and Maintenance Requirements*.

During construction and restoration of the Project, Natural would implement the measures contained in its Environmental Compliance Management Plan (ECMP), which includes the following:

- FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures);²
- Fugitive Dust Control Plan;
- Hydrostatic Testing Best Management Practices Plan;
- Spill Prevention and Response Procedures; and
- Plan for Unanticipated Discovery of Historic Properties or Human Remains During Construction.

² The FERC Plan and Procedures are a set of baseline construction and mitigation measures developed to minimize the potential environmental impacts of construction on upland areas, wetlands, and waterbodies. The Plan and Procedures can be viewed on the FERC website at: www.ferc.gov/industries/gas/enviro/plan.pdf and www.ferc.gov/industries/gas/enviro/procedures.pdf. Natural has not requested any modifications to the FERC Plan and Procedures.

Figure 1: Project Location Map



During the construction phase, Natural would assign an individual at each location to perform the duties of an environmental inspector (EI) to oversee and document environmental compliance and prepare inspection reports to be submitted to the FERC. The duties and responsibilities of the EI are contained in our recommended conditions 6-8 in section D of this EA. All Project-related construction personnel would be informed of the EI's authority and would receive job-appropriate environmental training prior to commencement of work on the Project. FERC staff may also conduct inspections of Project facilities during construction and restoration to determine compliance with any conditions attached to any Certificate that FERC may issue.

Natural states that the typical construction schedule would be limited to daylight hours only (typically 7:00 am to 7:00 pm), Monday through Saturday. Generally, work would not take place on Sundays or federal holidays. Some nighttime or Sunday work may be conducted inside of the existing or new buildings at the compressor stations (which would not require additional yard lighting). Hydrotesting-related activities and mainline tie-ins may need to be conducted on Sundays or during nighttime hours due to the ongoing nature of these activities. Should hydrotesting or other outside activities need to take place outside of daylight hours, Natural would implement the following measures:

- Natural would utilize a reduced set of construction equipment during nighttime hours from 7:00 pm to 7:00 am and on Sundays in an effort to limit nighttime noise to 48.6 decibels on the A-weighted scale (dBA) using a 24-hour equivalent sound level (L_{eq}). As long as the total sound power level of the nighttime equipment is less than 105 dBA at Compressor Station 300 (CS 300), 112 dBA at CS 301, and 121 dBA at CS 304, then the nighttime sound levels at all noise sensitive areas (NSAs) are predicted to be lower than 48.6 dBA L_{eq} .
- Natural would use the minimum amount of temporary nighttime lighting needed for safety and security during construction at the existing compressor stations. Any additional lighting determined to be needed to safely complete the nighttime activities would be down-shielded and minimized to the extent practicable, in accordance with a recommendation from the Texas Parks and Wildlife Department (TPWD) regarding nighttime lighting (letter dated December 20, 2018).

If Natural believes extended work hours or days beyond those described above are necessary, Natural would need to request a variance from FERC in accordance with the Commission's established variance procedures (see recommended condition 1 in section D of this EA).

All Project construction, staging, equipment and material storage, and parking would occur within the existing compressor station sites. As needed for construction, Natural would obtain clean gravel and fill material from local commercial sources.

Construction and general debris, and other wastes generated during construction would be disposed of at existing licensed commercial disposal facilities.

Natural would incorporate the Project facilities into its ongoing comprehensive operations and maintenance program for its pipeline system, in accordance with applicable regulatory requirements and Natural's operations and maintenance requirements. In accordance with 49 CFR 192, the compressor stations would be inspected for leaks as part of scheduled operations and maintenance. Natural's personnel would perform routine checks of the Project facilities, including calibration of equipment and instrumentation, inspection of critical components, and scheduled and routine maintenance of equipment and grounds. Operational testing would be performed on safety equipment to ensure proper function, and corrective actions would be taken as necessary. Natural does not anticipate the need for additional permanent staff for operation/maintenance of the new Project facilities, and no new operations offices or district offices would be required for operation of the Project facilities.

5.1 General Construction Procedures

Prior to the start of construction, Natural would conduct a kick-off meeting to coordinate lines of communication and scheduling. All construction personnel would receive safety and environmental training prior to mobilizing to construction sites. Prior to beginning any construction-related activities, survey crews would stake the limits of the construction work areas within the existing compressor station yards. Existing utility lines (e.g., cables, conduits, and pipelines) would be located and marked with flags, stakes, or other devices to prevent accidental damage during construction. Sensitive resources, such as the wetland boundaries within the CS 303 yard, would also be located and marked. Approved access routes would be clearly delineated using conspicuous temporary signage.

Following the establishment of the limits of work, the Project workspace would be cleared of vegetation³ and debris. The construction work area associated with the below ground station and yard piping would be graded, where necessary, to create a level workspace to allow equipment to operate safely. Natural would then level and compact the soils for the construction of building foundations. Silt fence or other erosion control devices would be installed where necessary to minimize soil erosion and stormwater runoff from disturbed areas in accordance with the Project ECMP. High strength concrete would be utilized for building foundations associated with major compressor equipment. Foundation depths could range from 8 feet to 20 feet.

Once the concrete foundation has been completed, installation of the buildings and machinery for the compressor station would begin. Compression equipment would be manufactured off-site and shipped to the site by truck; the compressor equipment would

³ Vegetation within the limits of the compressor stations is currently maintained by periodic mowing.

then be offloaded and positioned on the foundation, leveled, grouted, and secured. Modularized, skid-mounted buildings would house supporting utilities.

Where piping is to be installed, the pipe would be buried below the ground surface to a depth that meets or exceeds the USDOT standards set forth in 49 CFR Subpart G - *General Construction Requirements for Transmission Lines and Mains* §192.327 - *Cover*. The pipe trench would be excavated to a sufficient depth to allow a minimum of 36 inches of cover between the top of the pipe and the final land surface after backfilling. Fabricated sections of assembled pipe would be lowered into the trench by side-boom tractors or other equipment. Tie-in welding and pipe coating would take place within the trench to join the newly lowered-in section with the previously installed sections of pipe. After the pipe is lowered into the trench, the trench would be backfilled. Any excess excavated materials or materials unsuitable for backfill would be spread evenly over the construction work area or transported off-site for proper disposal.

Natural would abandon the compressor units at CS 300 and CS 304 by removing portions of the existing headers and manifold piping to isolate the existing units from the compression process with blind flanges and weld caps, as required. Exposed piping foundations would be demolished to a minimum of 1 foot below grade. Auxiliary utility piping would also be isolated as required. At CS 304 Natural would also remove existing mainline filter separators and portions of the associated suction and discharge piping and valving. Piping would be replaced in the mainlines at locations where filter separators tie-in to the mainlines.

Natural does not anticipate the need for blasting for the Project. In the event that shallow bedrock is encountered during construction, the technique used for bedrock removal would depend on factors such as strength and hardness of the rock. Should Natural determine that blasting is required, it would submit a *Blasting Plan* to the Commission for review and approval prior to the commencement of any blasting activities.

Once construction is complete, all disturbed areas not covered with gravel or asphalt would be graded, restored, and reseeded with the typical seed mixes used for maintenance and revegetation at the existing facilities.

Before start up, Natural would inspect and test all compressor station controls and safety equipment and systems, including emergency shutdown, relief valves, gas and fire detection, and vibration.

5.2 Project Restoration

Following construction, all disturbed areas within the permanent footprint not covered with gravel or asphalt would be graded and restored to pre-construction contours as closely as practicable, and topsoil redistributed in accordance with Natural's ECMP. Construction debris and organic refuse unsuitable for distribution over the construction

work area would be disposed of at appropriate facilities. Permanent erosion and sediment control measures would be installed as appropriate, and revegetation measures outlined in Natural's ECMP would be implemented.

5.3 Hydrostatic Testing

The below ground station and yard piping would be cleaned and hydrostatically tested to ensure that the facilities are free from leaks and are capable of operating at the design pressure. Upon filling the pipe, water would be pressurized and held in accordance with USDOT safety standards in 49 CFR 192. Any loss of pressure or leaks would be repaired and the segments retested. Upon completion of the testing, the water would be discharged in well-vegetated upland areas or transported off-site for disposal in accordance with applicable federal and state regulations (see EA section B.3.4).

6. Operation and Maintenance

All Project facilities would be operated, inspected, and maintained together with Natural's existing facilities in compliance with USDOT regulations specified in 49 CFR 192, as well as applicable conditions of any Certificate that may be issued for the Project, and all other applicable federal, state, and local laws and regulations. Natural would incorporate the Project facilities into its ongoing operations and maintenance program for its pipeline system. Natural's personnel would perform routine checks of the Project facilities, including calibration of equipment and instrumentation, inspection of critical components, and maintenance of equipment and grounds. Operational testing would be performed on safety equipment to ensure proper function and corrective actions taken as necessary if issues are identified.

7. Construction Schedule

Natural anticipates beginning the contractor mobilization by April 2020 in order to have the new and modified facilities in service by March 1, 2021. Construction of the Project would occur in phases, from initial site staking, to facility construction, to testing and restoration. Construction activities would generally take place during daylight hours (7:00 am to 7:00 pm), six days per week. A peak workforce of 70 to 80 workers would be required at each of CS 300, 301, and 304, while work at CS 303 and 394 would require about 45-50 workers at each location. The work would take approximately 12 months to complete.

8. Land Requirements

The Project would disturb a total of about 147.2 acres of land during construction. The majority of the Project impacts (about 145.3 acres) would be within the existing compressor station fenced operational area. Approximately 1.9 acres of existing facility access driveways would be used to enter and exit the construction work areas. A total of 1.1 acres of permanent impact would result from the installation of the aboveground

facilities or impervious surfaces within existing compressor stations fenced operational areas. For details, see section B.5, below.

9. Non-Jurisdictional Facilities

Under Section 7 of the NGA, the Commission is required to consider, as part of its decision to authorize jurisdictional facilities, all factors bearing on the public convenience and necessity. The primary jurisdictional facilities for the Project are the modifications within the five compressor stations.

Occasionally, proposed projects have associated facilities that do not come under the jurisdiction of the Commission. These non-jurisdictional facilities may be integral to the need for the proposed facilities (e.g., a gas-fueled power plant at the end of a jurisdictional pipeline) or they may be minor, non-integral components of the jurisdictional facilities that would be constructed and operated as a result of the proposed facilities.

Non-jurisdictional facilities necessary to operate the Project would consist of the addition of a new power line at CS 300 to accommodate the increase in electrical power requirements to the additional electric-driven compressor unit. Natural anticipates that an approximately 1,000-foot-long power line would be extended to the site from an existing electrical substation located on the opposite side of Farm to Market (FM) Road 1686, approximately 420 feet east of CS 300. The local utility provider, AEP Texas, Inc. would be responsible for installing the new power line, including erecting new poles adjacent to the existing overhead power line along the FM 1686 road easement, and entering CS 300 on an existing power pole. Within the compressor station the new power line would continue from the power pole via below ground conduit parallel to existing buried power lines to terminate at the new motor control center building. There would be minor ground disturbance associated with the installation of each power pole and the below ground power line (installed within temporary workspace proposed for CS 300).

The power line would be installed pursuant to state and local jurisdiction, and it is anticipated that AEP Texas, Inc. would obtain all necessary federal permits and approvals prior to construction of the electrical facilities.

10. Public Review and Comment

On April 9, 2019, the Commission issued a *Notice of Intent to Prepare an Environmental Assessment for the Proposed Gulf Coast Southbound Project and Request for Comments on Environmental Issues* (NOI). The NOI was sent to affected landowners; federal, state, and local government agencies; elected officials; environmental and public interest groups; Native American tribes; other interested parties; and local libraries and newspapers.

In response to the NOI, the Commission received comments from the TPWD, the Quapaw Nation, and the Choctaw Nation of Oklahoma. The TWPD letter identifies species that may be present in the area, cites the *TWPD Guidelines for Protection of State-Listed Species*, and provides recommendations on best management practices including: measures to exclude wildlife from construction areas; reducing night-time lighting to reduce effects on migrating birds; and minimizing vegetation clearing and using native vegetation in restoration. The TWPD also identified measures for the protection of bird species under the Migratory Bird Treaty Act. Natural has agreed to adopt many of these recommendations, as addressed in section B.4 of this EA. The Quapaw Nation and the Choctaw Nation of Oklahoma indicated that the Project is outside their areas of interest and that they had no comments.

11. Permits

A number of federal, state, and local regulatory agencies have permits, approvals, or consultations associated with the Project. Table 2 provides a list of permits and consultations; the applicable local, state, and federal agencies; as well as any responses received to date. Natural would be responsible for obtaining all permits and approvals required for construction and operation of the Project, regardless of whether they appear in the table.

Table 2. List of Permits and Approvals		
Permit or Approval ^a	Agency	Submittal/Receipt
Certificate of Public Convenience and Necessity	Federal Energy Regulatory Commission	Certificate application filed on February 28, 2019. Certificate order requested by March 1, 2020.
Endangered Species Act, Section 7 Consultation and Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act	U.S. Fish and Wildlife Service (USFWS)– Arlington Ecological Field Office	CS 303, CS 304, and CS 394 request for concurrence submitted by Natural on November 30, 2018. Response received December 6, 2018.
	USFWS – Texas Coastal Ecological Field Office	CS 300 and CS 301 Request for concurrence submitted by Natural on November 30, 2018. Response received February 1, 2019.
Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act	USFWS – Southwest Regional Office (Region 2)	Request for coordination submitted by Natural on January 28, 2019. Response received May 16, 2019.
Hydrostatic Test Water Discharge permit	Texas Railroad Commission	Natural anticipates submittals in 2nd Quarter 2020
Air Permit-by-Rule	Texas Commission on Environmental Quality	CS 301 Application submitted by Natural on February 28, 2019. Registration issued April 4, 2019.
Air Permit-by-Rule		CS 304 Application submitted by Natural on February 28, 2019. Registration issued April 3, 2019.
State Threatened and Endangered Species Consultation	Texas Parks and Wildlife Department	Request for coordination submitted by Natural on November 30, 2018 Recommendations provided in a letter dated December 20, 2018, submitted to Docket No. CP19-99 on April 1, 2019.
National Historic Preservation Act Section 106 Consultation	Texas Historical Commission – State Historic Preservation Office	Request for coordination submitted by Natural on November 30, 2018. Texas Historical Commission issued “No historic properties present or affected” determinations on December 13, 2018 and March 21, 2019.
^a Unless otherwise noted, permit/clearance/approval listed is applicable for the entire Project.		

B. ENVIRONMENTAL ANALYSIS

The following sections discuss the Project's potential direct and indirect impacts on environmental resources. When considering environmental consequences, the duration and significance of any impacts may be temporary, short-term, long-term, or permanent. Temporary impacts generally occur during construction, with the resources returning to pre-construction conditions almost immediately. Short-term impacts could continue for up to 3 years following construction. Long-term impacts would require more than 3 years to recover, but eventually would recover to pre-construction conditions. Permanent impacts occur when activities modify resources to the extent that they would not return to pre-construction conditions during the life of the Project, such as with the construction of an aboveground facility. An impact would be considered significant if it would result in a substantial adverse change in the physical environment.

1. Geology

1.1 Geologic Conditions

Project facilities would be constructed within the boundaries of existing compressor stations on shallow foundations, and blasting is not anticipated. The Project therefore would have no effect on local geologic conditions.

1.2 Mineral and Non-Mineral Resources

No mineral or non-mineral resources, active or inactive mines, sand/gravel pits, or quarries were identified within 0.5 mile of the Project area (U.S. Geological Survey [USGS] 2018b, 2018c, 2016, 2003). Fourteen oil and gas extraction wells were identified within 0.25 mile of the Project at CS 300, CS 301, and CS 304; however, none are within Project construction workspaces. No oil or gas wells are within 0.25 mile of CS 303 or CS 394 (Railroad Commission of Texas, 2018). In addition, there are no underground natural gas storage reservoirs located within 1 mile of the Project area (EIA, 2016).

Project facilities would be constructed within the boundaries of existing compressor stations on shallow foundations. Construction and operation of the compressor stations is not expected to impact mineral or non-mineral resources.

1.3 Geologic Hazards

Geologic hazards are natural physical conditions that can, when present, result in damage to land and structures or injury to people. Potential geologic hazards in the general Project area were determined through database searches and literature and topographic map reviews, and include seismicity (earthquakes and faults), slope stability and landslides, subsidence, flooding/scour, soil liquefaction, and volcanism. The proposed Project sites are not characterized by volcanic or karst conditions, or susceptible

to landslides; thus, the Project would not be affected by such hazards. Seismic hazards and flooding are discussed below.

Seismic Hazards

Seismic hazards include earthquakes, ground faulting, and secondary effects such as soil liquefaction. Based on historical seismic activity within Victoria, Wharton, Angelina, Harrison, and Cass counties, the Project is situated in an area of low to moderate seismic probability (USGS, 2014). The USGS estimates that the 500-year earthquake (an earthquake with a 10 percent probability of occurring within any 50-year interval) would result in peak ground accelerations between less than 1 and 4 percent gravity. Peak ground accelerations between 1.4 and 3.9 percent gravity are generally characterized by light shaking and no damage to structures (Wang, 2010).

No significant or non-significant earthquakes have been recorded within Victoria, Wharton, Angelina, Harrison, or Cass counties since recordkeeping began, and the closest significant earthquake to the Project area was 33.2 miles south of CS 304 in Shelby County, Texas. This earthquake occurred on May 17, 2012, had a magnitude of 4.8 (Richter scale), and caused minor damage (USGS, 2018d, 2018e). The closest non-significant earthquake to the Project occurred on June 9, 1981, approximately 18.2 miles south of CS 304 in Panola County, Texas, and had a magnitude of 3.0 (USGS, 2018f).

No faults are within the Project area (USGS, 2018a). The nearest mapped fault is approximately 12.6 miles southwest of CS 394. While this fault occurs in Cass County, the mapped faults located in the Project vicinity have not been linked to a specific seismic event. Further, the USGS does not classify any of the mapped faults located in Victoria, Wharton, Angelina, Harrison, or Cass counties as active (i.e., displacement has not occurred along the fault within the last 10,000 years) (USGS, 2018h). In addition, the low probability of a significant seismic event happening in the Project area makes the occurrence of soil liquefaction unlikely. As such, we do not anticipate seismic-related impacts on the Project.

Flooding

A floodplain is the relatively level land area along a stream or river that is subject to periodic flooding. An area subject to a 1 percent chance of flooding in any given year is normally classified as the 100-year floodplain, while an area subject to a 0.2 percent chance of flooding in any given year is classified as the 500-year floodplain (Federal Emergency Management Agency [FEMA], 2018).

Executive Order 11988 on Floodplain Management directs federal agencies to demonstrate a comprehensive approach to floodplain management. The executive order establishes avoidance of actions on the base of the floodplain, or the 100-year floodplain, as the preferred method for meeting these requirements.

According to FEMA, the Project facilities are located in areas of minimal flood hazard (X Zone [unshaded]) (FEMA, 2018b). X zones (unshaded) are determined to be outside the 500-year flood limit and/or protected by levee from a 100-year flood (FEMA, 2018a). Therefore, the Project facilities would not affect floodplains.

1.4 Paleontology

No known fossil locations were identified within the Project area based on a review of known paleontological sites. The likelihood of encountering and disturbing paleontological resources such as vertebrate fossils or scientifically significant invertebrate or plant fossils during Project construction is considered to be low due to the fact that the areas where construction would take place have been previously disturbed. Thus, we conclude that significant paleontological resources are unlikely to be affected by construction or operation of the Project.

2. Soils

Construction activities such as grading, excavation, backfilling, and heavy equipment traffic could result in adverse impacts on soil resources. Grading and equipment traffic could compact soil, reducing porosity and percolation rates, which could result in increased runoff potential. Soil contamination from equipment spills and/or leakage of fuels, lubricants, and coolants could also impact soils.

To minimize or avoid impacts on soils during construction and operation of the Project, Natural would implement soil mitigation procedures outlined in the Project ECMP. In addition, Natural would implement its Project-specific *Spill Prevention and Response Procedures, Plan for Unanticipated Discovery of Contaminated Soils or Groundwater*, and other Project-specific plans.

A total of 115.1 acres (78 percent) of the soils impacted by the Project are considered prime farmland (or prime farmland if drained); however, these soils are entirely associated with the Natural's existing compressor station facilities, which have already been converted to developed land and are not being used for agricultural purposes. Therefore, no prime farmland soils would be removed from agricultural production as a result of Project activities. No soils within the Project area are designated as unique farmlands by the Natural Resources Conservation Service (NRCS, 2018a). In addition, there are no areas enrolled in the NRCS Conservation Reserve Program or Conservation Reserve Enhancement Program easement (D. Sullivan, 2018; Six, 2019).

A review of the U.S. Environmental Protection Agency's (EPA) and Texas Commission on Environmental Quality's (TCEQ) online databases of recent or historic sources of contamination, such as spills, landfills, and leaking storage tanks identified two potentially contaminated sites within 0.5 mile of the Project (EPA, 2018a, 2018b; TCEQ, 2018, 2018b). Both sites are named the Angelina County Landfill, the first of which is 0.17 mile east of CS 303 and the second is 0.22 mile northeast of CS 303

(TCEQ, 2018c). The Project is not anticipated to impact or be impacted by potential sources of soil contamination associated with these sites, as all work at CS 303 would involve shallow excavations within the existing fenced operational area. No other potential sources of soil contamination were identified within 0.5 mile of the Project.

In the event of a spill during construction, Natural would implement the Project ECMP, which includes a Project-specific Spill Prevention and Response Procedure (SPRP) that specifies cleanup, disposal, and reporting responses in the event of soil contamination from spills or leaks of fuel, lubricants, coolants, or solvents.

Given that Project activities would take place within existing, developed compressor station sites and with Natural's use of the impact minimization and mitigation measures in the ECMP and the FERC Plan, we conclude that soils would not be significantly affected by Project construction and operation.

3. Water Resources and Wetlands

3.1 Groundwater Resources

Aquifers

The Project area is underlain by two principal aquifers, the Texas Coastal Uplands aquifer system (CS 303, CS 304, and CS 394) and the Coastal Lowlands aquifer system (CS 300 and CS 301) (USGS, 2018i). In addition, CS 303 and CS 394 are underlain by a minor aquifer designated as the Queen City aquifer (Texas Water Development Board, 2018a, 2018b). The Texas Coastal Uplands aquifer system consists of unconsolidated deposits consists of sand, silt, and clay deposits that span from the Texas-Arkansas and Texas-Louisiana borders south to the Mexican border (Jones, 2008). Groundwater from the Texas Coastal Uplands aquifer system is primarily used for irrigation, municipal, and industrial needs. The average depth to the water table across this aquifer in Texas is approximately 40 to 600 feet, while the average depth to the water table near the Project facilities is approximately 200 to 600 feet (Texas Water Development Board, 2018c; Water Data for Texas, 2019).

The Coastal Lowlands aquifer system is comprised of sand, silt, and clay deposits and is recharged primarily through precipitation and infiltration, yielding large amounts of water for public, agricultural, and industrial needs. The average depth to the water table across this aquifer in Texas ranges from 10 to 200 feet, while the average depth to the water table near the Project facilities is approximately 25 to 50 feet (Texas Water Development Board, 2018c; Water Data for Texas, 2019).

Under Section 1424(e) of the Safe Drinking Water Act, the EPA defines a sole or principal source aquifer as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer, and for which there are no other reasonably available alternative drinking water source(s) that could physically, legally, and

economically supply all those who depend on the aquifer for drinking water should the aquifer become contaminated. None of the Project facilities are underlain by sole-source aquifers (EPA, 2018a).

Private Water Wells and Springs

Public and private water supply wells in the vicinity of the Project were identified by Natural through field surveys and review of publicly available data (Texas Water Development Board, 2018c). Seven private water wells were identified within 200 feet of the Project area including two at CS 300, two at CS 301, two at CS 304, and one at CS 394. All seven of these wells are operated by Natural and used for compressor station operations. No known additional public or private water wells are within 200 feet of the Project area. There are no known springs within 1 mile of the Project area (USGS, 2018i, 2018j). Likewise, there are no wellhead protection areas in the Project area (TCEQ, 2018a).

Groundwater Contamination

No leaking underground storage tanks or other sites of known groundwater contamination are within 0.5 mile of the Project area (TCEQ, 2018b). The Project is not anticipated to impact or be impacted by potential contamination associated with the Angelina County Landfill sites (discussed in section B.2, above), as all construction activities would consist of shallow excavations within the fenced operational area of existing CS 303. If contaminated groundwater is encountered during construction of the Project, Natural would implement measures outlined in the Project-specific SPRP.

3.2 Surface Water

The Project facilities are located in five USGS Hydrologic Unit Code [HUC] 12 subwatersheds: the Hurricane Creek-Black Bayou (HUC 111403040202), Gandia Branch-Sabine River (HUC 120100020706), One Eye Creek-Biloxi Creek (HUC 120200020502), Bear Creek-Neches River (HUC 120200020308), Sandy Branch-West Bernard Creek (HUC 120904010204), and Black Bayou-Green Lake (HUC 121004030100).

Natural conducted a survey of surface waterbodies in the Project areas in October 2018. Two ephemeral streams are on the CS 303 parcel, and one manmade upland drainage for stormwater conveyance (i.e., a ditch) is at CS 394.

The Project would not directly impact the three identified waterbodies. Natural would cross the two ephemeral streams at CS 303 via existing roads and culverts, which would not be improved or modified. Natural has designed the construction workspace at CS 394 to avoid the manmade drainage.

The Project would not cross or otherwise impact any waterbodies considered or designated as sensitive (National Wild and Scenic Rivers System, 2019; EPA, 2018c; National Park Service, 2011; TPWD, 2019). Additionally, the Project would not cross or otherwise impact any waterbodies that are listed as Section 303(d) impaired waters (EPA, 2018b; TCEQ, 2018d). No sources of contamination were identified in the Project vicinity (EPA, 2018c, 2018d; TCEQ, 2018c). There are no surface water intakes for public water systems within 3 miles of the Project areas (TCEQ, 2019).

During construction, clearing vegetation cover and grading could increase erosion. Compaction of soils by heavy equipment near the ephemeral streams and manmade drainage at the compressor stations may accelerate erosion and the transportation of sediment carried by stormwater runoff into these features. To minimize erosion, Natural would implement the Project ECMP, which includes the FERC Plan and Procedures and the Project SPRP. Natural would use standard measures to protect water resources, including:

- installing erosion and sediment controls immediately following initial soil disturbance where required;
- inspecting and maintaining erosion and sediment controls throughout the duration of construction and restoration;
- repairing or replacing erosion and sediment controls within 24 hours of identifying deficiencies; and
- restoring temporary disturbance areas to pre-construction contours and drainage patterns.

During construction, rainwater may accumulate in open trenches associated with the station piping or foundations. Natural would remove the accumulated water using a pump, and discharge the water through energy dissipation devices (e.g., hay bale structures and/or filter bags) into vegetated upland areas.

The Project's ECMP and SPRP contain measures to prevent and, if necessary, control any inadvertent spill of hazardous materials such as fuels, lubricants, or solvents that could affect water quality, as well as identifies specific actions, including emergency notification procedures to be taken should any spills occur. Fuel and other hazardous materials would not be stored within 100 feet of waterbodies or wetlands. No equipment would be parked and/or refueled within 100 feet of waterbodies or wetlands.

Once construction is completed, Natural would restore disturbed construction work areas to match pre-construction contours and drainage patterns. Temporary work areas would be seeded in accordance with county requirements and the Plan. Temporary erosion controls would remain in place until sufficient vegetation re-establishes on the Project sites. As a result, we conclude that impacts on surface waters would be short-term and not significant.

3.3 Wetlands

Natural conducted wetland delineations in October 2018 for all Project areas, in accordance the U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (USACE, 1987) and Regional Supplement to the USACE's Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0) (USACE, 2010). Prior to the field surveys, Natural accessed the U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory to determine if wetlands may be present within the Project sites.

During the October 2018 survey, no wetlands were identified within CS 300, CS 301, CS 304, or CS 394. Accordingly, no impacts on wetlands would result from construction and operation of the Project at these locations.

Two palustrine emergent wetlands were identified within the CS 303 parcel. The construction workspace at CS 303, however, has been configured to avoid the two wetlands. Natural would implement its Project ECMP and SPRP to minimize impacts on the nearby wetlands during construction and restoration of the Project. As a result, we conclude that any impacts on wetlands would be short-term and not significant.

3.4 Hydrostatic Testing

In accordance with USDOT regulations, Natural would conduct hydrostatic testing for all new compressor station piping prior to placing the facilities into service, to ensure all new pipe is capable of operating at the design pressure. Hydrostatic test water for the proposed facilities would be obtained from a municipal source and trucked to the Project sites for storage in temporary mobile tanks until use. Natural would use approximately 100,000 gallons of water for hydrostatic testing at each of the three compressor station involving additional compression (CS 300, CS301, and CS 304), and approximately 50,000 gallons of water each at CS 303 and CS 394. Hydrostatic test water would only be in contact with new steel pipe; Natural would not add any chemical additives to the hydrostatic test water.

Upon completion of the hydrostatic test, water would be discharged into a holding tank and hauled off-site to an authorized disposal site, or discharged into an upland area in accordance the Project ECMP and with hydrostatic test water discharge permits issued by the Railroad Commission of Texas. The test water would be discharged using energy dissipation devices to reduce the velocity of the discharged water, thereby reducing the potential for erosion where the water is discharged. Impacts from the discharge of test water would be minimized by following the requirements specified in the state hydrostatic test water discharge permits. Impacts from the discharge of hydrostatic test water would be short-term and not significant.

In addition to the water required for hydrostatic testing, Natural would utilize a maximum of 5,000 gallons of water per day at each compressor station facility (a total of approximately 25,000 gallons of water per day) to control fugitive dust emissions during

construction, as necessary. All water utilized for dust control would be acquired from a municipal water source.

4. Vegetation and Wildlife and Special Status Species

4.1 Vegetation

The Project is within two ecoregions -- the Southeastern Mixed Forest Province Ecoregion and the Prairie Parkland (Subtropical) Province Ecoregion (U.S. Department of Agriculture [USDA], 2018a). The area of Southeastern Mixed Forest Province Ecoregion, where CS 303, CS 304, and CS 394 are located, is characterized by oak-hickory pine forest, southern mixed forest, and southern floodplain forest. Dominant vegetation species found in the area include loblolly pine, longleaf pine, post oak, white oak, blackjack oak, southern red, red maple, green ash, Nuttall oak, sweetgum, and swamp hickory (USDA, 2018b).

The area of the Prairie Parkland (Subtropical) Province Ecoregion, where CS 300 and CS 301 are located, is characterized by bluestem-sacahuista prairie and southern cordgrass prairie. The predominant vegetation is tall grassland consisting mainly of bunchgrass with little occurrence of bluestem, indiagrass, switchgrass, and big bluestem. Live oak are present occasionally and poorly drained areas along the coast support freshwater and saltwater marsh vegetation of sedges, rushes, saltgrass, and cordgrass (USDA, 2018c).

Land impacted by the Project is almost all developed industrial land associated with the existing compressor stations facilities and associated infrastructure. Vegetation observed on the compressor station sites during the October 2018 survey include routinely mowed bermudagrass and bahia grass, loblolly pine, winged elm, post oak, muscadine grape, shortleaf pine, beaked panic grass, Cherokee sedge, narrow-leaf carpet, Vasey's grass, yellow bluestem, and southern crab grass.

Construction of the Project would temporarily impact approximately 145 acres of developed industrial land with maintained vegetation. No tree clearing would occur during construction. Operations of the stations would result in a permanent conversion of approximately 1.1 acres of maintained vegetation to graded, graveled, or asphalt areas for compressor station operations.

Following construction, areas cleared or otherwise disturbed and not needed for operation of the compressor station would be graded, restored, and reseeded in accordance with the Project ECMP. Typical reseeding mixes may contain species such as bermudagrass, winter rye, bahia grass, and little bluestem (species currently present at the compressor station sites). Due to the existing disturbed nature of the sites, impacts on vegetation from construction and operation of the modification to the compressor facilities are not expected to be significant.

To minimize the spread of non-native and invasive plant species during and following construction, Natural would implement several management strategies, including:

- ensuring all construction equipment is cleaned prior to beginning work on the Project;
- requiring the construction contractor to use weed-free straw or hay bales for sediment barrier installations and/or mulch;
- controlling non-native or invasive species within the footprint of permanent facilities and access roads, using mechanical removal, as necessary;
- following the FERC Plan to ensure that soil movement and the associated movement of non-native seeds are minimized;
- using techniques that minimize the time bare soil is exposed and thus minimize the opportunity for invasive species to become established; and
- monitoring the disturbed sites following construction to ensure that revegetation with suitable plant species has been successful and that invasive or non-native species have not become established.

We expect that Natural's adherence to the above non-native invasive species strategies, its ECMP, and the FERC Plan, would minimize adverse impacts from the spread of noxious weeds.

4.2 Wildlife

Wildlife species common to the area of the Southeastern Mixed Forest Province Ecoregion include white-tailed deer, bobcat, gray fox, raccoon, striped skunk, cottontail and swamp rabbit, gray and fox squirrel and smaller rodents, ibises, cormorants, herons, egrets, kingfishers, red-eyed vireo, northern cardinal, tufted titmouse, wood thrush, summer tanager, blue-gray gnatcatcher, hooded warbler, Carolina wren, box turtle, and common garter snake (USDA, 2018b).

Wildlife species common to the area of the Prairie Parkland (Subtropical) Province include coyote, collared peccary, swamp rabbit, fulvous harvest mouse, northern pygmy mouse, nutria, white-faced egret, white-fronted goose, olivaceous cormorant, bronzed cowbird, American alligator, Gulf coast salt marsh snake, Mediterranean gecko, keeled earless lizard, Texas blind snake, Gulf coast toad, and diamondback terrapin (USDA, 2018c).

We do not expect the presence of larger wildlife species within the existing fenced compressor station yards. Most wildlife occurrences would be birds, reptiles, and smaller

mammals, as well as various invertebrate species. Construction and operation of the Project would primarily result in short-term impacts on these species via the temporary displacement of wildlife from construction areas and adjacent habitats as a result of construction activities, dust, and noise. We expect that the more mobile species would temporarily relocate to adjacent available habitat during construction activities. Construction could also result in the mortality of less mobile animals such as rodents, reptiles, and invertebrates, which may be unable to escape the immediate construction area.

Natural would implement measures to minimize the potential for impacts on wildlife in adjacent areas from lighting if nighttime construction activities occur at CS 300, CS 301, and CS 304. Natural would use the minimum amount of temporary nighttime lighting needed for safety and security during construction at the existing compressor stations. Any additional lighting would be down-shielded and minimized to the extent practicable, as recommended by the TPWD (2018). Impacts on wildlife from lighting is not expected to be significant due to the localization of Project lighting effects and implementation of the recommendation from TPWD.

Year-round suitable habitat for the American kestrel and red-headed woodpecker (birds protected under the Migratory Bird Treaty Act) occurs in the vicinity of the Project. Suitable habitat (i.e., large bodies of water close by) for bald eagles is not present in the Project area. Migratory bird habitat would not be impacted, as no trees would be removed during construction. However, noise during construction as well as operation of the new compressor units (CS 300, CS 301, and CS 304) may result in migratory birds moving to adjacent habitat. Natural would implement measures to limit noise exposure during both construction and operation of the Project, further discussed in section B.9, below. Natural would also implement a measure recommended by the TPWD to minimize impacts on ground-nesting migratory birds by conducting nest surveys prior to construction during the nesting season (March 15 to September 15). Since no trees would be removed and Natural has committed to implementing the TPWD's recommendations, we conclude that the Project's impacts on migratory birds would not be not significant.

To further minimize impacts on wildlife during construction, Natural would implement recommendations from the TPWD including having all project personnel participate in environmental training and outlining the appropriate steps to take in the event wildlife is encountered during construction or identified in Project workspaces prior to commencement of construction activities each day. Environmental awareness training would also include instruction for contacting the appropriate personnel to safely remove or relocate the wildlife in the immediate Project vicinity.

4.3 Aquatic Resources

As discussed in section 3.2, above, three ephemeral and/or manmade drainages are in the Project area; however, they would not be affected by construction or operation of the Project. None support year-round fisheries. Natural would cross the two ephemeral streams at CS 303 via existing roads and culverts, which would not be improved or modified. Natural has designed the construction workspace at CS 394 to avoid the manmade drainage.

No direct impacts on fisheries associated with construction and operation of the Project facilities are anticipated. However, temporary, short-term, and indirect impacts on fisheries associated with construction activities may be caused downstream due increased sedimentation and turbidity or the introduction of water pollutants from accidental spills or leaks associated with fuel storage, equipment refueling, and equipment maintenance. The protective measures discussed above (section 3.2) would ensure that impacts on aquatic resources would be short-term and not significant.

4.4 Special Status Species

Special status species are those species for which state or federal agencies provide an additional level of protection by law, regulation, or policy, such as those protected under the Endangered Species Act and those that are state-listed as threatened, endangered, or otherwise considered sensitive.

Natural utilized the USFWS' Information for Planning and Consultation System and the TPWD species-by-county list to determine whether any federally or state-listed threatened or endangered species, species of concern, or designated critical habitats occur in the Project area. Ten federally listed species have the potential to occur within the general Project vicinity. These include the Attwater's greater prairie-chicken, interior least tern, piping plover, red-cockaded woodpecker, red knot, whooping crane, Louisiana pine snake, golden orb, geocarpion, and Neches River rose-mallow.

Natural conducted surveys of the Project areas in October 2018 to identify federally and state listed species and potential suitable habitat. No suitable habitat was found at the Project sites for the above-referenced species. We have reviewed Natural's survey information and species information from the USFWS, and concluded that construction and operation of the Project would have *no effect* on any federally listed species or their habitats. As such, section 7 consultation is complete.

State-Listed Species

On November 30, 2018, Natural submitted an informal coordination letter to the TPWD, including a Project description and map, and requested the TPWD's review of Natural's assessment of impacts on state-listed threatened or endangered species that may be directly or indirectly impacted by the Project. On December 20, 2018, the TPWD

issued a response with information, comments, and recommendations to minimize impacts on state fish and wildlife resources.

While Natural's October 2018 survey did not find suitable habitat for protected species, the TPWD indicated that there is potential for the state-threatened swallow-tailed kite, white-tailed hawk, wood stork, northern scarlet snake, and timber rattlesnake to occur as transient individuals within the Project areas due to suitable habitat being present nearby. The TPWD also noted that suitable habitat for the wood stork could be present within the emergent wetlands at CS 303. Natural would avoid these wetlands, and we do not anticipate impacts on the wood stork, as it is unlikely that wood storks would utilize an active industrial facility rather than higher quality habitat in the surrounding area.

As no tree clearing would occur, potential impacts on tree-nesting birds such as the swallow-tailed kite, white-tailed hawk, and wood stork would be avoided. Natural would also implement measures outlined in the Project ECMP, as well as certain recommendations provided by the TPWD, to minimize potential effects on the five identified state-listed species (and protected wildlife in general), including:

- Natural would minimize impacts on ground-nesting birds by conducting nest surveys prior to construction if construction occurs during the primary nesting season of March 15 to September 15.
- Where necessary, temporary nighttime lighting would be used minimally during construction and consist of down-shielded lights.
- Natural would require all Project personnel to attend environmental training, to include training on sensitive resources and species, prior to the start of construction.
- EIs would be onsite with stop work authority in case of an encounter with any listed species.
- If a protected species is encountered during construction, Natural's contractors would be instructed to stop their vehicle or equipment and allow the protected species to leave the site on its own volition. If necessary, relocation efforts would be conducted by a qualified individual identified in coordination with the TPWD or USFWS.
- Natural would minimize the time between trenching/excavation and backfilling to the greatest extent practicable.
- Natural would implement erosion and sedimentation controls in accordance with the FERC Plan and Procedures, incorporated in the Project ECMP, as well as other applicable provisions of the Project ECMP. Natural would follow guidance in the

FERC Plan and Procedures regarding the use of synthetic monofilament mesh/netted erosion control materials.

- Any encounters of state-listed species would be reported by Natural to the Texas Natural Diversity Database.

Based on our review of the species habitat and distribution information, as well as Natural's implementation of the measures outlined above, we conclude that the Project would not have a significant impact on state-listed species.

5. Land Use and Visual Resources

Project construction would only impact industrial land that is currently in use as compressor station sites. Following the completion of construction activities, all disturbed land within the Project facilities not covered by gravel or facility foundations would be restored to previous contours and maintained in an herbaceous state.

Temporary and permanent areal land impacts are summarized in table 3.

Table 3.		
Proposed Project Facilities		
Facility ^a	Land Affected During Construction (acres) ^b	Land Affected During Operation (acres) ^c
Compressor Stations		
CS 300	12.88	0.15
CS 301	33.74	0.12
CS 303	51.33	0.03
CS 304	35.02	0.76
CS 394	12.32	0.03
Compressor Station Subtotal	145.29	1.09
Facility Access Driveways (all locations)	1.86	0.00
Project Total	147.15	1.09
^a All land affected would be within the existing compressor station fenced operational area and existing access driveways. ^b Land affected during construction is inclusive of operation impacts (permanent). ^c Land affected during operation consists only of new permanent impacts within the existing compressor stations.		

No designated Coastal Zone Management Areas, registered National Natural Landmarks (National Park Service, 2016a, 2016b), designated Wilderness Areas (Wilderness Connect, 2018), Wild and Scenic Rivers (National Wild and Scenic Rivers System, 2019), or designated National Trails are within 0.25 mile of any proposed Project activities (National Park Service, 2018, 2016a, 2016b; USFWS, 2019; Wilderness Connect, 2018)). No National Scenic Byway would be crossed or impacted by the

Project (Federal Highway Administration, 2018). No USDA Agricultural Conservation Easement Program easements or other agricultural land easements would be affected (Sullivan, 2018; Six, 2019). In addition, there are no lands enrolled in the NRCS Wetland Reserve Program within the Project area (NRCS, 2018).

5.1 Residential Land and Commercial Areas

No aboveground structures or residences are within 100 feet of Project workspace. The closest residential structures are approximately 129 feet southwest of the CS 300 access driveway, 338 feet east of the CS 301 access driveway, 294 feet east of the CS 303 fence line, 1,396 feet southeast of the CS 304 fence line, and 604 feet northwest of CS 394 fence line. The potential for dust and noise impacts on nearby residential areas is addressed in sections B.8.4 and B.9.4.

All activities associated with the Project would take place within the existing compressor station fenced operational areas and access driveways, therefore, no residences or residential land are anticipated to be impacted by the construction or operation of the Project facilities. No known future planned residential or commercial developments are within 0.25 mile of the Project area (Benson, 2019, 2018; Bottoms, 2019; Burns, 2019; Fulgham, 2018, 2019; Heinkle, 2019; Ives, 2019; Janak, 2019; Longoria, 2019; Martin, 2019; and Hodges, 2019).

5.2 Visual Resources

The visual character of the Project area outside of the existing fenced operational area of each compressor station to be modified is generally a rural landscape. The Project is not within any federal, state, or locally designated scenic areas, such as National Wild and Scenic Rivers and scenic roads/highways.

Impacts on visual and/or aesthetic resources would primarily occur during construction as a result of the presence of construction equipment; as such, most impacts on visual resources would be temporary. The construction of the new compression facilities at CS 300, CS 301, and CS 304 would create some minor permanent impacts on the visual landscape; however, these would be consistent with the visual scope and scale of the existing compressor station facilities. As such, additional visual screening is not warranted and impacts would not be significant.

6. Socioeconomics and Environmental Justice

Activities associated with the Project would take place in Victoria, Wharton, Harrison, Angelina, and Cass counties, Texas in a rural setting where low- to medium-density, single-family detached dwellings and a mix of agricultural and open spaces dominate the surrounding landscapes. The Project activities at CS 303 and CS 394 are limited, consisting of the installation of one additional gas cooler and filter separator at each location with an anticipated peak construction workforce of between 45 and 50

personnel at each station, therefore potential socioeconomic impacts from these activities in Angelina and Cass counties would be short term and negligible and are not discussed further in this section.

The following sections provide the socioeconomic setting for the county, cities, and communities that may be affected by construction and operation of the proposed facilities at CS 300 (Victoria County), CS 301 (Wharton County), and CS 304 (Harrison County). All population, housing, income, and employment data come from U.S. Department of Commerce, Bureau of the Census (U.S. Census, 2010, 2017).

6.1 Population, Employment, Housing, and Public Services

Impacts on the local population would primarily result from the short-term influx of temporary employees during construction. Natural estimates that the peak construction workforce would consist of approximately 70 to 80 personnel per compressor station with approximately 75 percent of these workers being non-local.

Assuming that approximately 20 percent of the 60 anticipated non-local workers, bring three family members with them, the total increase in the population of each affected county would be approximately 48 people. This temporary increase of 48 people would be short-term and would not significantly impact the population in Victoria, Wharton, or Harrison counties. In addition, there would be no new permanent employees required to operate the proposed Project, as these facilities would be operated by existing employees either locally or remotely. Due to the anticipated small size of the work force in each Project area, construction period impacts on employment are expected to be positive, although minor. Because no permanent employees would be hired, long-term impacts on employment would not occur.

Natural anticipates that most of the non-local construction workers are likely to use temporary housing such as hotels, motels, apartments, and RV parks within commuting distance of the Project, and that 30 percent of the non-local workers would provide their own housing units (e.g., travel trailers or RV campers). Only minor impacts on local housing markets are expected to occur, however, as approximately 1,131 rental units are located in Victoria County, 427 rental units are in Wharton County, and 621 rental units are in Harrison County (U.S. Census, 2017); and there are approximately 1,738 hotel or motel rooms available within Victoria County, 433 rooms in Wharton County, and 905 rooms in Harrison County (Texas Motel Markets Report, 2017, 2018). Additionally, there are 12, 11, and 17 RV parks within Victoria, Wharton, and Harrison counties, respectively (Good Sam Club, 2019; Google Maps, 2019).

Given the number of hotel/motel rooms and campsites available within the counties where the existing compressor stations occur, construction crews should not encounter difficulty in finding temporary housing. Because no permanent employees would be hired, long-term impacts on housing would not occur. In summary, temporary and long-term/permanent impacts on housing are expected to be negligible.

Construction of the Project could result in a temporary increased demand on local public services, such as medical, fire, police, and education services. Potential temporary impacts on services could include traffic-related incidents, medical emergencies, increases in traffic violations, and issuances of permits for construction vehicles subject to load and width restrictions. The community medical services in the Project vicinity typically provide short-term or continuing general health care services and are capable of responding to minor or routine medical needs. With a peak construction work force of 80 workers per county, any Project-related increase in demand for medical facility services would not be expected to exceed the capacity or level of service provided by existing medical facilities in the Project area.

Although the potential for police, fire, and medical services may increase slightly during construction activities, adequate public services exist in the Project area to handle a civil, criminal, or emergency event. Furthermore, there would be no large influx of workers. We anticipate that most non-local construction workers would not relocate to the Project area with school-age children due to the relatively short duration of construction activities. For these reasons, impacts on public services during construction are expected to be negligible.

6.2 Traffic and Transportation

The movement of personnel, equipment, and materials to the construction work areas could adversely impact the transportation system in the Project area. Area roadways include a network of county, state, and federal roads. Major transportation routes available for general access to the Project are State Highway (SH) 185 (Shepley Street) and FM Road 1686 near CS 300, West FM 1161 (County Road 239) near CS 301, and Terrapin Neck Road near CS 304. Additionally, a well-established network of state highways and county roads are available for Project access in Victoria, Wharton, and Harrison counties.

Natural anticipates that the Project would generate a maximum of 20 trips per day during the peak of construction to each of the Project compressor stations. Most roadways that would be used to access the Project sites have relatively low annual average daily traffic levels. The movement of construction personnel, equipment, and materials to the work areas would result in short term, minor impacts on roadways, typically, a traffic increase of about 1-2 percent based on current traffic patterns (Texas Department of Transportation [TXDOT], 2019).

It is anticipated that Project construction working hours and deliveries would usually occur during off-peak hours, and that many workers would also be carpooling to the worksite, which would help keep Project-related traffic to a minimum. Further, Natural would employ traffic control measures, such as flagmen and signs when appropriate, to minimize impacts on local traffic.

Natural would also direct its construction contractors to comply with local weight limitations and restrictions on area roadways and to remove any soil that falls from equipment onto roadway surfaces. Additionally, Natural would coordinate with state and county officials to obtain all necessary permits for temporary construction-related impacts on roadways in the area. As a result of these measures, traffic is not expected to be significantly impacted by construction of the Project. Based on the temporary and short-term potential traffic interruptions, we conclude that impacts from Project-related construction traffic would be minor.

Occasional site visits by existing operations personnel would be required for routine facility maintenance. This represents a negligible impact on local traffic and transportation routes.

6.3 Environmental Justice

For projects with major aboveground facilities, FERC regulations (18 CFR 380.12(g)(1)) direct us to consider the impacts on human health or the environment of the local populations, including impacts that would be disproportionately high and adverse for minority and low-income populations.

In its guidance for the consideration of environmental justice under NEPA, the CEQ defines a “minority” as an individual who is American Indian or Alaskan Native, Black or African American, Asian, Native Hawaiian or Pacific Islander, or Hispanic or Latino. The CEQ characterizes a “minority population” as existing in an affected area where the percentage of defined minorities exceeds 50 percent of the population, or where the percentage of defined minorities in the affected area is meaningfully greater (10 percentage points higher) than the percentage of defined minorities in the general population or other appropriate unit of geographic analysis (CEQ, 1997a; EPA, 2016).

The CEQ guidance further recommends that low-income populations in an affected area should be identified using data on income and poverty from the U.S. Census Bureau. Low-income populations are populations where households have an annual household income below the poverty threshold, which is currently \$24,600 for a family of four.

Table 4 below identifies the demographic characteristics of the State of Texas and the three counties affected by CS 300, CS 301, and CS 304.

State/ County	Persons Below Poverty Level (%)	White Non- Hispanic (%)	African American (%)	Hispanic (%)	Asian (%)	Native American (%)	Pacific Islander (%)	Other (%)	Total Minority (%)
Texas	16.0	42.9	11.7	38.9	4.5	0.2	0.1	1.7	57.1
Victoria County	14.8	45.4	5.8	46.0	1.1	0.1	0.0	1.5	54.6
Wharton County	17.5	45.3	13.8	40.3	0.1	0.1	0.0	0.5	54.7
Harrison County	17.9	63.8	21.3	12.7	0.7	0.3	0.0	1.1	36.2
Source: U.S. Census, 2017									

The minority populations within Victoria County (54.6 percent), Wharton County (54.7 percent), and Harrison County (36.2 percent) are below the state level (57.1 percent).

The percentage of persons below the poverty line in Victoria County (14.8 percent), Wharton County (17.5 percent), Harrison County (17.9 percent), are similar to the level for the State of Texas (16 percent).

While table 4 presents a summary of minority and low income communities in the Project vicinity on a county-wide basis, census block group data were also examined to provide a more detailed analysis of the Project area demographics. A census block group is a statistical division for presenting census data that is smaller than a county or census tract, and a block typically contains between 600 and 3,000 residents. Census block groups within 1 mile of the Project sites are presented in table 5. Census block group data in this table are compared to the reference county-wide data to determine the presence or absence of Environmental Justice populations that may be adversely affected by the Project.

CS 300 is located within Tract 0017.00, Block Group 2 and is approximately 1 mile northeast of Tract 0017.00, Block Group 1. The percent of persons below poverty level in Tract 0017.00, Block Group 2 (13.3 percent) is slightly higher than Tract 0017.00, Block Group 1 (10.2 percent); however, both are lower than for Victoria County as a whole (14.8 percent). The minority population in Tract 0017.00, Block Group 2 (79.1 percent) is greater than 50 percent and is also meaningfully greater than Victoria County (54.6 percent).

Table 5.
Environmental Justice Populations in the Project Area

Census Tract and Block Group	Persons Below Poverty Level (%)	White Non-Hispanic (%)	African American (%)	Hispanic (%)	Asian (%)	Native American (%)	Pacific Islander (%)	Other (%)	Total Minority (%)
CS 300 (Victoria County, Texas)									
Tract 0017.00, Block Group 1	10.2	62.9	2.5	34.6	0.00	0.00	0.00	0.00	37.1
Tract 0017.00, Block Group 2	13.3	20.9	27.9	51.2	0.00	0.00	0.00	0.00	79.1
CS 301 (Wharton County, Texas)									
Tract 7401.00, Block Group 2	7.7	80.4	19.6	0.00	0.00	0.00	0.00	0.00	19.6
Tract 7401.00, Block Group 4	21.9	13.2	68.9	17.9	0.00	0.00	0.00	0.00	86.8
Tract 7401.00, Block Group 5	2.5	81.1	0.00	18.6	0.00	0.00	0.00	0.00	18.6
CS 304 (Harrison County, Texas)									
Tract 0206.04, Block Group 1	12.9	80.9	12.1	1.8	0.00	0.00	0.00	0.00	19.1
Source: U.S. Census, 2017 Values exceeding county reference levels are indicated in bold .									

Three census block groups are within 1 mile of CS 301: Tract 7401.00, Block Group 2; Tract 7401.00, Block Group 4; and Tract 7401.00, Block Group 5. CS 301 is in Tract 7401.00, Block Group 4. The minority population in Tract 7401.00, Block Group 4 (86.8 percent) is greater than 50 percent and meaningfully greater than in Wharton County (54.7). Minority population levels in Tract 7401.00, Block Group 2 (19.6 percent) and Tract 7401.00, Block Group 5 (18.9 percent), are less than 50 percent and below the Wharton County total.

The percent of persons below poverty level near CS 301 are less than 50 percent. The level in Tract 7401.00, Block Group 4 (21.9 percent) is higher than Wharton County (17.5 percent), but not meaningfully higher. Tract 7401.00, Block Group 2 (7.7 percent)

and Tract 7401.00, Block Group 5 (2.5 percent) also have poverty levels below county levels.

The only census block group located within 1 mile of CS 304 is Tract 0206.04, Block Group 1. This census block group has both a lower percent of persons below poverty level (12.9 percent) and minority population (19.1 percent) than Harrison County, at 17.9 and 36.2 percent, respectively.

Tract 0017.00, Block Group 2 (CS 300) and Tract 7401.00, Block Group 4 (CS 301) have a minority populations exceeding the 50 percent minority threshold identified by CEQ. The other census block groups do not contain minority or low income populations exceeding the CEQ thresholds.

The types of impacts that could affect the Environmental Justice populations within these two census tracts include air quality and noise during construction and air quality, noise impacts, and aesthetics during operation. All Project activities affecting these two census block groups would occur within existing compressor stations CS 300 and CS 301, and the Project would not introduce any new operational activities.

Project construction activities would generally take place between 7 am and 7 pm, Monday through Saturday, over a one year period. As described in section B.5.1, the residences closest to CS 300 and CS 301 are more than 125 feet from the edge of any construction work areas. The implementation of measures in our Plan and in Natural's ECMP would reduce the effects of construction on these residences to less than significant levels.

With respect to emissions from facility operations, as discussed further in section B.8.5 below, the new compressor proposed for installation at CS 300 would be an electric-driven motor and would result in a decrease in the emissions from the station. The only operational air emissions at CS 300 following completion of the Project would be associated with compressor venting and fugitive equipment leaks, and would be de minimus and unlikely to affect local air quality. In addition, based on modeled results, the operational emissions and subsequent ambient concentrations of regulated pollutants from the addition of compression at CS 301 would be within established health-based air quality standards.

Similarly, as presented in section B.9.4, the predicted sound levels from the modified stations following completion of the Project would be lower than the day-night average sound level of 55 dBA. As the Project involves constructing new compression and other pipeline facilities at CS 300 and CS 301, the addition of new facilities to an existing operational compressor station would not result in a significant change to area aesthetics.

Additionally, the Project is located in relatively sparsely populated areas, and while general construction and operational impacts (e.g., noise, air emissions) on adjacent

landowners may occur, they would not be directed toward any particular segment of the population.

As described throughout this EA, the proposed Project would not have a significant adverse impact on the environment or on individuals living in the Project area. Therefore, the Project would not have a disproportionately high adverse environmental or human health impact on minority or low-income residents.

7. Cultural Resources

Section 106 of the National Historic Preservation Act, as amended, requires the FERC to take into account the effect of its undertakings on properties listed, or eligible for listing, on the National Register of Historic Places, and to afford the Advisory Council on Historic Preservation an opportunity to comment. Natural, as a non-federal party, is assisting the FERC in meeting our obligations under Section 106 and the implementing regulations at 36 CFR 800.

Natural contacted the Texas State Historic Preservation Office (SHPO) regarding the Project, providing a project description, mapping, and the results of background research. No historic properties were identified within or adjacent to the Project facilities. On December 13, 2018, the Texas SHPO indicated that no historic properties were present or would be affected by the Project. We agree with the SHPO and find that the Project would not affect historic properties.

Natural contacted the following Native American tribes, providing a Project description and mapping, and also initiated follow-up emails with the tribes: Alabama-Coushatta Tribe of Texas; Alabama Quassarte Tribal Town; Apache Tribe of Oklahoma; Caddo Nation of Oklahoma; Cherokee Nation; Chickasaw Nation; Choctaw Nation of Oklahoma; Comanche Nation of Oklahoma; Coushatta Tribe of Louisiana; Iowa Tribe of Oklahoma; Jena Band of Choctaw Indians; Kialegee Tribal Town; Kickapoo Traditional Tribe of Texas; Kickapoo Tribe of Oklahoma; Kiowa Indian Tribe of Oklahoma; Miami Tribe of Oklahoma; Mississippi Band of Choctaw Indians; Muscogee (Creek) Nation; Osage Nation; Poarch Band of Creeks; Quapaw Nation; Seminole Nation of Oklahoma; Shawnee Tribe; Thlopthlocco Tribal Town; Tonkawa Tribe of Indians of Oklahoma; Tunica-Biloxi Indian Tribe; United Keetoowah Band of Cherokee Indians in Oklahoma; and Wichita and Affiliated Tribes.

The Cherokee Nation, Choctaw Nation of Oklahoma, Miami Tribe of Oklahoma, Quapaw Nation, and Wichita and Affiliated Tribes indicated the Project was outside their area of interest. The Comanche Nation of Oklahoma and Muscogee (Creek) Nation indicated no historic properties would be affected by the Project. The Alabama-Coushatta Tribe of Texas, Alabama Quassarte Tribal Town, Osage Nation, and Shawnee Tribe of Oklahoma indicated no historic properties would be affected by the Project, but requested to be notified of unanticipated discoveries during construction. The unanticipated discovery plan (see below) provides for notification of tribes. No other

comments have been received. We sent our NOI to these same tribes. The Choctaw Nation of Oklahoma and Quapaw Nation indicated that the Project was outside their area of interest. No other responses to our NOI have been received from the tribes.

Natural provided a plan to address the unanticipated discovery of cultural resources and human remains during construction. We requested minor revisions to the plan. Natural provided a revised plan which we find acceptable.

8. Air Quality

The term “air quality” refers to relative concentrations of pollutants in the ambient air. The subsections below describe concepts that are applied to characterize air quality and to determine the significance of increases in air pollution resulting from construction and operation of the Project.

The Project would result in air emissions through short-term construction activities as well as long-term stationary source emissions. Emissions associated with construction activities include fugitive dust from soil disruption and combustion emissions from construction equipment. Fugitive leaks from the modified compressor stations would also result in emissions of small quantities of natural gas.

8.1 Existing Environment and Air Quality Standards

The climate in the Project area where all five modified compressor stations are located is characterized by generally mild to cool winters and hot, humid summers. Temperatures range from an average low between the mid 30s and mid 40s °F in early winter to an average high in the mid 90s °F in mid to late summer.

Federal and state air quality standards have been designed to protect human health and the environment from airborne pollutants.⁴ The EPA established National Ambient Air Quality Standards (NAAQS) for seven air contaminants designated “criteria air pollutants,” which are nitrogen dioxide (NO₂), carbon monoxide (CO), ozone, sulfur dioxide (SO₂), lead, inhalable particulate matter (PM) with an aerodynamic diameter less than or equal to 2.5 microns (PM_{2.5}), and PM with an aerodynamic diameter less than or equal to 10 microns (PM₁₀). The NAAQS were established under the Clean Air Act (CAA) of 1970, as amended in 1977 and 1990, to protect human health (primary standards) and public welfare (secondary standards). The NAAQS are codified in 40 CFR 50 (EPA, 2017a).

Under the CAA, each state prepares a State Implementation Plan (SIP) to demonstrate the state’s air quality management program to attain or maintain the primary and secondary NAAQS. A state’s SIP may also include stricter standards than the NAAQS. Texas has adopted the NAAQS as statewide standards.

⁴ The current NAAQS are listed on EPA's website at <https://www.epa.gov/criteria-air-pollutants/naaqs-table>.

The EPA has established Air Quality Control Regions in accordance with Section 107 of the CAA, defined as contiguous areas considered to have relatively uniform ambient air quality, and are treated as single geographical units for reducing emissions and determining compliance with the NAAQS. Attainment with the NAAQS is determined based on whether or not measured ambient air pollutant concentrations are above or below the NAAQS and/or state Ambient Air Quality Standards. The SIP must include measures identifying how applicable air quality standards are achieved as well as maintained in each region.

Areas of the country are designated based on compliance with the NAAQS. Designations fall under three main categories as follows: “attainment” (areas in compliance with the NAAQS); “nonattainment” (areas not in compliance with the NAAQS); or “unclassifiable” (areas lacking data to determine attainment). Areas formerly designated as nonattainment are considered “maintenance areas.” All portions of the Project are within attainment areas for all criteria pollutants as designated by the EPA.

On December 7, 2009, the EPA added greenhouse gases (GHG) to the definition of pollutant; such GHGs include carbon dioxide (CO₂), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The GHGs that would be produced by the Project are CO₂, methane, and nitrous oxide. Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride would not be emitted. Emissions of GHGs are quantified in terms of carbon dioxide equivalents (CO₂e) by multiplying emissions of each GHG by its respective global warming potential (GWP). The GWP is a ratio relative to CO₂ regarding each GHG’s ability to absorb solar radiation and its residence time in the atmosphere. Accordingly, CO₂ has a GWP of 1 while methane has a GWP of 25, and nitrous oxide a GWP of 298.⁵ To obtain the CO₂e quantity, the mass of the particular chemical is multiplied by the corresponding GWP, the product of which is the CO₂e for that chemical. The CO₂e value for each of the GHG chemicals is summed to obtain the total CO₂e GHG emissions. There are no federal regulations at this time limiting the emissions of CO₂. Also, CO₂ reporting requirements for stationary sources do not apply to construction emissions. However, in compliance with the EPA’s definition of air pollution to include GHGs, we provide estimates of GHG emissions for construction and operation activities below. The EPA did not establish NAAQS for any listed GHGs, as their impact is on a global basis and not a local/regional basis.

8.2 Regulatory Requirements

The CAA, 42 U.S.C. 7401 et seq., as amended in 1977 and 1990, and 40 CFR 50 through 99 provide the federal statutes and regulations governing air pollution in the United States. The provisions of the CAA that are applicable to the Project are discussed

⁵ These GWPs are based on a 100-year time period. We have selected their use over other published GWPs for other timeframes because these are the GWPs the EPA has established for reporting of GHG emissions and air permitting requirements. This allows for a consistent comparison with these regulatory requirements.

below. See section B.8.5 for estimated potential operational emissions for Natural's compressor stations, and comparison with the major regulatory thresholds.

Air Permitting

New Source Review (NSR) is a pre-construction air permit program designed to protect air quality when air pollutant emissions are increased either through the construction of new stationary sources or modifications to existing stationary sources. In areas with good air quality, NSR ensures that the new emissions do not degrade the air quality, which is achieved through the implementation of the Prevention of Significant Deterioration (PSD) permitting program for major sources or state permit programs for minor sources. In areas with poor air quality, Nonattainment NSR ensures that the new emissions do not inhibit progress toward cleaner air. In addition, NSR ensures that any large, new, or modified industrial source employs appropriate air pollution control technologies. The TCEQ administers the minor source NSR program and the major Nonattainment NSR and PSD program in Texas.

All portions of the Project, including the five compressor stations proposed to be modified, are within attainment areas for all criteria pollutants; thus, the Nonattainment NSR program does not apply. In addition, the potential emissions from each of the modified compressor stations would not exceed any PSD major source threshold; therefore, PSD does not apply to the Project.

Natural proposes to modify five existing stationary sources (CS 300, 301, 303, 304, and 394) in Angelina, Cass, Harrison, Victoria, and Wharton Counties, Texas. Based on the operating emissions discussed below, CS 300 would cease to be a major source subject to the permitting provisions of Title V (Part 70). CS 304 would remain a major source following completion of the Project, and therefore would continue to be subject to Title V permitting requirements. Following the Project modifications, CS 301, 303, and 394 would continue to be subject to state (minor source) permitting requirements, as further discussed below.

New Source Performance Standards

The EPA promulgates New Source Performance Standards (NSPS) to establish emission limits and fuel, monitoring, notification, reporting, and recordkeeping requirements for stationary source types or categories. These regulations apply to new, modified, or reconstructed sources.

NSPS Subpart KKKK applies to the proposed turbines at CS 301 and CS 304. This Subpart requires that each turbine meet specified emission limits for nitrogen oxides (NO_x). The turbines are insured by the manufacturer to meet these requirements.

NSPS Subpart OOOOa standards for fugitive emission releases of volatile organic compounds (VOC) and methane would apply to any of the Project's pneumatic

controllers having a natural gas bleed rate of greater than 6 standard cubic feet per hour; Natural expects that all continuous bleed pneumatic controllers installed as part of the Project would have a bleed rate of less than this threshold and therefore would be exempt from this requirement, but otherwise would comply with all applicable provisions of this Subpart. Subpart OOOOa further applies to centrifugal compressors equipped with wet seals; the centrifugal compressors at CS 300, 301, and 304 would be equipped with dry seals; therefore, these requirements of Subpart OOOOa would not apply. In addition, the Project's modified compressor stations would also be subject to the fugitive leak monitoring requirements of Subpart OOOOa.⁶

National Emission Standards for Hazardous Air Pollutants

The 1990 CAA amendments established a list of 189 hazardous air pollutants (HAP), resulting in the promulgation of National Emission Standards for Hazardous Air Pollutants. These standards regulate HAP emissions from specific source types located at major or area sources of HAPs by setting emission limits, monitoring, testing, record keeping, and notification requirements. The proposed emergency generator at CS 304 would be subject to National Emission Standards for Hazardous Air Pollutants Subpart ZZZZ; compliance with Subpart ZZZZ is met by complying with NSPS Subpart JJJJ as described above.

Greenhouse Gas Mandatory Reporting Rule

The EPA's Mandatory Reporting of GHG Rule (40 CFR 98) requires reporting of GHG emissions from suppliers of fossil fuels and facilities that emit greater than or equal to 25,000 tons per year of GHG CO₂e. Subpart W of the Mandatory Reporting of GHG Rule establishes reporting requirements for natural gas supplier's transmission pipeline systems, and specifically natural gas transmission compression. As indicated in tables 9 and 10 below, CS 301 and CS 304 could potentially emit greater than 25,000 tons per year of CO₂e; therefore, for actual emissions from any station exceeding this threshold, Natural would be required to comply with all applicable reporting requirements specified in 40 CFR 98.

Methane Challenge Program

Natural participates in the EPA's Methane Challenge Program, which is designed to help reduce methane emissions from oil and gas operations. As part of this program, Natural would comply with requirements of Subpart OOOOa described above, and implement other leak detection and maintenance provisions as specified in its Methane Challenge implementation plan.

⁶ We note that on September 11, 2018, the EPA proposed amendments to Subpart OOOOa, which if implemented may affect the ways in which affected sources are subject to the rule.

Conformity of General Federal Actions

According to Section 176(c)(1) of the CAA (40 CFR 51.853), a federal agency cannot approve or support an activity that does not conform to an approved SIP. Therefore, a conformity analysis to determine whether a project would conform to an approved SIP is required when a federal action would generate emissions exceeding conformity threshold levels of pollutants for which an air basin is designated as nonattainment or maintenance. A conformity applicability determination requires that direct and indirect emissions of nonattainment or maintenance pollutants (or precursors) resulting from the federal action be compared with general conformity applicability emissions thresholds. If the thresholds are exceeded, general conformity applies and a conformity determination is required. No portion of the proposed Project is within a nonattainment area; therefore, the General Conformity requirements do not apply.

8.3 State Air Quality Regulations

All Project modifications would be permitted through the TCEQ's Permit-by-Rule program codified in 30 Texas Administrative Code (TAC) Chapter 106. The Permit-by-Rule statutes under 30 TAC 106.352 (Oil and Gas Handling and Production Facilities), 30 TAC 106.359 (Planned Maintenance, Startup, and Shutdown at Oil and Gas Handling and Production Facilities), 30 TAC 106.512 (Stationary Engines and Turbines), and 30 TAC 106.511 (Portable and Emergency Engines and Turbines) would apply at each of the stations as listed in table 6 below.

Table 6. TCEQ Permit by Rule applicable to the Project	
Facility	Applicable Permit-by-Rule
CS 300	30 TAC 106.352(l), 106.359
CS 301	30 TAC 106.352(l), 106.359, 106.512
CS 303	30 TAC 106.352(l)
CS 304	30 TAC 106.352(l), 106.359, 106.511, 106.512
CS 394	30 TAC 106.352(l)

Natural would not conduct any open burning as part of the Project; therefore, the Project would not require any state or locally issued open burn permits or permissions.

8.4 Construction Emissions Impacts and Mitigation

Emissions associated with construction activities generally include: (a) exhaust emissions from construction equipment; (b) fugitive dust emissions associated with construction vehicle movement on unpaved surfaces; and (c) fugitive dust associated with grading, trenching, backfilling, and other earth-moving activities. The exhaust emissions

would depend on the equipment used and the horsepower-hours of operation. The combustion of gasoline and diesel fuels during construction of the Project would release NO₂, CO, VOCs, PM_{2.5}, PM₁₀, SO₂, HAPs, and GHGs. Fugitive dust emission levels would vary in relation to moisture content, composition, and volume of soils disrupted during construction. Fugitive dust and other emissions from construction activities generally do not result in a significant increase in regional pollutant levels, although local pollutant levels could increase temporarily.

Table 7 provides the estimated total Project construction emissions, including exhaust emissions and fugitive dust from on-road and off-road construction equipment and vehicles, exhaust emissions from construction worker vehicles for commuting and vehicles used to deliver equipment/materials to the site.

Table 7. Potential Construction Emissions for the Project									
Facility	NO_x	CO	SO₂	PM₁₀	PM_{2.5}	VOC	CO₂e	Formaldehyde	Total HAP
CS 300	0.72	0.46	0.001	1.58	0.20	0.14	231.46	0.002	0.005
CS 301	2.18	1.51	0.004	3.89	0.54	0.37	652.82	0.005	0.015
CS 303	0.72	0.45	0.001	1.50	0.19	0.13	229.58	0.002	0.005
CS 304	3.34	2.40	0.006	6.21	0.89	0.59	1,002.26	0.007	0.024
CS 394	0.60	0.36	0.001	3.05	0.33	0.10	190.11	0.001	0.004
Project Total	7.57	5.17	0.013	16.24	2.15	1.32	2,306	0.017	0.055
Construction emission estimates obtained using the EPA MOVES 2014 mobile source emissions model, Southern California Air Quality Management District emission factors, EPA AP-42 emission factors, and methodology found in 40 CFR 98 for estimating global warming potential.									

Natural would implement the following measures detailed in its *Fugitive Dust Control Plan*, as needed, to control fugitive dust from Project construction activities:

- take reasonable precautions to minimize fugitive dust emissions from construction activities;
- clean up any soil tracked onto a paved road that extends more than 50 feet from the point of origin within one hour of discovery;
- clean up soil tracked onto a paved road that extends less than 50 feet by the end of the working day;
- properly maintain all construction equipment;
- cover open-bodied trucks while transporting materials;
- use off-site parking and shuttle buses to minimize traffic (if such measures become necessary); and

- revegetate all areas that are not rocked or cultivated following completion of construction in accordance with the FERC Plan and Procedures.

Emissions associated with the construction-related activities would be temporary, and cease following completion of Project construction. We conclude that Project construction emissions would not cause, or significantly contribute to, a violation of any applicable ambient air quality standard.

8.5 Operational Emissions Impacts and Mitigation

Following the Project, the emissions from modified CS 300 would be largely eliminated due to the replacement of existing natural gas-fired compressor units with an electric motor driven unit, the potential operational emissions from modified CS 301 would increase, potential emissions from modified CS 304 would be drastically reduced through the replacement of nine relatively old and inefficient reciprocating compressor units with two modern compressor turbines, and potential emissions from modified CS 303 and 394 would increase only minimally due to minor amounts of fugitive emissions released from new components and piping.

Tables 8, 9, and 11 provide estimates of the potential annual emissions at CS 300, 301, and 304 before and after the proposed modifications. Project modifications to CS 303 and 394 do not involve new compression, and Project-related operational emissions at these stations (tables 10 and 12) would be limited to equipment leaks from piping components. These estimated emissions are based on permitted emission rates (existing sources at CS 300, 301, and 304), manufacturer's data, EPA emission factors, historical data of natural gas composition on Natural's natural gas pipeline system; Natural's expected compressor blowdown and purging frequencies; methodology found in 40 CFR 98 for estimating GWP; and assumptions that each compressor station operates at full capacity during an entire year (8,760 hours). Since no station would likely operate continuously at full load every day, each table provides worst-case estimates of emissions.

Compressor unit blowdowns (gas venting) can occur during initial testing, operational startup and shutdown, maintenance activities, and during emergency events. Emission estimates of compressor unit blowdowns are included in tables 8, 9, and 11. During normal operations, blowdowns resulting from compressor startup/shutdown and during maintenance activities would be infrequent.

Table 8. Potential Operational Emissions for CS 300							
Emission Source	NO _x	CO	VOC	SO ₂	PM _{2.5} / PM ₁₀	HAP	GHG (CO ₂ e)
Potential Emissions (tons per year)							
Project Emission Sources							
Compressor Blowdowns/Purges	-	-	1.34	-	-	0.11	3,123
Station Blowdowns	-	-	0.33	-	-	0.028	778
Fugitive Equipment Leaks (new Components)	-	-	0.12	-	-	0.01	284
Project Sources Total a/	0.00	0.00	1.80	0.00	0.00	0.15	4,186
Emissions Reductions from Sources Removed by the Project							
Total Emissions Reductions	-1,489.0	-62.0	-10.4	-0.10	-1.8	not estimated	-27,701
Net Potential Change in Emissions following completion of Project	-1,489.0	-62.0	-8.6	-0.10	-1.8	not estimated	-23,515
a/ Project source emission rates reflect the potential emission rates from the station after Project completion, not including emissions from existing minor ancillary sources at the station.							

Table 9. Potential Operational Emissions for CS 301							
Emission Source	NO _x	CO	VOC	SO ₂	PM _{2.5} / PM ₁₀	HAP	GHG (CO ₂ e)
Potential Emissions (tons per year)							
Project Emission Sources							
Turbine #2 – Solar Mars 100	20.26	34.25	3.92	1.91	3.71	1.450	65,810
Catalytic Fuel Gas Heater	0.45	0.37	0.02	0.003	-	0.008	532
Compressor Blowdowns/Purges	-	-	1.43	-	-	0.122	3,328
Station Blowdowns (new components)	-	-	0.32	-	-	0.028	753
Fugitive Equipment Leaks (new components)	-	-	0.08	-	-	0.007	188
New Turbine Startups/Shutdowns	0.16	13.64	0.16	-	-	-	87
Project Sources Total	20.86	48.26	5.94	1.91	3.71	1.61	70,699
Potential Emission Rates from Existing Station a/	25.57	35.59	6.84	1.30	3.73	1.01	47,318
Total Emissions from Station following completion of Project	46.43	83.85	12.78	3.21	7.44	2.62	118,016
a/ The permitted sitewide emission rates for criteria pollutants are taken from TCEQ Permit by Rule Registration 144315.							

Table 10. Potential Emissions from Project Components at CS 303							
Emission Source	NO _x	CO	VOC	SO ₂	PM _{2.5} / PM ₁₀	HAP	GHG (CO ₂ e)
Annual Potential Emissions (tons per year)							
Fugitive Equipment Leaks (new components)	-	-	0.07	-	-	0.01	174.3
Facility-Wide Totals	0.00	0.00	0.07	0.00	0.00	0.01	174.3

Table 11. Potential Operational Emissions for CS 304							
Emission Source	No _x	CO	VOC	SO ₂	PM _{2.5} / PM ₁₀	HAP	GHG (CO ₂ e)
Potential Emissions (tons per year)							
Project Emission Sources							
Turbine #1 Solar Titan 130	27.20	45.99	5.27	2.56	4.97	1.944	88,237
Turbine #2 Solar Titan 130	27.20	45.99	5.27	2.56	4.97	1.944	88,237
New Emergency Generator	0.83	0.73	0.33	8.0E-04	0.014	0.134	197
Catalytic Fuel Gas Heater	1.20	1.01	0.07	0.007	-	0.023	1,436
Compressor Blowdowns/Purges	-	-	1.94	-	-	0.165	4,509
Station Blowdowns	-	-	0.39	-	-	0.033	902
Fugitive Equipment Leaks	-	-	0.28	-	-	0.023	643
Turbine Startups/Shutdowns	0.22	19.23	0.22	-	-	-	122
Project Totals b/	56.65	112.95	13.75	5.13	9.96	4.27	184,284
Potential Emission Reductions from Units being Replaced a/	-1,192.6	-265.0	-81.2	-0.2	-16.5	-18.9	not estimated
Net Potential Change in Emissions from Station following completion of Project	-1,136	-152.1	-67.5	4.9	-6.5	-14.6	not estimated
a/ Permitted emission rates for group of existing compressor units obtained from TCEQ Permit 55775.							
b/ Project source emission rates reflect the potential emission rates from the station after Project completion, not including emissions from existing minor ancillary sources at the station.							

Table 12. Potential Emissions from Project Components at CS 394							
Emission Source	NO _x	CO	VOC	SO ₂	PM _{2.5} / PM ₁₀	HAP	GHG (CO ₂ e)
Annual Potential Emissions (tons per year)							
Fugitive Equipment Leaks (new components)	-	-	0.07	-	-	0.0063	173.4
Facility-Wide Totals	0.00	0.00	0.07	0.00	0.00	0.0063	173.4

8.6 Air Quality Modeling

Natural completed refined air quality dispersion modeling for the proposed modified CS 301 and CS 304 using EPA's AERMOD modeling program (version 18081, AERSCREEN mode, MAKEMET program version 16216) to determine emissions impacts from these respective stations outside each facility's defined fenceline boundaries in accordance with EPA's definition of ambient air. Due to the net emission decreases from CS 300 that would result after Project modifications, dispersion modeling for CS 300 was not conducted. Natural's AERSCREEN analyses for these stations found that each modified compressor station would be in compliance with the NAAQS. Both analyses assumed that these modified facilities would be running at full capacity (i.e., 8,760 hours per year at maximum emission rates). Background concentrations from the nearest air monitors were then added to the maximum predicted concentrations from the model and the total was compared to the NAAQS. The model results for CO, NO₂, and PM_{2.5} are provided in tables 13 and 14 below.

The results in tables 13 and 14 indicate that the combined total of existing background and maximum modeled concentrations are less than the applicable NAAQS for all modeled pollutants. Therefore, the Project would not cause or significantly contribute to a degradation of ambient air quality. The Project would result in continued compliance with the NAAQS, which are established to be protective of human health, including sensitive populations such as children, the elderly, and asthmatics.

Table 13. CS 301 - Predicted Air Quality Impacts					
Pollutant	Averaging Period	Maximum Modeled Concentration in micrograms per cubic meter (µg/m³)	Existing Air Quality Monitored Values (µg/m³)	Aggregate Impact CS301 Plus Existing Air Quality Monitored Values (µg/m³)	NAAQS (µg/m³)
CO	8-hour	875.2	1,922	2,797	10,000
NO ₂	1-hour	40.2	75.8	116.0	188
	Annual	4.0	13.5	17.5	100
PM _{2.5}	24-hour	3.22	22.0	25.2	35
	Annual	0.54	10.8	11.3	12

Table 14. CS 304 - Predicted Air Quality Impacts					
Pollutant	Averaging Period	Maximum Modeled Concentration in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)	Existing Air Quality Monitored Values ($\mu\text{g}/\text{m}^3$)	Aggregate Impact CS304 Plus Existing Air Quality Monitored Values ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)
NO ₂	1-hour	57.3	40.1	97.4	188
	Annual	5.7	7.1	12.8	100
PM ₁₀	24-hour	6.51	28.7	35.2	150
PM _{2.5}	24-hour	6.51	16.7	23.2	35
	Annual	1.09	8.67	9.8	12

Class I Areas

Under the PSD program, 156 mandatory federal Class I areas are currently designated by the EPA to protect certain areas (e.g., wilderness areas, national parks, national forests) to ensure that deterioration of existing air quality-related values, such as visibility, is minimized in these areas. Relative to Class II and III areas, Class I areas have the most restrictive allowable PSD air quality increments. For a new major source or major modification located within 62 miles (100 kilometers) of Class I area, the facility is required to notify the appropriate federal land manager and assess the impacts of that project on the nearby Class I area.

The nearest Class I areas to the proposed modified compressor stations are listed in table 15:

Table 15. Nearest Class I Areas to Proposed Modified Compressor Stations		
Facility	Nearest Class I Area	Distance to Nearest Class I Area (kilometers)
CS 300	Big Bend National Park	585
CS 301	Caney Creek Wilderness Area	570
CS 303	Caney Creek Wilderness Area	350
CS 304	Caney Creek Wilderness Area	220
CS 394	Caney Creek Wilderness Area	130

As summarized in tables 13 to 14 above, only the modification of CS 301 would result in a net emissions increase above *de minimis* levels; modifications to CS 300 and CS 304 would result in substantial net emissions decreases for all criteria pollutants; and modifications to CS 303 and CS 394 would result in very minor emissions increases of VOC and HAP. Due to the large distance from CS 301 to each of the Class I areas identified in table 15, and the negligible emissions increases from CS 303 and CS 394, Project-related emissions would have negligible impacts on Class I areas. The net decreases in emissions from CS 300 and CS 304 would reduce current facility emission impacts on the Caney Creek Wilderness Area.

9. Noise

Project construction would temporarily affect noise levels in the immediate vicinity of each modified compressor station during times that active construction is occurring. Following construction, all modified compressor stations would continue to produce noise during operation, and noise emitted from CS 300, 301, and 304 could change over existing levels. Noise produced from existing CS 303 and 394 would not be affected by Project modifications; therefore, no Project operation-related noise impacts would result at these stations and no further discussion is included here.

The ambient sound level of a region is defined by the total noise generated within the specific environment, over varying land use types, and is usually comprised of natural and artificial sounds. Noise is generally defined as sound with intensity greater than the ambient or background sound pressure level. The magnitude and frequency of environmental noise may vary considerably over the course of the day, throughout the week, and across seasons, in part due to changing weather conditions and the effects of seasonal vegetation cover.

Two measures that relate the time-varying quality of environmental noise to its known effect on people are the 24-hour equivalent sound level (L_{eq}) and day-night sound level (L_{dn}). The L_{eq} is an A-weighted sound level containing the same energy as the instantaneous sound levels measured over a specific time period. Noise levels are perceived differently, depending on length of exposure and time of day. The L_{dn} takes into account the duration and time the noise is encountered. Specifically, the L_{dn} is the L_{eq} plus a 10 decibel on the A-weighted scale (dBA) penalty added to account for people's greater sensitivity to sound levels during late evening and early morning hours (between the hours of 10:00 pm and 7:00 am). The A-weighted scale is used to assess noise impacts because human hearing is less sensitive to low and high frequencies than mid-range frequencies. The human ear's threshold of perception for noise change is considered to be 3 dBA; 6 dBA is clearly noticeable to the human ear, and 10 dBA is perceived as a doubling of noise (Bies and Hansen, 1988).

9.1 Federal Noise Regulations

In 1974, the EPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA, 1974). This document provides information for state and local governments to use in developing their own ambient noise standards. The EPA has indicated that an L_{dn} of 55 dBA protects the public from indoor and outdoor activity interference. We have adopted this criterion and use it to evaluate the potential noise impacts from the proposed Project at NSAs. NSAs are defined as homes, schools, churches, or any location where people reside or gather. FERC requires that the noise attributable to any new or modified compressor station during full load operation not exceed an L_{dn} of 55 dBA at any NSAs. Due to the 10 dBA nighttime penalty added prior to the logarithmic calculation of the L_{dn} , for a facility to meet the 55 dBA L_{dn} limit, it must be designed such that actual constant noise levels on a 24-hour basis do not exceed 48.6 dBA L_{eq} at any NSA. No state or local noise ordinances apply to any of the Project locations.

9.2 Ambient Noise Conditions

The areas surrounding CS 300 and CS 301 primarily consist of agricultural land, while CS 304 is situated in an area that is both forested and occupied by existing oil and gas infrastructure. Ambient noise surveys were conducted for CS 300, 301, and 304 to identify nearby NSAs and determine the existing full-load noise contributions of each station, in dBA L_{dn} , at each of its respective NSAs.⁷

9.3 Construction Noise Impacts and Mitigation

Noise would be generated during construction of the Project at each of the compressor station sites. Construction activities could last from several weeks to several months on an intermittent basis. On-site construction noise would occur mainly from heavy-duty construction equipment (e.g., trucks, backhoes, excavators, loaders, and cranes). While individuals in the immediate vicinity of the construction activities would experience an increase in noise, this effect would be temporary and local. If nighttime construction is necessary at CS 300, 301, and 304, Natural would utilize a reduced set of construction equipment during nighttime hours from 7:00 pm to 7:00 am in an effort to limit nighttime construction noise to 48.6 dBA L_{eq} at nearby NSAs.

9.4 Operation Noise Impacts and Mitigation

All modified compressor stations would continue to generate noise on a continuous basis (up to 24 hours per day) when operating; however, only full-load noise levels from CS 300, 301, and 304 would change as a result of the Project. Noise

⁷ Natural's ambient noise surveys also included measurements of existing ambient background noise not attributable to Natural's compressor stations at each of the NSAs; as FERC's noise regulations apply only to the noise contribution from FERC-jurisdictional noise sources, we do not include ambient noise results at any of the existing compressor stations evaluated in our analysis here.

generated from operation of each station would originate from: an existing electric unit, coolers, and proposed new electric unit and associated equipment (CS 300); new equipment including one compressor unit, two gas coolers, one lube oil cooler, air intake and exhaust system, catalytic fuel heater, pressure control valves, yard and station piping, and existing compressor units and equipment (CS 301); and new equipment including two compressor units, seven gas coolers, one lube oil cooler, air intake and exhaust systems, catalytic fuel heater, filter separators, pressure control valves, and yard and station piping (CS 304).

Natural conducted ambient sound surveys for each of the existing CS 300, 301, and 304 to estimate the full-load noise contribution of each existing station at nearby NSAs, and subtracted extraneous noise sources (insects, animals, roadway traffic, logging operations, etc.) using acoustic software.

As summarized in tables 16, 17, and 18, the full-load ambient noise contribution of each of the CS 300, 301, and 304 obtained from each respective sound survey is combined with predicted noise impacts from the proposed equipment to predict the full-load noise contribution of each modified compressor station at nearby NSAs. The predicted full-load noise contributions for each station incorporate the noise control measures for operational noise specified in the Pre-Construction Sound Level Survey reports filed with Natural's application.

Noise control measures would include acoustic specifications and other design requirements for the compressor station building walls and roof, equipment and personnel doors, and building ventilation (CS 300, 301, and 304); aboveground piping, engine inlet, and turbine exhaust (CS 301); and combustion air inlet and exhaust and updraft filter (CS 304). The distance from the nearest NSAs to the compressor stations and each modified station's inherent design would also serve to minimize vibration. The results of the operational noise analysis incorporating Natural's proposed noise mitigation measures are provided in tables 16, 17, and 18.

Table 16. Noise Analysis for the Modified CS 300					
NSA (residences)	Distance and Direction from station	Measured L_{dn} Noise Level Contribution from existing station (dBA)	Predicted L_{dn} Noise Level Contribution from proposed new equipment	Predicted Total L_{dn} Noise Contribution	Predicted Change in L_{dn} from existing station (dBA)
1	840 feet SSE	46.3	48.3	50.4	+4.1
2	2,530 feet SSE	36.7	36.5	39.6	+2.9

Table 17.
Noise Analysis for the Modified CS 301

NSA (residences)	Distance and Direction from station	Measured L_{dn} Noise Level Contribution from existing station (dBA)	Predicted L_{dn} Noise Level Contribution from proposed new equipment	Predicted Total L_{dn} Noise Contribution	Predicted Change in L_{dn} from existing station (dBA)
1	1,480 feet W	36.3	49.3	49.5	+13.2
2	1,670 feet SE	46.6	49.1	51.0	+4.4
3	2,210 feet S	47.2	43.2	48.7	+1.5

Table 18.
Noise Analysis for the Modified CS 304

NSA (residences)	Distance and Direction from station	Modeled L_{dn} Noise Level Contribution from existing station (dBA)	Predicted L_{dn} Noise Level Contribution from proposed new equipment	Predicted Total L_{dn} Noise Contribution	Predicted Change in L_{dn} from existing station (dBA)
1	2,830 feet SE	48.8	46.7	50.9	+2.1
2	3,250 feet SW	45.3	47.9	49.8	+4.5
3	2,430 feet NW	42.1	47.3	48.4	+6.3
4	3,660 feet NE	38.4	43.6	44.7	+6.3

The operational noise results in tables 16, 17, and 18 indicate that, depending on other sources of ambient noise at varying times during the year and during the day, the change in the modified CS 300's noise contribution would likely be perceptible at NSAs 1 and 2, the modified CS 301's noise contribution would be clearly noticeable at NSA 1 and perceptible at NSA 2 (but not at NSA 3), and the modified CS 304's noise contribution would be perceptible at NSAs 2, 3, and 4 (but not at NSA 1). The modeled results predict that the noise contribution from each facility would be within our 55 dBA L_{dn} criterion.

In addition, a gas blowdown vent (alternatively called casing venting events or unit blowdowns) for a compressor unit would be within the fenced area of CS 300, 301, and 304, and would vent gas between the suction/discharge valves and compressor to the atmosphere via a silencer. Natural estimates that these case vent events would occur approximately 100 times annually, would take place over approximately 5 minutes, and

would not exceed the following noise levels at each compressor station: 51.7 dBA L_{eq} at NSA 1 associated with CS 300; 44.0 dBA L_{eq} at NSA 1 associated with CS 301; and 47.5 dBA L_{eq} at NSA 1 associated with CS 304. To ensure that the operational noise contribution of each of the modified CS 300, 301, and 304 at nearby NSAs would be less than an L_{dn} of 55 dBA, **we recommend that:**

- **Natural should file noise surveys with the Secretary of the Commission (Secretary) no later than 60 days after placing the authorized unit(s) at the modified CS 300, 301, and 304 into service. If a full power load condition noise survey is not possible, Natural should file an interim survey at the maximum possible power load within 60 days of placing each modified station into service and file the full power load survey within 6 months. If the noise attributable to the operation of all equipment at each station under interim or full power load conditions exceeds an L_{dn} of 55 dBA at any nearby NSAs, Natural should:**
 - (a) **file a report with the Secretary, for review and written approval by the Director of the Office of Energy Projects (OEP), on what changes are needed;**
 - (b) **install additional noise controls to meet that level within 1 year of the in-service date; and**
 - (c) **confirm compliance with this requirement by filing a second noise survey with the Secretary no later than 60 days after it installs the additional noise controls.**

While existing noise levels would be impacted by operation of the modified CS 300, 301, and 304, based on our analysis, Natural's proposed noise mitigation measures for each station, and our recommendation above, we conclude that the Project would not result in significant noise impacts on any nearby NSAs.

10. Reliability and Safety

The pressurization of natural gas at a compressor station involves some risk to the public in the event of an accident and subsequent release of gas. The greatest hazard is a fire or explosion following a leak, or rupture at the facility. Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death.

The compressor station upgrades must be designed, constructed, operated, and maintained in accordance with the USDOT Minimum Federal Safety Standards in 49 CFR Part 192. The regulations are intended to ensure adequate protection for the public and to prevent facility accidents and failures.

Part 192.163 – 192.173 of 49 CFR specifically addresses design criteria for compressor stations, including emergency shutdowns and safety equipment. Part 192 also requires a pipeline operator to establish a written emergency plan that includes procedures to minimize the hazards in an emergency.

Additionally, the operator must establish a continuing education program to enable the public, government officials, and others to recognize an emergency at the facility and report it to appropriate public officials. Natural would provide the appropriate training to local emergency service personnel before the facilities are placed in service.

On October 1, 2019, the PHMSA issued new regulations modifying and expanding the standard pipeline safety standards under 49 CFR Parts 191 and 192. These regulations, in part, established: new standards for in-line inspections; requirements for newly established moderate consequence areas (MCA); explicit requirements for consideration of seismicity and geotechnical risks in the integrity management plan for the pipeline; new regulations on pipeline patrol frequency for HCAs, MCAs and grandfathered pipelines; a policy to reconfirm maximum allowable operating pressure (MAOP) for certain pipelines; installation of pressure relief for pig launcher/receivers; and reporting of exceedances of MAOP to PHMSA. These regulations go into effect on July 1, 2020.

Natural's construction and operation of modified CS 300, 301, 303, 304, and 394 would represent a minimum increase in risk to the nearby public, and we are confident that with implementation of the required design criteria for the design of the modified stations, that they would be constructed and operated safely.

11. Cumulative Impacts

In accordance with NEPA and with FERC policy, we identified other actions in the vicinity of the Project facilities and evaluated the potential for a cumulative impact on the environment. As defined by the CEQ, a cumulative effect is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of the agency or party undertaking such other actions. Cumulative impacts can result from individually minor, but collectively significant actions, taking place over time. The CEQ guidance states that an adequate cumulative effects analysis may be conducted by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions (CEQ, 1997b). In this analysis, we consider the impacts of past projects within defined geographic scopes as part of the affected environment (environmental baseline) which were described and evaluated in the preceding environmental analysis. However, present effects of past actions that are relevant and useful are also considered.

We have evaluated the cumulative impacts of the proposed Project consistent with other recent assessments issued by the Commission, and in accordance with recommended CEQ and EPA methodologies (CEQ, 1997b; EPA, 1999). The EPA also

recommended that we follow the cumulative impacts analysis methodology *Guidance for Preparers of Cumulative Impact Analysis* developed jointly by the EPA, the Federal Highway Administration, and the California Department of Transportation⁸ to assess cumulative impacts for the proposed Project.

Our cumulative effects analysis focuses on potential impacts from the proposed Project on resource areas or issues where the incremental contribution could result in cumulative impacts when added to the potential impacts of other actions. To avoid unnecessary discussions of insignificant impacts and projects and to adequately address and accomplish the purposes of this analysis, an action must first meet the following three criteria to be included in the cumulative analysis:

- affects a resource also potentially affected by the Project;
- causes this impact within all, or part of, the Project area defined by the resource-specific geographic scope; and
- causes this impact within all, or part of, the time span of the proposed Project's estimated impacts.

As described in our analysis above within section B of this EA, constructing and operating the Project would temporarily and permanently affect the environment. However, with the exception of air and noise impacts, we concluded that nearly all of the Project-related impacts would be short term and contained within or adjacent to the temporary construction workspaces. For example, erosion control measures included in Natural's ECMP and the FERC Plan would keep disturbed soils within the work areas on each facility site and would therefore not contribute to cumulative impacts on soil resources. Resources that could be affected outside the immediate Project area and are subject to our cumulative impacts review include watershed-level impacts on surface water resources; socioeconomic; traffic; air quality and noise (both construction-related and operational); and climate change.

The following resources would not be affected by the Project, and therefore no cumulative impacts would occur on:

- geological resources, due to the relatively shallow depth of excavation; because construction would take place within areas previously disturbed by compressor facility construction; karst terrain is not present; and blasting would not be required;
- active mineral resources or oil wells, as none are present in the Project area;
- soils, as Project-related soil disturbance would take place only within the boundaries of existing, disturbed compressor facilities, and because

⁸ See http://www.dot.ca.gov/ser/cumulative_guidance/approach.htm.

Natural would follow the provisions of the Plan and Procedures and its ECMP to prevent the offsite migration of sediment during construction and operation;

- 100-year floodplains, as no portions of the Project would be constructed within a 100-year floodplain;
- groundwater resources, due to the relatively shallow depth of excavation; the depth to groundwater, and the lack of nearby potable water wells;
- wetlands, as none would be affected by the Project;
- general vegetation, wildlife habitat, or wildlife activity, as the only ground-disturbance or vegetation clearing would be within fenced natural gas compressor station facilities, and no other identified project is close enough to one of the Project compressor stations to cumulatively affect wildlife behavior;
- endangered or threatened species, as the Project would have *no effect* on federally listed endangered or threatened species and therefore it would not contribute to cumulative impacts on federally listed species;
- cultural resources, as none were identified in the areas affected by the Project; therefore, the Project would have no impact on cultural resources and would not result in cumulative impacts on these resources;
- land use, as the new compression facilities would be constructed within existing Natural operating facilities, and no change in land use type or intensity would occur;
- natural or scenic areas and parks, registered natural landmarks, designated National or State Wilde and Scenic Rivers, special use areas, or visually sensitive areas, because none are within the Project area; or
- visual resources and aesthetics as the Project would add additional facilities only to existing, natural gas compression facilities.

Table 19 below summarizes the resource-specific geographic boundaries considered in this analysis, and the justification for each. Actions outside of these boundaries were not evaluated because their potential to contribute to cumulative impacts diminishes with increasing distance from the Project.

Table 19. Resource-Specific Geographic Regions and Temporal Scope for Determining Cumulative Impacts			
Resource(s)	Cumulative Impact Geographic Scope	Justification for Geographic Scope	Temporal Scope
Surface water resources	Watershed boundary (HUC 12)	Watersheds are well-defined, published natural boundaries for surface water flow and commonly contribute to the recharge of groundwater resources. Impacts on surface waters can result in downstream contamination or turbidity. Therefore, the geographic scope used to assess cumulative impacts on waterbodies includes the HUC-12 watershed within which Project facilities are located. As no perennial waterbodies would be directly (or indirectly) affected, the Project would not contribute to cumulative impacts on fisheries.	Within 2 weeks of construction (to account for any offsite turbidity or sedimentation impacts).
Socioeconomics and traffic	Affected County	The socioeconomic impact area generally comprises the municipalities or counties in which project facilities will be located or may be affected by project activities. Because of the minor nature of the activities at CS 303 and 394, cumulative impacts on socioeconomics, including traffic-related impacts, were evaluated for the counties only where additional compression is proposed (i.e., CS 300, CS 301, and CS 304).	Construction work - Within construction period – 2020 – 2021. Operations – lifetime of project for employment and real property tax payments.
Air Quality and Noise	50 kilometers (air quality - operations)	Operational impacts include all sources within 50 kilometers of facilities having potential emission rates of pollutants capable of elevating existing background concentrations, which for this analysis includes the proposed modified CS300, CS301, and CS304.	Operations – lifetime of project.
	0.25 mile (air quality – construction)	Due to the limited emissions generated by construction equipment, the geographic scope used to assess potential cumulative impacts on air from construction activities was set at 0.25 mile.	Within construction period – 2020 – 2021 or until land restoration and stabilization completed.
	1 mile (operational noise and vibration)	Noise impacts are highly localized and attenuate quickly as the distance from the noise source increases. The Commission's Guidance Manual for Environmental Report Preparation requires that noise impacts from aboveground facilities are evaluated at all noise sensitive areas within 1 mile.	Construction – during construction period. Operation – lifetime for compressor stations.

11.1 Other Actions identified within the Geographic Scope

Table 20 identifies past, current, and reasonably foreseeable actions and affected resources potentially falling within one or more geographic scopes identified in table 19. Natural obtained the information about present and future planned actions summarized in the table by consulting federal, state, and local agency and municipality websites.⁹

⁹ Natural filed a comprehensive list of other projects in the general area of the Project compressor stations (see FERC e-library accession no. 20190228-5086), most of which would not contribute to cumulative impacts for the reasons discussed above. Only the projects with the potential to contribute to cumulative impacts are included in table 20 and discussed here.

<p>Table 20. Past, Present, and Reasonably Foreseeable Projects Considered in the Cumulative Impacts Analysis for the Gulf Coast Southbound Project</p>					
Project (Project Proponent)	Project Description	Estimated Construction Timeframe	Project Size (acres)	Closest Distance from Project	Resources Potentially Affected within the proposed Project's Geographic Scope
Compressor Station Projects					
Gulf Connector Expansion Project (Transcontinental Pipe Line Gas Company, LLC [Williams])	Phase 1 - Construction of a new compressor station (Compressor Station 32) in Wharton County, and piping and valve modifications at an existing compressor station (Compressor Station 40).	Construction: completed and facility is in operation	75.8	Compressor Station 32 is 1.46 miles northwest of CS 301 in Wharton County;	Socioeconomics and Operational Air Quality
Gulf Connector Expansion Project (Transcontinental Pipe Line Gas Company, LLC [Williams])	Phase 2 – Construction of two new compressor stations (Compressor Station 17 in San Patricio County and Compressor Station 23 in Victoria County).	Construction: completed and facilities are in operation	75.8	Compressor Station 17 is over 50 miles south of CS 300 in in Victoria County	Socioeconomics
				Compressor Station 23 is 0.94 mile north of CS 300 in Victoria County	Socioeconomics and Operational Air Quality
Station 9 Horsepower Replacement Project (Tennessee Gas Pipeline Company, L.L.C)	Replace existing horsepower at an existing compressor station.	Construction: October 2018 Operation: October 2019	20	1.41 miles northwest of CS 300	Socioeconomics and Operational Air Quality
Road Construction Projects					
US 59 Freeway Upgrade Project (TXDOT)	Upgrade to rural freeway to include construction of frontage roads	Construction: information not available. Operation: May 2021	2.77 miles	8.67 mile north of CS 300	Socioeconomics

<p align="center">Table 20. Past, Present, and Reasonably Foreseeable Projects Considered in the Cumulative Impacts Analysis for the Gulf Coast Southbound Project</p>					
Project (Project Proponent)	Project Description	Estimated Construction Timeframe	Project Size (acres)	Closest Distance from Project	Resources Potentially Affected within the proposed Project's Geographic Scope
US 59 Diboll Relief Route (TXDOT)	Construction of a relief route around the City of Diboll.	Construction: 2020 Operation: TBD	8.19 miles	3.08 miles west of CS 303	Water Resources and Socioeconomics
Residential Development Projects					
Lake Forest Residential Development (B.J. Davis D.G.M.P. Inc.)	Construction of a 100-plus-lot residential subdivision in multiple phases.	Construction: Currently underway and ongoing as lots are sold	8.39	14.17 miles northwest of CS 300	Water Resources and Socioeconomics
Salem Crossing Residential Development (Salem Crossing, LTD.)	Construction of a 162-lot residential subdivision in multiple phases.	Construction: Currently underway and ongoing as lots are sold	31.03	12.67 miles northwest of CS 300	Water Resources and Socioeconomics
Terravista Residential Development (Landmark Residential Holdings, LLC)	Construction of a 100 plus-lot subdivision in multiple phases.	Construction: Currently underway and ongoing as lots are sold	6.32	14.67 miles northwest of CS 300	Water Resources and Socioeconomics
Tuscany Residential Development (Ball Airport Road Development Corporation)	Construction of a 100-plus-lot residential subdivision in multiple phases.	Construction: Currently underway and ongoing as lots are sold	18.13	14.91 miles northwest of CS 300	Water Resources and Socioeconomics
N/A – not applicable TBD – to be determined					

11.2 Potential Cumulative Impacts of the Proposed Project

The actions considered in our cumulative impact analysis identified in section B.11.1 may vary from the proposed Project in nature, magnitude, and duration. These actions are included based on the likelihood of their impacts coinciding with the Project's impacts, which means that these other actions have current or ongoing impacts or are "reasonably foreseeable." The actions we considered are those that could affect a similar resource within the same geographic scope defined in table 19, and during the same timeframe as the Project. The anticipated cumulative impacts of the Project and these other actions are discussed below, as well as mitigation actions that Natural would follow to reduce those impacts related to the Project. As discussed above, the potential for the proposed Project to result in cumulative impacts is limited to the following resource areas: surface water resources, socioeconomics, traffic, air quality and noise, and climate change, as discussed below.

Surface Water

The geographic scope for assessing cumulative impacts on surface water resources includes each Project compressor station's HUC-12 watershed. The temporal scope is limited to the duration of time where any offsite turbidity or sedimentation could reasonably be expected to persist (a couple of weeks).

Construction of the Project facilities would not directly impact surface waterbodies or wetlands (the construction workspace at CS 303 would avoid the two PEM wetlands onsite). However, during construction, clearing vegetation cover and grading could increase erosion. Compaction of soils by heavy equipment near the ephemeral streams and manmade drainage may accelerate erosion and the transportation of sediment carried by stormwater runoff into these features. To minimize erosion, Natural would implement its Project ECMP, which includes the FERC Plan and Procedures and the Project SPRP.

The actions in table 20 could result in direct and indirect impacts on surface water and wetlands through increased erosion from vegetation clearing and grading. Two TXDOT roadway and four residential development projects may be constructed within the Project HUC-12 watershed during the same period as the Project; however, these projects would be between 3 and 15 miles from the proposed Project, and it is unlikely that cumulative impacts to surface water would occur. These projects would be required to obtain all necessary federal and state water quality permits for stream crossing and wetlands impacts, including Section 404 of the Clean Water Act and NPDES permits as well as local and county soil erosion and sediment control approvals. As discussed in section B.3.2, the only potential Project impacts on surface water resources are associated

with two ephemeral streams and a man-made ditch, and any impacts on the associated watershed would be very minor and short-term. Therefore, we conclude that the Project would not have a noticeable contribution to overall cumulative impacts on surface water resources.

Socioeconomics

As discussed in section B.6, the Project may affect the socioeconomic conditions of the Project area in the short term, when the facilities are under construction and the temporary construction work force relocates to the Project area. The project would also have an effect in the long term due to increased county revenue collections from taxes levied on Project facilities. Table 20 identifies two TXDOT roadway and four residential development projects that may have short term socioeconomic effects within the geographic and temporal scope of the Project. These projects would likely be constructed by workers who either already reside in the Project area, and whose effect on socioeconomic conditions is already accounted for in the baseline housing, economic, public services, and infrastructure conditions; or by workers who would temporarily move to the area for the roadway and housing construction projects.

While an estimate of the number of outside workers who would relocate for these project is not available, it can be conservatively assumed that even if the workforce is similar in scale to that constructing the Project facilities (i.e., 80 workers per county), available housing and other public services would be sufficient to accommodate this short term demand without significant impact to the affected counties.

On a long-term basis, the proposed Project facilities and the other natural gas compression facilities in table 20 would have a minor, positive, cumulative impact on the level of tax collections in Victoria and Wharton counties during the operational life of the these facilities. No new workers would be hired to operate the Project facilities, and no impact on county public services such as schools and public safety would occur.

As concluded in section B.6, socioeconomic impacts from Project construction and operation are expected to be minimal. No major impacts are expected from any other projects within the defined geographic scope for socioeconomic impacts. Therefore, we conclude that the Project would result in a minimal cumulative impact on socioeconomics within the geographic scope.

Traffic

As described in section B.6.4, traffic impacts from Project construction are expected to be minimal. Traffic levels and congestion in Project areas may be affected during the 12-month construction period due to personnel movement and materials and equipment deliveries. If this takes place during the same time period as other potential projects listed in table 20 (such as the construction of the US 59 Diboll Relief Route), there could be a cumulative impact on local traffic. However, we would expect the

TXDOT projects (or others that involve considerable use of local road systems) to have traffic management plans, and that related impacts would be short term and minor.

During Project operations, no new staff would be hired at Natural's facilities and any increases in traffic on local roadways due to increases in material deliveries would be negligible. We conclude that the Project would result in a minimal cumulative impact on traffic within the geographic scope.

Air Quality and Noise

With the exception of the Transcontinental Pipeline Compressor Station 23 Project, all of the projects in table 20 would be more than 1 mile from the Project facilities, and therefore there would be no cumulative construction or operational noise or construction period air quality impacts. The compressor station projects in table 20, however, would have operational air quality emissions that could combine with the emissions from Project CS 301 and 304. As discussed in section B.9.4, Natural performed refined air dispersion modeling for the proposed modified CS 301 and 304 and found that the cumulative potential air impacts from both stations combined with background concentrations would comply with NAAQS outside each respective facility's fenceline boundary.

The Transcontinental Pipeline and Tennessee Gas Pipeline compression projects identified by Natural as falling within the defined 50-kilometer radius geographic scope for Compressor Stations 301 and 304 could have the potential to result in some cumulative impact with ambient concentrations attributable to each of these stations; however, due to the distances from each of these sources to Compressor Stations 301 and 304, we conclude that such impacts would have negligible potential to elevate ambient concentrations when combined with each compressor station's and existing ambient background concentrations of any criteria pollutant.

The Transcontinental Gas Pipeline Compressor Station 23 project, in the vicinity of Compressor Station 300, has the potential to add to noise levels at the location of NSA 1 associated with Compressor Station 300. Natural estimates that the full-load L_{dn} noise contribution from Compressor Station 23 at NSA 1 (38.6 dBA), combined with full-load noise contribution of Compressor Station 300 at NSA 1 (50.4 dBA), would result in a potential cumulative increase in noise levels at that NSA of approximately 0.3 dBA (total 50.7 dBA L_{dn}). This 0.3 dB change would not be detectable by the human ear, and the resultant cumulative noise level would remain under our noise criterion of 55 dBA L_{dn} .

We conclude that cumulative air quality and noise impacts from Project construction and operation would not be significant.

C. ALTERNATIVES

In accordance with NEPA and Commission policy, we evaluated alternatives to the Project to determine whether they would be reasonable and environmentally preferable to the proposed action, while meeting the Project objective. These alternatives included the no-action alternative, system alternatives, and site alternatives. The evaluation criteria used for developing and reviewing alternatives were:

- ability to meet the Project's stated objective;
- technical and economic feasibility and practicality; and
- significant environmental advantage over the proposed action.

1. No-Action Alternative

Under the no-action alternative, Natural would not construct or operate the Gulf Coast Southbound Project, and none of the impacts associated with the Project would occur. However, the Project objectives would not be met. Natural would not be able to meet the Project's stated need in section A.2, including providing an incremental increase of 300,000 Dth per day of natural gas capacity to Corpus Christi Liquefaction.

Although a Commission decision to deny the proposed action would avoid the environmental impacts addressed in this EA, other natural gas projects could be constructed to provide a substitute for the natural gas transportation capacity offered by Natural. Such alternative projects would require the construction of additional and/or new facilities in the same or other locations to meet the Project objectives. These alternatives would result in their own set of specific environmental impacts that could be greater or equal to those associated with the current proposal. Therefore, we have dismissed this alternative as a reasonable alternative to meet the Project objectives.

2. System Alternatives

System alternatives are alternatives to the proposed action that would make use of Natural's (or other companies') existing, modified, or proposed pipeline systems to meet the stated objective of the proposed Project. Other than Natural's Gulf Coast Mainline System, there are no other natural gas pipeline systems in the vicinity of the proposed Project that can provide transport from the requested receipt points to the desired delivery points without major expansion. Therefore, we identified no system alternatives that are technically feasible and would meet the Project objectives.

3. Alternative Facilities

Natural has proposed to construct the facilities within Natural-owned properties where active compression facilities already exist. Construction at these existing stations would take place within the existing disturbed, fenced properties and would not require any expansion of the station sites. Based on our analysis in this EA, we have determined

that the proposed construction and operation activities on these existing developed sites would not result in significant environmental impacts. We did not receive any comments on, or objections to the proposed sites, nor did we receive any suggested alternative locations. Natural's site investigations determined that the proposed sites were well-suited with regards to engineering and hydraulic constraints, and posed minimal environmental impact. We agree, and as such did not evaluate site alternatives for the compressor stations modifications.

4. Alternatives Conclusion

We did not identify any system, pipeline, or aboveground facility alternatives that would provide a significant environmental advantage over the proposed Project design. Therefore, we conclude that the proposed Project is the preferred alternative to meet the Project objectives.

D. CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis in this EA, we have determined that if Natural abandons, constructs, and operates the proposed facilities in accordance with its application and supplements, and the staff's recommended mitigation measures below, approval of the Project would not constitute a major action significantly affecting the quality of the human environment. We recommend that the Commission Order contain a finding of no significant impact and include the measures listed below as conditions in any authorization the Commission may issue to Natural.

1. Natural shall follow the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests) and as identified in the EA, unless modified by the Order. Natural must:
 - a. request any modification to these procedures, measures, or conditions in a filing with the Secretary;
 - b. justify each modification relative to site-specific conditions;
 - c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
 - d. receive approval in writing from the Director of OEP **before using that modification.**
2. The Director of OEP, or the Director's designee, has delegated authority to address any requests for approvals or authorizations necessary to carry out the conditions of the Order, and take whatever steps are necessary to ensure the protection of environmental resources during construction and operation of the Project. This authority shall allow:
 - a. the modification of conditions of the Order;
 - b. stop-work authority; and
 - c. the imposition of any additional measures deemed necessary to ensure continued compliance with the intent of the conditions of the Order as well as the avoidance or mitigation of unforeseen adverse environmental impact resulting from Project construction and operation.
3. **Prior to any construction**, Natural shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, EIs, and contractor personnel will be informed of the EI's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.
4. The authorized facility locations shall be as shown in the EA, supplemented by filed alignment sheets. **As soon as they are available, and before the start of**

construction, Natural shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. All requests for modifications of environmental conditions of the Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

5. Natural shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction in or near that area**.

This requirement does not apply to extra workspace allowed by the Commission's *Upland Erosion Control, Revegetation, and Maintenance Plan* and/or minor field realignments per landowner needs and requirements which do not affect other landowners or sensitive environmental areas such as wetlands.

Examples of alterations requiring approval include all facility location changes resulting from:

- a. implementation of cultural resources mitigation measures;
 - b. implementation of endangered, threatened, or special concern species mitigation measures;
 - c. recommendations by state regulatory authorities; and
 - d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.
6. **At least 60 days before construction begins**, Natural shall file an Implementation Plan with the Secretary for review and written approval by the Director of OEP. Natural must file revisions to the plan as schedules change. The plan shall identify:
 - a. how Natural will implement the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests), identified in the EA, and required by the Order;

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- b. how Natural will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
 - c. the number of EIs assigned, and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;
 - d. company personnel, including EIs and contractors, who will receive copies of the appropriate material;
 - e. the location and dates of the environmental compliance training and instructions Natural will give to all personnel involved with construction and restoration (initial and refresher training as the Project progresses and personnel change);
 - f. the company personnel (if known) and specific portion of Natural's organization having responsibility for compliance;
 - g. the procedures (including use of contract penalties) Natural will follow if noncompliance occurs; and
 - h. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:
 - (1) the completion of all required surveys and reports;
 - (2) the environmental compliance training of onsite personnel;
 - (3) the start of construction; and
 - (4) the start and completion of restoration.
7. Natural shall employ at least one EI for the Project. The EI(s) shall be:
- a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;
 - b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;
 - c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;
 - d. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and
 - e. responsible for maintaining status reports.
8. Beginning with the filing of its Implementation Plan, Natural shall file updated status reports with the Secretary on a **monthly** basis until all construction and restoration activities are complete. On request, these status reports will also be

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provided to other federal and state agencies with permitting responsibilities. Status reports shall include:

- a. an update on Natural's efforts to obtain the necessary federal authorizations;
 - b. the construction status of the Project, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally sensitive areas;
 - c. a listing of all problems encountered and each instance of noncompliance observed by the EI during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);
 - d. a description of the corrective actions implemented in response to all instances of noncompliance;
 - e. the effectiveness of all corrective actions implemented;
 - f. a description of any resident complaints which may relate to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and
 - g. copies of any correspondence received by Natural from other federal, state, or local permitting agencies concerning instances of noncompliance, and Natural's response.
9. Natural must receive written authorization from the Director of OEP **before commencing construction of any Project facilities**. To obtain such authorization, Natural must file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).
10. Natural must receive written authorization from the Director of OEP **before placing the Project into service**. Such authorization will only be granted following a determination that rehabilitation and restoration of the right-of-way and other areas affected by the Project are proceeding satisfactorily.
11. **Within 30 days of placing the authorized facilities in service**, Natural shall file an affirmative statement with the Secretary, certified by a senior company official:
 - a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or
 - b. identifying which of the conditions in the Order Natural has complied with or will comply with. This statement shall also identify any areas affected by the Project where compliance measures were not properly implemented,

if not previously identified in filed status reports, and the reason for noncompliance.

12. Natural shall file noise surveys with the Secretary **no later than 60 days** after placing the authorized unit(s) at the modified CS 300, 301, and 304 into service. If a full power load condition noise survey is not possible, Natural shall file an interim survey at the maximum possible power load **within 60 days** of placing each modified station into service and file the full power load survey **within 6 months**. If the noise attributable to operation of all equipment at each station under interim or full power load conditions exceeds an L_{dn} of 55 dBA at any nearby NSA, Natural shall:
 - a. file a report with the Secretary, for review and written approval by the Director of OEP, on what changes are needed;
 - b. install additional noise controls to meet that level **within 1 year** of the in-service date; and
 - c. confirm compliance with this requirement by filing a second full power load noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls.

E. REFERENCES

- America's Scenic Byways. 2018. Texas Scenic Byways.
<https://scenicbyways.info/state/TX.html>. Accessed November 2018. Benson, Lisa. January 14, 2019. Harrison County Road and Bridge Department. Personal communication with Kaitlyn Cargol (Environmental Specialist, Perennial Environmental Services, LLC).
- _____. November 20, 2018. Harrison County Road and Bridge Department. Personal communication with Blake Bringham (Staff Biologist, Perennial Environmental Services, LLC).
- Bies, D.A. and C.H. Hansen. 1988. Engineering Noise Control. Unwin Hyman Ltd., London, pg. 36, Table 2.1.
- Bottoms, Keisha. January 3, 2019. Mayor, Atlanta City Hall. Personal communication with Kaitlyn Cargol (Environmental Specialist, Perennial Environmental Services, LLC).
- Burns, Gary. February 15, 2019. Victoria County Commissioners' Court, Precinct 3. Personal communication with Kaitlyn Cargol (Environmental Specialist, Perennial Environmental Services, LLC).
- California Department of Transportation. 2005. Guidance for Preparers of Cumulative Impact Analysis: Approach and Guidance. Available at:
http://www.dot.ca.gov/ser/cumulative_guidance/downloads/Approach_and_Guidance.pdf. Accessed May 4, 2018.
- Council on Environmental Quality. 1997a. Environmental Justice: Guidance Under the National Environmental Policy Act. Website:
<https://www.doi.gov/sites/doi.gov/files/migrated/pmb/oepe/upload/EJ-under-NEPA.pdf>. Accessed May 2018.
- _____. 1997b. Considering Cumulative Effects under the National Environmental Policy Act. Website:
http://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-CEQ-ConsidCumulEffects.pdf. Accessed April 2018.
- Cowardin, L.M., Carter, V., Golet, F.C., and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS 76/09. Accessed November 2018.
- Federal Highway Administration. 2018. About America's Byways.
<https://www.fhwa.dot.gov/byways/about>. Accessed November 2018. Fulgham, Julie. January 31, 2019. Developmental Services Director, City of Victoria.

REFERENCES

- Personal communication with Virginia Steen (Staff Scientist, Perennial Environmental Services, LLC).
- _____. November 19, 2018. Developmental Services Director, City of Victoria. Personal communication with Blake Bringham (Staff Biologist, Perennial Environmental Services, LLC).
- Good Sam Club. 2019. RV Online Community - RV Centers and Parks Listings. <http://www.goodsamclub.com>. Accessed January 2019.
- Google Maps. 2019. <http://maps.google.com>. Accessed January 2019.
- Heinkle, Vicki. January 14, 2019. Panola County Commissioner's Court. Personal communication with Kaitlyn Cargol (Environmental Specialist, Perennial Environmental Services, LLC).
- Hodges, Cassell. February 15, 2019. City of Lufkin Open Records Center, Assistant City Planner. Personal communication with Kaitlyn Cargol (Environmental Specialist, Perennial Environmental Services, LLC).
- Ives, Clint. February 15, 2019. Victoria County Commissioners' Court, Precinct 4. Personal communication with Kaitlyn Cargol (Environmental Specialist, Perennial Environmental Services, LLC).
- Janak, Kevin. February 15, 2019. Victoria County Commissioners' Court, Precinct 2. Personal communication with Kaitlyn Cargol (Environmental Specialist, Perennial Environmental Services, LLC).
- Jones, Scott. 2008. The Carrizo-Wilcox Aquifer in Texas. <http://academic.emporia.edu/schulmem/hydro/TERM%20PROJECTS/2008/Jones/carwil.htm>. Accessed November 2018.
- Longoria, Anna. February 15, 2019. Victoria County Commissioners' Court, Administrative Assistant. Personal communication with Kaitlyn Cargol (Environmental Specialist, Perennial Environmental Services, LLC).
- Martin, Monica. February 18, 2019. Wharton County Permit and Inspection Department. Personal communication with Kaitlyn Cargol (Environmental Specialist, Perennial Environmental Services, LLC).
- National Oceanic and Atmospheric Administration. 2017. Office of Climate, Water, and Weather Services. Summary of Natural Hazard Statistics for 2017 in the United States. <http://www.nws.noaa.gov/os/hazstats/sum17.pdf>. Accessed November 2018.

REFERENCES

- National Park Service. 2011. Nationwide Rivers Inventory.
<https://www.nps.gov/ncrc/programs/rtca/nri/index.html>. Accessed November 2018.
- _____. 2018. Find a Park. <http://www.nps.gov/index.htm>. Accessed December 2018.
- _____. 2016a. Listing of Historic National Landmarks by State.
<https://www.nps.gov/subjects/nationalhistoriclandmarks/list-of-nhls-by-state.htm>. Accessed January 2019.
- _____. 2016b. Interactive Map of National Park Service Wild and Scenic Rivers.
<https://www.nps.gov/orgs/1912/plan-your-visit.htm>. Accessed November 2018.
- Natural Resources Conservation Service. 2018a. Web Soil Survey Geographic Database.
<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>. Accessed November 2018.
- _____. 2018. Stewardship Lands Easement Locations.
<http://nrsc.maps.arcgis.com/apps/webappviewer/index.html?id=60cb4564f7b4461ca9a61fa224c066ba>. Accessed November 2018.
- National Wild and Scenic Rivers System. 2019. Explore Designated Rivers.
<https://www.rivers.gov/map.php>. Accessed January 2019.
- Pipeline and Hazardous Materials Safety Administration. 2019a. Significant Pipeline Incidents. https://opsweb.phmsa.dot.gov/primis_pdm/significant_inc_trend.asp. Accessed June 2019.
- _____. 2019b. Annual Report Mileage for Natural Gas Transmission and Gathering Systems. <https://www.phmsa.dot.gov/data-and-statistics/pipeline/annual-report-mileage-natural-gas-transmission-gathering-systems>. Accessed June 2019.
- Railroad Commission of Texas. 2018. Public GIS Viewer (Map).
<http://www.gisp.rrc.texas.gov/GISViewer2>. Accessed November 2018.
- Samford, Bob. January 15, 2019. Director of Economic Development, City of Lufkin. Personal communication with Kaitlyn Cargol (Environmental Specialist, Perennial Environmental Services, LLC).
- Six, Gary. January 30, 2019. State Executive Director, USDA – Farm Service Agency. Personal communication with Kaitlyn Cargol (Environmental Specialist, Perennial Environmental Services, LLC).
- Sullivan, David. November 28, 2018. Chief, Program Analysis Division, U.S. Department of Agriculture Farm Service Agency. Personal communication with

REFERENCES

- Kaitlyn Cargol (Environmental Specialist, Perennial Environmental Services, LLC).
- Sullivan, Patty. January 23, 2019. Rusk County Commissioners' Court, Administrative Assistant. Personal communication with Kaitlyn Cargol (Environmental Specialist, Perennial Environmental Services, LLC).
- Texas Commission on Environmental Quality. 2018. Superfund Sites by County. <https://www.tceq.texas.gov/remediation/superfund/sites/county>. Accessed November 2018.
- _____. 2019. Surface Water Quality Viewer. <https://tceq.maps.arcgis.com/apps/webappviewer/index.html?id=b0ab6bac411a49189106064b70bbe778>. Accessed January 2019.
- _____. 2018a. Source Water Assessment and Protection - More Information Available. <https://www.tceq.texas.gov/gis/swaview>. Accessed November 2018.
- _____. 2018b. Petroleum Storage Tank Record and Datasets. <https://www.tceq.texas.gov/agency/data/lookup-data/pst-datasets-records.html>. Accessed November 2018.
- _____. 2018c. Download TCEQ GIS Data. <https://www.tceq.texas.gov/gis/download-tceq-gis-data#land>. Accessed December 2018.
- _____. 2018d. Texas Integrated Report of Surface Water Quality. <https://www.tceq.texas.gov/waterquality/assessment>. Accessed January 2019.
- Texas Department of Transportation. 2019. District Traffic Maps. <https://www.txdot.gov/inside-txdot/division/transportation-planning/maps.html>. Accessed January 2019.
- _____. 2019a. Project Tracker. http://apps.dot.state.tx.us/apps-cq/project_tracker/. Accessed December 2018.
- Texas Motel Markets Report 2017, 2018. Performance by County. Accessed January 2019.
- Texas Parks and Wildlife Department. 2019. Ecologically Significant Stream Segments. https://tpwd.texas.gov/landwater/water/conservation/water_resources/water_quantity/sigsegs. Accessed January 2019.
- _____. 2019a. Outdoor Annual Freshwater/Saltwater Boundary.
- _____. 2019b. Protection of State-Listed Species, Texas Parks and Wildlife Department Guidelines.

REFERENCES

- https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/habitat_assessment/media/tpwd_statelisted_species.pdf. Accessed January 2019.
- Texas Water Development Board. 2018a. Texas Aquifers.
<http://www.twdb.texas.gov/groundwater/aquifer/index.asp>. Accessed November 2018.
- _____. 2018b. Queen City Aquifer.
<http://www.twdb.texas.gov/groundwater/docs/QueenCityAquifer.pdf>. Accessed November 2018.
- _____. 2018c. Water Data Interactive.
<https://www2.twdb.texas.gov/apps/WaterDataInteractive/GroundwaterDataViewer/?map=sdr>. Accessed December 2018.
- The University of Texas at Austin – Bureau of Economic Geology. 1996. Physiographic Map of Texas.
<http://www.beg.utexas.edu/UTopia/images/pagesizemaps/physiography.pdf>. Accessed November 2018.
- U.S. Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region. Version 2.0. U.S. Army Engineers Research and Development Center, Vicksburg, MS. Accessed November 2018.
- _____. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS. Accessed November 2018.
- U.S. Bureau of Labor Statistics. 2017. Bureau of Labor Statistics Recordable Injury Data. Available at: <https://www.bls.gov/data/#injuries>. Accessed June 2019.
- U.S. Census Bureau. 2017. American Fact Finder.
<http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>. Accessed January 2019.
- _____. 2010. 2010 Census. <http://www.census.gov>. Accessed January 2019.
- U.S. Department of Agriculture. 2018a. Ecoregions of the United States.
<https://www.fs.fed.us/rm/ecoregions/products/map-ecoregions-united-states/#>. Accessed November 2018.
- U.S. Energy Information Administration. 2016. Layer Information for Interactive State Maps--Coal Mines, Surface and Underground.
https://www.eia.gov/maps/layer_info-m.php. Accessed November 2018.

REFERENCES

- U.S. Bureau of Labor Statistics. 2016. Bureau of Labor Statistics Injury Data. Available at: <https://www.bls.gov/data/#injuries>. Accessed August 2018.
- U.S. Census Bureau. 2010. American Fact Finder for the 2010 U.S. Decennial Census. Available at: <https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>. Accessed February 2018.
- _____. 2015. American Fact Finder for the 2015 American Community Survey (ACS) 5-year estimates. Available at: <https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>. Accessed February 2018.
- _____. 2016. American Fact Finder for the Population Estimates Program. Available at: <https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>. Accessed February 2018.
- U.S. Department of Agriculture. 2018. USDA Agricultural Conservation Easement Program. Interactive easement mapper. Available at: <http://nrcs.maps.arcgis.com/apps/webappviewer/index.html?id=60cb4564f7b4461ca9a61fa224c066ba>. Accessed June 2018.
- _____. 2018a. Ecoregions of the United States. <https://www.fs.fed.us/rm/ecoregions/products/map-ecoregions-united-states/#>. Accessed November 2018.
- _____. 2018b. Southeastern Mixed Forest. <https://www.fs.fed.us/land/pubs/ecoregions/ch20.html>. Accessed November 2018.
- _____. 2018c. Prairie Parkland. <https://www.fs.fed.us/land/pubs/ecoregions/ch29.html>. Accessed November 2018.
- U.S. Environmental Protection Agency. 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Office of Noise Abatement and Control. EPA 550/9-74-004. March 1974. Available at: <http://www.nonoise.org/epa/Roll1/roll1doc11.pdf>. Accessed June 9, 2016.
- _____. 2018a. Sole Source Aquifers for Drinking Water. <https://www.epa.gov/dwssa>. Accessed November 2018.
- _____. 2018b. Cleanups in My Community. <https://www.epa.gov/cleanups/cleanups-my-community>. Accessed November 2018.

REFERENCES

- _____. 1999. Consideration Of Cumulative Impacts In EPA Review of NEPA Documents. U.S. Environmental Protection Agency, Office of Federal Activities (2252A), EPA 315-R-99-002, May 1999. Accessed January 2019.
- _____. 2016. Promising Practices for EJ Methodologies in NEPA Reviews. March 2016. Available at: <https://www.epa.gov/environmentaljustice/ej-iwg-promising-practices-ej-methodologies-nepa-reviews>. Accessed May 2019.
- _____. 2017a. National Ambient Air Quality Standards. Available at: <https://www.epa.gov/criteria-air-pollutants/naaqs-table>. Accessed December 2017.
- _____. 2018a. Sole Source Aquifers for Drinking Water. Available at: <https://www.epa.gov/dwssa>. Accessed November 2018.
- _____. 2018b. Water Tools. <https://www.epa.gov/waterdata/waters-tools>. Accessed November 2018.
- _____. 2018c. NEPAassist. <https://www.epa.gov/nepa/nepassist>. Accessed November 2018.
- _____. 2018d. Cleanups in My Community. <https://www.epa.gov/cleanups/cleanups-my-community>. Accessed November 2018.
- U.S. Fish and Wildlife Service. 2019. National Wildlife Refuge System Map. https://www.fws.gov/refuges/maps/NWRS_National_Map.gif. Accessed January 2019.
- _____. 2018. Information for Planning and Consultation Species List: Texas Ecological Services Field Office. <https://ecos.fws.gov/ipac>. Accessed November 2018.
- U.S. Geological Survey. 2014. Seismic-Hazards Maps for the Conterminous United States. <https://pubs.usgs.gov/sim/3325>. Accessed November 2018.
- _____. 2018a. Texas Geologic Map Data. <https://mrdata.usgs.gov/geology/state/state.php?state=TX>. Accessed November 2018.
- _____. 2018b. 2014 Minerals Yearbook. https://minerals.usgs.gov/minerals/pubs/commodity/statistical_summary/myb1-2014-stati.pdf. Accessed November 2018.
- _____. 2018c. Mineral Resources Data System (MRDS). <https://mrdata.usgs.gov/mrds>. Accessed November 2018.

REFERENCES

- _____. 2018d. Significant Earthquakes.
<https://earthquake.usgs.gov/earthquakes/browse/significant.php>. Accessed November 2018.
- _____. 2018e. M 4.8 – Eastern Texas.
<https://earthquake.usgs.gov/earthquakes/eventpage/usp000jkhb/executive>. Accessed November 2018.
- _____. 2018f. Search Earthquake Catalog.
<https://earthquake.usgs.gov/earthquakes/search>. Accessed November 2018.
- _____. 2018h. Quaternary Fault and Fold Database of the United States – Gulf-margin normal faults, Texas (Class B) No. 924.
https://earthquake.usgs.gov/cfusion/qfault/show_report_AB_archive.cfm?fault_id=924§ion_id=. Accessed November 2018.
- _____. 2018i. Aquifers: Map of the Principal Aquifers of the United States.
<http://water.usgs.gov/ogw/aquifer/map.html>. Accessed November 2018.
- _____. 2018j. Aquifer Basics, Coastal Lowlands Aquifer System.
https://pubs.usgs.gov/ha/ha730/ch_e/E-text6.html. Accessed December 2018.
- _____. 2014a. Water Quality in the Mississippi Embayment – Texas Coastal Uplands Aquifer System and Mississippi River Valley Alluvial Aquifer, South-Central United States, 1994 – 2008.
<http://pubs.usgs.gov/circ/1356/pdf/circ1356.pdf>. Accessed November 2018.
- _____. 2016. Prospect- and mine-related features on USGS topographic maps.
<https://mrdata.usgs.gov/usmin>. Accessed November 2018.
- _____. 1982. Landslide Overview Map of the Conterminous United States.
<https://landslides.usgs.gov/hazards/nationalmap>. Accessed November 2018.
- U.S. Global Change Research Program. 2017. Climate Science Special Report: Fourth National Climate Assessment, Volume I, Chapter 3 Detection and Attribution of Climate Change [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 470 pp., doi: 10.7930/J0J964J6.
- _____. 2018. Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II. U.S. Global Change Research Program, Washington, DC, USA, 1515 pp., doi: 10.7930/NCA4.2018.
- Victoria Advocate. 2014. Salem Crossing subdivision to bring 162 more homes to Victoria. <https://www.victoriaadvocate.com/news/business/salem-crossing->

REFERENCES

- subdivision-to-bring-more-homes-to-victoria/article_85ca4d88-f8d7-561b-a2a2-eae2ad98acc4.html. Accessed January 2019.
- Wang, Zhenming. 2010. Ground motion for the maximum credible earthquake in Kentucky. https://www.uky.edu/KGS/geologichazards/RI22_12.pdf. Accessed January 2019.
- Water Data for Texas. 2019. Automated Ground Water Levels. <https://waterdatafortexas.org/groundwater>. Accessed January 2019.
- Wilderness Connect. 2018. Maps of wilderness areas in the United States. Available at: <http://www.wilderness.net>. Accessed November 2018.

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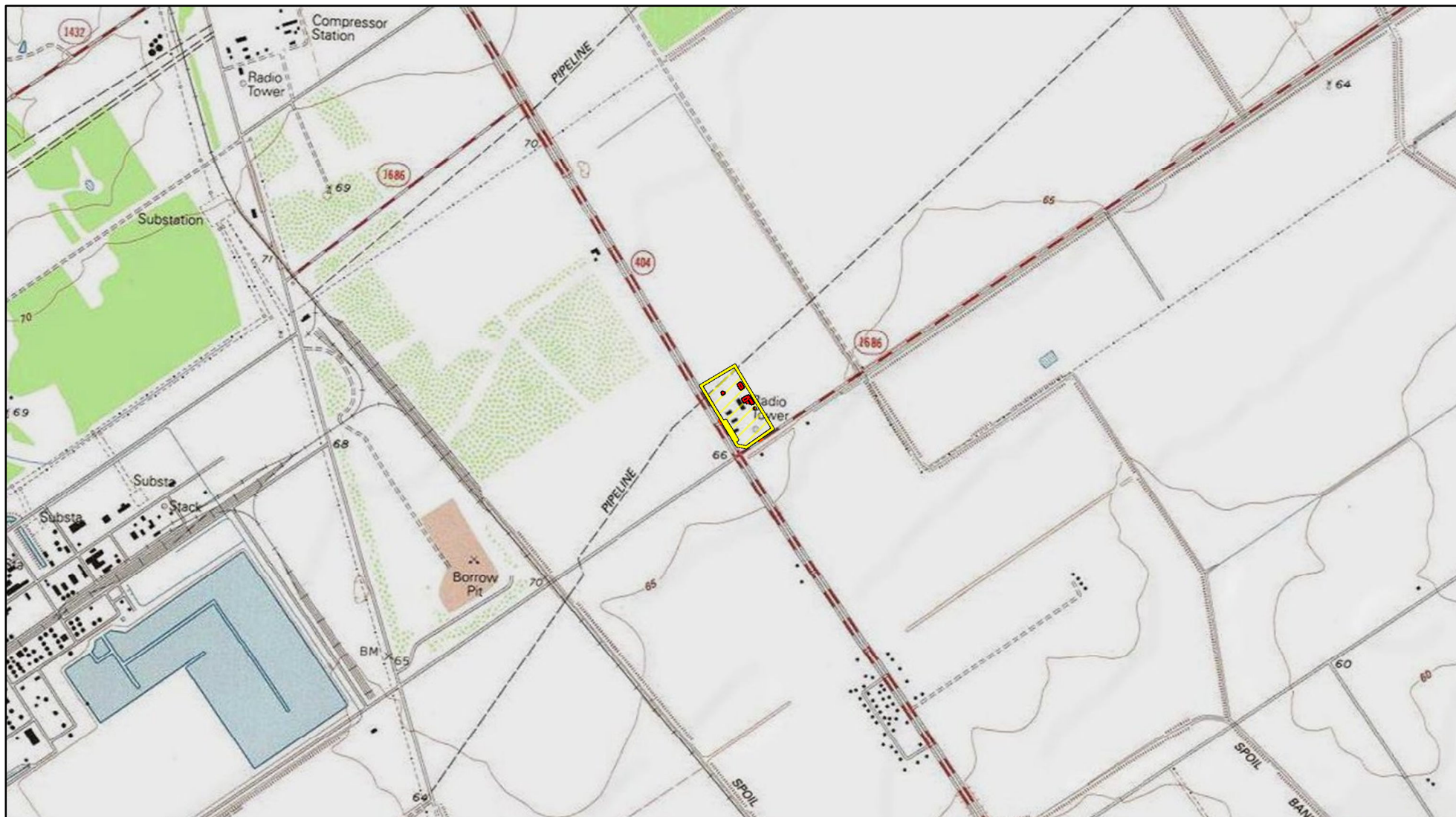
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Appendix A

Detailed Maps and Drawings



Permanent Workspace



Temporary Workspace



Temporary Access Driveway

0 750 1,500 Feet

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**Natural Gas Pipeline Company
of America LLC**

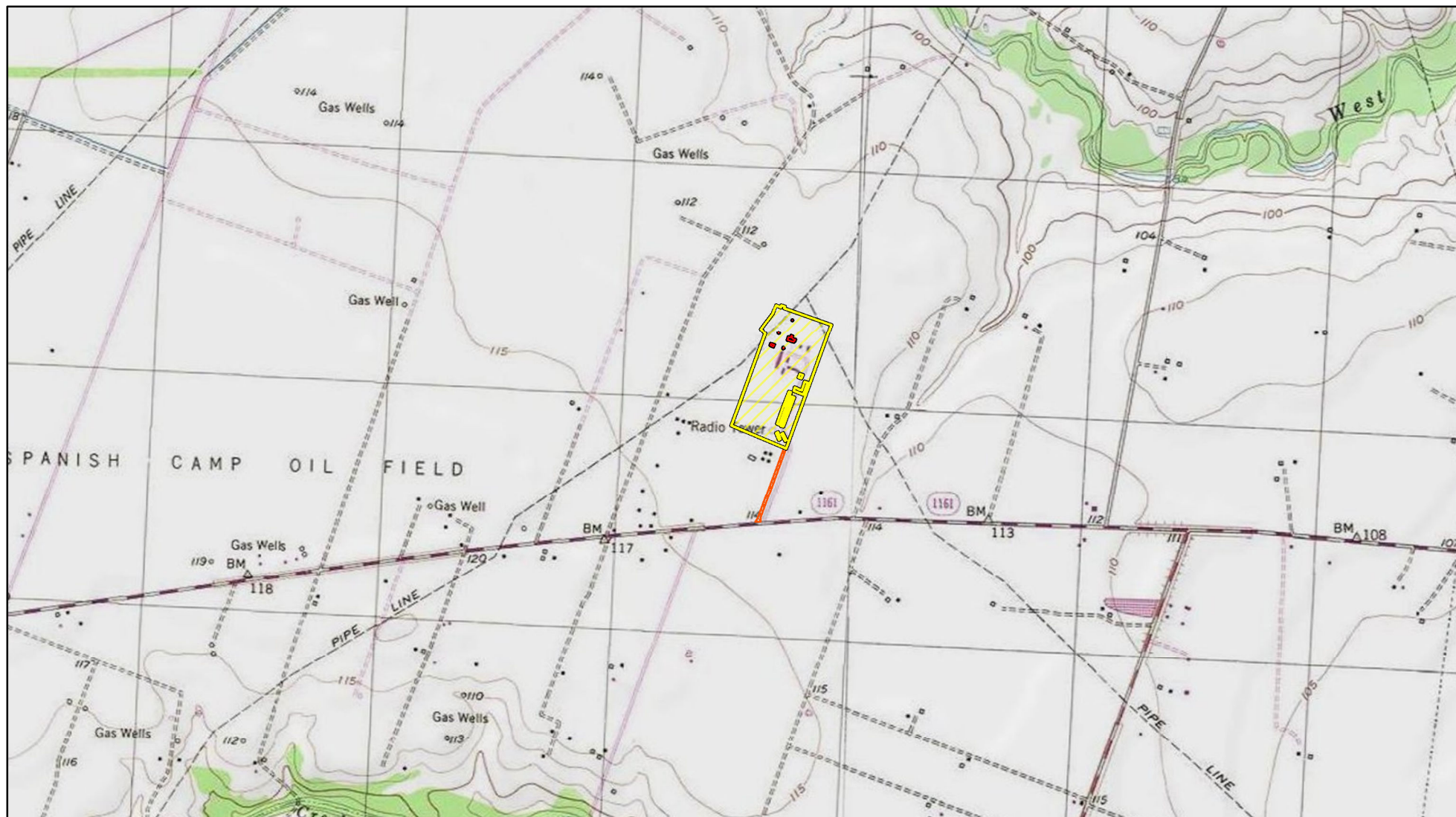
**Topographic Quadrangle Excerpt:
Compressor Station 300
Gulf Coast Southbound Project
Natural Gas Pipeline Company of America LLC
Victoria County, Texas
Quad: Bloomington**

Page 1 of 5

Scale: 1:24,000

NAD 83 TX 14/15 N ft

Date: February, 2019



- Permanent Workspace
- Temporary Workspace
- Temporary Access Driveway

0 750 1,500 Feet

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Natural Gas Pipeline Company
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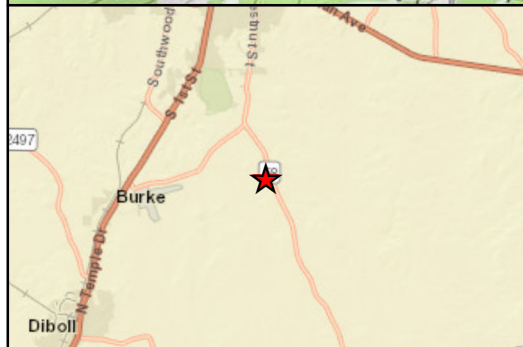
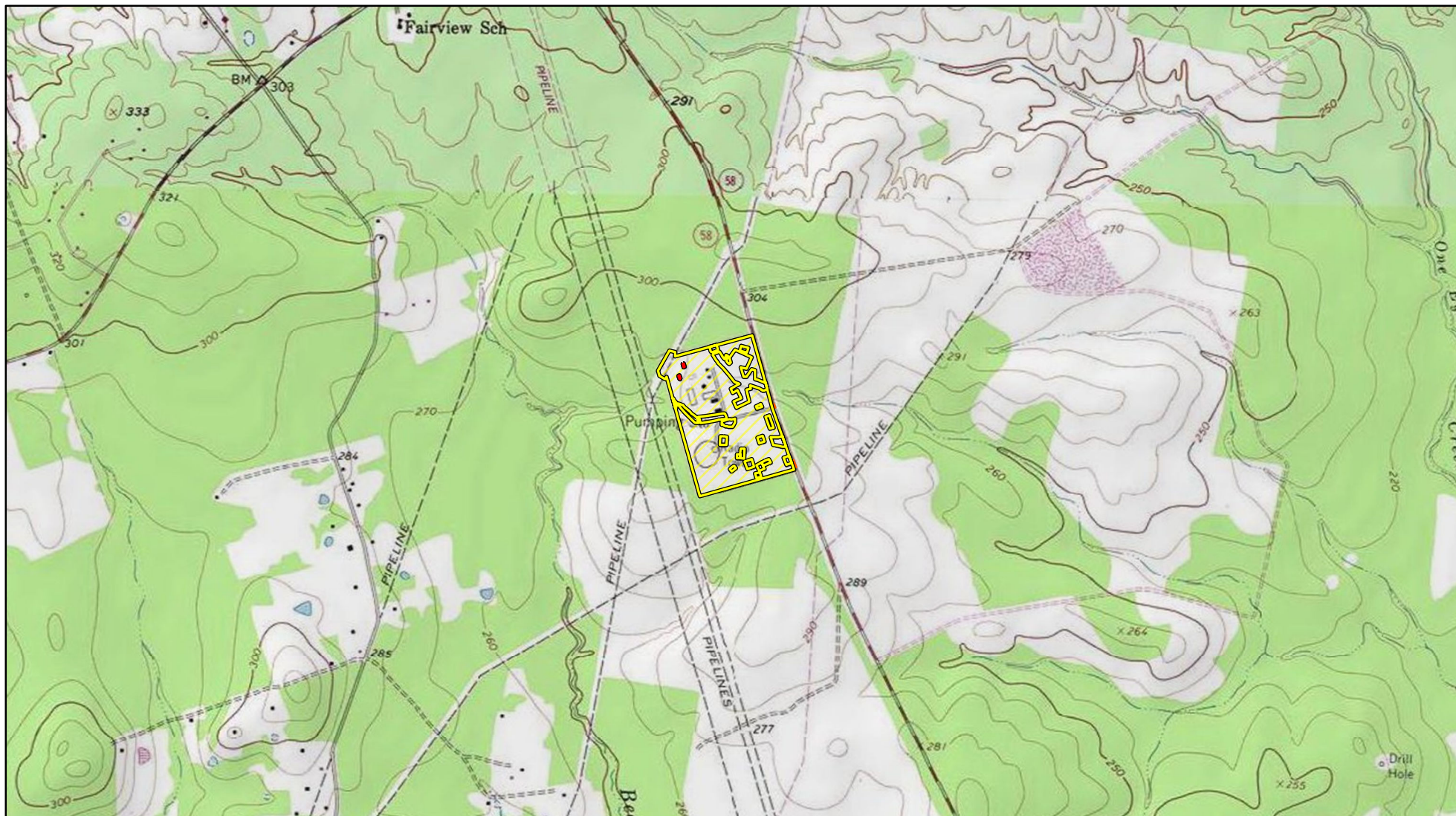
**Topographic Quadrangle Excerpt:
Compressor Station 301
Gulf Coast Southbound Project
Natural Gas Pipeline Company of America LLC
Wharton County, Texas
Quad: Egypt**

Page 2 of 5

Scale: 1:24,000

NAD 83 TX 14/15 N ft

Date: February, 2019



Permanent Workspace



Temporary Workspace



Temporary Access Driveway

0 750 1,500 Feet

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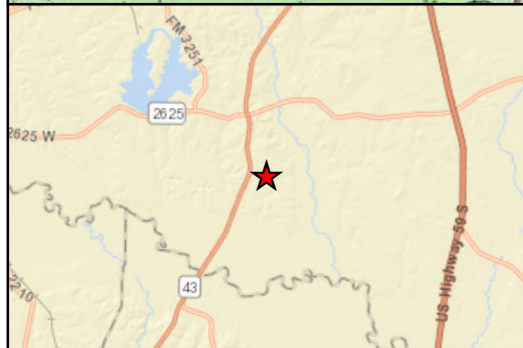
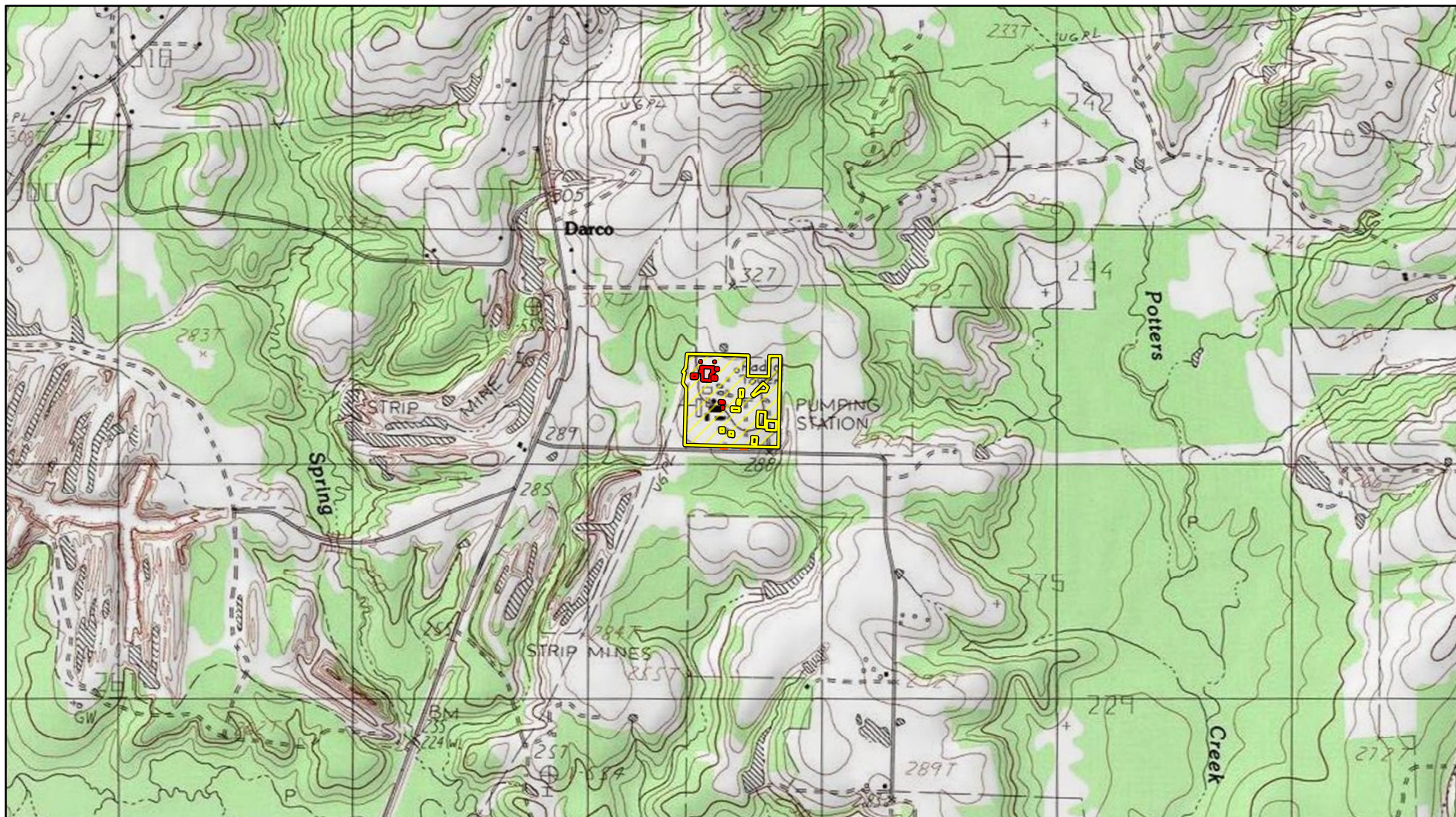
**Topographic Quadrangle Excerpt:
Compressor Station 303
Gulf Coast Southbound Project
Natural Gas Pipeline Company of America LLC
Angelina County, Texas
Quad: Bald Hill**




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Scale: 1:24,000

NAD 83 TX 14/15 N ft

Date: February, 2019



-  Permanent Workspace
-  Temporary Workspace
-  Temporary Access Driveway

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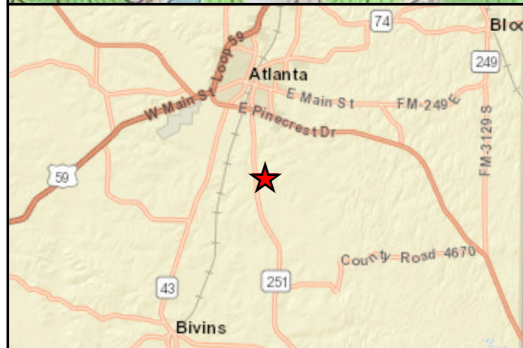
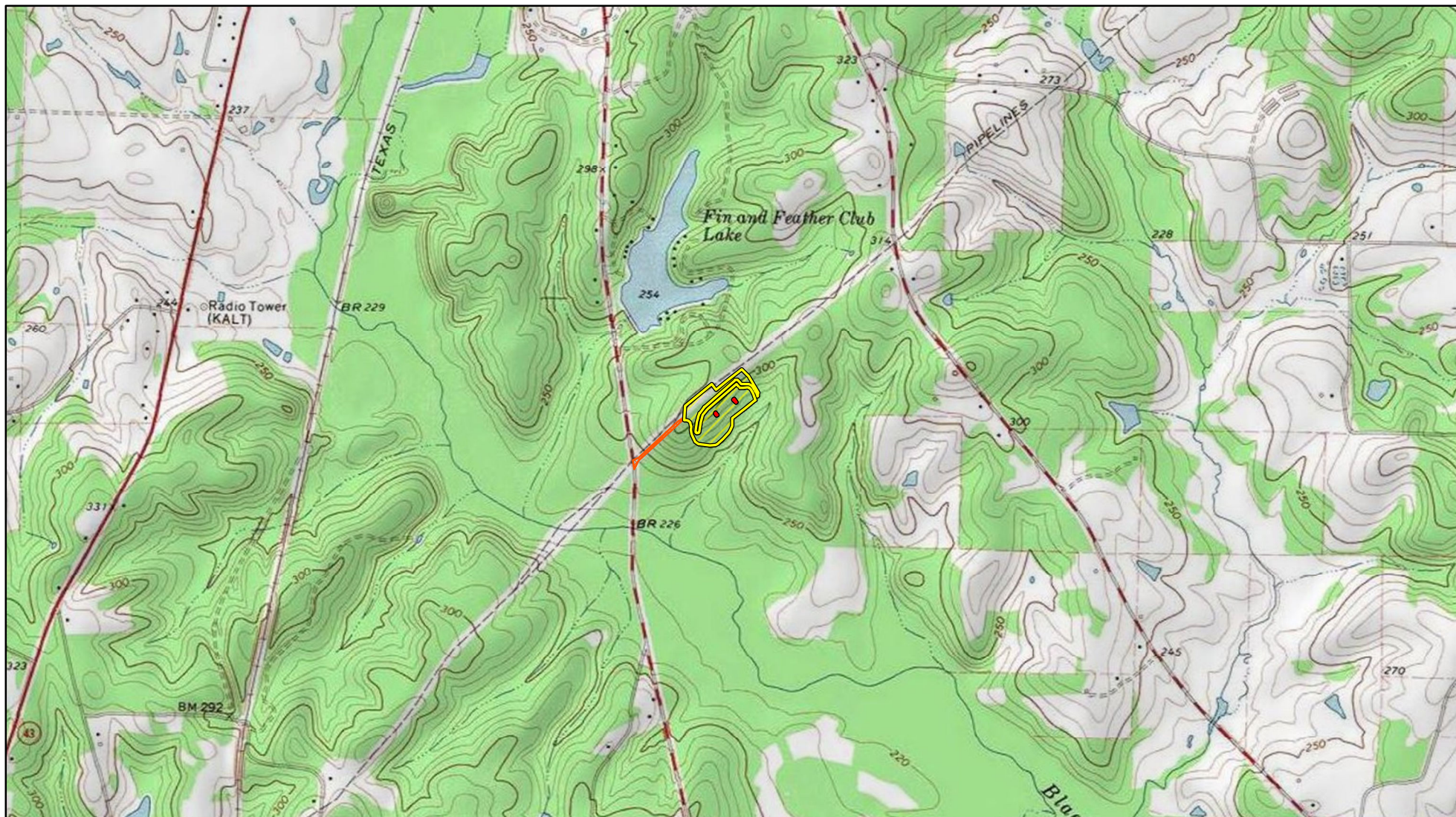
**Topographic Quadrangle Excerpt:
 Compressor Station 304
 Gulf Coast Southbound Project
 Natural Gas Pipeline Company of America LLC
 Harrison County, Texas
 Quad: Darco**




Page 4 of 5

Scale: 1:24,000

NAD 83 TX 14/15 N ft

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Natural Gas Pipeline Company
of America LLC

Topographic Quadrangle Excerpt:
Compressor Station 394
Gulf Coast Southbound Project
Natural Gas Pipeline Company of America LLC
Cass County, Texas
Quad: Atlanta South

Page 5 of 5

Scale: 1:24,000

NAD 83 TX 14/15 N ft

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