Federal Energy Regulatory Commission

Office of Energy Projects

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Gulf South Pipeline Company, LP **Docket No. CP19-517-000**

Lamar County Expansion Project

Environmental Assessment

Washington, DC 20426

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ABBREVIATIONS AND ACRONYMS

APE	area of potential effects
AQCR	Air Quality Control Region
BA	Biological assessment
BCC	Birds of Conservation Concern
BO	Biological Opinion
CAA	Clean Air Act of 1970
CEQ	Council on Environmental Quality
Certificate	Certificate of Public Convenience and Necessity
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
Commission	Federal Energy Regulatory Commission
Cooperative	Cooperative Energy
dB	decibel
dBA	A-weighted decibel
DOT	U.S. Department of Transportation
EA	environmental assessment
EI	environmental inspector
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act of 1973
fbs	feet below the ground surface
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FWS	U.S. Fish and Wildlife Service
GHG	greenhouse gas
Gulf South	Gulf South Pipeline Company, LP
GWP	global warming potential
HAP	hazardous air pollutants
HCA	high consequence areas
HDD	Horizontal Directional Drill
HDD Plan	Horizontal Directional Drill Monitoring, Inadvertent Return Response, and Contingency Plan
IR	inadvertent return
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
MAOP	maximum allowable operating pressure
MBTA	Migratory Bird Treaty Act of 1918

MCA	moderate consequence areas
MDEQ	Mississippi Department of Environmental Quality
Memorandum	Memorandum of Understanding on Natural Gas Transportation Facilities
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NGA	Natural Gas Act of 1935
NNSR	Nonattainment New Source Review
NO_2	nitrogen dioxide
NOI	Notice of Intent to Prepare an Environmental Assessment for the Lamar County Expansion Project
NO_x	nitrogen oxides
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NSA	Noise Sensitive Area
NSPS	New Source Performance Standards
OEP	Office of Energy Projects
Pb	lead
PCB	Polychlorinated Biphenyls
PEM	palustrine emergent
PFO	Palustrine forested
PHMSA	Pipeline and Hazardous Materials Safety Administration
Plan	*Upland Erosion Control, Revegetation, and Maintenance Plan*
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to 2.5 microns
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to 10 microns
Procedures	*Wetland and Waterbody Construction and Mitigation Procedures*
Project	Lamar County Expansion Project
PSD	Prevention of Significant Deterioration
PSS	Palustrine scrub-shrub
RMP	Risk Management Plan
Secretary	Secretary of the Commission
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SPRPP	Spill Prevention and Response Procedures Plan
SWPA	Source water protection areas
SWPPP	Stormwater Pollution Prevention Plan
tpy	tons per year
UDP	unanticipated discovery plan

USACE	United States Army Corps of Engineers
USGS	United State Geological Survey
VOC	volatile organic compound

SECTION A – PROPOSED ACTION

1.0 INTRODUCTION

The staff of the Federal Energy Regulatory Commission (Commission or FERC) has prepared this environmental assessment (EA) to assess the environmental effects of the natural gas pipeline facilities proposed by Gulf South Pipeline Company, LP (Gulf South). We[1] prepared this EA in compliance with the requirements of the National Environmental Policy Act of 1969 (NEPA) (Title 40 of the Code of Federal Regulations [CFR] Parts 1500-1508) and with the Commission's implementing regulations under 18 CFR 380.

On September 30, 2019, Gulf South filed an application with the Commission in Docket No. CP19-517-000 for the Lamar County Expansion Project (Project) under Section 7(c) of the Natural Gas Act of 1935 (NGA) and Part 157 of the Commission's regulations. Gulf South seeks to construct and operate certain natural gas facilities in Forrest and Lamar Counties, Mississippi. The Project would deliver up to 200,000 dekatherms per day of firm natural gas transportation service to Cooperative Energy's (Cooperative) proposed 550-megawatt combined cycle gas turbine generation facility in Lamar County, Mississippi.

The EA is an important and integral part of the Commission's decision on whether to issue Gulf South a Certificate of Public Convenience and Necessity (Certificate) to construct and operate the proposed facilities. 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.

2.0 PURPOSE AND NEED

Gulf South's stated purpose for the Project is to provide 200,000 dekatherms per day of firm natural gas transportation services to Cooperative for the proposed Morrow Repower Project to be located at Cooperative's existing coal-fired power plant site (Plant Morrow) in Lamar County, Mississippi. The Morrow Repower Project would utilize high-efficiency combined cycle gas turbines and emissions control technology that would further lower emissions.

Under Section 7 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 both economic issues, including need, and environmental impacts.

[1] The pronouns "we," "us," and "our" refers to environmental staff of the Office of Energy Projects.

3.0 PROPOSED FACILITIES

Gulf South's Lamar County Expansion Project would involve the installation of new facilities. Figure 1 shows the general location of the Project and aerial photographs of all Project facilities are provided in appendix A. The Project would consist of the following:

- approximately 3.4 miles of new 20-inch-diameter pipeline lateral in Lamar and Forrest Counties, Mississippi;
- construction of the Black Creek Compressor Station consisting of two new gas-fired compressor units capable of providing a total of 5,000 horsepower, one pig[2] launcher, one mainline valve, and associated tie-in piping at approximate station 128+08 on Gulf South's existing Index 299 pipeline in Forrest County, Mississippi; and
- construction of the Plant Morrow Meter Station and one pig receiver at the terminus of the new lateral in Lamar County, Mississippi.

[2] A "pig" is a tool that the pipeline company inserts into and pushes through the pipeline for cleaning the pipeline, conducting internal inspections, or other purposes.

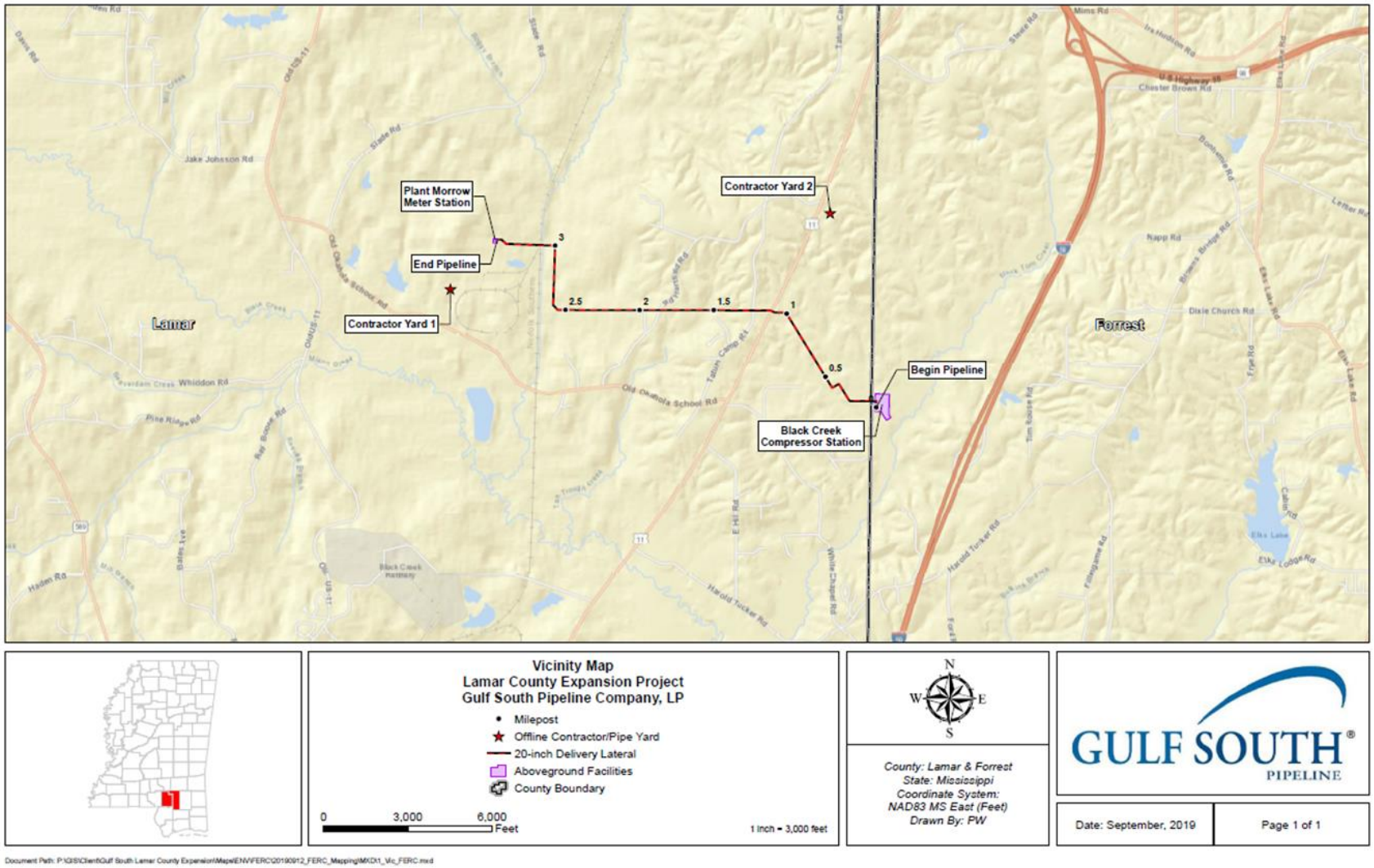

Figure 1: Project Map

4.0 NON-JURISDICTIONAL FACILITIES

Non-jurisdictional facilities are facilities that are related to the Project for the purpose of delivering, receiving, or using the proposed natural gas volumes, and may include facilities to be built and owned by other companies that are not subject to FERC jurisdiction. Non-jurisdictional facilities may include laterals or other pipeline-related facilities that may be constructed to allow project interconnections for the receipt or delivery of the proposed natural gas volumes, or electric distribution systems that may be constructed to provide electricity or other services to project facilities. For the proposed Plant Morrow Meter Station, a non-jurisdictional power transmission line would be installed underground by Cooperative for a length of 1,500 feet to connect an existing power feed inside of the Plant Morrow site to a power drop at the proposed delivery meter station. Gulf South would construct a non-jurisdictional 1.0-mile power line to provide power to the proposed Black Creek Compressor Station from an existing power line located along U.S. Route 11. This 1.0-mile power line would be co-located with the pipeline right-of-way and the permanent access road. The construction of both power lines is under state and local jurisdiction. The power provider would obtain all necessary federal and state permits prior to the construction of the power line.

The Project's purpose is to provide gas to a non-jurisdictional gas-fired plant that is currently under construction in Lamar County Mississippi. The construction of this facility is known as the Morrow Repower Project. The Mississippi Public Service Commission has jurisdiction over the Morrow Repower Project. The Morrow Repower Project involves converting the existing Plant Morrow from coal burning to gas burning. The Morrow Repower Project would increase the power output at the Plant Morrow from approximately 408 Megawatt to 550 Megawatt which requires Cooperative to add an additional high voltage power line and substation upgrades. Construction of the Morrow Repower Project would take place within the existing Plant Morrow site with the exception of the 5.0-mile high voltage power line that would be constructed from Plant Morrow to the Purvis Bulk Substation. Cooperative would upgrade the current Purvis Bulk Substation to support increased generation and acquire 40 acres of land to build the 5.0-mile high voltage power line.

Construction of the Morrow Repower Project would occur in two phases: demolition of existing coal burning systems followed by the construction of the new gas-burning system. Cooperative would demolish all coal handling, processing and burning equipment and systems, including the coal-train unloading trestle, coal and ash conveyors, coal stock piles, coal bunkers and feeder systems, and coal-fired steam generators. A new natural gas combustion turbine generator would be installed within the footprint of the demolished assets. Additionally, Cooperative would build a new heat recovery steam generator that would use exhaust heat from the natural gas combustion turbine generator to power the exiting Unit 1 steam turbine generator. The repowered combined cycle unit will produce approximately 550 Megawatts of electric power at an improved heat rate of approximately 6,500 British thermal units/kilowatt-hour. Demolition of the existing coal burning systems has already begun and construction of the new facilities would begin in Spring 2020. The Project is planned to begin operation in 2023. The permits required for the Morrow Repower Project are listed in table 1. The cumulative effects of the Morrow Repower Project are discussed in section B.10.0 of this EA.

Table 1 Permits Required for the Morrow Repower Project		
Agency	**Permit**	**Status**
U.S. Fish and Wildlife Service	Endangered Species Act, Section 7 Consultation	Information regarding status has not been filed
Mississippi Public Services Commission	Application to Amend Certificate of Convenience and Necessity	Order issued July 2, 2019
Mississippi Department of Archives and History	*National Historic Preservation Act,* Section 106 Consultation	Information regarding status has not been filed
Mississippi Department of Wildlife, Fisheries, and Parks	Threatened and Endangered Species Consultation/Clearance	Information regarding status has not been filed
Mississippi Department of Environmental Quality	Construction Stormwater General Permit	Application submitted: January 21, 2019
	Air Permit	Application submitted: February 14, 2019

5.0 PUBLIC REVIEW AND COMMENT

On November 4, 2019, the Commission issued a *Notice of Intent to Prepare an Environmental Assessment for the Proposed Lamar County Expansion Project and Request for Comments on Environmental Issues* (NOI). The NOI was published in the Federal Register and mailed to 138 entities, including federal, state, and local government representatives and agencies; Native American tribes; newspapers and libraries in the Project area; and affected landowners. We received one comment to the NOI from the Choctaw Nation of Oklahoma, noting that the Project lies within its area of historic interest and requesting a copy of the EA, cultural resources survey, and GIS shapefiles.[3] This comment is addressed in Section B.5.0 of this EA.

6.0 PERMITS, APPROVALS, AND REGULATORY CONSULTATIONS

Table 2 displays the major anticipated federal and state permits for the proposed Project. Gulf South is responsible for obtaining all necessary permits, licenses, clearances, and approvals related to construction and operation of the Lamar County Expansion Project regardless of whether they appear in table 2. Gulf South would provide all relevant permits and approvals to the contractor, who would be required to adhere to applicable requirements.

[3] Duplicate filings were received providing the same comment on December 11, 2019, December 19, 2019, and January 15, 2020.

Table 2 Permits, Approvals, and Consultations Applicable to the Project		
Permitting/Approval Agency	**Permit, Approval, or Consultation**	**Status of Permit/ Clearance**
Federal		
Federal Energy Regulatory Commission	Certificate of Public Convenience and Necessity	Application filed September 30, 2019
U.S. Fish & Wildlife Service	Endangered Species Act, Section 7 Consultation; Fish and Wildlife Coordination Act Consultation; Migratory Bird Treaty Act Consultation; Bald and Golden Eagle Protection Act Consultation	Informal consultation initiated September 27,2019 Formal consultation initiated concurrent with EA
U.S. Army Corps of Engineers, Mobile District	Section 404 – Nationwide Permit (NWP) 12	Application filed September 27, 2019
State		
Mississippi Department of Environmental Quality	Section 401 Water Quality Certification (Automatic with NWP 12)	Application sent September 27, 2019
	State Permit to Construct (Air Permit)	Application sent September 27, 2019
	State Permit to Operate (Air permit)	To be obtained prior to operation
	Hydrostatic Test General Permit (MSG13)	To be obtained prior to construction
Mississippi Department of Wildlife, Fisheries, and Parks	Threatened and Endangered Species Consultation/Clearance	Consultation completed September 26, 2019
Mississippi Department of Archives and History	National Historic Preservation Act, Section 106 Consultation	Consultation completed October 21, 2019
Mississippi Department of Transportation	Driveway Permits	To be obtained prior to construction
County – Forrest		
Forrest County Planning Department	Flood Plain Development Permit	To be obtained prior to construction
	Building Permit	To be obtained prior to construction
County – Lamar		
Lamar County Planning Department	Site Plan Development Permit	To be obtained prior to construction

7.0 CONSTRUCTION, OPERATION, AND MAINTENANCE

Gulf South would construct, operate, and maintain the proposed Project in compliance with all applicable federal and state permit requirements, regulations, and environmental guidelines. The key relevant federal regulations are those of the U.S. Department of Transportation (DOT) under 49 CFR 192 (*Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*). These regulations ensure adequate protection for the public and prevent natural gas facility accidents and failures.

Pending the receipt of all necessary permits and authorizations, Gulf South plans to begin construction of the Project in December 2020 and estimates in-service by January 1, 2022. Gulf South adopted our *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan), and

Wetland and Waterbody Construction and Mitigation Procedures (Procedures), with several deviations.[4] Gulf South would also follow its *Stormwater Pollution Prevention Plan*[5] (SWPPP), a *Spill Prevention and Response Procedures Plan* (SPRPP), and a *Horizontal Directional Drill Monitoring, Inadvertent Return Response, and Contingency Plan* (HDD Plan) to minimize sediment impacts outside of the Project area; to ensure proper handling of lubricants, fuel, or other potentially toxic materials and prevent spills, respectively, prior to construction; and to protect sensitive resources from inadvertent releases during construction. These plans would be implemented in compliance with FERC and the Mississippi Department of Environmental Quality (MDEQ) requirements.

Gulf South requested deviations to the Plan and Procedures that are listed in table 3. We have reviewed the requested modifications and find them acceptable.

Table 3
Site Specific Deviations to the Plan and Procedures

Workspace Type	Milepost/ Facility	Waterbody or Wetland	Section of Plan and Procedures	Deviation	Justification
PAR-02	Black Creek Compression Station	WP1010_PFO_B WP1009_PSS WP1009_PSS_B WP1009_PFO_B WP1009_PEM_C	Procedures Section VI.B.1.d	Permanent access road impact on wetland	Access to the compressor station is blocked by wetlands on three sides. Permanent access road length would need to be increased to avoid wetland impacts and would cause additional forest impacts.
ATWS 24	0.42	WP1010_PFO_C	Procedures Section VI.B.1.a	ATWS within 50 feet of a wetland	Workspace required near the 90-degree bend in the pipe for spoil storage and to allow for safe construction of the new pipeline.
ATWS 19	1.40	WP1011_PFO	Procedures Section VI.B.1.a	ATWS impact on wetland	Workspace required for the equipment and materials needed to complete the proposed HDD. Relocation of HDD entry to the east to avoid wetlands would increase noise impacts on a nearby landowner.
TAR-01	3.00	WP3001	Procedures Section VI.B.1.d	Temporary access road impact on wetland	The temporary access road is an existing dirt road that Gulf South would widen to accommodate construction equipment. The wetland is within existing dirt road and wetland avoidance would

[4] The Plan and Procedures includes best management practices for pipeline facility construction to minimize resource impacts. Copies of the Plan and Procedures may be accessed on our website (http://www.ferc.gov/industries/gas/enviro/guidelines.asp).

[5] Gulf South's SWPPP, SPRPP, and HDD Plan can be found in Appendix 1B of its September 30, 2019 filing (accession number 20190930-5232).

Table 3 Site Specific Deviations to the Plan and Procedures					
Workspace Type	**Milepost/ Facility**	**Waterbody or Wetland**	**Section of Plan and Procedures**	**Deviation**	**Justification**
					require increased forest impacts.
ATWS 5	3.01	WP2004_PFO	Procedures Section VI.B.1.a	ATWS impact on wetland	Workspace required to string pipe that would be installed via the HDD method.
ATWS 4	3.01	WP2004_PFO	Procedures Section VI.B.1.a	ATWS impact on wetland	Workspace required for the equipment and materials needed at the HDD exit point.
ATWS = additional temporary workspace PAR= permanent access road TAR= temporary access road HDD = horizontal directional drill					

Construction at the proposed facilities would generally include establishing erosion and sediment controls; clearing and grading, excavation and placement of foundations, piping installation, installation of structures and machinery, testing, and final cleanup and restoration. These general activities are described below.

Clearing and Grading

Prior to initiating ground-disturbing activities, a standard survey and stakeout would be conducted to identify all existing underground utilities (e.g., cables, conduits, and pipelines), construction right-of-way, and workspace boundaries. Existing underground utilities would be identified and flagged. Temporary erosion control devices would be installed, then the approved work area would be cleared of trees and other vegetation, stumps, logs, brush, and rocks. Cleared vegetation would be either chipped or hauled off-site to a commercial disposal facility. Following clearing, construction areas would be graded as necessary to provide a level work surface. Graded topsoil would be segregated in accordance with the Plan and Procedures.

Trenching

A backhoe, trenching machine, or similar equipment would be used to excavate a trench for pipeline placement. Trench spoil would be deposited adjacent to the trench within the construction work area with topsoil segregation utilized where necessary per the Plan and Procedures. In standard conditions, the trench would be excavated to a depth of approximately 7 feet to ensure a minimum of 3 feet of cover over the pipe as required by 49 CFR Part 192. On Cooperative's property, the trench would be excavated to a depth of approximately 9 feet to ensure a minimum of 5 feet of cover over the pipe. Typically, the bottom of the trench would be cut at least 12 inches wider than the width of the pipe. The width at the top of the trench would vary to allow the side slopes to be adapted to local conditions at the time of construction.

Foundations and Pipe Stringing

The compressor units and associated equipment would be placed on foundations. High strength concrete would be used for the foundations and would be reinforced as necessary. Construction of aboveground facilities would be concurrent with pipeline construction. Additionally, safety and control devices would be installed and tested prior to operation.

New pipe would be strung and distributed along the right-of-way parallel to the trench. Pipes would be bent by hydraulic bending machines, welded, x-rayed, coated, and placed in the trench and backfilled. Each major section of piping would be hydrostatically tested after it is placed in the trench and the trench is backfilled. Following installation and backfilling, disturbed areas would be graded and restored in compliance with the Plan and Procedures.

Waterbody Crossings

Waterbodies less than 100 feet wide would be crossed via the open-cut method. This method would maintain flow in the waterbody at all times. Excavated material from the trench would be placed on the bank above the ordinary high-water mark for use as backfill. The pipe segment would be prefabricated and weighted, as necessary, to provide negative buoyancy and placed below scour depth. With the exception of field drains and roadside ditches, Gulf South would install the pipeline with a minimum of 5 feet of cover unless otherwise required by applicable federal, state, or local permits. Typical backfill cover requirements would be met, contours would be restored within the waterbody, and the banks would be stabilized via seeding and/or the installation of erosion control matting or riprap. Excess excavated materials would be distributed in an upland area in accordance with the Plan and Procedures.

The pipeline trench would be excavated immediately prior to pipe installation to limit the duration of construction within the waterbody to 24 hours for crossings less than 10 feet and 48 hours for crossings between 10 feet and 100 feet. Excavated materials would be stored no less than 10 feet from the edge of the waterbody and temporary erosion control devices would be utilized to prevent the sediment from reentering the waterbody.

Horizontal Directional Drill

The horizontal directional drill (HDD) method allows for construction across a sensitive resource or road/railroad without the excavation of a trench, by drilling a hole significantly below conventional pipeline depth, and pulling the pipeline through the pre-drilled hole. Gulf South would utilize the HDD method to avoid direct impacts on sensitive resources such as wetlands and waterbodies, and/or to avoid areas in which constructability by conventional means is not feasible. Proposed HDD locations for the Project are provided in table 4.

Table 4
Proposed Locations of Horizontal Directional Drill Operations

Name of HDD	Resource(s) Avoided (Feature ID)	Milepost		Length (feet)
		Entry	Exit	
HDD 1	Wetland (WP1011_PFO)	1.40	1.73	1,737
	Pond (OWP1002)			

Table 4 Proposed Locations of Horizontal Directional Drill Operations				
Name of HDD	Resource(s) Avoided (Feature ID)	Milepost		Length (feet)
		Entry	Exit	
HDD 2	Railroad	3.29	3.02	1,408
	Waterbodies (SP2007, SP1015, SP1016)			

Gulf South would hand clear two paths of sufficient width, not to exceed 3 feet wide, to allow placement and surveying of an electric guide wire coil (closed loop system) along the ground surface between the HDD entry point and exit point. This coil is used to facilitate tracking of the location of down hole drilling equipment and to determine steering inputs during advancement of the pilot bore. Wireline guidance systems typically require two guide wires for each crossing. The guide wires would be placed parallel to the centerline of an installation with variable spacing or offset on each side of the centerline depending on the depth of the particular HDD installation.

Following the completion of the pilot hole, reaming tools would be utilized to enlarge the hole to accommodate the pipeline diameter. The reaming tools would be attached to the drill string at the exit point and would then be rotated and drawn back to incrementally enlarge the pilot hole. Drilling mud consisting of bentonite clay and water would be continuously pumped into the pilot hole to remove cuttings and maintain the integrity of the hole. Once the hole has been sufficiently enlarged, a prefabricated segment of pipe would be attached behind the reaming tool on the exit side of the crossing and pulled back through the drill hole towards the drill rig. If a particular drill is unsuccessful, Gulf South would implement its Contingency Plan specified in the HDD Plan.

Wetland Crossings

The construction right-of-way width would be limited to 75 feet in wetlands and buffers would be clearly marked during construction activities, unless otherwise requested and approved by FERC. Operation of construction equipment through wetlands would be limited to only that necessary for each stage of pipe installation (e.g., clearing, trenching, etc.). Topsoil segregation techniques would be utilized in unsaturated wetlands to preserve the seed bank and allow for successful restoration of the disturbed area following completion of Project activities. Disturbed wetlands would be monitored post-construction to ensure successful revegetation. No refueling or storage of fuel would occur within 100 feet of wetlands unless otherwise approved by the Environmental Inspector (EI). Wetland crossings for the Project may be accomplished via a combination of the HDD method and the conventional lay method in accordance with all applicable permits and the Procedures.

Construction techniques for the conventional lay method in wetlands are similar to the open-cut method in upland areas. However, topsoil segregation techniques would be utilized to facilitate revegetation following the completion of construction activities. In some cases, site-specific conditions may not support construction equipment, but the area would still be crossed using the conventional lay method. In these instances, construction mats would be

used to minimize disturbances to wetland hydrology and maintain soil structure. Per the Procedures, Gulf South would not utilize topsoil segregation techniques in inundated wetlands.

Roads, Railroad, and Utility Crossings

Gulf South would use the open-cut, HDD, or subsurface bore method to cross paved roads, railroads, and utility lines. Open-cut would be used on some paved and unpaved roads with limited traffic pending appropriate consultation with the affected county or landowner and in accordance with existing regulations. Construction at road crossings would typically be conducted within one day in order to minimize the interruption of traffic. Typically, a minimum of 5 feet cover over the pipe would be maintained at all road crossings and the associated side borrow/drainage ditch crossings as well as at all railroad crossings. Gulf South would provide additional depth of cover where required to ensure that the minimum depth of cover over the pipe is in accordance with all federal, state, and local regulations for pipeline crossings. Gulf South would coordinate the railroad crossing with the respective company that owns the railroad. Additionally, pipeline warning signs and/or markers would be used to identify the presence of a pipeline. Cathodic protection test stations would be installed in proximity to all public roads, railroads, and foreign pipeline crossings, and at other locations as needed, to monitor the performance of the cathodic protection system.

Prior to construction, Gulf South would request meetings with representatives of each foreign utility line operator to inform them of the Project, obtain their requirements for crossing their utility line, and to solicit their cooperation in facilitating safe crossing. In areas where the proposed pipeline crosses an existing utility line, a minimum of 24 inches would be maintained between the existing utility line and the proposed pipeline. Mechanical excavation would be restricted in proximity to the existing pipelines being crossed. Gulf South would have inspectors present to monitor all crossing installations. Foreign utility line operators would also be afforded the opportunity to have a representative on-site to help ensure that the crossings are made as safely as possible. Although not anticipated, should a foreign pipeline be damaged during construction, Gulf South would stop work immediately and notify all appropriate personnel and local first responders, as needed.

Residential Areas

Gulf South stated it would complete construction activities in residential areas as quickly and safely as practicable to minimize disturbances to residents. Gulf South would attempt to maintain access to the residences during construction. However, if access is temporarily impeded, Gulf South would coordinate with landowners to minimize the disturbance. Temporary safety fences would be erected along the construction right-of-way in areas within proximity to residences. Homeowners would be notified in advance of any expected utility interruption and the estimated duration of outages. Topsoil segregation would be used in residential areas unless specifically requested by the homeowner, or if Gulf South elects to import topsoil. Following the completion of construction activities, all debris would be removed, and residential areas would be restored to pre-construction conditions. Gulf South would coordinate with landowners in an attempt to meet any special requests concerning landscaping restoration.

Gulf South would use at least one full-time EI during construction of the Project. The EIs would be on site during construction activities to ensure compliance with the construction procedures contained in our Plan and Procedures and conditions of the Commission's orders. The EI would report directly to Gulf South's Environmental Project Manager and would have stop work authority. The EIs' responsibilities include:

1) monitoring and documenting compliance with all mitigation measures required by the Commission's Order and any other grants, permits, certificates, or other authorizing documents;

2) evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract or other authorizing documents;

3) identifying, documenting, and overseeing correction of acts that violate the Plan and Procedures or the environmental conditions of the Commission's Order, or any other authorizing document (e.g., U.S. Army Corps of Engineers [USACE] Section 404 permit) and, if necessary, to stopping work; and

4) maintaining construction status reports and training records.

FERC staff would also conduct compliance inspections during construction and restoration to verify compliance with the Commission's requirements.

8.0 LAND REQUIREMENTS

The Project would require 137.2 acres of land for construction, of which 37.3 acres would be required for operation. Permanent impacts would be associated with the Black Creek Compressor Station, Plant Morrow Meter Station, maintained pipeline right-of-way, and permanent access roads. Approximately 99.9 acres would be restored to preconstruction conditions. Table 5 provides site-specific land requirements for the Project.

Table 5
Summary of Land Requirements Associated with the Project

Facility	Land Affected During Construction (acres) [a]	Land Affected During Operation (acres)
Pipeline Facilities		
Right-of-Way	31.40	18.37
Additional Temporary Workspace	8.65	0.00
Contractor/Pipe Yards	36.23	0.00
Access Roads	3.38	0.00
Pipeline Facilities Subtotal	**79.66**	**18.37**
Aboveground Facilities		
20-inch Delivery Lateral		
Plant Morrow Meter Station [b]	2.38	0.50
Access Roads	7.02	3.48
Index 299 Pipeline		
Black Creek Compressor Station [c]	35.65	8.55

Table 5 Summary of Land Requirements Associated with the Project		
Facility	**Land Affected During Construction (acres) [a]**	**Land Affected During Operation (acres)**
Access Roads	12.49	6.35
Aboveground Facilities Subtotal	**57.54**	**18.88**
Project Total	**137.20**	**37.25**

a. Land affected during construction is inclusive of operational impacts (permanent).
b. Land affected during construction and operation is inclusive of the pig receiver, which would be located within the Plant Morrow Meter Station.
c. Land affected during construction and operation is inclusive of the pig launcher and Index 299 mainline valve, which would both be located within the Black Creek Compressor Station.

Gulf South would utilize two contractor yards in Lamar County. Contractor Yard 1 is classified as industrial/open land and Contractor Yard 2 is classified as open land. Contractor Yard 1 is located near Plant Morrow and would also be utilized for the Morrow Repower Project. Contract Yard 2 is located along US Route 11 and is connected to the Black Creek Compressor Station by TAR-02. Both contractor yards would be used for parking, staging, and storage of construction material. The contractor yards would be restored to pre-construction conditions upon Project completion unless otherwise agreed upon with the landowner and submitted to FERC for review and approval.

Gulf South would construct two temporary and two permanent access roads. The construction of access roads would impact approximately 22.9 acres, of this 9.8 acres of land would be utilized during operation of permanent access roads. Table 6 describes the location, size, existing land use, and proposed upgrades of each access road.

Table 6 Temporary and Permanent Access Roads for the Project						
Access Road ID[a]	**Milepost /Facility**	**Proposed Use**	**Existing Use**	**Upgrade Requirements**	**Approximate Length (feet)**	**Approximate Width (feet)[b]**
Pipeline Facilities						
TAR-01	3.00	Temporary	Private dirt road	Tree trimming, grading, widening, gravel	4,235	25
Aboveground Facilities						
TAR-02	Black Creek Compressor Station	Temporary	Private dirt road	Tree trimming, grading, widening, gravel or construction mats	5,350	50
PAR-01	Plant Morrow Meter Station	Permanent	Private dirt road	Tree trimming, grading, widening, gravel	6,064	25[c]
PAR-02	Black Creek Compressor Station	Permanent	Forest, pine plantation, open land, wetland	Tree clearing grading, gravel	5,520	50

PAR- Permanent Access Road
TAR- Temporary Access Road
a. Access Road IDs are not consecutive
b. Approximate width corresponds to the average width of the proposed access road; however, an expanded width across short distances may be required in specific locations to accommodate safe turning areas for construction equipment.

Table 6
Temporary and Permanent Access Roads for the Project

Access Road ID[a]	Milepost /Facility	Proposed Use	Existing Use	Upgrade Requirements	Approximate Length (feet)	Approximate Width (feet)[b]

c. The operational footprint of PAR-01 will be 25 feet; however, Gulf South will utilize temporary workspace on both sides of the access road during construction, which will result in a total width of 50 feet.

SECTION B – ENVIRONMENTAL ANALYSIS

The following sections discuss the Project's potential direct and indirect impacts on environmental resources. When considering the environmental consequences of the Project, the duration and significance of any potential impacts are described below according to the following four levels: temporary, short-term, long-term, and 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 three years following construction. Long-term impacts would require more than three years to recover, but eventually would recover to pre-construction conditions. Permanent impacts could occur because of activities that modify resources to the extent that they may 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.

1.0 GEOLOGY

The Project is within the East Gulf Coastal Plain section of the Coastal Plain physiographic province (U.S. Geological Survey [USGS], 2018). The Coastal Plain province extends from south Texas to Massachusetts and consists of sediments deposited with the rise and fall of ocean levels. The East Gulf Coastal Plain section consists of flat, relatively featureless plains interspersed with cuestas, flatwoods, and floodplains. This section formed on Mesozoic Era to recent sediments (gravels, sands, silts, and clays) and sedimentary rocks composed of chalk, limestone, sandstone, and claystone (Encyclopedia of Alabama, 2016).

Lithology crossed by the Project area includes geologic formations comprised of sand, clay, and gravel, with minor siltstone (USGS, 2005a-c). The topography across the Project area is generally flat with areas of gently rolling hills; elevations range from 226 to 380 feet above mean sea level.

Mineral and Paleontological Resources

Mississippi's primary non-fuel mineral resources are sand and gravel, crushed stone, and clay (USGS, 2019a). Within 0.25 mile of the Project area, no current, historic, or proposed oil or gas wells or natural gas storage reservoirs were identified (Mississippi State Oil and Gas Board, 2019; MDEQ, 2019a; U.S. Energy Information Administration, 2018). Further, no active or historic quarries, mines, or mine spoil areas were identified within 1 mile of the Project (U.S. Energy Information Administration, 2018; USGS, 2011). Therefore, Project construction and operation would not impact the availability of or access to mineral resources.

The Project vicinity is not known to contain paleontological resources; however, some minor, non-marine fossils could be encountered. The State of Mississippi does not have any laws that protect paleontological resources (Starnes, 2019). In the unlikely event that paleontological resources are discovered during construction of the Project, Gulf South would temporarily cease excavation in the area and notify the state geological survey or natural history museum as well as the FERC, so that all finds may be properly documented.

Geologic Hazards

Geologic hazards are natural, physical conditions that can result in damage to land and structures or injury to people. Such hazards typically are seismic-related, including earthquakes, surface faulting, and soil liquefaction. Landslides, ground subsidence hazards (including karst terrain), and flood hazards, as well as the feasibility of utilizing HDD based on hydrogeologic conditions present in the Project area, are discussed below.

The shaking during an earthquake can be expressed in terms of the acceleration as a percent of gravity (g), and seismic risk can be quantified by the motions experienced at the ground surface or by structures during a given earthquake expressed in terms of g. USGS National Seismic Hazard Probability Mapping shows that for the Project area, within a 50-year period, there is a 2 percent probability of an earthquake with an effective peak ground acceleration of 4 to 6 percent g; and a 10 percent probability of an earthquake with an effective peak ground acceleration of 2 to 3 percent g being exceeded (USGS, 2014). For reference, peak ground acceleration of 10 percent g (0.1g) is generally considered the minimum threshold for damage to older structures or structures not constructed to resist earthquakes.

The Project area is within the Gulf-margin normal fault system, a belt of poorly defined, mostly seaward-facing normal faults that trend parallel to the Gulf Coast in westernmost Florida, southwestern Alabama, southern Mississippi, all of Louisiana and southernmost Arkansas, and eastern and southern Texas (USGS, 2019b). Movement along active growth faults in this system tends to be minimal (less than 0.2 millimeters/year) and non-seismogenic. Project facilities are not anticipated to be affected by faults given the nature of fault movement (gradual creep) and the composition of sediments and rocks that underlie the fault system, which are likely unable to generate the energy required to produce significant seismic events (Wheeler and Heinrich, 1998).

Additionally, based on a review of seismic events recorded in the region, the epicenter of the closest recorded earthquake is approximately 38 miles southeast of the Black Creek Compressor Station. This earthquake occurred on September 9, 1975 and had a magnitude of 2.90 (Richter Scale) (USGS, 2019c).

The Project is in an area with low seismicity, therefore we conclude the Project is not likely to be adversely impacted by future seismic incidents or soil liquefaction.

Project area topography is generally flat or gently sloping, with slopes of less than 8 percent. Therefore, the Project would not likely impact or be impacted by slope instability or landslide hazards.

Ground subsidence, involving the localized or regional lowering of the ground surface, may be caused by karst formation due to limestone or gypsum bedrock dissolution, sediment compaction due to groundwater pumping and/or oil and gas extraction, and underground mining. Oil and gas extraction and subsurface mines do not occur in the Project vicinity. The Project area does not overlay any salt domes and the nearest salt dome is 4.8 miles southeast of the Project. Therefore, Project facilities are not anticipated to be impacted by subsidence associated with salt domes (Mississippi Office of Geology, 2009). No karst terrain is present and the

lithology that could lead to bedrock dissolution and karst development do not generally occur (USGS, 2004).

Project areas overlie the unconsolidated Coastal Lowlands aquifer system. Unconsolidated aquifers are particularly susceptible to subsidence from excessive pumping. However, the Coastal Lowlands aquifer system is highly productive, and instances of significant subsidence from over-extraction of groundwater were not identified in Lamar or Forrest Counties.

The Project could be impacted by flash flooding due to its proximity to streams and other nearby waterbodies. According to the Federal Emergency Management Agency (FEMA) approximately 0.40 mile of the Project area crossed by the 20-inch-diameter delivery lateral occurs within Zone A of a 100-year floodplain (FEMA, 2010). Areas within Zone A are subject to inundation by the 1 percent chance of an annual flood event. Installation of the pipeline would not significantly affect floodplain storage as it would be installed subsurface and all contours would be restored following the completion of construction activities. Flooding could affect the pipeline by increasing buoyancy. However, Gulf South would install concrete coating or weights along the pipeline, where necessary, to minimize potential impacts from flooding. All aboveground facilities would be within FEMA Zone X, which is defined as an area of minimal flood hazard outside of the 100-year floodplain and the 500-year floodplain. Therefore, we conclude that the Project would not significantly impact or be impacted by flood hazards. Further, Gulf South would obtain all applicable federal, state, and local authorizations necessary for construction within floodplains and Project facilities would be designed to meet or exceed applicable federal, state, and local standards.

Gulf South has proposed the use of the HDD construction method to cross one wetland, one railroad, and four waterbodies. Specifically, HDD 1 would be 1,737 feet long and would cross one waterbody (OWP1002) and a portion of one wetland (WP1011_PFO); and HDD 2 would be 1,408 feet long and would cross one railroad and three waterbodies (SP2007, SP1015, and SP1016). During HDD operations, bentonite-based drilling mud is pumped under pressure through the inside of the drill pipe and flows back (returns) to the drill entry point along annular space between the outside of the drill pipe and the drilled hole. Because the drilling mud is pressurized, it can be lost, resulting in an inadvertent return of fluids to the ground surface (IR), if the drill path encounters porous material and/or fractures or fissures in the bedrock. Chances for an IR to occur are greatest near the drill entry and exit points where the drill path has the least amount of ground cover. It is also possible for HDD operations to fail, primarily due to encountering unexpected geologic conditions such as coarse materials or if the pipe were to become lodged in the hole during pullback operations.

Gulf South completed geotechnical investigations to assess subsurface conditions at the location of both HDDs. At HDD 1, one geotechnical boring was installed approximately 500 feet north of the proposed entry point to a depth of 100 feet below grade (fbg), and one geotechnical boring was installed approximately 300 feet north of the drill exit point to a depth of 125 fbg. Depths of geotechnical exploration exceed the depth of the proposed HDD 1, which would not exceed approximately 75 fbg. To assess subsurface conditions at HDD 2, one geotechnical boring was installed approximately 300 feet north of the proposed entry point to a depth of 140 fbg, and one geotechnical boring was installed approximately 300 feet south of the

drill exit point to a depth of 115 fbg. Depths of geotechnical exploration exceed the depth of the proposed HDD 2, which would not exceed approximately 50 fbg.

Subsurface materials were found to be generally consistent at all boring locations and were comprised of unconsolidated clays and sands, with minor silt and gravel. There would be approximately 50 feet of cover at HDD 1 and 25 feet of cover at HDD 2 between the proposed alignment and the surficial features crossed.

While use of the HDD method would significantly minimize potential impacts on the proposed crossings of waterbodies and wetlands, HDDs could result in an unanticipated release of drilling fluids into a waterbody or wetland during drilling. Gulf South's HDD Plan includes procedures for monitoring and adjusting drill operations, and for identifying and responding to potential IRs if one should occur. Further, Gulf South's HDD Plan states that all additives would be compliant with the NSF International/American National Standards Institute 60 – Drinking Water Treatment Chemicals – Health Effects standard. We have reviewed Gulf South's HDD Plan and find their proposed measures to be generally acceptable. However, portions of Gulf South's HDD Plan remain incomplete based on incomplete geotechnical information at the time of HDD Plan creation. Items that remain outstanding include final feasibility reports, site-specific plan and profiles, hydrofracture analysis, and a list of proposed drilling fluid additives and associated safety data sheets. Therefore, **we recommend that:**

- **<u>Prior to construction</u>, Gulf South should file with the Secretary of the Commission (Secretary), for review and written approval by the Director of the Office of Energy Projects (OEP), its completed, final Horizontal Directional Drill Monitoring, Inadvertent Return Response, and Contingency Plan.**

Based on the above assessment, and our recommendation, we conclude that the impact from geologic hazards on the Project facilities during construction and/or operation would be minimal and the Project would not significantly impact or be significantly impacted by geologic hazards.

2.0 SOILS

Construction activities such as clearing, grading, trench excavation, backfilling, heavy equipment traffic, and restoration along the construction right-of-way have the potential to adversely affect natural soil characteristics such as water infiltration, storage and routing, and soil nutrient levels, thus reducing soil productivity. Clearing removes protective vegetative cover and exposes soils to the effects of wind and water which increases the potential for soil erosion and the transport of sediment to sensitive resource areas.

Soil characteristics in the Project area were assessed using the Natural Resources Conservation Service (NRCS) Soil Survey geographic database (NRCS, 2019). Soils were grouped and evaluated according to the characteristics that could affect construction or increase the potential for soil impacts during construction (refer to table 7).

Table 7
Summary of Major Soil Limitations Crossed by the Project (acres)

Facility	Prime Farmland/ Farmland of Statewide Importance [a]	Hydric Soils [b]	High Soil Rutting Hazard [b]	Wind Erosion Potential [c]	Shallow Bedrock [d]	Revegetation Potential [e]
Pipeline Facilities						
Forrest County						
Right-of-Way	0.00	0.2	0.2	0.0	0.00	0.2
Lamar County						
Right-of-Way	12.3	1.8	14.2	0.0	2.6	1.8
Additional Temporary Workspace	2.8	0.4	5.6	0.0	0.2	0.4
Contractor/Pipe Yard	26.5	0.0	0.2	0.0	0.0	0.0
Access Roads	1.6	0.0	1.8	0.0	0.2	0.0
Pipeline Facilities Subtotal	**43.1**	**2.4**	**22.0**	**0.0**	**3.0**	**2.4**
Aboveground Facilities						
Forrest County						
Black Creek Compressor Station	35.1	0.5	0.5	35.1	0.0	0.5
Temporary and Permanent Access Roads	1.3	0.1	0.1	1.3	0.0	0.1
Lamar County						
Plant Morrow Meter Station	0.0	0.0	2.4	0.0	0.0	0.0
Permanent Access Road	4.5	0.0	2.9	0.0	0.0	0.0
Index 299 Temporary and Permanent Access Roads	7.0	0.3	0.3	<0.1	0.0	0.3
Aboveground Facilities Subtotal	**48.0**	**0.9**	**6.3**	**36.5**	**0.0**	**0.9**
Project Totals	**91.0**	**3.3**	**28.3**	**36.5**	**3.0**	**3.3**

a. Includes soils designated as prime farmland, unique farmland, and farmland of statewide or local importance.
b. As designated by the NRCS.
c. Soils with NRCS wind erodibility group designations of 1 or 2.
d. Soils with unconsolidated rock 60 inches or less from the surface.
e. Soils considered to have low revegetation potential if classified by the NRCS as hydric and as having high soil rutting hazard or compaction potential (unless prime farmland).

Prime Farmland

The United States Department of Agriculture defines prime farmland as land that has the best combination of physical and chemical characteristics for growing food, feed, forage, fiber, and oilseed crops. Unique farmland is land, other than prime farmland, that is used for production of specific high-value food and fiber crops. Soils that do not meet all of the

requirements to be considered prime or unique farmland may be considered farmland of statewide or local importance if soils are capable of producing a high yield of crops when treated or managed according to accepted farming methods.

Project construction would disturb approximately 91.0 acres of soils classified as prime farmland or farmland of statewide importance, of which approximately 12.9 acres would be permanently converted to industrial use for operation of the Black Creek Compressor Station and permanent access roads. Other areas would be returned to pre-construction conditions and/or revegetated and maintained in an herbaceous state. Although the Project would permanently impact prime farmland and farmland of statewide importance, these impacts would be negligible given the amount of prime farmland within Forrest County (approximately 159,796.6 acres) and Lamar County (approximately 118,192.9 acres) (NRCS, 2019).

Shallow Bedrock

Per NRCS classification, approximately 3 acres underlying the proposed pipeline facilities have shallow bedrock (bedrock 60 inches or less from the ground surface). The introduction of stones or rocks to surface soil layers may reduce soil moisture-holding capacity, resulting in a reduction of soil productivity. If bedrock is encountered during construction, Gulf South would use rock pickers or other rock removal equipment to remove large rock fragments prior to clean up. No blasting is proposed, and Gulf South would remove any excess stone and rock from surface soils within the Project area so that rock contents in the soils would be no higher than similar soils in adjacent locations.

All soils in the Project area have low to moderate soil compaction potential but exhibit high potential for rutting. The Project area may experience an increase in frequency of rain events during the spring and fall months, causing increased saturation and an increase in the potential for compaction and rutting to occur. In general, rutting and compaction of soils would be avoided or minimized through the use of timber mats, as deemed necessary during construction. Other methods, such as using low-ground pressure equipment, may also be used as conditions dictate.

Erosion and Revegetation

The majority of soils have moderate to high revegetation potential and are not highly susceptible to erosion by wind or water; however, clearing, grading, and equipment movement can accelerate the erosion process and, without adequate protection, result in discharge of sediment to waterbodies and wetlands.

To minimize or avoid potential impacts due to soil erosion and waterbody sedimentation, Gulf South would implement sediment and erosion control measures in accordance with the Plan and Procedures. Temporary erosion controls, including interceptor diversions and sediment filter devices such as silt fences, would be installed immediately following land disturbing activities. These controls would be inspected on a regular basis and after each rainfall event of 0.5 inch or greater to ensure proper functioning. Temporary erosion control devices would be maintained until the Project area is successfully revegetated. Gulf South would additionally utilize dust-

control measures, including routine wetting of the construction workspace with municipal water as necessary where soils are exposed.

Successful restoration and revegetation of the Project workspaces is important for maintaining productivity and protecting the underlying soil from potential damage. Fertility and erosion are generally the two main factors that would limit the re-growth of vegetation, but these can be mitigated through the application of fertilizers and/or proper seeding. Gulf South would apply soil amendments in areas with poor to moderate revegetation potential as needed in order to create a favorable environment for the re-establishment of vegetation. Temporary workspaces would be revegetated in accordance with the FERC Plan and Procedures, consultations with the NRCS Field Service Centers in Lamar and Forrest Counties, Mississippi, the Project's Exotic and Invasive Species Control Plan and Revegetation Plan, and the NRCS' Establishing Grasses and Legumes on Critical Areas guide.

Given Gulf South's proposed mitigation measures and that it would return disturbed areas to pre-construction conditions, maintain the right-of-way in an herbaceous state, and stabilize aboveground facilities with gravel cover, permanent impacts due to soil erosion or poor revegetation potential are not anticipated.

Inadvertent Spills or Discovery of Contaminants

A review of U.S. Environmental Protection Agency (EPA) and MDEQ online databases was conducted to identify recent or historic sources of contamination such as spills, landfills, and leaking storage tanks, within 0.5 mile of the Project area. None were identified (EPA, 2019a, 2019b; MDEQ, 2019b, 2019c).

In the event that contaminated soil or groundwater is discovered during construction, Gulf South would implement its Plan for the Unanticipated Discovery of Contaminated Environmental Media. This plan identifies the steps to be followed in the event that contaminated sediments or soils, as identified by evidence of subsoil discoloration, odor, sheen, or other such indicators, are encountered during construction.

During construction, contamination from accidental spills or leaks of fuels, lubricants, and coolant from construction equipment could adversely impact soils. To minimize impacts, Gulf South would implement measures contained in its SPRPP which specifies measures to prevent and cleanup inadvertent spills during Project construction.

We conclude that Gulf South's implementation of the Plan and Procedures, its SPRPP, and its Plan for the Unanticipated Discovery of Contaminated Environmental Media during construction and restoration would adequately minimize impacts on soils.

3.0 WATER RESOURCES AND WETLANDS

3.1 Groundwater

The Project is underlain by the Coastal Lowlands aquifer system (USGS, 2003). The Coastal Lowlands aquifer system extends from Texas across Louisiana, Mississippi, and

Alabama and into western Florida. This aquifer system consists of interbedded sand and clay, which constitutes numerous water-yielding and confining zones. Many of these local aquifers have been identified, mapped, and named according to the depth at which they are encountered or the age or name of the geologic formation in which they occur (USGS, 1998). The Project area is underlain by the locally named Miocene aquifer system (also known as the Grand Gulf aquifer system) (MDEQ, 2017).

The Miocene aquifer system is the largest potential source of groundwater in Mississippi, spanning approximately 17,000 square miles across the southern portion of the state. More than 100 million gallons of water per day are withdrawn from this aquifer system in Mississippi. The general saturated thickness of this aquifer system increases southward and westward as it extends toward the coast, and the base of the freshwater section also generally increases in depth toward the south and west (MDEQ, 2017).

According to MDEQ's well completion data for water wells near the Project area, all wells draw water from a confined aquifer unit, which ranges from 630 to 710 feet below the land surface (MDEQ, 2019b).

Sole Source Aquifers and Wellhead Protection Areas

The EPA oversees the Sole Source Aquifer Protection Program to protect high production aquifers that supply 50 percent or more of the region's water supply and for which there are no reasonably available alternative drinking water sources should the aquifer become contaminated. The Project area does not overlie any EPA-designated sole-source aquifer (EPA, 2019c). Source water protection areas (SWPAs) are designated surface and subsurface zones surrounding public water supply wells. These zones have been identified in an effort to prevent contaminants from entering the groundwater table and compromising the quality of public drinking water. A portion of the Project (approximate MP 2.5 to the Plant Morrow Meter Station, and Contractor Yard 1) is within a SWPA (SWPA: 0370014) associated with public water supply wells that appear to be associated with Plant Morrow. Three public water supply wells are within 400 feet of PAR-01, including two within 150 feet which are described in more detail below (MDEQ, 2019b). MDEQ recommended that Gulf South avoid spraying herbicides to the greatest extent practicable within the SWPA to minimize the potential for groundwater contamination (Williams, 2019). If herbicides are required, Gulf South would apply the minimum amount necessary using selective/spot treatment techniques. Given this and other mitigation measures described below, construction and operation of the Project would not significantly impact the SWPA.

Public and Private Water Supply Wells

Based on a review of the MDEQ Land and Water Division Map Viewer (MDEQ, 2019b), two water supply wells were identified within 150 feet of the Project area. The two wells are 20 feet and 13 feet, respectively, from PAR-01 and are both classified as active industrial/potable water wells. Based on field surveys conducted in July and August 2019 and a review of the USGS National Water Information System tool, springs were not identified within 1 mile of the Project area (USGS, 2019d).

Gulf South would offer pre-and post-construction water quality and yield testing to landowners for water supply wells within 150 feet of the Project construction workspace. Should landowners outside of the 150-foot range request testing, Gulf South would provide this service on an individual basis. The scope, terms, and duration of the monitoring event(s) would be negotiated with each landowner at the time of the request. If a well is determined to have been damaged or the water quality or yield impacted as a result of construction of the Project, Gulf South would compensate the landowner for the repair of the well, installation of a new well, or otherwise arrange for a suitable water supply.

Groundwater Contamination

There are no known sources of groundwater contamination in the immediate vicinity of the Project work areas (EPA, 2019a, 2019b; MDEQ, 2019b, 2019c). If contaminated groundwater is encountered during construction of the Project, Gulf South would implement measures outlined in the Project-specific Plan for the Unanticipated Discovery of Contaminated Environmental Media.

To minimize the risk of potential fuel or hazardous material spills, Gulf South would implement measures within its SPRPP. Spill related impacts would also be minimized by prohibiting fuel storage and refueling activities within 200 feet of private wells and 400 feet of community or municipal wells.

Groundwater Impacts

Surface drainage and groundwater recharge patterns can be temporarily altered by clearing, grading, trenching, and soil stockpiling activities, potentially causing minor fluctuations in groundwater levels and/or increased turbidity, particularly in shallow surficial aquifers. We expect the resulting changes in water levels and/or turbidity in these aquifers to be localized and temporary because water levels quickly re-establish equilibrium and turbidity levels rapidly subside. The addition of impervious surfaces at aboveground facilities may affect overland flow patterns and subsurface hydrology. However, these effects would be highly localized and minor.

We therefore conclude no significant or long-term impacts on groundwater resources would occur from construction or operation of the facilities.

3.2 Surface Water

The Project is within the Black Creek Watershed. There are 12 waterbodies in Lamar County that would be impacted by the Project. Of the 12 waterbodies crossed, one is characterized as a perennial stream, eight as intermittent streams, two as ephemeral streams and one as a pond. The pond crossing is defined as a major waterbody crossing by the Procedures and would be crossed using HDD. The other waterbodies would either be crossed by the open-cut method or temporarily matted. Table 8 summarizes the details of all 12 waterbody crossings. No waterbodies would be crossed or impacted by the Project in Forrest County.

When possible, construction at stream crossings would be conducted at low-flow periods to minimize sedimentation, turbidity, stream bank disturbance, and the time it would take to

complete in-stream crossing method. Silt fences and/or straw bales would border spoil piles near waterbodies to prevent run off into waterbodies.

An inadvertent spill of fuels, lubricants, or solvents could result in surface water contamination. By implementing proper storage, containment, and handling procedures, the potential spill hazard would be greatly minimized or avoided. In the event of a spill, Gulf South would employ measures outlined in its SPRPP and the Procedures. In the event of an inadvertent release of HDD drilling mud, Gulf South would minimize the impacts through implementation of the HDD Plan. Therefore, we conclude that the Project would not significantly impact surface water resources.

Table 8
Summary of Waterbody Crossings

Milepost/ Location	Feature ID	Waterbody Name	Flow Regime	Width (feet)	Crossing Length (feet)	Crossing Method
Pipeline						
0.11	SP1007	Unnamed Tributary to Black Tom Creek	Intermittent	4	5	Open Cut
1.45	OWP1002	Tan Trough Creek [a]	Manmade Pond	926[b]	898	HDD
2.51	SP1010	Unnamed Tributary to Sandy Run	Intermittent	4	24	Open Cut
3.09	SP2007	Sandy Run	Perennial	30	31	HDD
3.12	SP1015	Unnamed Tributary to Sandy Run	Intermittent	3	3	HDD
3.12	SP1016	Unnamed Tributary to Sandy Run	Ephemeral	3	0	HDD
Aboveground facilities						
Plant Morrow Meter Station	SP1017	Unnamed Tributary to Sandy Run	Ephemeral	2	N/A	Workspace Only (Timber Mats)
Access Roads						
PAR-01	SP1021	Unnamed Tributary of Black Creek	Intermittent	1	N/A	Existing Culvert/ Timber Mat
PAR-02	SP1008	Unnamed Tributary to Black Tom Creek	Intermittent	2	N/A	New 3'x6' Box Culverts & Rock
PAR-02	SP1007	Unnamed Tributary to Black Tom Creek	Intermittent	4	N/A	New 3'x6' Box Culverts & Rock

a. Waterbody has been artificially dammed downstream of the proposed Project; therefore, the waterbody has been characterized as a pond rather than a stream.
b. Waterbody width provided for ponds represents the maximum width of the pond within the Project footprint.

Hydrostatic Testing and Water Use

Gulf South would conduct hydrostatic testing in accordance with DOT pipeline safety regulations (49 CFR 192, Subpart J). Hydrostatic testing is completed after backfilling of the trench to ensure the integrity of the newly installed facility piping. Sections that are installed by HDD are generally hydrostatically tested prior to installation. The facility piping would be filled with water and pressurized to the maximum allowable operating pressure (MAOP), which is monitored for a minimum of eight hours. If a drop-in pressure is recorded, the facility piping would be examined to determine if any leaks have occurred. Gulf South would obtain approximately 351,738 gallons of water total for hydrostatic testing from a municipal source which would involve groundwater withdrawals. Details regarding the volume at each milepost are provided in table 9.

Table 9
Hydrostatic Test Water Source and Discharge Locations

MP/Facility		Length (feet)	Water Source	Water Withdrawal Location (MP)	Approximate Volume (gallons)	Discharge Location (MP)	Rate of Discharge (gal/min)
Begin	End						
Pipeline Facilities							
0.00	3.40	17,961	Municipal	N/A	293,102	0.00; 3.40	200
1.40	1.73	1,737	Municipal	N/A	28,356	1.73	200
3.29	3.02	1,408	Municipal	N/A	22,980	3.02	200
Aboveground Facilities							
Black Creek Compressor Station		3,000	Municipal	N/A	2,000	0.00	100
Plant Morrow Meter Station		120	Municipal	N/A	5,300	3.40	100

The water obtained from municipal sources may be treated with chlorine. Gulf South would use a maximum of 0.004 grams of sodium thiosulfate per 1 gallon of water to reduce the concentration of chlorine in hydrostatic test water. Following testing, each test section would be depressurized, and the water would pass through an energy-dissipation and/or filtration device before being discharged into a well-vegetated, upland area. Therefore, we conclude that the hydrostatic testing of the Project would not have a significant impact on water resources.

Gulf South would also obtain water from a municipal source for HDD and fugitive dust control. The HDD under the wetland would require 371,921 gallons of water to be mixed with bentonite clay and the HDD under the railroad would require 301,787 gallons of water. Gulf South would utilize a maximum of 63,000 gallons of water per day during construction to control fugitive dust emissions. Water would only be applied to control fugitive dust when necessary.

3.3 Wetlands

Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of wetland vegetation adapted for life in saturated soil conditions, commonly known

as hydrophytic vegetation (Environmental Laboratory, 1987). Wetlands can be a source of substantial biodiversity and serve a variety of functions that include providing wildlife habitat, recreational opportunities, flood control, and naturally improving water quality.

Gulf South conducted wetland delineations in July and August 2019 and identified 30 wetlands in the Project area. Of these, 5 are palustrine emergent (PEM) wetlands, 5 are palustrine scrub-shrub (PSS) wetlands, and 20 are palustrine forested (PFO) wetlands. A table of all wetlands crossed are included in appendix B. Dominant vegetation in the PEM wetlands includes shortbristle horned beaksedge, anglestem beaksedge, woolgrass, rosepink, southern dewberry, and silver plumegrass. Dominant vegetation in the PSS wetlands includes red maple, sweet gum, Chinese tallow, hazel alder, common rush, and sand spikerush. Dominant vegetation in the PFO wetland includes sweetbay, water oak, blackgum, tuliptree, red maple, summer grape, and Japanese honeysuckle.

Construction of the Project would impact 4.5 acres of wetlands, of which 1.5 acres would be impacted by the operation and maintenance of the pipeline right-of-way, and the permanent access road. Construction would impact 0.1 acre of PEM wetland, 0.6 acre of PSS wetland, and 3.8 acres of PFO. Operation would impact <0.1 acre of PEM, 0.2 acre of PSS, and 1.3 acre of PFO. Table 10 identifies impacts on each wetland type by county. Operational impacts are based on a 10-foot-wide area in PFO and PSS wetlands that would be converted to other wetland types due to pipeline right-of-way maintenance. Additionally, operational impacts on forested wetlands reflect potential for selective thinning of trees within 15 feet of the pipeline right-of-way that have roots that could compromise the integrity of the pipeline coating.

The construction and operation of the permanent access road through wetlands would result in permanent fill of 0.6 acre of wetland. PAR-02 leads from the compressor station, along the pipeline right-of-way to connect to US Route 11. A permanent access road from the north of the compressor station would be the only alternative to avoid wetland impacts. However, rerouting the permanent access road to the north would require more land and cause a greater impact to forested habitat. Additionally, Gulf South would install appropriately sized culverts within all wetlands crossed by permanent access roads to ensure that the access road does not permanently alter the wetland hydrology. Wetlands impacted by construction would be reseeded and allowed to revert back to preexisting conditions.

Table 10
Wetland Resources Crossed by the Project

Wetland type	Number of wetlands crossed	Construction impact	Operational Impacts
Forrest County, Mississippi			
PEM	0	0	0
PSS	0	0	0
PFO	6	0.70	0.09
Forrest County Subtotal	***6***	***0.70***	***0.09***

Table 10 Wetland Resources Crossed by the Project			
Wetland type	**Number of wetlands crossed**	**Construction impact**	**Operational Impacts**
Lamar County, Mississippi			
PEM	5	0.05	0.02
PSS	5	0.58	0.20
PFO	14	3.16	1.14
Lamar County Subtotal	***24***	***3.79***	***1.36***
Project Totals	**30**	**4.49**	**1.45**

Gulf South would minimize impacts on wetlands by following the guidelines in our Procedures, including: limiting the amount of equipment and use of temporary workspace in and adjacent to wetlands; using equipment stabilization such as timber mats within wetlands; restoring wetland contours; and conducting follow-up monitoring to ensure each wetland becomes re-established successfully. Gulf South would be required by the USACE to follow a compensatory mitigation plan to appropriately mitigate for unavoidable impacts on wetlands. Due to Gulf South's compliance with our Procedures and other mitigation measures, we conclude that the Project would not significantly impact wetlands.

4.0 VEGETATION, WILDLIFE, AND THREATENED AND ENDANGERED SPECIES

4.1 Vegetation

The Project is in the Coastal Plains and Flatwoods Ecoregion. The predominant vegetation type in the area consists of evergreen needle-leaved trees, scattered with patches of cold-deciduous and evergreen broad-leaved forest. The Project area consists of open land, forest, pine plantation, developed lands, wetlands, and open water. Open land in the Project area is typically vegetated with little bluestem, southern dewberry, powderpuff, sawtooth blackberry, and bahiagrass. Forest vegetation in the area includes loblolly pine, eastern poison ivy, laurel oak, southern red oak, blackgum, and American beech. Vegetation associated with pine plantations includes loblolly pine, American beautyberry, blackjack oak, heartleaf peppervine, longleaf pine, slash pine, and American holly. Developed lands typically are sparsely vegetated with bahiagrass and common carpetgrass. Some dominant vegetation associated with wetlands in the Project area includes seedbox, shortbristle horned beaksedge, Chinese tallow, red maple, southern dewberry, and sand spikerush. Open water within the Project area consists of one man-made pond and vegetation commonly found along the banks of the pond include seedbox, spiny rush, common duckweed, and floating primrose-willow.

Construction of the Project would impact 137.2 acres of vegetation and operation would impact 37.3 acres of vegetation. Table 11 depicts construction and operation impacts on each vegetation type.

Table 11
Summary of Habitat Impacts for the Project (acres)

Vegetation/Habitat Type	Construction	Operation
Open land	50.32	5.0
Forest	44.15	15.85
Pine Plantation	32.3	13.23
Developed	4.93	1.72
Wetlands	4.49	1.45
Open water	1.01	0.0
Project Total	**137.20**	**37.25**

Impacts on vegetation include clearing and grading, permanent conversion to other vegetation types, introduction of invasive species, and possible spills. Following construction and restoration, most construction workspaces would be allowed to revert to pre-construction land use and vegetation type. The primary impact on vegetation from the Project facilities would be the new permanent conversion of about 29.1 acres of forested upland and pine plantation to open land, comprised of maintained right-of-way and aboveground facilities. In addition, about 47.4 acres of forested upland and pine plantation would be cleared for temporary construction workspaces. This would be considered a long-term to permanent impact as it would take more than 20 years for forested vegetation to return to pre-construction conditions. However, vegetation within developed, upland herbaceous, and herbaceous wetland habitat types would likely return to their preconstruction conditions within 1 to 5 years.

Mitigation for impacts on vegetation includes utilizing an invasive species control plan, following the SPRPP in the event of a spill, and revegetating with recommended seeds from the NRCS using species such as big bluestem, little bluestem, Indian grass, and switch grass. Due to the mitigation measures and the abundance of similar adjacent habitat, we conclude that the Project would not significantly impact vegetation.

4.2 Wildlife

Common wildlife species found in the Project area include the mourning dove, coyote, deer mouse, raccoon, copperhead, bobcat, feral hog, leopard frog, cottonmouth, blue heron, eastern cottontail, and American kestrel. Wildlife species with recreational and/or aesthetic value in the Project area include game species such as mourning dove, white-tailed deer, and wild turkey, as well as species popular for wildlife viewing including a diversity of bird species.

While hunting is a popular recreational activity in the Project area, game species are abundant and highly mobile, and would likely temporarily relocate to similar adjacent habitats during construction. The majority of species popular for wildlife viewing, such as birds, are highly mobile and would likely temporarily displace to similar adjacent habitats during construction.

Impacts on wildlife could include displacement of mobile species to adjacent habitats, habitat fragmentation, direct mortality to small, less mobile species during clearing and grading, and noise disturbance. Forest fragmentation can result in the alteration of species composition by creating suitable habitat for edge species, while removing habitat for interior forest dwelling species. Some bird species may also become more susceptible to brood parasitism. The Project would not significantly contribute to forest fragmentation because a majority of the Project area has been utilized as pine plantations. These pine plantations are routinely cleared to harvest timber. A portion (approximately 23 percent) of the 20-inch-diameter delivery lateral right-of-way is co-located with an existing utility corridor to reduce additional forest fragmentation impacts. The Project impacts a small proportion of the available wildlife habitat in the vicinity. Additionally, Gulf South would ensure all contractors and workers participate in environmental training that outlines the appropriate steps to take should wildlife be encountered or identified during construction activities. This would include instructions for contacting the appropriate personnel to safely remove or relocate wildlife in the immediate Project vicinity. Therefore, we conclude that the Project would not significantly impact wildlife populations.

4.3 Migratory Birds

Migratory birds are protected under the Migratory Bird Treaty Act of 1918 (MBTA), 16 U.S.C. 703-712 (FWS, 2015). Executive Order 13186 (66 Federal Register 3853) directs federal agencies to identify where unintentional take is likely to have a measurable negative effect on migratory bird populations and to avoid or minimize adverse impacts on migratory birds. Executive Order 13186 states that emphasis should be placed on species of concern, priority habitats, and key risk factors, and that particular focus should be given to addressing population-level impacts.

On March 30, 2011, the U.S. Fish and Wildlife Service (FWS) and the Commission entered into a Memorandum of Understanding (FERC, 2011) that focuses on avoiding or minimizing adverse effects on migratory birds and strengthening migratory bird conservation through enhanced collaboration between the two agencies. This voluntary Memorandum of Understanding does not waive legal requirements under the MBTA, Bald and Golden Eagle Protection Act of 1940, Endangered Species Act of 1973 (ESA), NGA, Federal Power Act, or any other statutes and does not authorize the take of migratory birds. Birds of Conservation Concern (BCC) are a subset of protected birds under the MBTA and include all species, subspecies, and populations of migratory nongame birds that are likely to become candidates for listing under the ESA without additional conservation actions (FWS, 2008). The Project is within Bird Conservation Region 27, the Southern Coastal Plain region of the United States. BCC with the potential to occur in the area are listed in table 12.

Table 12 Birds of Conservation Concern with Potential to Occur within the Project Area				
Species [a]	**Scientific Name**	**Season Present**	**Preferred Habitat**	**Assessment of Potential Impacts**
American Kestrel	*Falco sparverius paulus*	Year-round	Found in open areas with short ground vegetation and sparse trees, including deserts, wood edges, parks, meadows, grasslands, farm fields, cities, and suburbs.	Suitable habitat exists in the Project area; however, individuals potentially present during construction would likely avoid the area or displace to similar adjacent habitats. Additionally, all clearing is anticipated to occur outside of the nesting season.
Red-headed Woodpecker	*Melanerpes erythrocephalus*	Year-round	Inhabits pine savannas and other open forests with clear understories, forest edges, open pine plantations, standing timber, groves, farm country, orchards, shade trees in towns, and large scattered trees. Avoids unbroken forest, favoring open country or forest clearings.	Suitable habitat exists in the Project area; however, individuals potentially present during construction would likely avoid the area or displace to similar adjacent habitats. Additionally, all clearing is anticipated to occur outside of the nesting season.
Wood Thrush	*Hylocichla mustelina*	Breeding	Occurs in deciduous woodlands. Breeds in woodland understory, damp forest, and mature deciduous and mixed forest. Nests in suburban areas, fragmented forests, and woodlands. Winters in mature, broad-leaved, and palm tropical forests, and lowland tropical forest understory.	Suitable breeding habitat exists in the Project area; however, clearing activities are anticipated to occur outside of the nesting season.

Sources: Cornell Lab, 2019; National Audubon Society, 2019; USFWS, 2019b

a. Only those BCC species identified by the USFWS IPaC System as potentially occurring in the Project area are identified in the table.

Project activities that could potentially impact BCC include vegetation clearing, increased noise from construction and operation, and the installation of radio towers. A 100-foot-tall communication tower would be built at the compressor station and an 80-foot-tall radio tower would be built at the meter station. To minimize impacts to BCC, these towers would not have guy wires or lights. BCC would likely relocate to surrounding habitat and avoid the Project area during construction. This could increase competition among birds in nearby habitats, but population level effects are not anticipated due to the substantial amount of adjacent habitat available and Gulf South's proposal to co-locate the pipeline with an existing utility corridor for 23 percent of the route. Therefore, we conclude that the Project would not significantly impact migratory birds or BCC. To further reduce impacts on migratory birds, Gulf South plans to

conduct all clearing activities outside of the breeding periods, and all temporarily disturbed areas would be allowed to revegetate following construction. Additionally, Gulf South would adhere to the Plan which prohibits routine mowing or clearing of the right-of-way during the migratory bird nesting season (April 15 to August 1).

4.4 Fisheries

Fisheries and aquatic habitats in the Project area are primarily characterized by water temperature (warmwater or coldwater) and flow (perennial, intermittent, ephemeral). All waterbodies crossed or impacted by the Project are classified as fresh, warmwater fisheries. None of the waterbodies in the Project area are classified as trout or stocked fisheries. The Project does not cross or impact essential fish habitat. Additionally, there are no designated fishing areas or waterbodies of local importance for recreational fishing in the Project area. The pond is the only waterbody that could support recreational fishing; however, it would be crossed by HDD. Fish species common in the Project area include sunfish, white crappie, black crappie, and catfish.

Construction of the Project may result in short-term impacts on fisheries such as increased sedimentation and turbidity, temperature changes due to removal of vegetation cover over streams, introduction of water pollutants, or entrainment of fish. Significant increases in turbidity and sedimentation could result in damaged gill structures and decreased visibility resulting in decreased ability to feed. Sediment deposition may also smother aquatic vegetation, cause changes in substrate composition, and bury or suffocate eggs and larvae. Additionally, loss of stream bank and aquatic vegetation could affect aquatic species by reducing shade and cover and increasing the temperature of the water. Significant increases in water temperatures can result in increased metabolic rates, resulting in greater respiration rates and oxygen consumption. Gulf South would adhere to measures (erosion controls, minimizing duration of disturbance, etc.) outlined in the Procedures to minimize sedimentation and turbidity. Gulf South would implement its SPRPP, and its HDD Plan to prevent impacts from potential spills or inadvertent releases of drilling material. Therefore, we conclude that the Project would not have significant or long-term impacts on fisheries.

4.5 Special Status, Threatened, and Endangered Species

Federally Listed Species

Federal agencies are required under Section 7 of the ESA, as amended, to ensure that any actions authorized, funded, or carried out by the agency would not jeopardize the continued existence of a federally listed endangered or threatened species, or result in the destruction or adverse modification of the designated critical habitat of a federally listed species. As the lead federal agency authorizing the Project, FERC is required to consult with the FWS and/or the National Oceanic and Atmospheric Administration's National Marine Fisheries Service to determine whether federally listed endangered or threatened species or designated critical habitat are found in the vicinity of the Project, and to evaluate the proposed action's potential effects on those species or critical habitats. If the action agency determines that the action is likely to adversely affect listed species and/or designated critical habitat, then it must request initiation of

formal consultation, and the lead federal agency must prepare a Biological Assessment (BA) and submit its BA to the FWS. We have determined that the Project is likely to adversely affect a federally listed species. Therefore, we request that the FWS consider this EA as our BA for the Project.

Gulf South, acting as our non-federal representative for ESA consultation, utilized the FWS Information, Planning, and Conservation system to obtain an official species list to determine the federally listed or protected species that could potentially occur within the Project area. The five federally listed species that could potentially occur in the Project area are the black pine snake, gopher tortoise, rainbow snake, wood stork, dusky gopher frog, and the Louisiana quillwort. Gulf South conducted field surveys during July and August 2019, to identify if any of the listed species or their habitat is present within the Project area. Both federally listed and state-listed species are listed in table 13 with their habitat description and determinations. We conclude that the Project would have no effect on the wood stork, dusky gopher frog, and the Louisiana quillwort, so these species are not discussed further. We also determined that no critical habitat for any federally listed species is present in the Project area.

Table 13
Threatened and Endangered Species Potentially within the Project Area

Common Name **(*Scientific Name)***	**Federal Status**	**State Status**	**Habitat Description**	**Project Impacts and Habitat Assessment**
Rainbow snake (*Farancia erytrogramma)*	N/A	E	The species is most common in cypress swamps and flowing-water habitats such as blackwater creeks, streams, and rivers.	*Not likely to adversely impact*
Black pine snake (*Pituophis melanoleucus lodingi)*	T	E	Black pine snakes prefer mature longleaf pine forests in sandy well-drained soils that are maintained with fire. These areas tend to have an open canopy, reduced mid-story, and a dense understory. The species has been documented to occur in habitat similar to that inhabited by gopher tortoises.	*May affect, but not likely to adversely affect*
Gopher tortoise (*Gopherus Polyphemus)*	T	E	Gopher tortoises require well drained, sandy soils, and ample herbaceous vegetation for foraging. The species prefers longleaf pine forests but is also known to occur in disturbed areas such as roadsides, utility rights-of-way, fence-rows, old fields, and overgrown uplands.	*May affect, and is likely to adversely affect*

Table 13
Threatened and Endangered Species Potentially within the Project Area

Common Name **(*Scientific Name)***	**Federal Status**	**State Status**	**Habitat Description**	**Project Impacts and Habitat Assessment**
Wood stork (*Mycteria americana*)	T	N/A	Wood storks utilize freshwater and estuarine wetlands for nesting, feeding, and roosting. Nesting sites are characterized by tall trees in standing water or on islands surrounded by open water to provide security. Foraging sites consists of wetlands and roosting sites can be similar to nesting sites or can be characterized by clumps of trees near foraging areas. Wood storks typically occur in Mississippi only during the non-breeding season (May to October).	*No effect:* all clearing activity would occur before wood storks arrive to Mississippi in May
Dusky gopher frog (*Rana Servosa)*	E	N/A	Uplands dominated by fire maintained longleaf pine, with a grassy understory. Breeding and larval habitat consists of relatively shallow, isolated, depressional ponds that dry completely on a cyclic basis. Breeding ponds typically contain emergent aquatic vegetation and lack predaceous fish. The remaining populations are limited to within DeSoto National Forest in Perry, Forrest, and Harrison counties and to a few isolated areas east of the national forest in Jackson County.	*No effect:* The Project would not affect lands within DeSoto National Forest in Forrest County.
Louisiana quillwort (*Isoetes louisianensis)*	E	N/A	Louisiana quillwort grow in shallow, intermittent streams located in bottomlands or bayhead areas of pine forests. Preferred habitat is characterized by sand and gravel bars as well as moist overflow channels with silty sand substrates.	*No effect:* Species is only known to occur within DeSoto National Forest in Lamar and Forest Counties. Additionally, a database search revealed no known occurrences within two-miles of the Project.

T=Threatened

E= Endangered

Black Pine Snake

The black pine snake is endemic to longleaf pine forests with fire-suppressed mid-stories and sandy, well drained soils covered in dense herbaceous vegetation. They are rarely found in riparian areas, hardwood forests, or pine plantations (FWS, 2015a). This species has been documented utilizing gopher tortoise burrows for refuge but prefer stump holes. Eggs are laid from June to August in sandy burrows or beneath large rocks and logs (NatureServe Explorer, 2019). Recent surveys indicate that populations of black pine snake are concentrated in the DeSoto National Forrest in Mississippi. Black pine snake populations outside of the DeSoto National Forest are small and restricted to small islands of suitable habitat in Mississippi and Alabama due to longleaf pine forest fragmentation.

Field surveys identified long leaf pine and tortoise burrows within the Project area. However, this section of the forest has been harvested in the last 10 years, has not been maintained by fire, and has dense mid-stories. No black pine snakes were observed during surveys and the habitat within the Project area is considered marginal. Potential impacts on the black pine snake would be minimized through the installation of earthen ramps in the open trench and performing inspections of the trench to ensure that no animals have become trapped. Gulf South has a no kill policy for all wildlife, including snakes. Therefore, Gulf South would notify the FWS and Mississippi Department of Wildlife, Fisheries, and Parks to seek guidance regarding relocation of any black pine snakes located within the Project workspaces. Therefore, we conclude that the Project *may affect, but is not likely to adversely affect* the black pine snake.

Gopher Tortoise

The gopher tortoise occurs throughout the sandy coastal plain of the southeastern United States and extends from eastern Louisiana through the southern portions of Mississippi, Alabama, and Georgia into extreme southern South Carolina and southward to Cape Sable at the southern tip of the Florida peninsula. Under provisions of the ESA, the western population of gopher tortoise was listed as threatened on July 7, 1987. The western population of gopher tortoise is located west of the Tombigbee and Mobile rivers in Alabama, in southern Mississippi, and in extreme eastern Louisiana. The gopher tortoise is characterized by spade-like forelimbs with large flattened toenails, elephantine hind feet, gray colored scutes on the carapace, and a gular projection beneath the head on a hinge less plastron containing yellowish colored scutes. Adult tortoises average 9 to 11 inches in length, 6 to 10 inches in width, and weigh between 8 to 10 pounds (Conant and Collins, 1998). Juvenile gopher tortoises are 1.5 to 2 inches in length at hatching and contain soft shells with yellowish-orange scutes on their carapace and plastron (FWS, 1990).

Gopher tortoises generally occur in colonial aggregations on well-drained sandy or gravelly soils of xeric open forests and savannas that allow substantial sunlight penetration necessary for the development of diverse, herbaceous ground cover. Congregational densities vary considerably and are dependent on habitat types and site history (Cox et al., 1987). Tortoise densities tend to be highest in longleaf pine and turkey oak habitats. However, some ruderal habitats such as utility and road right-of-way also contain high densities of gopher tortoises. Use of ruderal habitats by the gopher tortoise is common in areas where natural habitats have

declined in quality as a result of development, agriculture, or adverse forest management practices (e.g., fire exclusion and conversion to high density pine plantations). The home range of the gopher tortoise varies from 0.7 to 15.6 acres, with mature males often using considerably larger areas than females or juveniles.

The most defining characteristic of this species is its ability to dig extensive burrows that are generally about 15 feet in length and 6 feet in depth. Adult burrow openings are semicircular in shape with a low mound of bare soil immediately in front of the mouth of an active burrow. A single gopher tortoise may utilize between three and seven different burrows during a single active season. Gopher tortoise burrows provide protection from fire, predators, and climatic conditions for the individual tortoise, as well as habitat for as many as 60 vertebrate and 302 invertebrate species (Auffenberg and Franz, 1982; Diemer, 1986; McRae et al., 1981).

Outside of southern Florida, gopher tortoises become inactive from approximately November 1 to April 1 and are seldom found outside their burrows. While active, gopher tortoises may be located outside of their burrows at any time of day, activity tends to be highest early in the morning to midday or late in the afternoon to after sunset. Activity periods tend to fluctuate throughout the gopher tortoise range and are dependent on climatic factors including temperature and humidity. Activity periods coincide with the ability of the tortoise to regulate its outer shell temperature between 50 to 91 degrees Fahrenheit and when the relative humidity is above 60 percent approximately 18 inches above the ground. If the relative humidity threshold is not met, particularly at higher temperatures, then activity periods decline. Wind gusts above 15 miles per hour also correspond negatively toward gopher tortoise activity (Ashton and Ashton, 2008).

The decline of the gopher tortoise is primarily a consequence of habitat loss. Longleaf pine plant communities have been reduced from 70 to 80 million acres to approximately 10 million acres (Means and Grow, 1986). Habitat loss and degradation are primarily attributed to urbanization, agriculture, and adverse forestry practices (e.g., intensive pine monoculture, fire exclusion, and unnatural fire regimes). Other causes of population decline include human predation, vehicular mortality, and increases in rates of predation by opportunistic species adaptable to human activities (e.g., raccoons, gray foxes, fire ants, armadillos, coyotes and domestic/feral dogs) (FWS, 1990; 2009).

Field surveys were conducted between July 9, 2019 and August 15, 2019. However, although surveys were conducted in a larger corridor, there was not 100 percent survey coverage because the Project workspace has not been finalized. Before Gulf South starts construction, comprehensive surveys of the entire Project workspace (excluding wetlands) would be conducted to ensure that no previously undocumented or new burrows are present in the Project area. Three active gopher tortoise burrows were identified in the survey area. The burrows range from 13 feet to 145 feet north of the Project workspace which is close enough for gopher tortoises to potentially be foraging or traveling in the Project workspace. Gulf South has committed to the following mitigation measures before and during construction.

Prior to construction of the Project:

- All previously identified burrows would be flagged with survey tape, and any previously undocumented burrows would be flagged and mapped using Trimble GeoXH GPS.

- A qualified biologist would view the length of each identified burrow using a remote video system and record age class, activity status, width, length, orientation, signs of disturbance, evidence of nesting, and photographs. This would be used to determine if the burrow is active or inactive. All inactive burrows would be collapsed to prevent reoccupation during construction of the Project.

- FWS would be notified if a burrow must be excavated so that a representative may be present.

- Prior to excavation, the burrow apron would be inspected for tortoise eggs. Eggs would be excavated, moved without rotation, reburied in a suitable location, and protected from mammalian predators using a two-inch wire enclosure.

- A flexible tube that has marked measurements would be inserted as far into the burrow as possible to ensure that the burrow path is not obscured with loose dirt and potentially lost during excavation.

- All equipment used in burrow excavation (shovels, backhoe bucket, burrow tubing, etc.) and tortoise relocation (measuring calipers, scales, containers) would be disinfected prior to and after each use to minimize the potential for spread of disease.

- Excavation would proceed cautiously with the flexible tube progressively inserted further into the burrow as allowed. Burrows would be excavated either by hand shovel or with a backhoe and all backhoe operations would be directed by a qualified biologist.

- Backhoe buckets would either have the teeth removed or a metal safety plate welded over the teeth to facilitate a slow, progressive burrow excavation in which the operator can easily see the extent of his impact. The terminus of the burrow around the gopher tortoise would be excavated by hand.

- Following removal from their burrows, captured tortoises would be handled using disposable latex gloves, photographed, measured, aged, inspected for standard marginal scute markings, and permanently marked if not already numbered.

- If an obviously sick or injured gopher tortoise is captured, or if a tortoise is injured during the Project, it would be transported in a suitable container, protected from overheating, to a local FWS approved veterinarian for treatment. However, if the tortoise is critically injured it would be euthanized by a veterinarian. Tortoises that are euthanized or found dead would be held on ice or frozen and all injuries and mortalities would immediately be reported to FWS.

- Any colonial tortoises found would be relocated to an inactive burrow within the boundaries of its colonial range. Any commensal species found in the burrows would be relocated with the tortoise or released unharmed into adjacent habitats.

- Isolated tortoises would be relocated to off-site mitigation banks in individual sterilized plastic containers. The animals would be soaked in a small amount (<1-inch-deep) of non-chlorinated water for a period of approximately one hour to minimize the potential for dehydration and then placed in a sterilized container with fresh moistened hay or straw. The containers would be kept covered and shaded to prevent overheating. Animals would not be held in captivity for more than 72 hours before being transported to the relocation site. The containers with tortoises (and any vertebrate commensals captured) would be transported in a closed vehicle to the relocation site for release.

- All captured tortoises proposed for relocation to off-site mitigation banks would be tested for Upper Respiratory Tract Disease by qualified personnel prior to their relocation. Blood samples from each tortoise would be drawn and sent to the University of Florida for testing in accordance with the methodologies provided by the University of Florida and as required by FWS.

During Construction of the Project:

- Silt fence extending 200 feet from either side of a displaced tortoise's new burrow would be installed prior to trench excavation activities to prevent or minimize tortoises from wandering into construction areas. Silt fences would be trenched into the ground a minimum of 6 inches.

- Qualified biologists/environmental inspectors would be on-site at all times and would conduct daily trench monitoring to remove tortoises and other wildlife that have either wandered into construction areas or have fallen into the pipe trench. Earthen ramps would be placed along the trenches no greater than 1,000 feet apart to allow wildlife to exit the ditch without human intervention.

- Along access roads, signage would be placed where there are known gopher tortoises and speed limits would be restricted to 10 miles per hour. Silt fences would be installed for a minimum of 150 feet between the burrow and access road.

- Qualified biologists/environmental inspectors would provide training to all Project personnel regarding gopher tortoise protection requirements. Any violations of the conditions or terms of the conservation strategy or Gulf South's Gopher Tortoise Management Plan shall be reported to the environmental Project manager who would contact the FWS.

- All personnel involved in the proposed work (e.g., Gulf South employees, contract personnel, Project inspectors, subcontractors, etc.) would be required to receive training regarding Gulf South's gopher tortoise protection requirements. This would include an overview of the terms and conditions of FWS' Biological Opinion, penalties for

noncompliance, legal penalties for actions taken against a gopher tortoise (killing, injuring, harassing, or otherwise disturbing), and procedures for coordinating with and contacting the Project's biologists or environmental inspectors.

Post-construction maintenance would avoid harming the gopher tortoise by following the guidelines for right-of-way clearing and small excavations provided in Gulf South's Gopher Tortoise Management Plan. Additionally, construction would begin in December 2020 during the gopher tortoise's inactive period. The proposed mitigation would reduce Gulf South's impact on gopher tortoises. Therefore, we conclude that the Project *may affect, and is likely to adversely affect* the gopher tortoise.

As summarized in table 13, we have determined that the Project would have *no effect* on three federally listed species; may affect but is *not likely to adversely affect* one federally listed species; and may affect and is *likely to adversely affect* one federally listed species. Since we determined that the action would adversely affect a listed species, we are requesting formal consultation for the gopher tortoise concurrent with the issuance of this EA. This EA serves as our BA, and in response FWS should issue a Biological Opinion as to whether or not the federal action would likely jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. Because we have not yet completed consultation with the FWS, **we recommend that:**

- **Gulf South should <u>not begin</u> construction activities <u>until</u>:**

  a. FERC staff receives comments from the FWS regarding the proposed action;

  b. FERC staff completes formal ESA consultation with the FWS; and

  c. Gulf South has received written notification from the Director of OEP (OEP) that construction or use of mitigation may begin.

State-Listed Species

As shown in table 13, the gopher tortoise, rainbow snake, and black pine snake are the only state-listed species within the Project area. The gopher tortoise and black pine snake determinations and mitigation are discussed in the federally listed species section above. The rainbow snake is a state-listed endangered species and is generally associated with aquatic habitats. It spends much of its time burrowed into moist soil, wet debris, or mats of vegetation along the water's edge. Typically, it is found near rivers, creeks, swamps, open marshes, or even brackish tidal areas and sheltered amongst cypress roots or submerged logs and debris. Rainbow snakes lay eggs in July and bury them underground in sandy soil. Since suitable habitat for the rainbow snake is present in the Project area Gulf South would implement the Plan and Procedures along with its SWRPP and SPRPP to minimize the deposition of sediments and contaminants in streams crossed by the Project. The Mississippi Department of Wildlife, Fisheries, and Parks agreed in a letter issued August 9, 2019 that the Project likely poses no

threat to listed species as long as best management practices are maintained and monitored. We conclude that the Project is not likely to adversely impact the rainbow snake.

5.0 CULTURAL RESOURCES

In addition to accounting for impacts on cultural resources under NEPA, Section 106 of the National Historic Preservation Act of 1966, as amended, requires FERC to take into account the effects of its undertakings on historic properties listed, or eligible for listing on the National Register of Historic Places (NRHP), and to afford the Advisory Council on Historic Preservation an opportunity to comment. Gulf South, as a non-federal party, is assisting FERC in meeting our obligations under Section 106 and its implementing regulations at 36 CFR 800.

Area of Potential Effects

The area of potential effects (APE) considered is the "geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR 800.16(d)). Gulf South defined the Project APE as the Project area, to include the limits of ground disturbance due to both permanent and temporary construction activities. The APE for subsurface resources includes all areas where ground disturbances are proposed along the Project, while the APE for aboveground locations includes those areas along with areas where land use may change, and any locations from which the Project may be visible. The APE includes locations within Forrest and Lamar Counties, Mississippi.

Because the Project footprint was not finalized at the time of field investigations, efforts were expanded to cover a broader survey area. Gulf South surveyed an approximately 350-to 700-foot-wide corridor for the delivery lateral, and an approximately 50- to 65-foot-wide corridor for access roads, offline facilities, temporary workspace areas, and contractor/pipe yards. The overall APE for direct effects for the Project measured approximately 139 acres, while the survey coverage measured approximately 402 acres. In addition to the area of direct effects, the APE for above-ground resources also includes areas from which the Project may be visible. The majority of the Project facilities would be situated below ground, but Project facilities would also include above-ground construction, specifically the Plant Morrow Meter Station and the Black Creek Compressor Station, which would constitute permanent, aboveground elements on the landscape.

Due to the Project's location within existing rights-of-way, previously disturbed areas, and within a heavily wooded landscape with a limited viewshed or immediately adjacent to an existing industrial facility, the APE is sufficient to account for all the potential direct and indirect effects to historic properties by the Project.

Cultural Resources Investigations

In an effort to identify historic properties in the APE and to account for any effects to those properties by the Project, Gulf South conducted cultural resources investigations which included background research, Phase I archaeological surveys, and historic architectural surveys.

Development of the Plant Morrow Meter Station and the Black Creek Compressor Station would include above-ground construction, and as a result, potential visual effects were considered to any possible historic structures. Gulf South conducted a desktop review of available data sources such as the Mississippi Department of Archives and History's Historic Resources Inventory Map, the NRHP database, aerial imagery, and topographic maps were reviewed to identify any potentially historic-age resources within a 0.25-mile review radius of permanent aboveground facilities. The architectural field survey included a visual assessment of the area as well. No NRHP-eligible properties were identified within the survey coverage. (Cochran and Peyton, 2019)

In September 2019, Gulf South recommended a no historic properties affected determination, concluding that "no further investigations are warranted". On October 21, 2019, the Mississippi Department of Archives and History, which serves as the Mississippi State Historic Preservation Officer (SHPO), responded by letter, agreeing that "no known cultural resources listed in or eligible listing in the NRHP were identified within the project area or are likely to be affected by the project. As such, we have no reservations with the undertaking." We agree.

Tribal Consultation

Gulf South contacted the following Native American tribes federally-recognized tribes regarding the Project: Alabama-Coushatta Tribe of Texas; Alabama-Quassarte Tribal Town; Coushatta Tribe of Louisiana; Jena Band of Choctaw Indians; Kialegee Tribal Town; Miccosukee Tribe of Indians of Florida; Mississippi Band of Choctaw Indians; Muscogee (Creek) Nation, Oklahoma; Poarch Band of Creek Indians; Seminole Nation of Oklahoma; Chickasaw Nation; Choctaw Nation of Oklahoma; Thlopthlocco Tribal Town, Oklahoma; and Tunica-Biloxi Indian Tribe. On September 17, 2019, Gulf South provided to the tribes an initial consultation letter and maps. On October 23, 2019, the Chickasaw Nation sent an email indicating "[t]he project is outside their area of interest." On December 11, 2019, the Choctaw Nation informed Gulf South that the Project is located in an area of historic interest, requesting a copy of the archaeological survey report and GIS shapefiles. Gulf South responded on December 19, 2019 with the requested information. There have been no additional comments to date.

Unanticipated Discovery Plan

Gulf South developed a Project-specific plan titled: Plan for the Unanticipated Discovery of Historic Properties or Human Remains During Construction, which outlines the procedures to follow, in accordance with state and federal laws, in the event that unanticipated cultural resources or human remains are discovered during construction of the Project, including

consultation with FERC, the SHPO, and tribes regarding discoveries. The plan was submitted to FERC and the SHPO. FERC requested minor revisions to the plan. Gulf South provided a revised plan which we find acceptable.

Compliance with the National Historic Preservation Act

Gulf South conducted cultural resources surveys and reviewed indirect effects on aboveground resources within the project APE. No traditional cultural properties or properties of religious or cultural importance to Indian tribes have been identified in the Project area. No eligible for listing on the NRHP archaeological or architectural sites have been identified in the direct APE. Gulf South recommended that the Project would have no effects on historic properties. Concurrence from the Mississippi SHPO was received on October 21, 2019.

FERC has completed its compliance requirements with Section 106 of the National Historic Preservation Act of 1966 for the Project.

6.0 LAND USE, RECREATION, AND VISUAL RESOURCES

6.1 Land Use

The Project would impact 137.2 acres of land, including 37.3 acres of permanent impacts associated with the operation of the permanent pipeline right-of-way, Plant Morrow Meter Station, Black Creek Compressor Station, and permanent access roads. Land use types within the Project area include open land, forest, pine plantation, industrial, wetlands, and open water. Table 14 summarizes the land use impacts associated with construction and operation of the Project.

Table 14
Summary of the Project's Habitat Impacts (acres)

Facility	Open Land		Forest		Pine Plantation		Industrial		Wetlands		Open Water		Project Total	
	Const.[a]	Op.[b]	Const.[a]	Op.[b]	Const.[a]	Op.[b]	Const.[a]	Op.[b]	Const.[a]	Op.[b]	Const.[a]	Op.[b]	Const.[a]	Op.[b]
Pipeline Facilities														
Right-of-Way	3.22	1.75	8.17	6.13	16.48	9.45	0.32	0.23	2.20	0.81	1.01	0[c]	31.4	18.37
Additional Temporary Workspace [d]	0.88	0.00	0.51	0.00	6.18	0.00	0.18	0.00	0.90	0.00	0.00	0.00	8.65	0.00
Contractor/Pipe Yards	34.77	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	0.00	36.23	0.00
Access Roads	1.53	0.00	0.10	0.00	1.72	0.00	0.00	0.00	0.03	0.00	0.00	0.00	3.38	0.00
Pipeline Facilities Subtotal	**40.40**	**1.75**	**8.78**	**6.13**	**24.38**	**9.45**	**1.96**	**0.23**	**3.13**	**0.81**	**1.01**	**0[c]**	**79.66**	**18.37**
Aboveground Facilities														
20-inch Delivery Lateral														
Plant Morrow Meter Station [e]	0.65	0.10	0.00	0.00	1.58	0.40	0.00	0.00	0.15	0.00	0.00	0.00	**2.38**	**0.50**
Access Roads	3.77	1.91	0.00	0.00	0.28	0.08	2.97	1.49	0.00	0.00	0.00	0.00	**7.02**	**3.48**
Index 299 System Facilities														
Black Creek Compressor Station [f]	1.42	0.51	33.69	8.04	<.01	0.00	0.00	0.00	0.54	0.00	0.00	0.00	**35.65**	**8.55**
Access Roads	4.08	0.73	1.68	1.68	6.06	3.30	0.00	0.00	0.67	0.64	0.00	0.00	**12.49**	**6.35**
Aboveground Facilities Subtotal	**9.92**	**3.25**	**35.37**	**9.72**	**7.92**	**3.78**	**2.97**	**1.49**	**1.36**	**0.64**	**0.00**	**0.00**	**57.54**	**18.88**
PROJECT TOTAL	**50.32**	**5.0**	**44.15**	**15.85**	**32.30**	**13.23**	**4.93**	**1.72**	**4.49**	**1.45**	**1.01**	**0[c]**	**137.20**	**37.3**

a. Const. = Land affected during construction consists of temporary and new permanent impacts.
b. Op. = Land affected during operation consists only of new permanent impacts.
c. Open water would be crossed by HDD, therefore permanent impacts would be avoided
d. Additional temporary workspace would be utilized during construction of pipeline facilities.
e. Land affected during construction and operation is inclusive of the pig receiver, which would be located within the Plant Morrow Meter Station.
f. Land affected during construction and operation is inclusive of the pig launcher and Index 299 mainline valve, which would both be located within the Black Creek Compressor Station.

Open land is defined as non-forested areas that are not otherwise classified as agricultural land or wetlands. A total of 50.3 acres of open land would be impacted by construction and a total of 5.0 acres would be converted to industrial land for the operation of the Black Creek Compressor Station, Plant Morrow Meter Station, and permanent access roads. During operation, 1.8 acres of open land would fall within the pipeline right-of-way. The open land within the pipeline right-of-way would be maintained in an herbaceous state, therefore land use would not change. Following completion of the Project, the area would be revegetated in accordance with the Plan and recommendations from NRCS.

Forests within the Project are characterized as hardwood forests. Approximately 44.2 acres of forest would be disturbed during construction and 15.9 acres would be disturbed during operation. Right-of-way maintenance would cause 6.1 acres of forest to be permanently converted to open land. Operation of the Black Creek Compressor Station and permanent access roads would permanently convert 9.7 acres of forest to industrial land. Temporary areas that are cleared for construction would result in long-term impacts due to the time required for trees to reestablish. All temporarily affected areas would be revegetated in accordance with the Plan and recommendations from NRCS.

Pine plantations are planted stands of pine species managed and harvested on rotations for a variety of timber products. Approximately 32.3 acres of pine plantation would be impacted by construction and 13.2 acres would be impacted by operation. Operation of the meter station, maintenance of the right-of-way, and permanent access roads would permanently convert pine plantation to open or industrial land. Pine plantation cleared for temporary construction would result in long-term impacts due to the time required for trees to reestablish. Gulf South would facilitate this reestablishment, where necessary, in accordance with landowner agreements and guidelines established in the Plan.

Industrial land is considered developed land that is not residential. Most industrial land is sparsely vegetated or lacks vegetation due to the presence of impervious structures. Approximately 4.9 acres of industrial land would be impacted by construction of the Project, of which 1.7 acres would be required for operation of the pipeline right-of-way and permanent access roads.

Wetlands in the Project area are classified as PEM, PSS, and PFO wetlands. Construction of the Project would affect 4.5 acres of wetland and operation would impact about 1.5 acres of wetland. Wetlands within the right-of-way for the pipeline would be maintained in an herbaceous state. The permanent right-of-way in areas crossed by HDD would not be maintained in order to avoid impacts on wetlands. Approximately 0.6 acre of wetland would be permanently converted to industrial land due to the operation of the compressor station and permanent access road. Permanent impacts on wetlands would be mitigated in accordance with Gulf South's USACE permit. Wetlands that are temporarily impacted would be revegetated according to the Plan and Procedures and NRCS recommendations.

Open water in the Project area includes a manmade pond. Approximately 1.0 acre of open water would be impacted by construction of the Project. The pond would be crossed using HDD which avoids direct impacts on the waterbody and does not result in a permanent change of

land use designation. Gulf South would implement best management practices and adhere to the Procedures and its HDD plan to reduce impacts on open water resources.

Construction of the Project would require a new permanent easement for pipeline and aboveground facilities operations. Gulf South has executed easement agreements with all landowners on which the proposed facilities would be located. Construction of the pipeline would require 31.4 acres of land, of which 18.4 acres would be maintained as permanent right-of-way. No trees or structures would be placed within the permanent right-of-way to ensure pipeline integrity and to maintain regular access to the pipeline. A total of 8.7 acres of temporary workspace would be utilized during construction. This land would be revegetated and allowed to revert back to its previous conditions. A total of 36.2 acres of land would be temporarily impacted by the contractor yards during construction of the Project. Construction of the compressor station would require 35.7 acres and 8.6 acres would be maintained for operation. The meter station would require 2.4 acres of land for construction and only 0.5 acre for operation. Gulf South has obtained easements for all aboveground facilities. Land within the permanent footprint for both the compressor station and meter station that is not covered by rock would be maintained in an herbaceous state.

The Project would cross some public roads, railroads, private roads, state highways, a U.S. highway, and utility corridors. The locations of these crossings are provided in table 15. subsurface bores would be used to cross paved roads. The open cut method would be used for crossing driveways and private roads. The conventional bore method would be used for most public roads and all federal, and major state highways. The railroad would be crossed using HDD.

Table 15
Road, Railroad, and Major Utility Crossings for the Project

Milepost	Road/ Railroad/ Utility	Type	Jurisdiction/Owner	Proposed Crossing Method
0.36	Utility Corridor	Overhead Power Line	Cooperative Energy	Open Cut
1.10	U.S. Route 11	2-land Asphalt Road	MDOT	Bore
1.23	Tatum Camp Road	2-land Asphalt Road	Lamar County	Bore
1.68	Utility Corridor	Overhead Power Line	Unknown	Open Cut
1.71	Utility Corridor	Overhead Power Line	Unknown	Open Cut
1.82	Utility Corridor	Overhead Power Line	Unknown	Open Cut
1.86	RD Hartfield Road	2-land Asphalt Road	Lamar County	Bore
3.11	Railroad	3 Rails	Norfolk Southern Railroad	HDD

MDOT – Mississippi Department of Transportation

6.2 Existing Residences and Planned Developments

The Project would not directly impact residential land and there are seven residential structures located within 100 feet of the Project. Of these seven structures, three structures are within 50 feet of the construction workspace. Table 16 provides a list of all structures within 100 feet of the Project along with the approximate milepost location, structure type, and approximate distance from the Project.

Table 16
Structures within 100 feet of the Project

Structure ID	Structure Type	MP/Location	Distance from the Pipeline (feet)	Distance from the Edge of Construction Workspace (feet)
Pipeline Facilities				
1	Single Family House	1.19	55	30
2	Single Family House	1.29	76	41
3	Shed	1.51	126	85
4	Single Family House	1.89	119	84
5	Shed	2.00	69	34
6	Mobile Home	2.08	124	89
Access Roads				
7	Shed	TAR-01	N/A	41

Construction of the Project could result in short-term impacts on nearby residential areas, including increased traffic on local roads and dust and noise generated during construction. Gulf South would minimize these impacts through implementation of their Project-specific *Residential Construction Implementation Plan*[6] which includes mitigation measures such as performing most construction during daytime hours, installing safety fencing around the edge of the construction area adjacent to residents for a distance of 100 feet on either side, and periodically inspecting roadways near residences. We have reviewed the *Residential Construction Implementation Plan* and find it acceptable.

Gulf South has contacted the local planning districts about future planned developments in Forrest and Lamar Counties, Mississippi. No planned residential or commercial developments were identified within 0.5 mile of the Project area. The Eagle One Mega Site is a potential commercial development within 0.5 mile of the Project. However, there is no definitive scope or construction schedule in place at this time.

6.3 Recreation and Special Interest Areas

The Project would not cross and is not located within 0.25 mile of any National Park System Units, such as national parks, national forests, monuments, preserves, historic sites, historical parks, memorials, battlefields, military parks, cemeteries, recreation areas, seashores, lakeshores, rivers, parkways, and other designations. The Project is not located within 0.25 mile of any state park, forest, or wildlife management area. Additionally, the Project is not located

[6] Gulf South's *Residential Construction Implementation Plan* can be found in Appendix 1B of its September 30, 2019 filing (assession number 20190930-5232).

with 0.25 mile of any land designated as Conservation Reserve Program, Conservation Reserve Enhancement Program, or Wetland Reserve Program land.

The Project would not cross any rivers in the National Wild and Scenic Rivers System, National Scenic Byways, or designated areas included in the National Wilderness Preservation System. The Project is not located in a Coastal Management Zone.

There are no contaminated sites located within 0.5 mile of the Project. In the event that contaminated media is discovered during construction, Gulf South would implement its *Plan for the Unanticipated Discovery of Contaminated Environmental Media* and adhere to all applicable federal, state, and local regulations. This plan identifies the steps to be followed in the event that contaminated sediments or soils, as identified by evidence of subsoil discoloration, odor, sheen, or other such indicators, are encountered during construction.

6.4 Visual Resources

The Project would result in visual impacts during construction and operation. Impacts from construction would be temporary and include presence of construction equipment and clearing of vegetation. Permanent impacts from operation are associated with maintenance of the right-of-way and operation of the Plant Morrow Meter Station and Black Creek Compressor Station. Approximately 0.8 acre of permanent right-of way is co-located with an existing utility corridor and would be consistent with the existing landscape. A majority of the remaining portions of right-of-way are not visible from any houses or roads. Therefore, only minor visual impacts would be associated with right-of-way maintenance.

The Black Creek Compressor Station would be located a mile from U.S. Route 11 and is surrounded by forest. The compressor station would not be visible from any roads or houses and is approximately 0.2 mile northeast from the nearest residence. The surrounding forest would minimize the visual impact from the 100-foot-tall communication tower. The Plant Morrow Meter Station would be located adjacent to Cooperative's existing power plant and therefore would be consistent with the existing landscape. The meter station would not be visible from any public lands or roads and is more than 500 feet away from the nearest residence. Therefore, the construction and operation of aboveground facilities would only result in minor visual impacts.

7.0 SOCIOECONOMICS

Construction and operation of the Project could impact socioeconomic conditions in the area. Some potential effects are related to the number of construction workers that would work on the Project and their impact on population, public services, and temporary housing during construction. Other potential effects are related to construction, such as increased traffic or disruption of normal traffic patterns. Increased property tax revenue, increased job opportunities, and increased income associated with local construction employment are potential effects of the Project.

7.1 Population, Economy, and Employment

A summary of select demographic and socioeconomic conditions for counties in the socioeconomic study area is presented in table 17.

Table 17
Existing Socioeconomic Conditions in the Project Area

Country/ State/ County City	Estimated Population in 2018	Population Density (persons per square mile)	Per Capita Income (U.S. Dollars 2017)	Median Household Income (U.S. Dollars 2017)	Civilian Labor Force	Unemployment Rate (Percent of Civilian Labor Force)	Major Industry
United States	327,167,434	87.4	31,177	57,652	161,159,470	6.6	Educational, health, and social services
Mississippi	2,986,530	63.2	22,500	42,009	1,339,614	8.8	Educational, health, and social services
Forrest	75,036	160.7	20,783	39,555	36,437	11.9	Educational, health, and social services
Lamar	62,447	112.0	28,342	56,129	30,593	9.2	Educational, health, and social services
Hattiesburg[a]	45,951	861.5	19,193	32,009	23,965	14.6	Educational, health, and social services

Source: U.S. Census, 2017, U.S. Census 2010
d. Hattiesburg is located in both Forrest and Lamar Counties, Mississippi.

Construction of the Project would temporarily increase the population in the socioeconomic study area. The Project would begin in 2020 and take approximately 11 months to complete. Peak construction would be from February to August 2021 and would have a maximum of 340 workers. This would reduce to approximately 160-185 workers outside of the peak construction period. Due to the availability of skilled laborers in the Project area, about 80 percent of the construction workforce would consist of non-local residents. Assuming 20 percent of the non-local workers bring three family members, the population increase would be 505 people. This increase of less than 1 percent of the total population within the two counties impacted by the Project would not result in a significant impact on the Project area. Only two to three permanent employees would be required for the operation of the Project.

The unemployment rates for Lamar and Forrest counties are both above the state and national average of 8.8 percent and 6.6 percent, respectively (U.S. Census, 2017). A brief decrease in the unemployment rates in the study area could occur as a result of hiring of local workers for construction and increased demands on the local economy. Additionally, the non-local workforce would also most likely spend a portion of their pay in local communities on items such as housing, food, automobile expenses, entertainment, and miscellaneous other items. The number of temporary, indirect jobs in the study area could increase as purchases for goods and services would increase along with the influx of the construction workforce to the area.

Indirect employment, including hiring additional staff in the retail and service industries to accommodate the increase in demand for food, clothing, lodging, gasoline, and entertainment, along with an increased demand for goods and services would have a temporary stimulating effect on local economies. Indirect jobs would represent a temporary, minor increase in employment opportunities in the study area.

7.2 Housing

During construction, the majority of the construction workforce for the Project is anticipated to temporarily relocate to the Project area. Approximately 1,457 rental units are available in nearby Hattiesburg. Previous facility construction suggests that approximately 30 percent of the non-local workers would provide their own housing units (e.g., travel trailers or RV campers). Table 18 shows the number of available temporary housing units in Forrest and Lamar Counties. Given the number of available hotel/motel rooms and campsites available within commuting distance of the Project area, construction crews should not encounter difficulty in finding temporary housing. Therefore, there would not be long-term impacts on housing in the Project area.

5)

Table 18
Temporary Housing Units Available in the Project Area

County/City	Percent Rental Vacancy Rate [b]	Number of Rental Units [b]	Number of Units for Seasonal, Recreational, or Occasional Use [b]	Number of RV Parks [c, d]	Number of Hotels and Motels [d]
Forrest	11.1	1,503	315	9	46
Lamar	11.1	892	559	2	18
Hattiesburg [a]	11.3	1,457	307	6	44

a. Hattiesburg is located in both Forrest and Lamar Counties, Mississippi.
b. Source: U.S. Census, 2017
c. Source: Good Sam Club, 2019
d. Sources: Google Earth, 2018

7.3 Public Services, Transportation, and Traffic

Emergency medical, fire and police services are available in both counties. Table 19 shows the number of existing public services in each county. These service requirements would only be necessary in the unlikely event of an accident. Sufficient medical, fire, and police services are readily available in the Project area and have the capacity to manage the temporary influx of Project personnel with negligible impacts on public services. The nearest emergency medical service facilities are located within Hattiesburg and have approximately 640 hospital beds. The construction crew foreman and operation manager would be aware of the public services available near the Project components. They would also maintain updated contact information for those entities providing these services for the Project.

Table 19
Existing Public Services and Facilities in the Vicinity of the Project Area

County/City	Community Medical Services [b]	Emergency Medical Services [b, c]	Police Services [b]	Fire Services [b]	Major Transportation Routes [d]
Forrest	10	4	3	8	US Route 11, I 59, US 98
Lamar	5	2	2	10	US Route 11, I 59
Hattiesburg [a]	9	2	1	8	US Route 11, I 59

a. Hattiesburg is located in both Forrest and Lamar Counties, Mississippi.
b. Source: Google Earth, 2018
c. Source: American Hospital Directory, 2019
d. I = Interstate; US = U.S. Highway

The movement of construction personnel, equipment, and materials to the work areas may slightly impact traffic in the Project area. Once equipment and materials reach the construction work area, construction traffic would be confined to the designated workspaces. Traffic associated with the Project would be temporary and minimal, as construction working hours and commuting time to work are typically scheduled during off-peak hours. Workers would carpool to the worksite in order to keep traffic to a minimum. Appropriate traffic control measures, such as flagmen and signs, would be used as necessary to ensure safety of local traffic. Gulf South would have its construction contractors prepare a *Traffic Management Plan* that would be in place for the duration of the Project to ensure the safety of local residents and any vehicular traffic traveling in the area. Gulf South's construction contractors would be directed to ensure compliance with local weight limitations, restrictions on area roadways, and to remove any soil that falls from equipment onto roadway surfaces. Additionally, Gulf South would coordinate with state and local officials to obtain all necessary permits for temporary construction-related impacts on roadways in the area. As a result of these measures, traffic would not be significantly impacted by construction of the Project.

7.4 Tax Revenues

Project construction would result in short-term, beneficial impacts in terms of increased payroll and local material purchases. The estimated construction payroll for the Project is approximately $24.0 million. In addition, the equipment and materials purchased in communities in the Project vicinity is estimated to be approximately $5.6 million. The local economy would also experience increased revenues as a result of purchases made by the construction workforce in the form of lodging, fuel, food, entertainment, and other miscellaneous expenses.

The bulk of most payroll earnings are expected to be spent locally which would increase sale tax revenue. The predominant sales tax rate in the Project area is 7 percent for local sales. Gulf South estimates that sales tax revenues resulting from the Project would be approximately $683,000. A summary of the economic impacts resulting from construction of the Project facilities is provided in table 20.

Table 20 Economic Impacts Resulting from Construction of the Project			
County	**Total Construction Payroll**	**Sales Tax Revenues**	**Cost of Materials Purchased Locally**
Forrest	$15,000,000	$500,000	$3,500,000
Lamar	$9,000,000	$189,000	$2,100,000
Total	**$24,000,000**	**$683,000**	**$5,600,000**

Calculation of the property tax revenues associated with the Project facilities would be subject to state, county, and local taxes upon completion of construction. Local taxes are established by town officials at the beginning of each year and are based on estimated budget needs for the upcoming year. These taxes are used to support school operating costs, public safety, public utilities, and other local government functions. The local municipality would assess the value of the Project facilities and would levy the local tax rate against that assessed value. Gulf South estimated the assessed values of the Project facilities and calculated estimated annual property taxes that would be paid to the local government. Actual property taxes would be identified after the completion of construction. Using Gulf Souths estimated construction cost of $54.6 million, Gulf South estimated that $506,775 in property taxes would be paid to Forrest County, and $243,255 would be paid to Lamar County. The Project would annually generate an estimated property tax revenue of $750,000.

Gulf South would compensate landowners in accordance with the terms of the existing right-of-way agreements and for the acquisition of new property and easements, including compensation for construction related damages, such as those associated with residential areas, pasture, and timber. In the event that a landowner observes damage after the restoration is complete, Gulf South would work with the landowner to correct the situation.

7.5 Environmental Justice

Executive Order 12898, *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to consider if impacts on human health or the environment (including social and economic aspects) would be disproportionately high and adverse for minority and low-income populations, and appreciably exceed impacts on the general population or other comparison group.

Consistent with Executive Order 12898, the Council on Environmental Quality (CEQ) called on federal agencies to actively scrutinize the following issues with respect to environmental justice (CEQ, 1997):

- the racial and economic composition of affected communities;

- health-related issues that may amplify project effects on minority or low-income individuals; and
- public participation strategies, including community or tribal participation in the process.

The EPA's Environmental Justice Policies focus on enhancing opportunities for residents to participate in decision making. The EPA (2011) states that Environmental Justice involves meaningful involvement so that: "(1) potentially affected community residents have an appropriate opportunity to participate in decisions about a proposed activity that would affect their environment and/or health; (2) the public's contributions can influence the regulatory agency's decision; (3) the concerns of all participants involved would be considered in the decision-making process; and (4) the decision-makers seek out and facilitate the involvement of those potentially affected."

In accordance with Executive Order 12898, all public documents and notices for the Project were made readily available to the public during our review of the Project. We received no comments from landowners on the Project.

Demographic and Economic Data

Based on published EPA guidance concerning environmental justice reviews (EPA, 1998), we used a three-step approach to conduct our review. These steps are:

1. determine the existence of minority and low-income populations;
2. determine if resource impacts are high and adverse; and
3. determine if the impacts fall disproportionately on environmental justice populations.

For the purposes of this review, a low-income population exists when the percentage of all persons living below the poverty level is more than the percentage for the state where the census tract is located. Also, for this review, minority population exists when:

- the total racial minorities in a U.S. Census Bureau-defined census tract are more than 50 percent of the tract's population;
- the percentage of a racial minority in a census tract is "meaningfully greater"[7] than in the comparison group;
- the total ethnic minorities in a census tract are more than 50 percent of the tract's population; or

[7] "Meaningfully greater" is defined in this analysis when minority or ethnic populations are at least 10 percentage points more than in the comparison group, which was the county in which the census tract was located.

- the percentage of ethnic minorities in a census tract is meaningfully greater than in the comparison group.

Racial and ethnic minorities include: African American/Black, Native American or Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, two or more races, and other races; and the Hispanic or Latino ethnicity.

Table 21 provides an overview of the racial and economic characteristics of the population in the census tracts within a 1-mile radius of all Project facilities. None of the census block groups are considered minority populations. Both census block groups located in Forrest County have higher poverty levels than the state and are considered low income communities. The poverty level of Mississippi is 19.9 percent and the poverty level in Forrest County is 22.5 percent. The census groups in Forrest County have poverty levels of 27.4 and 22.0 percent.

One census block group that contains an impoverished community (Tract 106.00, block group 3) would be directly impacted by the Black Creek Compressor Station, approximately 0.2 mile of a temporary access road, approximately 0.02 mile of the proposed 20-inch-diameter delivery lateral, and permanent access road. In this census block group, the percentage of the population with incomes below the poverty level is not significantly different from Forrest County. The second census block group that contains an impoverished community (Tract 105.00, block group 2) is approximately 0.9 mile northeast of Contractor Yard 2, and therefore, would not be adversely affected by the Project.

Gulf South would minimize the impacts on the community by complying with the DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) safety regulations and ensuring that National Ambient Air Quality Standards (NAAQS) are met. While general construction and operational impacts (e.g., noise, dust) on adjacent landowners may occur, the Project is in a relatively sparsely populated area within the census block group. Additionally, since the Project's location is constrained by the need to provide gas to Plant Morrow, adjustments to the Project's placement would not remove the Project from the low-income block group. The Project would result in increased tax revenues for the community and would support local economies through purchases made by the construction workforce. Therefore, construction and operation of the Project facilities would not disproportionately impact the health, social, or economic conditions of minority or low-income communities.

Table 21
Demographic Statistics

Location	White Alone Not Hispanic (percent)	African American (percent)	Native American/ Alaska Native (percent)	Asian (percent)	Native Hawaiian & Other Pacific Islander (percent)	Some Other Race (percent)	Two or more races (percent)	Hispanic or Latino (percent)	Total Minority (percent)	Percent of Persons Below Poverty Level
United States	61.4	12.3	0.7	5.3	0.2	0.2	2.3	17.6	38.6	12.4
Mississippi	56.9	37.5	0.4	1.0	0.0	0.1	1.1	3.0	43.1	19.9

Table 21 Demographic Statistics										
Location	**White Alone Not Hispanic (percent)**	**African American (percent)**	**Native American/ Alaska Native (percent)**	**Asian (percent)**	**Native Hawaiian & Other Pacific Islander (percent)**	**Some Other Race (percent)**	**Two or more races (percent)**	**Hispanic or Latino (percent)**	**Total Minority (percent)**	**Percent of Persons Below Poverty Level**
Forrest County	57.2	36.8	0.2	0.9	0.0	0.0	1.9	3.0	42.8	22.5
Tract 105.00, Block Group 2	80.3	11.6	0.0	0.0	0.0	0.0	1.9	6.2	19.7	27.4
Tract 106.00, Block Group 3	97.3	0.0	0.0	0.0	0.0	0.0	2.7	0.0	2.7	22.0
Lamar County	74.7	20.0	0.1	1.4	0.0	0.0	1.3	2.5	25.3	16.3
Tract 202.00, Block Group 2	80.0	17.5	0.0	2.5	0.0	0.0	0.0	0.0	20.0	5.9
Tract 203.01, Block Group 1	80.8	16.2	0.0	0.0	0.0	0.0	2.2	0.8	19.2	4.4
Tract 204.00, Block Group 1	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4
Tract 204.00, Block Group 2	95.5	2.9	0.0	0.0	0.0	0.0	0.0	1.6	4.5	9.8
Source: U.S. Census, 2017										

8.0 AIR QUALITY AND NOISE

8.1 Air Quality

Air quality would be affected by construction and operation of the Project. During construction, short-term emissions would be generated from the usage of equipment, land disturbance, and increased traffic from worker and delivery vehicles for all locations. No operational emissions would be associated with the pipeline or meter station; operation of the Black Creek Compressor Station would result in a minimum change in existing air emissions.

Ambient air quality is protected by federal and state regulations. Under the Clean Air Act of 1970 (CAA) and its amendments, the EPA has established NAAQS[8] for carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_x), ozone, particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), and sulfur dioxide (SO_2). The MDEQ has the authority to implement permit programs under the CAA for the proposed Project facilities.

These standards incorporate short-term (hourly or daily) levels and long-term (annual) levels to address acute and chronic exposures to the pollutants, as appropriate. The NAAQS include primary standards, which are designed to protect human health, including the health of sensitive subpopulations such as children and those with chronic respiratory problems. The NAAQS also include secondary standards designed to protect public welfare, including economic interests, visibility, vegetation, animal species, and other concerns not related to human health. Table 22 presents the NAAQS.

Table 22
National Ambient Air Quality Standards

Pollutant	**Averaging Period**	**Standards**	
		Primary	**Secondary**
Sulfur dioxide (SO_2)	1-hour [l,m]	75 ppb	0.5 ppm
		196 µg/m^3	
	3-hour [b]	--	
			1300 µg/m^3
	Annual [a,m]	0.03 ppm	--
		80 µg/m^3	
	24-hour [b,m]	0.14 ppm	--
		365 µg/m^3	
PM_{10}	24-hour [d]	150 µg/m^3	150 µg/m^3
$PM_{2.5}$ (2012 Standard)	Annual [e]	12.0 µg/m^3	15.0 µg/m^3
$PM_{2.5}$ (2006 Standard)	24-hour [f]	35 µg/m^3	35 µg/m^3
Nitrogen Dioxide (NO_2)	Annual [a]	0.053 ppm (53 ppb)	0.053 ppm (53 ppb)
		100 µg/m^3	100 µg/m^3
	1-hour [c]	100 ppb	--
		188 µg/m^3	
Carbon Monoxide (CO)	8-hour [b]	9 ppm	--

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

Table 22
National Ambient Air Quality Standards

Pollutant	Averaging Period	Standards	
		Primary	Secondary
		10,000µg/m^3	
	1-hour [b]	35 ppm	--
		40,000 µg/m^3	
Ozone (2008 Standard)	8-hour [g,h]	0.075 ppm	0.075 ppm
Ozone (2015 Standard)	8-Hour [i]	0.070 ppm	0.070 ppm
Ozone (O_3)	1-hour [j,k]	0.12 ppm	0.12 ppm
Lead (Pb)	Rolling 3-month [a]	0.15 µg/m^3	0.15 µg/m^3

a. Not to be exceeded.
b. Not to be exceeded more than once per year.
c. Compliance based on 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area.
d. Not to be exceeded more than once per year on average over 3 years.
e. Compliance based on 3-year average of weighted annual mean $PM_{2.5}$ concentrations at community-oriented monitors.
f. Compliance based on 3-year average of 98th percentile of 24-hour concentrations at each population-oriented monitor within an area.
g. Compliance based on 3-year average of fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area.
h. The 2008 8-hour ozone standard would remain in effect until one year after an area is designated for the 2015 8-hour ozone standard, which corresponds with January 16, 2019 based upon attainment designations for the 2015 ozone standard issued on January 16, 2018.
i. Permit applications that have not met EPA's grandfathering criteria would have to demonstrate that the proposed project does not cause or contribute to a violation of any revised ozone standards that are in effect when the permit is issued, including the 2015 revised standards.
j. Maximum 1-hour daily average not to be exceeded more than one day per calendar year on average.
k. The 1-hour ozone standard has been revoked in all areas in which Project activities would occur.
l. Compliance based on 3-year average of 99th percentile of the daily maximum 1-hour average at each monitor within an area.
m. The 24-hour and annual average primary standards for SO_2 have been revoked.

ppm = parts per million by volume;
ppb = parts per billion by volume.
µg/m^3 = micrograms per cubic meter.

Air quality control regions (AQCRs) are areas established by the EPA and local agencies for air quality planning purposes, in which State Implementation Plans describe how the NAAQS would be achieved and maintained. The AQCRs are intra- and interstate regions such as large metropolitan areas where improvement of the air quality in one portion of the AQCR requires emission reductions throughout the AQCR. Each AQCR, or smaller portion within an AQCR (such as a county), is designated, based on compliance with the NAAQS, as attainment, unclassifiable, maintenance, or nonattainment, on a pollutant-by-pollutant basis. Areas in compliance or below the NAAQS are designated as attainment, while areas not in compliance or above the NAAQS are designated as nonattainment. Areas previously designated as nonattainment that have since demonstrated compliance with the NAAQS are designated as maintenance for that pollutant. Maintenance areas may be subject to more stringent regulatory

requirements to ensure continued attainment of the NAAQS. Areas that lack sufficient data to determine attainment status are designated unclassifiable and treated as attainment areas. All Project components occur within areas that are designated as attainment for all criteria pollutants.

Permitting/Regulatory Requirements

Prevention of Significant Deterioration and Nonattainment New Source Review

The Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NNSR) air permit programs are designed to protect air quality when air pollutant emissions are increased either through the construction of new major stationary sources or major modifications to existing stationary sources. The MDEQ administer the PSD and NNSR permitting programs in their state. The Black Creek Compressor Station is located within an attainment area for all criteria pollutants and the potential emissions would not exceed the PSD threshold, therefore the program does not apply to the Project.

Title V Permitting

Title V is an operating air permit program run by each state for each facility that is considered a "major source." Emissions associated with the Project would result from construction activities and the new Black Creek Compressor Station, but as the Black Creek Compressor Station emissions would be below the major source thresholds for each criteria pollutant, this program does not apply to the Project.

New Source Performance Standards (NSPS)

The EPA promulgates NSPS to establish emission limits and fuel, monitoring, notification, reporting, and recordkeeping requirements for stationary source types or categories that cause or contribute significantly to air pollution.

Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines) would apply to the proposed reciprocating engines associated with the compressor station.

Subpart OOOOa (Standards of Performance for Crude Oil and Natural Gas Production Transmission and Distribution) would apply to all controllers and reciprocating compressors associated with the Project. Subpart OOOOa has proposed amendments under review since August 28, 2019 which would remove all sources in the transmission and storage segment from regulation under Subpart OOOOa. The proposed amendments have not been finalized. Gulf South would comply with all provisions from Subpart OOOOa that apply at the time the new emission sources are placed in-service and throughout their operations. If the amendments become final, no requirements from Subpart OOOOa would apply to the compressor station.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

The 1990 CAA Amendments established a list of 189 hazardous air pollutants (HAPs), resulting in the promulgation of NESHAP. The NESHAP 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.

Subpart ZZZZ- National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines would apply to the new engine, but only need to meet the requirements of NSPS part JJJJ.

State and County Regulations

The Black Creek Compressor Station would be required to obtain a State Permit to Construct and a State Permit to Operate from MDEQ before beginning construction. There are no additional state or county requirements applicable to the Project.

General Conformity

The EPA promulgated the General Conformity Rule to implement the conformity provision of Title I, Section 176(c)(1) of CAA. Section 176(c)(1) requires that the federal government not engage, support, or provide financial assistance for licensing or permitting, or approve any activity not conforming to, an approved CAA implementation plan.

The General Conformity Rule is codified in Title 40 CFR Part 51, Subpart W and Part 93, Subpart B, Determining Conformity of General Federal Actions to State or Federal Implementation Plans. A conformity determination must be conducted by the lead federal agency if a federal action's construction and operational activities is likely to result in generating direct and indirect emissions that would exceed the conformity threshold (*de minimis*) levels of the pollutant(s) for which an air basin is in nonattainment or maintenance. According to the conformity regulations, emissions from sources that are subject to any NNSR or PSD permitting/licensing (major or minor) are exempt and are deemed to have conformed.

The General Conformity Rule was developed to ensure that federal actions in nonattainment and maintenance areas do not impede states' attainment of the NAAQS. The lead federal agency must conduct a conformity determination if a federal action's construction and operational activities is likely to result in generating direct and indirect emissions that would exceed the General Conformity Applicability threshold levels of the pollutant(s) for which an air basin is designated nonattainment or maintenance. Section 176(c)(1) states that a federal agency cannot approve or support any activity that does not conform to an approved State Implementation Plan. Conforming activities or actions should not, through additional air pollutant emissions:

- cause or contribute to new violations of the NAAQS in any area;
- increase the frequency or severity of any existing violation of any NAAQS; or
- delay timely attainment of any NAAQS or interim emission reductions.

The General Conformity Rule entails both an applicability analysis and a subsequent conformity determination, if deemed necessary. A General Conformity Determination must be

completed when the total direct and indirect emissions of a project would equal or exceed the specified pollutant thresholds on a calendar year basis for each nonattainment or maintenance area.

As noted earlier, the Project facilities would be constructed and operated within counties in attainment for all criteria pollutants, therefore, a General Conformity Determination would not be required.

Greenhouse Gases

Greenhouse gases (GHGs) occur in the atmosphere both naturally and as a result of human activities, such as the burning of fossil fuels. GHGs are gases that absorb infrared radiation in the atmosphere, and an increase in emissions of these gasses has been determined by the EPA to endanger public health and welfare by contributing to global climate change. The most common GHGs emitted during fossil fuel combustion and natural gas transportation are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Emissions of GHGs are typically expressed in terms of CO_2 equivalents (CO_2e), where the potential of each gas to increase heating in the atmosphere is expressed as a multiple of the heating potential of CO_2 over a specific timeframe, or its global warming potential (GWP)[9]. The 100-year GWP of CO_2 is 1, CH_4 is 25, and N_2O is 298. During construction and operation of the Project, these GHGs would be emitted from non-electrical construction and operational equipment, as well as from fugitive CH_4 leaks from the pipeline and aboveground facilities.

On November 8, 2010, the EPA signed a rule that finalizes reporting requirements for the petroleum and natural gas industry under 40 CFR 98. Subpart W of 40 CFR 98 requires petroleum and natural gas facilities that emit 25,000 metric tons or more of CO_2e per year to report annual emissions of specified GHGs from various processes within the facility. Construction emissions are not covered under the GHG Reporting Rule, but those related to the proposed Project are expected to be well below the 25,000 metric tons reporting threshold. Operational emissions from the proposed facilities are likewise not expected to exceed this threshold and be reported to the EPA. The EPA has expanded its regulations to include the emission of GHGs from major stationary sources under the PSD program. The EPA's current rules require that a stationary source that is major for a non-GHG-regulated New Source Review pollutant must also obtain a PSD permit prior to beginning construction of a new or modified major source with mass-based GHG emissions equal to or greater than 100,000 tons per year (tpy) and significant net emission increases in units of CO_2e equal to or greater than 75,000 tpy. There are no NAAQS or other significance thresholds for GHGs.

[9] 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.

Construction Emissions

Construction of the Project would result in short-term increases in emissions of some pollutants from the use of fossil fuel-fired equipment and the generation of fugitive dust due to earthmoving activities. Some temporary indirect emissions, attributable to construction workers commuting to and from work sites during construction and from on-road and off-road construction vehicle traffic, could also occur. Large earth-moving equipment and other mobile equipment are sources of combustion-related emissions, including criteria pollutants (i.e., NO_x, CO, VOC, SO_2, and PM_{10}).

Gulf South would mitigate exhaust emissions from construction equipment by requiring contractors to meet all air quality regulations and emission standards associated with each piece of equipment. Fugitive dust emissions during construction would be mitigated by measures outlined in the Fugitive Dust Control Plan, such as spraying water on unpaved areas subject to frequent vehicle traffic. These emissions present the combined emissions for each facility of construction equipment combustion, on-road vehicle travel, off-road vehicle travel, and earthmoving fugitives.

Construction related emission estimates were based on a typical construction equipment list, hours of operation, and vehicle miles traveled by the construction equipment and supporting vehicles for each area of the Project. These emission-generating activities would include earthmoving, construction equipment exhaust, on-road vehicle traffic, and off-road vehicle traffic. Gulf South conservatively utilized emission factors from EPA's NONROAD2008a and MOVES2014 emission modeling software.

Construction is estimated to occur between December 2020 and January 2022. The air quality impacts of Project construction would be considered short-term and would be further minimized by Gulf South's implementation of fugitive dust control measures outlined in the Fugitive Dust Control Plan. Construction emissions for the Project are presented in table 23.

Table 23
Summary of Potential Construction Emissions from the Project

Construction Activity	**NO_x (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tons)**	**$PM_{2.5}$ (tpy)**	**VOC (tpy)**	**CO_{2e} (tpy)**	**Total HAPs (tpy)**
Black Creek Compressor Station	2.53	1.27	0.005	6.80	0.75	0.33	891	0.020
Pipeline Construction (3.40 miles of 20-inch- diameter pipeline lateral)	1.40	0.58	0.003	6.81	0.74	0.19	530	0.012
Plant Morrow Meter Station	0.61	0.36	0.001	4.15	0.46	0.09	205	0.005
TOTAL	**4.53**	**2.21**	**0.01**	**17.76**	**1.95**	**0.60**	**1,627**	**0.038**
General Conformity Thresholds	**100**	**100**	**100**	**100**	**100**	**50**	**-**	**100**

Given the temporary nature of construction, and the intermittent nature of construction emissions, we find that emissions from construction-related activities for the Project would not be expected to cause or significantly contribute to a violation of any applicable ambient air quality standard, or significantly affect local or regional air quality.

Operational Emissions

Emission generating modifications at the compressor station would include two natural gas-fired engines and ancillary emissions from a natural gas-fired emergency generator. Operational emissions for the Project facilities are presented in table 24.

Table 24
Operational Emissions Associated with the Black Creek Compressor Station

Emission Source	**NO_x**	**CO**	**VOC**	**SO_2**	**$PM_{2.5}$ / PM_{10}**	**GHG (in CO_{2e})**
Average Hourly Emissions (lb/hr)						
Engine #1 Caterpillar G3608	2.76	0.85	1.35	0.010	0.16	2,366
Engine #2 Caterpillar G3608	2.76	0.85	1.35	0.010	0.16	2,366
Emergency Generator	2.81	0.19	0.56	0.003	0.04	514
Storage Tanks	-	-	0.008	-	-	0
Condensate Loading	-	-	0.008	-	-	-
Equipment Leaks	-	-	0.030	-	-	70
Natural Gas Venting	-	-	0.31	-	-	722
Facility-Wide Totals	**8.33**	**1.89**	**3.62**	**0.023**	**0.36**	**6,038**
Annual Potential Emissions (tpy)						
Engine #1 Caterpillar G3616	12.07	3.72	5.91	0.04	0.72	10,365
Engine #2 Caterpillar G3616	12.07	3.72	5.91	0.04	0.72	10,365
Emergency Generator	0.70	0.05	0.14	6.4E-04	0.01	129
Storage Tanks	-	-	0.035	-	-	1
Condensate Loading	-	-	0.034	-	-	-
Equipment Leaks	-	-	0.13	-	-	308
Natural Gas Venting	-	-	1.34	-	-	3,161
Facility-Wide Totals	**24.84**	**7.49**	**13.50**	**0.08**	**1.45**	**24,329**
Permitting Requirement Thresholds						
PSD Major Source Thresholds [a]	*250*	*250*	*250*	*250*	*250*	*100,000* [c]
Title V Major Source Thresholds [b]	*100*	*100*	*100*	*100*	*100*	*100,000* [c]

Table 24 Operational Emissions Associated with the Black Creek Compressor Station						
Emission Source	**NO_x**	**CO**	**VOC**	**SO_2**	**$PM_{2.5}$ / PM_{10}**	**GHG (in CO_{2e})**
a. The PSD major source thresholds were obtained from 40 CFR 52.21(b)(1)(b) for areas in attainment of the NAAQS. b. The Title V major source thresholds were obtained from 40 CFR 70.2 for areas in attainment of the NAAQS. c. Projects that are not subject to NNSR/PSD review for a non-GHG pollutant are not subject to PSD review for GHG.						

Considering the minimal operational emissions associated with the Project, and that the meter station would not result in an increase in operational emissions other than minor fugitive methane and VOC releases, we conclude that the facilities would not have a significant impact on air quality.

8.2 Noise

Construction and operation of the Project would affect the local noise environment in the Project area. The ambient sound level of a region, which is defined by the total noise generated within the specific environment, is usually comprised of sounds emanating from both natural and artificial sources. At any location, both the magnitude and frequency of environmental noise may vary considerably over the course of the day and throughout the week, in part due to changing weather conditions and the impacts of seasonal vegetative cover.

The EPA published its Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Two measurements used by some federal agencies to relate the time-varying quality of environmental noise to its known effects on people are the equivalent sound level (L_{eq}) and the day-night sound level (L_{dn}). The L_{eq} is an A-weighted sound level containing the same sound 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, in the calculation of the L_{dn}, late night to early morning (10:00 PM to 7:00 AM) noise exposures are penalized +10 decibels (dB), to account for people's greater sensitivity to sound during the nighttime hours. The A-weighted scale (dBA) is used because human hearing is less sensitive to low and high frequencies than mid-range frequencies. For an essentially steady sound source that operates continuously over a 24-hour period and controls the environmental sound level, the L_{dn} is approximately 6.4 dB above the measured L_{eq}.

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 noise sensitive areas (NSAs), such as residences, schools, or hospitals. Also, in general, a person's threshold of perception for a perceivable change in loudness on the A-weighted sound level is about 3 dBA, whereas a 5 dBA change is clearly noticeable, and a 10 dBA change is perceived as either twice or half as loud.

There are no applicable county, or local noise regulations associated with the Project.

Construction Noise

Construction of the facilities would involve operation of general construction equipment and noise would be generated during the installation of the Project components. Construction of the Project would include two HDD's in Lamar County, only one of which has an NSA within 0.5 mile of the entry or exit sites. Gulf South anticipates only conducting HDD activities during daytime hours. Construction noise would be highly variable because the types of equipment in use changes with the construction phase and the types of activities. Noise from construction activities may be noticeable at nearby NSAs. However, construction equipment would be operated on an as-needed basis during the construction period. Further, Gulf South would limit construction activities to occur during daytime hours, except when required for activities such as hydrostatic testing, operation of pumps at waterbody crossings, and certain HDD activities that require continuous work. FERC staff considers daytime hours to be 7:00 AM to 7:00 PM. If night time construction is required, advanced notice would be provided to the residents informing them of the planned activities and duration.

Two NSAs were identified near the wetlands HDD site (HDD 1). Predicted noise levels for HDD activities are presented in table 25.

Table 25
HDD Noise Analysis

NSA	Distance (feet)/ Direction	Site	Existing Ambient L_{dn} (dBA)	Estimated Construction Noise (dBA)	Construction Noise Levels+ Ambient (dBA)	Increase in Noise Levels (dBA)
1	200/S	HDD #1 Entry	51.4	75.0	75.0	23.6
2	800/W	HDD #1 Exit	51.1	49.8	53.5	2.4

Based on the projected drilling sound levels, **we recommend that:**

- **Prior to construction of HDD #1 (MP 1.40 to 1.73), Gulf South should file with the Secretary, for review and written approval by the Director of OEP, an HDD noise mitigation plan to reduce the projected noise level attributable to the proposed drilling operations at NSAs with predicted noise levels above 55 dBA. During drilling operations, Gulf South should implement the approved plan, monitor noise levels, and make all reasonable efforts to restrict the noise attributable to the drilling operations to no more than an L_{dn} of 55 dBA at the NSAs.**

Measures to mitigate construction noise at affected NSA's would include compliance with federal regulations limiting noise from trucks, proper maintenance of equipment, employ a temporary noise barrier around the HDD entry site workspace, install hospital-grade exhaust silencers on all engines in conjunction with any of the site HDD equipment, install barriers around specific equipment, employ a low-noise generator, and temporary housing or compensation to affected landowners.

Because construction of the Project would be intermittent and mostly be limited to daytime hours, we conclude that construction noise would not have a significant impact on the environment.

Operation

The compressor station would produce operational noise. Gulf South completed a pre-construction sound survey and noise analysis for the compressor station using baseline sound surveys, sound level data for the specific equipment planned for the facility, and calculations for the noise attenuation over distance and proposed noise control measures. The existing (ambient) noise sound levels, estimated sound levels from the proposed sources, total noise sound levels, and noise increases/decreases were calculated.

Blowdowns associated with operation of the Black Creek Compressor Station would be mitigated by installing a unit blowdown system with silencers at each compressor unit. During initial start up and testing, it is anticipated that a unit blowdown could occur 2 to 5 times per week and 1 to 3 times monthly during normal operation.

Gulf South selected two measurement sampling sites based on their proximity to potentially impacted inhabited structures. As shown in table 26, the estimated noise from the compressor station is below the FERC's noise criterion of 55 dBA.

Table 26
Black Creek Compressor Station Operational Noise Analysis

NSA	Distance (feet)/ Direction	Site	Existing Ambient L_{dn} (dBA)	Estimated Sound Level (L_{dn}) of Station (dBA)	Total Ambient + Station L_{dn} (dBA)	Increase in Noise Levels (dBA)
1	1,300/SW	Residence	47.2	50.0	51.8	4.6
2	1,800/S	Residence	42.7	45.5	48.0	5.3

To confirm the noise modeling and verify that noise generated from the new compressor station would not exceed 55 dBA, **we recommend that:**

- **Gulf South should file noise surveys with the Secretary no later than 60 days after placing the Black Creek Compressor Station in service. If a full load condition noise survey is not possible, Gulf South should file an interim survey at the maximum possible horsepower load and file the full load survey within 6 months. If the noise attributable to the operation of all of the equipment at the station under interim or full power load conditions exceeds an L_{dn} of 55 dBA at any nearby NSAs, Gulf South should:**

  a) file a report with the Secretary on what changes are needed, for review and written approval by the Director of OEP;
  b) install additional noise controls to meet that level within 1 year of the in-service date; and

c) confirm compliance with the L_{dn} of 55 dBA requirement by filing a second noise survey with the Secretary no later than 60 days after it installs the additional noise controls.

The meter station would not contribute to an increase to the overall sound levels associated with the Project. Based on the duration of construction and minimal increase to operational noise from the Black Creek Compressor Station, we conclude that the Project would not result in significant noise impacts on residents and the surrounding communities.

9.0 RELIABILITY AND SAFETY

The transportation of natural gas by pipeline involves some incremental risk to the public due to the potential for accidental release of natural gas. The greatest hazard is a fire or explosion following a major pipeline rupture.

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. Methane has an auto-ignition temperature of 1,000 degrees Fahrenheit and is flammable at concentrations between 5.0 percent and 15.0 percent in air. An unconfined mixture of methane and air is not explosive; however, it may ignite and burn if there is an ignition source. A flammable concentration within an enclosed space in the presence of an ignition source can explode. It is buoyant at atmospheric temperatures and disperses rapidly in air.

9.1 Safety Standards

The DOT is mandated to prescribe minimum safety standards to protect against risks posed by pipeline facilities under Title 49, U.S.C. Chapter 601. PHMSA administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. Many of the regulations are written as performance standards which set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve safety. PHMSA's safety mission is to ensure that people and the environment are protected from the risk of pipeline incidents. This work is shared with state agency partners and others at the federal, state, and local level.

Title 49, U.S.C. Chapter 601 provides for a state agency to assume all aspects of the safety program for intrastate facilities by adopting and enforcing the federal standards. A state may also act as DOT's agent to inspect interstate facilities within its boundaries; however, the DOT is responsible for enforcement actions.

The DOT pipeline standards are published in Parts 190-199 of Title 49 of the CFR. Part 192 specifically addresses natural gas pipeline safety issues.

The DOT has the exclusive authority to promulgate federal safety standards used in the transportation of natural gas. Section 157.14(a)(9)(vi) of FERC's regulations require that an

applicant certify that it would design, install, inspect, test, construct, operate, replace, and maintain the facility for which a Certificate is requested in accordance with federal safety standards and plans for maintenance and inspection. Alternatively, an applicant must certify that it has been granted a waiver of the requirements of the safety standards by the DOT in accordance with Section 3(e) of the Natural Gas Pipeline Safety Act. Under a Memorandum of Understanding on Natural Gas Transportation Facilities (Memorandum) dated January 15, 1993, between the DOT and the FERC, FERC accepts this certification and does not impose additional safety standards. If the Commission becomes aware of an existing or potential safety problem, there is a provision in the Memorandum to promptly alert DOT. The Memorandum also provides for referring complaints and inquiries made by state and local governments and the general public involving safety matters related to pipelines under the Commission's jurisdiction.

The FERC also participates as a member of the DOT's Technical Pipeline Safety Standards Committee which determines if proposed safety regulations are reasonable, feasible, and practicable.

The pipeline and aboveground facilities associated with the Lamar County Expansion Project must be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. The DOT specifies material selection and qualification; minimum design requirements; and protection from internal, external, and atmospheric corrosion.

The DOT also defines area classifications, based on population density in the vicinity of the pipeline, and specifies more rigorous safety requirements for populated areas. The class location unit is an area that extends 220 yards on either side of the centerline of any continuous 1-mile length of pipeline. The four area classifications are defined below:

Class 1	Location with 10 or fewer buildings intended for human occupancy.
Class 2	Location with more than 10 but less than 46 buildings intended for human occupancy.
Class 3	Location with 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building, or small well-defined outside area occupied by 20 or more people on at least 5 days a week for 10 weeks in any 12-month period.
Class 4	Location where buildings with four or more stories aboveground are prevalent.

Class locations representing more populated areas require higher safety factors in pipeline design, testing, and operation. For instance, pipelines constructed on land in Class 1 locations must be installed with a minimum depth of cover of 30 inches in normal soil and 18 inches in consolidated rock. Class 2, 3, and 4 locations, as well as drainage ditches of public roads and railroad crossings, require a minimum cover of 36 inches in normal soil and 24 inches in consolidated rock.

Class locations also specify the maximum distance to a sectionalizing block valve (*e.g.*, 10.0 miles in Class 1, 7.5 miles in Class 2, 4.0 miles in Class 3, and 2.5 miles in Class 4). Pipe wall thickness and pipeline design pressures; hydrostatic test pressures; MAOP; inspection and testing of welds; and frequency of pipeline patrols and leak surveys must also conform to higher standards in more populated areas. Preliminary class locations for the Project have been developed based on the relationship of the pipeline centerline to other nearby structures and manmade features.

The nearest class 1 area to the compressor station is the Breton National Wildlife Refuge, which is located off the coast of Louisiana approximately 83 miles from the compressor station.

If a subsequent increase in population density adjacent to the right-of-way results in a change in class location for the pipeline, Gulf South would reduce the MAOP or replace the segment with pipe of sufficient grade and wall thickness, if required to comply with the DOT requirements for the new class location.

The DOT Pipeline Safety Regulations require operators to develop and follow a written integrity management program that contain all the elements described in 49 CFR 192.911 and address the risks on each transmission pipeline segment. The rule establishes an integrity management program which applies to all high consequence areas (HCA).

High Consequence Areas

The DOT has published rules that define HCAs where a gas pipeline accident could do considerable harm to people and their property and requires an integrity management program to minimize the potential for an accident. This definition satisfies, in part, the Congressional mandate for DOT to prescribe standards that establish criteria for identifying each gas pipeline facility in a high-density population area.

The HCAs may be defined in one of two ways. In the first method an HCA includes:

- current Class 3 and 4 locations,
- any area in Class 1 or 2 where the potential impact radius[10] is greater than 660 feet and there are 20 or more buildings intended for human occupancy within the potential impact circle[11], or
- any area in Class 1 or 2 where the potential impact circle includes an identified site.

An identified site is an outside area or open structure that is occupied by 20 or more persons on at least 50 days in any 12-month period; a building that is occupied by 20 or more persons on at least 5 days a week for any 10 weeks in any 12-month period; or a facility that is

[10] The potential impact radius is calculated as the product of 0.69 and the square root of the MAOP of the pipeline in psig multiplied by the square of the pipeline diameter in inches.

[11] The potential impact circle is a circle of radius equal to the potential impact radius.

occupied by persons who are confined, are of impaired mobility, or would be difficult to evacuate.

In the second method, an HCA includes any area within a potential impact circle which contains:

- 20 or more buildings intended for human occupancy, or
- an identified site.

Once a pipeline operator has determined the HCAs along its pipeline, it must apply the elements of its integrity management program to those segments of the pipeline within HCAs. The DOT regulations specify the requirements for the integrity management plan at section 192.911. There are no HCAs located near the Project.

Project facilities must be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR 192 that are designed to minimize the risks of such impacts. The DOT specifies material selection and qualification; minimum design requirements; and protection from internal, external, and atmospheric corrosion. The requirements include provisions for written emergency plans and emergency shutdowns. Gulf South would provide the appropriate training to local emergency service personnel before the facilities are placed into service.

The DOT prescribes the minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Each pipeline operator is required to establish an emergency plan that includes procedures to minimize the hazards of a natural gas pipeline emergency. Key elements of the plan include procedures for:

- receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;
- emergency system shutdown and safe restoration of service;
- making personnel, equipment, tools, and materials available at the scene of an emergency; and
- protecting people first and then property, and making them safe from actual or potential hazards.

The DOT requires that each operator establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline emergency, and to coordinate mutual assistance. The operator must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials. Gulf South would provide the appropriate training to local emergency service personnel before the pipeline is 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); explicitly requires consideration of seismicity and geotechnical risks in its integrity management plan for the pipeline; new regulations on pipeline patrol frequency for HCAs, MCAs and grandfathered pipelines; a policy to reconfirm MAOP for certain pipelines; installation of pressure relief for pig launcher/receivers, and report exceedances of MAOP to PHMSA. Gulf South would be required to comply with these regulations, which go into effect on July 1, 2020.

9.2 Pipeline Accident Data

The DOT requires all operators of natural gas transmission pipelines to notify the DOT of any significant incident and to submit a report within 30 days. Significant incidents are defined as any leaks that:

- caused a death or personal injury requiring hospitalization; or
- involve property damage of more than $50,000 (1984 dollars)[12].

During the 20-year period from 1999 through 2018, a total of 1,310 significant incidents were reported on the more than 300,000 total miles of natural gas transmission pipelines nationwide.

Additional insight into the nature of service incidents may be found by examining the primary factors that caused the failures. Table 27 provides a distribution of the causal factors as well as the number of each incident by cause. The dominant causes of pipeline incidents are corrosion and pipeline material, weld or equipment failure constituting 53.2 percent of all significant incidents. The pipelines included in the data set in table 27 vary widely in terms of age, diameter, and level of corrosion control. Each variable influences the incident frequency that may be expected for a specific segment of pipeline. The frequency of significant incidents is strongly dependent on pipeline age. Older pipelines have a higher frequency of corrosion incidents and material failure, because corrosion and pipeline stress/strain is a time-dependent process.

[12] $50,000 in 1984 dollars is approximately $112,955.73 as of May 2015 (CPI, Bureau of Labor Statistics, 2015)

Table 27 Natural Gas Transmission Pipeline Significant Incidents by Cause (1999-2018)[a]		
Cause	**Number of Incidents**	**Percentage**
Pipeline material, weld, or equipment failure	413	30.1
Corrosion	317	23.1
Excavation	195	14.2
All other causes [b]	142	10.3
Natural forces [c]	156	11.4
Outside force [d]	95	6.9
Incorrect operation	55	4.0
Total	**1,310**	**100**

a. All data gathered from PHMSA's Oracle BI Interactive Dashboard website for Significant Transmission Pipeline Incidents (PHMSA, 2019)
b. All other causes include miscellaneous, unspecified, or unknown causes.
c. Natural force damage includes earth movement, heavy rain, floods, landslides, mudslides, lightning, temperature, high winds, and other natural force damage.
d. Outside force damage includes previous mechanical damage, electrical arcing, static electricity, fire/explosion, fishing/maritime activity, intentional damage, and vehicle damage (not associated with excavation).

The use of both an external protective coating and a cathodic protection system[13], required on all pipelines installed after July 1971, significantly reduces the corrosion rate compared to unprotected or partially protected pipe.

Outside force, excavation, and natural forces are the cause in 33.5 percent of significant pipeline incidents. These result from the encroachment of mechanical equipment such as bulldozers and backhoes; earth movements due to soil settlement, washouts, or geologic hazards; weather effects such as winds, storms, and thermal strains; and willful damage. Table 28 provides a breakdown of external force incidents by cause.

Older pipelines have a higher frequency of outside forces incidents partly because their location may be less well known and less well marked than newer lines. In addition, the older pipelines contain a disproportionate number of smaller-diameter pipelines; which have a greater rate of outside forces incidents. Small diameter pipelines are more easily crushed or broken by mechanical equipment or earth movement.

Since 1982, operators have been required to participate in "One Call" public utility programs in populated areas to minimize unauthorized excavation activities in the vicinity of pipelines. The "One Call" program is a service used by public utilities and some private sector companies (*e.g.*, oil pipelines and cable television) to provide preconstruction information to contractors or other maintenance workers on the underground location of pipes, cables, and culverts.

The available data from PHMSA show that natural gas transmission pipelines continue to be a safe, reliable means of energy transportation. The construction and operation of the facilities

[13] Cathodic protection is a technique to reduce corrosion (rust) of the natural gas pipeline through the use of an induced current or a sacrificial anode (like zinc) that corrodes at faster rate to reduce corrosion.

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 these facilities, that they would be constructed and operated safely.

Table 28
Excavation, Natural Forces, and Outside Force Incidents by Cause (1996-2015) [a]

Cause	Number of Excavation, Natural Forces, and Outside Force Incidents	Percentage of All Incidents [b,c]
Third party excavation damage	172	13.1
Heavy rain, floods, mudslides, landslides	74	5.7
Vehicle (not engaged with excavation)	49	3.7
Earth movement, earthquakes, subsidence	32	2.4
Lightning, temperature, high winds	27	2.1
Operator/contractor excavation damage	25	1.9
Unspecified excavation damage/previous damage	13	1.0
Other or unspecified natural forces	13	1.0
Fire/explosion	9	0.7
Fishing or maritime activity	9	0.7
Other outside force	9	0.7
Previous mechanical damage	6	0.5
Electrical arcing from other equipment/facility	1	0.1
Intentional damage	1	0.1
Total	**440**	**33.5**

a. All data gathered from PHMSA's Oracle BI Interactive Dashboard website for Significant Transmission Pipeline Incidents, https://hip.phmsa.dot.gov/analyticsSOAP/saw.dll?Portalpages&NQUser=PDM_WEB_USER&NQPassword=Public_Web_User1&PortalPath=%2Fshared%2FPDM%20Public%20Website%2F_portal%2FSC%20Incident%20Trend&Page=Significant&Action=Navigate&col1=%22PHP%20-%20Geo%20Location%22.%22State%20Name%22&val1=%22%22 (DOT, 2016a). Accessed on 2/17/2016.
b. Percentage of all incidents was calculated as a percentage of the total number of incidents natural gas transmission pipeline significant incidents (i.e., all causes)
c. Due to rounding, column does not equal 33.6 percent.

Polychlorinated Biphenyls

When any existing station piping or pipeline is cut, the contractor would follow the EPA issued Polychlorinated Biphenyls (PCB) rules and regulations contained in 40 CFR Part 761. Gulf South would not be replacing or abandoning any existing pipeline facilities, and PCB's are not expected to be encountered. In the event contaminated liquid, soil, or pipeline facilities are encountered unexpectedly during construction, these materials would be managed in accordance

with federal and state regulations. Based on this, we conclude that PCB's are not expected at Project facilities.

10.0 CUMULATIVE IMPACTS

In accordance with NEPA, we identified other actions located near the Project facilities and evaluated the potential for a cumulative impact on the environment. As defined by 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 what agency or person undertakes such other actions. 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.

In this analysis, we consider the impacts of past projects within the regions of influence as part of the affected environment (environmental baseline) which was described and evaluated in the preceding environmental analysis. However, present effects of past actions that are relevant and useful are also considered. Actions located outside the regions of influence are generally not evaluated because their potential to contribute to a cumulative impact diminishes with increasing distance from the Project. Table 29 identifies the geographic scope that was used to evaluate cumulative impacts of each resource affected by the Project.

Table 29
Geographic Scope for Cumulative Impacts

Resource	Geographic Scope
Soils and Geology	Construction Workspaces
Water Resources, Fisheries, Vegetation, and Wildlife	Hydrologic Unit Code (HUC)12 Watershed
Cultural Resources	Area of Potential Effects
Land Use	1-mile radius
Visual Resources	0.25-mile from pipeline and road crossings, and 1-mile from aboveground facilities
Noise	Operation: 1 mile
	Construction: 0.25 mile
Air Quality	Operation: 50 kilometers (approximately 31.1 miles)
	Construction: 0.25-mile
Socioeconomics	County

As discussed in section B of this EA, construction and operation of the Project would temporarily and permanently impact the environment. The Project would impact geology, soils, water resources, wetlands, vegetation and wildlife, land uses, air quality, and noise. However, these impacts would be minimal and mostly temporary. In section B, of this EA we determined that the environmental impacts of the Project would not be significant. Cumulative impacts on soils, water resources, vegetation and wildlife, land use, visual resources, socioeconomics, and air quality were assessed. The 10 projects that affect one or more of these resources within the geographic scope for cumulative analysis are listed in table 30.

We determined that there would be no significant noise impacts during construction or operation of the Project. Construction noise would be limited and intermittent and minimized by the mitigation measures Gulf South would implement. Operational noise levels associated with the Project would be below 55 dBA, and since there are no new noise emitters planned within 1.0 mile of the compressor station., there would be no cumulative impacts on operational noise. No cultural resources were identified within the APE. Therefore, there would be no cumulative impacts on cultural resources. In addition, there would not be any cumulative effects on geology because the other projects within the geographic scope do not involve ground disturbance.

Table 30
Cumulative Impacts Analysis: Past, Present, and Reasonably Foreseeable Projects

Project Name (Company)	County	Location	Description	Timeframe	Resources That May Be Cumulatively Affected
Petal III Compression Project (Gulf South Pipeline Company, LP)	Forrest	5.0 miles northeast of Contractor Yard 2	Construction of two new electric driven compressor units and associated ancillary facilities and a new dehydration unit all within the existing Petal Gas Storage Facility.	Construction: Anticipated to begin in November 2019 Operation: June 2020	Socioeconomics
Morrow Repower Project (Cooperative Energy)	Lamar	Overlaps with PAR-01 and Contractor Yard 1	Conversion of the R.D. Morrow, Sr. Generating Station (Plant Morrow) from coal to a natural gas fired combined cycle plant and construction of a 5.0 mile power line.	Construction: Ongoing Operation: 2023	Groundwater, Surface Water, and Wetlands; Fisheries, Vegetation, and Wildlife; Soils; Land Use; Visual Resources; Air; Socioeconomics
Meter Station Power Line (Cooperative Energy)	Lamar	Overlaps with Plant Morrow Meter Station temporary workspace	Installation of a 1,500 foot power line to provide power to the Plant Morrow Meter Station from an existing power feed located within Cooperative's Plant Morrow.	Construction: Anticipated to begin after December 2020 Operation: January 2022	Groundwater, Surface Water, and Wetlands; Fisheries, Vegetation, and Wildlife; Soils; Land Use; Visual Resources; Air; Socioeconomics
Black Creek Compressor Station Powerline (Gulf South Pipeline Company, LP)	Forrest, Lamar	Overlaps with pipeline permanent right-of-way and temporary workspace	Installation of a 1.0 mile Powerline to provide power tot the Black Creek Compressor Station from an existing power line along U.S. Route11.	Construction: Anticipated to begin in December 2020 Operation: January 2022	Groundwater, Surface Water, and Wetlands; Fisheries, Vegetation, and Wildlife; Soils; Land Use; Visual Resources; Air; Socioeconomics
Tennessee Gas Meter Station Abandonment Project (Gulf South Pipeline Company, LP)	Forrest	14.9 miles northeast of Contractor Yard 2	Abandonment of Tennessee Gas Meter Station, and the installation of a check meter and associated tie-in piping.	Construction: Anticipated to begin in May 2020 Operation: August 2020	Socioeconomics
I 59 Interchange at SR 42 (Mississippi Department of Transportation)	Forrest	10.8 miles north of Contractor Yard 2	Construction of new entrance and exit ramps and two new frontages roads	Construction: began in April 2019 Operation: April 2021	Socioeconomics

Table 30 Cumulative Impacts Analysis: Past, Present, and Reasonably Foreseeable Projects					
Project Name (Company)	**County**	**Location**	**Description**	**Timeframe**	**Resources That May Be Cumulatively Affected**
The Refuge Property Residential Development (The Refuge Development, LLC)	Lamar	9.3 miles northwest of PAR-01	Construction of a Residential subdivision.	Construction: Anticipated to begin in 2019 and ongoing as lots are sold Operation: N/A	Socioeconomics
Petal School District Storm Shelter Project (Petal School District)	Forrest	9.4 miles northwest of Contractor Yard 2	Construction of aboveground storm shelters for each of the five schools within the Petal School district.	Construction: Began January 2019 Operation: Early 2020	Socioeconomics
Complex on Bryd Parkway (York Developments)	Forrest	11.3 miles northwest of Contractor Yard 2	Construction of a luxury apartment complex with 135 units.	Construction: Anticipated early 2020 Operation: Unknown	Socioeconomics
Kohler Company Expansion (Kohler Company)	Forrest	5.6 miles northwest of Contractor Yard 2	Expansion into an additional 300,000 sq. ft. of manufacturing and office space to relocate second plant from Wisconsin to Hattiesburg.	Construction: March 2019 Operation: March 2020	Socioeconomics

Groundwater

The Project is not anticipated to adversely affect groundwater quality or supply, as further discussed in section B.3.1. Construction of the Project would not directly withdraw groundwater except as needed for trench dewatering efforts should trenching intersect the shallow groundwater aquifer. Quantitative information regarding water use for the Morrow Repower Project is unknown; however, Gulf South anticipates approximately 1,083,714 gallons of groundwater would be withdrawn from a municipal source during construction of the Project. As discussed in section 3.1, the Miocene aquifer system is the largest potential source of groundwater in Mississippi, and more than 100 million gallons of water per day are withdrawn from this aquifer system in Mississippi. Therefore, cumulative impacts on groundwater use would be negligible compared to the overall groundwater withdrawals in the region. Further, all project proponents, including Gulf South, would have to coordinate with MDEQ to ensure that there are adequate water supplies for each respective project.

Surface Water, Wetlands, and Fisheries

The Project could have temporary impacts on surface water and fisheries due to the in-water activities, any stormwater runoff, hydrostatic testing, and potential spills. The open-cut crossings and installation of permanent culverts could increase turbidity and sedimentation in the vicinity of the crossing and immediately downstream. The impacts would be short term and minor due to Gulf South's adherence to the Procedures, USACE guidelines, and state stormwater certifications. The geographic scope for cumulative impacts on waterbodies and wetlands is

defined as the Hydrologic Unit Code (HUC) 12 subwatershed. The Morrow Repower Project is within the same HUC 12. The Morrow Project would be required to get a Section 401 Water Quality Certification from MDEQ and would have guidelines and best management practices to follow to reduce the impact on waterbodies and fisheries. The construction of the non-jurisdictional 1.0-mile power line would involve temporarily matting two intermittent waterbodies in the Project area. Gulf South would adhere to USACE and stormwater permits to prevent impacts to these intermittent waterbodies.

The Project would impact 4.5 acres of wetland during construction and 1.5 acres during operation. Construction and operation of the non-jurisdictional 1.0-mile power line would involve the permanent conversion of approximately 0.1 acre PFO and PSS wetland to PEM wetland. Gulf South would mitigate the permanent effects on wetlands by purchasing mitigation credits from a USACE approved mitigation bank. Temporary effects would be minimized by adhering to the Procedures and best management practices requested by USACE. The Morrow Repower Project is mostly within the footprint of the existing Plant Morrow. Therefore, it is unlikely to impact wetlands. If construction of the 5.0 mile power line associated with the Morrow Repower Project affects wetlands, Cooperative would be required to follow any state guidelines and file for additional USACE permits. Therefore, the cumulative effects of the Project, non-jurisdictional power lines, and the Morrow Project would not significantly impact waterbodies, fisheries, or wetlands.

Vegetation and Wildlife

The geographic scope for cumulative impacts on vegetation and wildlife is defined as the HUC 12 subwatershed. The Project would permanently impact 37.3 acres of land, of which 15.9 acres of forest would be permanently impacted. Gulf South's construction and operation of the non-jurisdictional 1.0-mile power line would involve the permanent conversion of 0.4 acre of forest habitat into open land. This would result in permanent habitat loss and displacement for some wildlife species. Displacement of wildlife could result in additional stress and increased competition in available habitats. In addition, direct mortality of less mobile species may occur as a result of construction.

The Morrow Repower Project is mostly within the existing Morrow Power Plant and the area is classified as developed. Construction within the existing plant would have minimal impacts on vegetation and wildlife. Construction of the associated 5.0 mile power line could involve clearing and grading that could impact vegetation and wildlife. However, the types of vegetation and land uses crossed by the power line is unknown. Construction of the 1,500 foot power line that connect the Plant Morrow Meter station to a power drop in Plant Morrow would not result in any increased vegetation or wildlife impacts since it is within the footprint of Plant Morrow and the temporary workspace associated with the Plant Morrow Meter Station. Overlapping construction schedules can cause increased noise, lighting, and human activity that would further disturb and displace wildlife in the area. There is suitable adjacent habitat to support displaced wildlife. Therefore, cumulative impacts on vegetation and wildlife would not be significant.

Soils

Concurrent or consecutive construction schedules could prolong the duration that soils would be disturbed and thus susceptible to erosion and invasive species establishment. Construction of the Morrow Repower Project is ongoing and is expected to be completed in 2023; based on the proposed schedule for the Lamar County Expansion Project, construction of the two projects would be concurrent. However, overlap of construction work areas would be at PAR-01 and Contractor Yard 1. PAR-01 is an existing road and Contractor Yard 1 is an existing cleared parking area; ground disturbance is not proposed for either of these areas. Therefore, the potential cumulative impacts on soils would not be significant.

Land Use

Construction and operation of the Project would convert some existing land uses into industrial land. The geographic scope for cumulative impacts on land use include areas within 1 mile of Project workspaces. The Morrow Repower Project is the only project within a mile of the Project. Since the Morrow Repower Project would mostly affect industrial land, there would not be a significant cumulative effect on land use.

The geographic scope for assessing cumulative impacts on visual resources affected by the Project includes areas within 0.25 mile of the proposed pipeline and road crossings and 1 mile of the aboveground facilities. The Project would result in temporary impacts during construction. Permanent visual impacts from the Project would be minor because the surrounding forest minimizes the visual impacts of the compressor station and associated communication tower on public roads or houses. The pipeline right-of-way would not be visible from public roads or houses and the non-jurisdictional power line associated with the compressor station would follow the pipeline route. This would not result in any additional changes to visual resources. The Morrow Repower Project would mostly be confined to the existing facility, the construction of the 5.0 mile power line could result in visual impacts if it involves tree clearing. However, the land uses crossed by the 5.0 mile power line are unknown along with the potential visual impacts. Therefore, there would not be a significant cumulative effect on visual resources.

Socioeconomics

The geographic scope for analyzing the cumulative impacts of the Project on socioeconomics is Forrest and Lamar Counties, Mississippi. The Project would have temporary and limited impacts on employment, housing, and transportation in the Project area. All of the projects listed in table 30, are within the geographic scope for socioeconomics. Construction of the Morrow Repower Project, I-59 Interchange at SR 42, Complex on Bryd Parkway, and possibly the Refuge Property Residential Development would overlap temporally with the Project. This could create some challenges when recruiting local workers. However, the Project would mostly utilize non-local workers that specialize in pipeline and compressor station construction. Therefore, there should be an adequate labor force available to complete both the Project and those other projects that may be constructed concurrently.

Increased worker influx from multiple projects could increase rental rates and housing shortages. This could result in longer commutes for those seeking housing near their place of work. However, the Project would only temporarily employ a maximum of 340 employees, of which approximately 80 percent would be nonlocal. Of the approximate 272 non-local workers, an estimated 30 percent would bring their own housing unit (trailer, RV, etc.). The Project is located near several small to medium sized municipalities with multiple housing options within a 30-mile radius and the Project would only impact approximately 191 units. Therefore, there would be adequate housing for workers that relocate to the area during construction of the Project and other nearby projects.

Increased traffic from construction of multiple Projects in the area could occur. This could create increased congestion, travel time, and safety risks. Gulf South would reduce impacts on traffic by scheduling shift changes for off-peak hours and utilizing flaggers. Operation of the Project only requires two to three new employees so it would not affect traffic congestion. The Project would result in minor and temporary effects and cumulative effects on socioeconomics. Therefore, the Project would not have a significant cumulative effect on socioeconomic resources.

Air Quality

The Morrow Repower Project was identified within the vicinity of the Project with the potential to contribute to cumulative impacts on air quality during construction and operation of the Project. Construction of these projects would involve the use of heavy equipment that would generate emissions of air pollutants and fugitive dust. Fugitive dust emissions would settle quickly, and dust suppression measures would be implemented at the Project site as necessary to ensure the Project-related effects from fugitive dust are intermittent and temporary and would occur within or very near the construction area. The potential cumulative impacts from the Project and recently completed, current, and reasonably foreseeable projects in the vicinity would be temporary and minor. Due to the timing of construction, minimization of fugitive dust as a result of the dust suppression measures, and the highly localized nature of construction emissions, there would be no significant cumulative impacts on air quality during construction.

To account for combustion impacts from the identified end-use customer for this Project, we looked at the facility to which the gas would be delivered. As noted in section A of the EA, the Project's purpose is to provide 200,000 Dth/d of natural gas from Gulf South's existing Index 299 pipeline to Cooperative, which would primarily be utilized for Cooperative's new 550-megawatt combined cycle gas turbine generation facility. Combustion of this volume of natural gas would result in 3.87 million metric tons of CO_2 per year. This represents an upper bound of GHG emissions from the Project because it assumes the total maximum capacity is transported 365 days per year. Cooperative's facility has the potential to have a gross output of 550 megawatts. The 3.87 million metric tons of GHG emissions would result in a 5.7 percent

increase in GHG emissions from fossil fuel combustion in Mississippi,[14] and a 0.07 percent increase in national emissions.[15]

The Project would reduce emissions currently being generated at the coal facility by replacing the capacity with natural gas fired units resulting in lower air impacts to the surrounding area. During operation, the Morrow Repower Project would be required to meet applicable state and federal air quality regulations to avoid significant impacts on air quality, and therefore we conclude there would be no significant cumulative impacts on air quality when considering the combined effects of the Morrow Repower Project and operation of the proposed Project.

Cumulative Impact Conclusion

In conclusion, when the impacts of the Project are added to other projects in the vicinity, we conclude that the cumulative impacts would be minimal. We conclude that most of the impacts would be temporary in nature and no significant cumulative impacts would be incurred from the Project.

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[14] Based on Mississippi's GHG emissions of 67.8 million metric tons of CO_2 from fossil fuel consumption for the 2017 calendar year. U.S. Energy Information Admin., *Mississippi Carbon Dioxide Emissions from Fossil Fuel Consumption* (2019), *available at* https://www.eia.gov/environment/emissions/state/.

[15] Based upon national net emissions of 5,742.6 million metric ton of CO_2e for the 2017 calendar year. U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2017* at ES-8 (2019), *available at* https://www.epa.gov/sites/production/files/2019-04/documents/us-ghg-inventory-2019-main-text.pdf.

SECTION C – ALTERNATIVES

In accordance with NEPA and Commission policy, we identified and evaluated alternatives to the Project to determine whether they would be reasonable and environmentally preferable to the proposed action. These alternatives include the no action alternative, system alternatives, and compressor station site alternatives. The criteria used for selecting potentially environmentally preferable alternatives are: the ability to meet the Project's objectives, technical and economic feasibility and practicality, and whether it provides a significant environmental advantage over the proposed Project.

No Action Alternative

The no-action alternative would result in not implementing the proposed action and would avoid the potential environmental impacts associated with the Project; however, the Project objectives would not be met. The current Gulf South Index 299 pipeline cannot adequately supply additional pipeline capacity for the transportation of natural gas to meet customer demands. Without the Project, Cooperative would be required to seek other sources of natural gas to convert its existing power plant from a coal-fired steam generating facility to a natural gas fired, combined cycle facility. Although a Commission decision to deny the Project would either avoid the environmental impacts discussed in this EA, other natural gas projects could be constructed to provide a substitute for the natural gas supplies offered by Gulf South. Such actions could result in impacts similar to or greater than the proposed Project and would likely not meet the Project's purpose and need within the proposed timeframe.

System Alternatives

The purpose of identifying and evaluating system alternatives is to determine whether the environmental impacts associated with the construction and operation of the proposed project could be avoided or reduced by using existing, modified, or other proposed facilities rather than constructing new facilities. System alternatives are those able to meet the objectives of the project but use a different facility (existing or proposed) or are able to otherwise use existing infrastructure to eliminate the need for the proposed facility. However, a viable system alternative must be technically and economically feasible as well as practicable and must satisfy interconnect requirements and the anticipated in-service date to fulfill commitments made to the Project customers.

The Index 299 pipeline is the major Gulf South pipeline located in the region, and expansion of the pipeline capacity and construction of a new lateral to Cooperative's Morrow Repower Project are required to meet Cooperative's needs. Gulf South's Index 299 pipeline cannot provide the capacity required by Cooperative and meet the purpose and need of the Project without the construction of the new compressor station and new 20-inch pipeline lateral. The addition of compression at another existing Gulf South facility located along the Index 299 pipeline would not adequately increase the operating pressure and provide bi-directional operation on the Index 299 pipeline between the Perryville Transportation Point and the Petal Storage Complex. A review of PHMSA's National Pipeline Mapping System, showed that the Gulf South Index 299 Pipeline is the only gas pipeline within the vicinity of the Morrow

Repower Project. Therefore, there is not currently a viable system alternative that could meet the purpose and need of the Project.

Pipeline Route Alternative

We evaluated the proposed route and one route alternative with the intent to identify whether the alternative provides a significant environmental advantage over the proposed Project. Figure 2 shows both the proposed route and the alternative route. The alternative route follows the proposed route until milepost 0.36, where it deviates to the north for approximately 3.1 miles before terminating at the Plant Morrow Meter Station. The quantitative comparison of the routes is provided in table 31. The alternative route would increase co-location to 83 percent compared to the 23 percent co-located proposed route. The alternative route would increase the impact on wetlands and waterbodies and would affect 11 landowners as opposed to three landowners. The alternative route would require the removal of a home that is located in the right-of-way. Due to increased impacts on residences, forest, and wetlands, we do not find that the alternative route provides a significant environmental advantage.

Table 31
Pipeline Route Alternatives Comparison

Category	Proposed Route	Alternative 1
Route Length (miles)	3.40	3.42
Total Land Disturbance (acres) [a]	35.13	35.39
Percent Adjacent to Existing ROW	23	85
Residences within 100 feet	6	4 [b]
Land Use (acres) [c]		
Pine Plantation	19.20	6.64
Forest	10.72	17.58
Wetland	0.63	3.53
Open Land	2.65	6.53
Open Water	1.01	0.23
Residential	0.00	0.66
Developed [d]	0.31	0.22
Waterbodies Crossed		
Minor Waterbodies Crossed [e]	6	7
Intermediate Waterbodies Crossed [f]	1	1
Ponds Crossed [h]	1	2

Table 31
Pipeline Route Alternatives Comparison

Category	Proposed Route	Alternative 1
Total Waterbody Crossings	8	10
Wetland Impacts (acres) [i]		
Non-forested (PEM/PSS) Wetland	0.00	0.07
Forested (PFO) Wetland	0.63	3.46
Total Wetland Impacts	0.63	3.53

Sources: Homer et al., 2015; U.S. Fish and Wildlife Service (USFWS), 2019; USGS, 2019

a. Acreage is based on 85-foot workspace for both the Proposed Route and the alternative route.
b. One residence is located within the 85-foot-wide construction ROW and would have to be removed to construct the alternative route.
c. Land use impacts for the Proposed Route and alternative route is based on aerial imagery, NWI data, and the USGS National Land Cover Database.
d. Developed land use category includes roads, urban, industrial, and residential areas.
e. Minor waterbodies are those with a crossing width of 10 feet or less.
f. Intermediate waterbodies are those with a crossing width of greater than 10 feet and less than 100 feet.
g. Major waterbodies are those with a crossing width of 100 feet or greater.
h. Number of ponds crossed based on NWI data and aerial imagery.
i. Wetland impacts calculated utilizing 85-foot-wide workspace and NWI data, field survey data omitted for consistency.

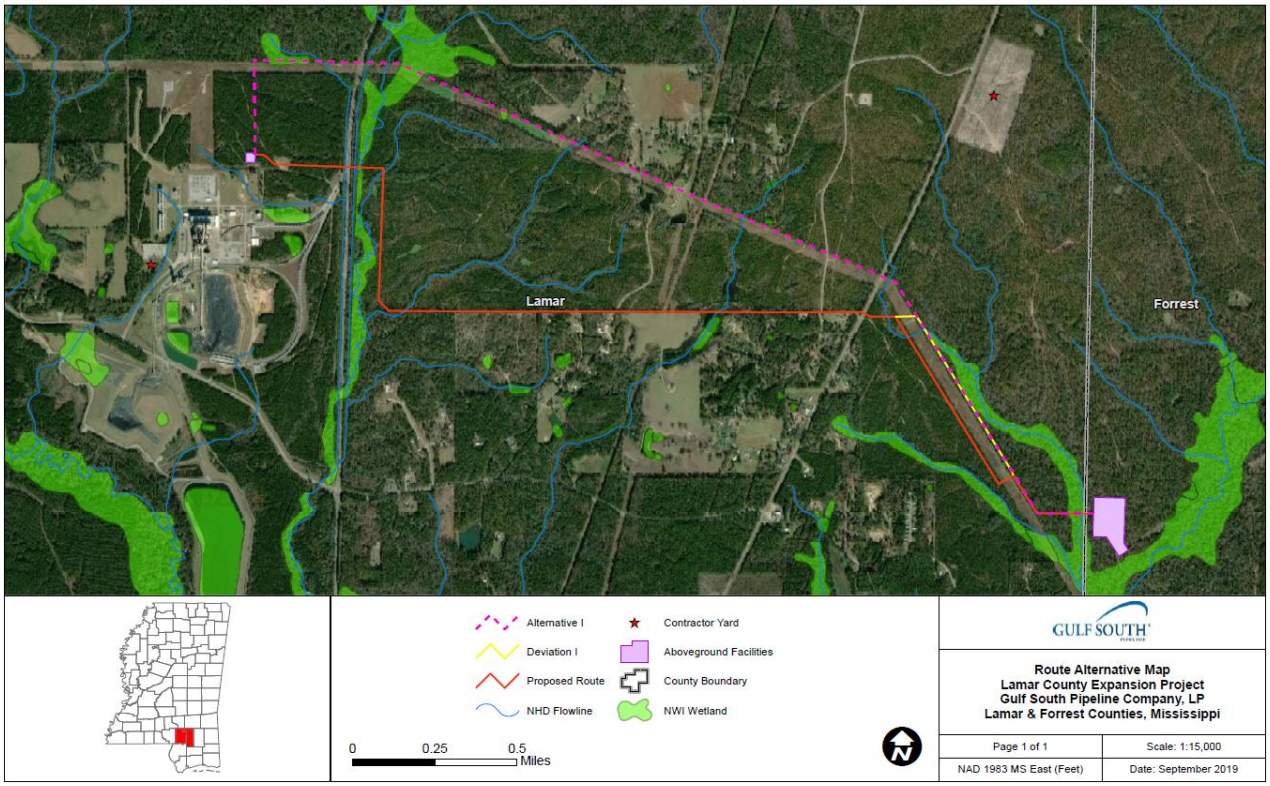

Figure 2: Alternative Pipeline Routes and Deviations

Aboveground Facilities Alternative

The Project includes the construction of a new meter station and a new compressor station. No alternative sites were evaluated for the meter station because its siting was constrained based on the need for it to serve as the delivery point for Cooperative's Morrow Repower Project. The proposed compressor station was compared to two alternative compressor station sites in order to identify whether an alternative site may provide a significant environmental advantage. Figure 3 shows the location of the proposed site compared to the alternative sites. All three site options are located on and owned by the same landowner, therefore, the landowner's preference for placement was taken into consideration. A quantitative comparison of the sites is provided in table 32.

Table 32
Black Creek Compressor Station Alternatives Comparison

Category	Proposed Site	Alternative Site 1	Alternative Site 2
Total Land Disturbance (acres) [a]	35.65	35.65	35.65
Length of suction/discharge piping required to connect to Index 299 Pipeline (miles)	0.00	1.32	0.55
Distance to nearest Noise Sensitive Area [b]	1,091	1,253	331

Table 32
Black Creek Compressor Station Alternatives Comparison

Category	Proposed Site	Alternative Site 1	Alternative Site 2
Floodplains Impacted (acres)			
Construction Impacts [c]	0.00	0.00	4.42
Operation Impacts	0.00	0.00	0.00
Prime Farmland Impacted [d]			
Construction Impacts [c]	35.14	13.15	10.93
Operation Impacts	8.49	5.17	6.54
Land Use (acres) [e]			
Pine Plantation	<0.01	31.58	20.29
Forest	33.69	0.00	3.21
Wetland	0.54	2.81	12.15
Open Land	1.42	1.26	0.00
Waterbodies Impacted			
Minor Waterbodies Impacted f	0	0	3
Total Waterbody Crossings	0	0	3
Wetland Impacts (acres) g			
Non-forested (PEM/PSS) Wetland	0.00	1.60	0.00
Forested (PFO) Wetland	0.54	1.21	12.15
Total Wetland Impacts	0.54	2.81	12.15

Sources: Homer et al., 2015; USGS, 2019; NRCS, 2019

a. Acreage is based on 35.65-acre workspace for both the Proposed Site and the alternative sites.
b. The distance to the nearest NSA is measured from the closest point along the permanent footprint of the alternative compressor station sites. It should be noted that the distance will not match what is presented in Resource Report 9 – Air and Noise Quality as the distance to the nearest NSA presented in that report is measured from the center of the proposed compressor station site (i.e., near the location of the compressor units).
c. Consists of total land affected by Project, including temporary and new permanent impacts.
d. Includes prime farmland and farmland of statewide and local importance. No unique farmland is present in the Project area.
e. Land use impacts for the Proposed Site and alternative sites is based on aerial imagery, wetland delineation data, and the USGS National Land Cover Database.
f. Minor waterbodies are those with a crossing width of 10 feet or less.
g. Wetland impacts calculated using field verified wetland data.

The proposed compressor station site was designed to minimize impacts on sensitive resources and to minimize the distance between the compressor station and the Index 299 pipeline. The proposed site is over 1,000 feet from the nearest NSA and is the preferred site of the landowner. Alternative site 1 is located north of the proposed site along U.S. Route 11. Although it is a greater distance from the nearest NSA, it is visible from the nearest public road.

Alternative site 1 would have a decreased impact on prime farmland and forest habitat, but it would result in increased wetland impacts. Alternative site 2 is located approximately 0.3 mile south of the proposed site and the nearest residence is 331 feet west of the site. Alternative site 2 would result in the greatest wetland and floodplain impacts. Due to the increased impacts on residences, wetlands, floodplains, and visual resources, we conclude that neither of the alternative sites provides a significant environmental advantage over the proposed site.

In summary, we have determined that the proposed action, as modified by our recommended mitigation measures, is the preferred alternative that can meet the Project's objectives.

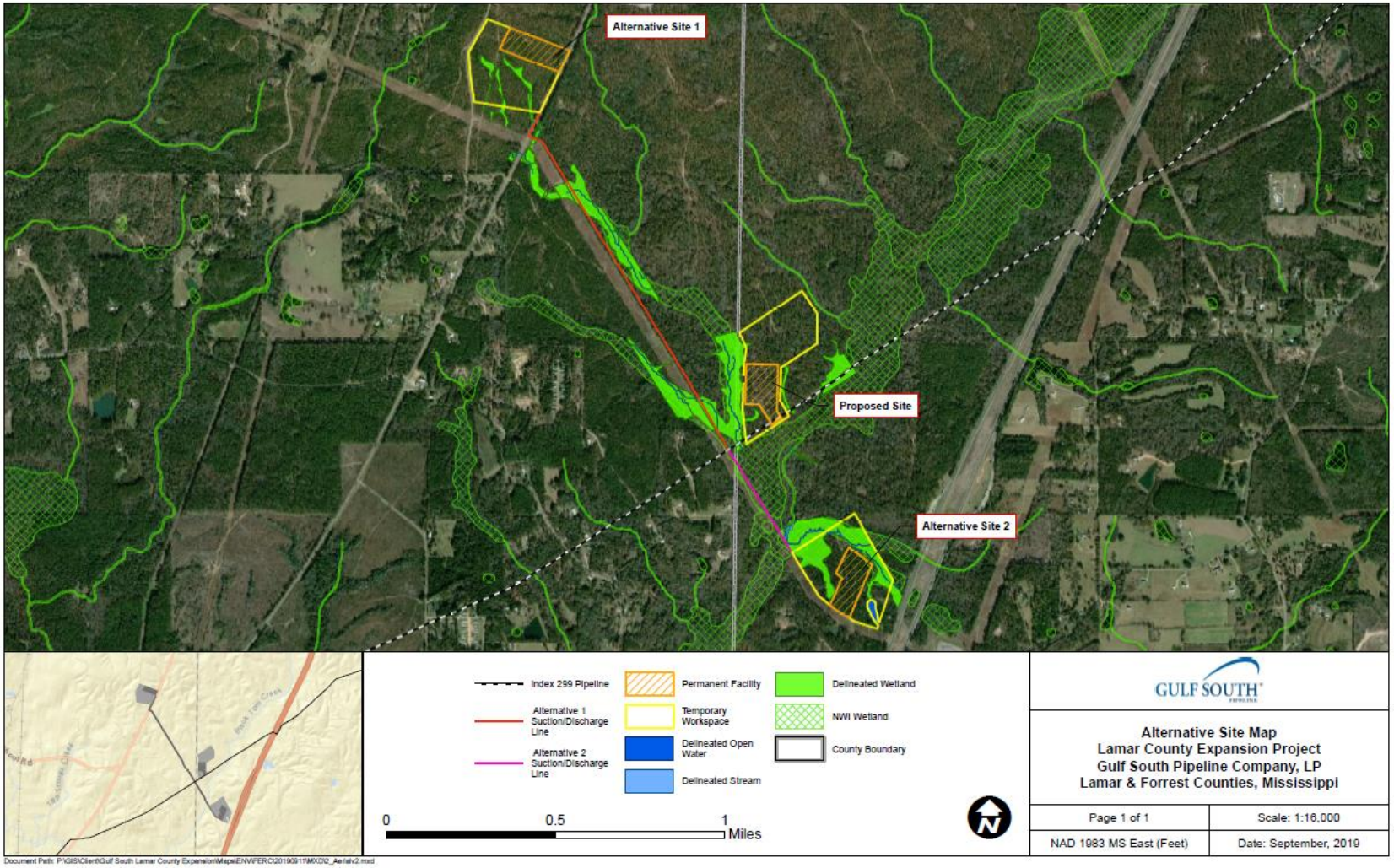

Figure 3: Alternative Compressor Station Sites

SECTION D – CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis in this EA, we have determined that if Gulf South constructs and operates the proposed facilities in accordance with its application, supplements, and the staff's recommended mitigation measures, approval of this proposal would not constitute a major federal action significantly affecting the quality of the human environment. We recommend that the Commission Order (Order) contain a finding of no significant impact and include the following list of mitigation measures as conditions to any Certificate the Commission may issue.

1. Gulf South 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. Gulf South 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**, Gulf South 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 location shall be as shown in the EA as supplemented by filed alignment sheets. **As soon as they are available, and before the start of construction**, Gulf South 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.

Gulf South's exercise of eminent domain authority granted under Natural Gas Act section 7(h) in any condemnation proceedings related to the Order must be consistent with these authorized facilities and locations. Gulf South's right of eminent domain granted under Natural Gas Act section 7(h) does not authorize it to increase the size of its natural gas facilities to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

5. Gulf South shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or 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 route realignments and 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. **Within 60 days of the acceptance of the Certificate and before construction begins**, Gulf South shall file an Implementation Plan with the Secretary for review and written approval by the Director of OEP. Gulf South must file revisions to the plan as schedules change. The plan shall identify:

   a. how Gulf South 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;
   b. how Gulf South 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 Gulf South 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 Gulf South's organization having responsibility for compliance;
g. the procedures (including use of contract penalties) Gulf South 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. Gulf South shall employ at least one EI per construction spread. The EI 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. a full-time position, separate from all other activity inspectors;
e. 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
f. responsible for maintaining status reports.

8. Beginning with the filing of its Implementation Plan, Gulf South shall file updated status reports with the Secretary on a **biweekly** basis until all construction and restoration activities are complete. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:

a. an update on Gulf South'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(s) 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 landowner/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 Gulf South from other federal, state, or local permitting agencies concerning instances of noncompliance, and Gulf South's response.

9. Gulf South must receive written authorization from the Director of OEP **before commencing construction of any Project facilities.** To obtain such authorization, Gulf South must file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).

10. Gulf South 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**, Gulf South 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 Gulf South 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. **Prior to construction**, Gulf South shall file with the Secretary, for review and written approval by the Director of OEP, its completed, final Horizontal Directional Drill Monitoring, Inadvertent Return Response, and Contingency Plan.

13. Gulf South shall **not begin** construction activities **until**:

a. FERC staff receives comments from the FWS regarding the proposed action;
b. FERC staff completes formal ESA consultation with the FWS; and
c. Gulf South has received written notification from the Director of OEP that construction or use of mitigation may begin.

14. **Prior to construction of HDD #1 (MP 1.40 to 1.73)**, Gulf South shall file with the Secretary, for review and written approval by the Director of OEP, an HDD noise mitigation plan to reduce the projected noise level attributable to the proposed drilling operations at NSAs with predicted noise levels above 55 dBA. During drilling operations, Gulf South shall implement the approved plan, monitor noise levels, and make all reasonable efforts to restrict the noise attributable to the drilling operations to no more than an L_{dn} of 55 dBA at the NSAs.

15. Gulf South shall file noise surveys with the Secretary **no later than 60 days** after placing the Black Creek Compressor Station in service. If a full load condition noise survey is not possible, Gulf South shall file an interim survey at the maximum possible horsepower load and file the full load survey **within 6 months**. If the noise attributable to the operation of all of the equipment at the station under interim or full power load conditions exceeds an L_{dn} of 55 dBA at any nearby NSAs, Gulf South shall:

    a. file a report with the Secretary on what changes are needed, for review and written approval by the Director of OEP;
    b. install additional noise controls to meet that level **within 1 year** of the in-service date; and
    c. confirm compliance with the L_{dn} of 55 dBA requirement by filing a second noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls.

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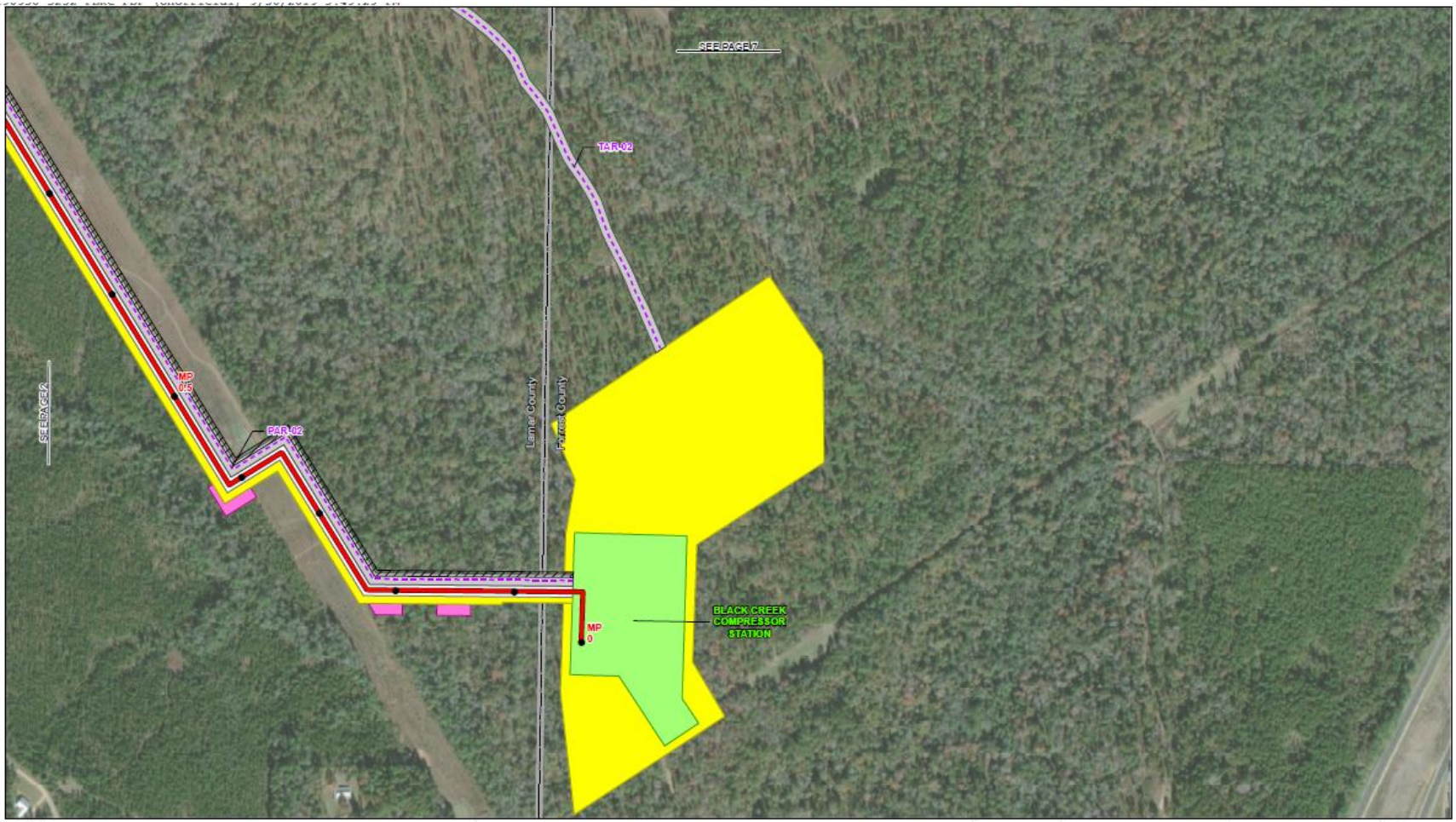
Appendix A:
Project Maps



Legend

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- HDD
- PIPELINE CENTERLINE
- ACCESS ROAD CENTERLINE
- UTILITY EASEMENT
- ACCESS ROAD EASEMENT
- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- ADDITIONAL TEMPORARY WORKSPACE
- SITE LOCATION
- CONTRACTOR YARD
- COUNTY BOUNDARY

DOCUMENTS COMPILED UTILIZING PUBLICLY AVAILABLE GIS RESOURCES AND MINIMAL ON THE GROUND RECONNAISSANCE

GULF SOUTH PIPELINE
LAMAR COUNTY EXPANSION PROJECT
AERIAL MAP SERIES
FORREST & LAMAR COUNTY, MISSISSIPPI

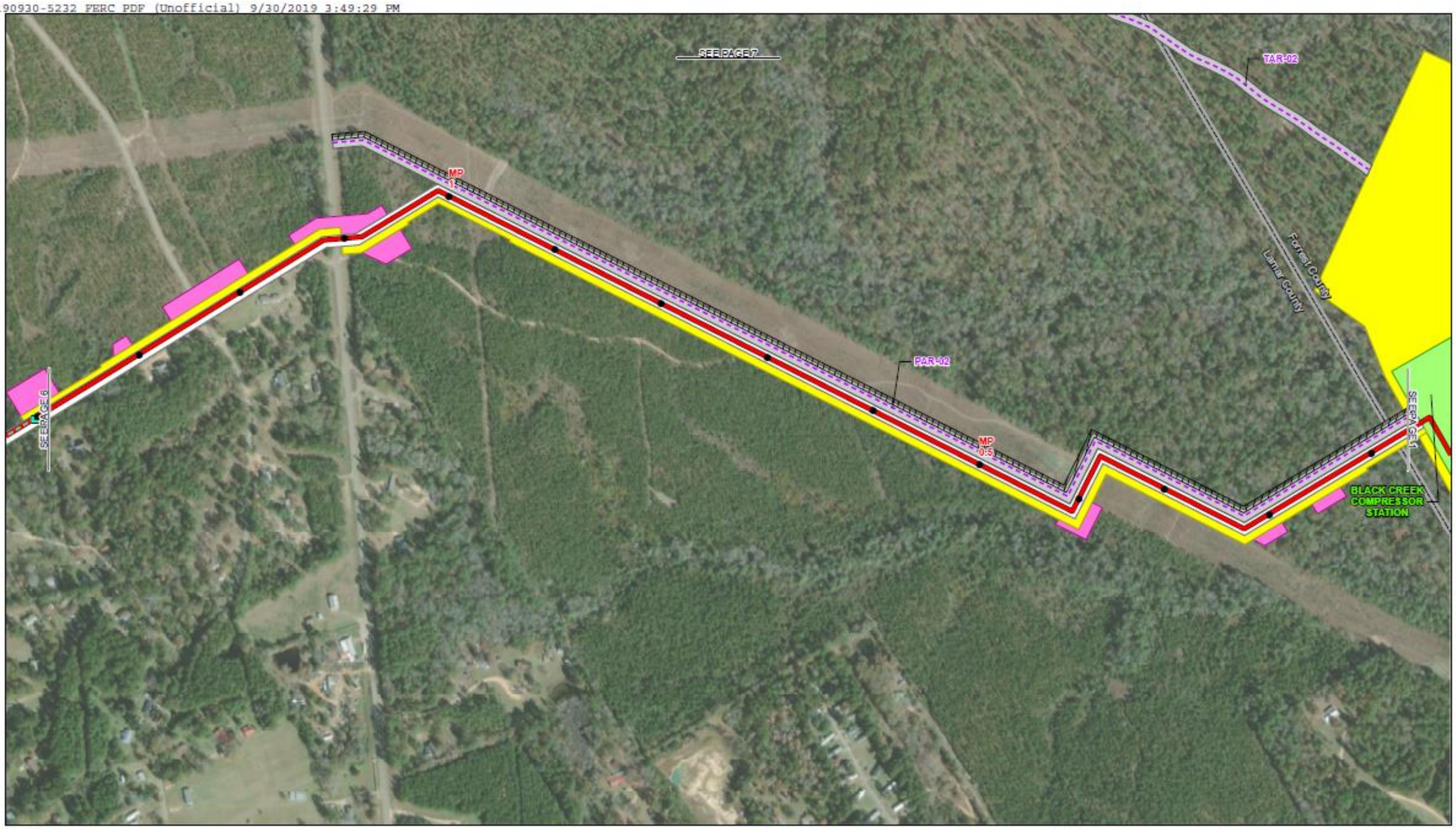
FEET

DRAWN BY:	CLR
CHECKED BY:	KH
APPROVED BY:	JLP
ABSOLUTE SCALE: 1:4,800	PROJECT:
REFERENCE SCALE: 1 IN = 400 FT	DATE:
PAGE: 1 OF 8	REV:

GULF SOUTH PIPELINE

MOTT MACDONALD

PROPRIETARY
GULF SOUTH PIPELINE



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- HDD
- PIPELINE CENTERLINE
- ACCESS ROAD CENTERLINE
- UTILITY EASEMENT
- ACCESS ROAD EASEMENT
- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- ADDITIONAL TEMPORARY WORKSPACE
- SITE LOCATION
- CONTRACTOR YARD
- COUNTY BOUNDARY

DOCUMENTS COMPILED UTILIZING PUBLICLY AVAILABLE GIS RESOURCES AND MINIMAL ON THE GROUND RECONNAISSANCE

GULF SOUTH PIPELINE
LAMAR COUNTY EXPANSION PROJECT
AERIAL MAP SERIES

FORREST & LAMAR COUNTY, MISSISSIPPI

400 200 0 400 FEET

ABSOLUTE SCALE: 1:4,800	
REFERENCE SCALE: 1 IN = 400 FT	
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DRAWN BY:	CLB
CHECKED BY:	KH
APPROVED BY:	JLF
PROJECT:	507100861
DATE:	09/2019
REV:	0

GULF SOUTH PIPELINE

MOTT MACDONALD

PROPRIETARY
GULF SOUTH PIPELINE

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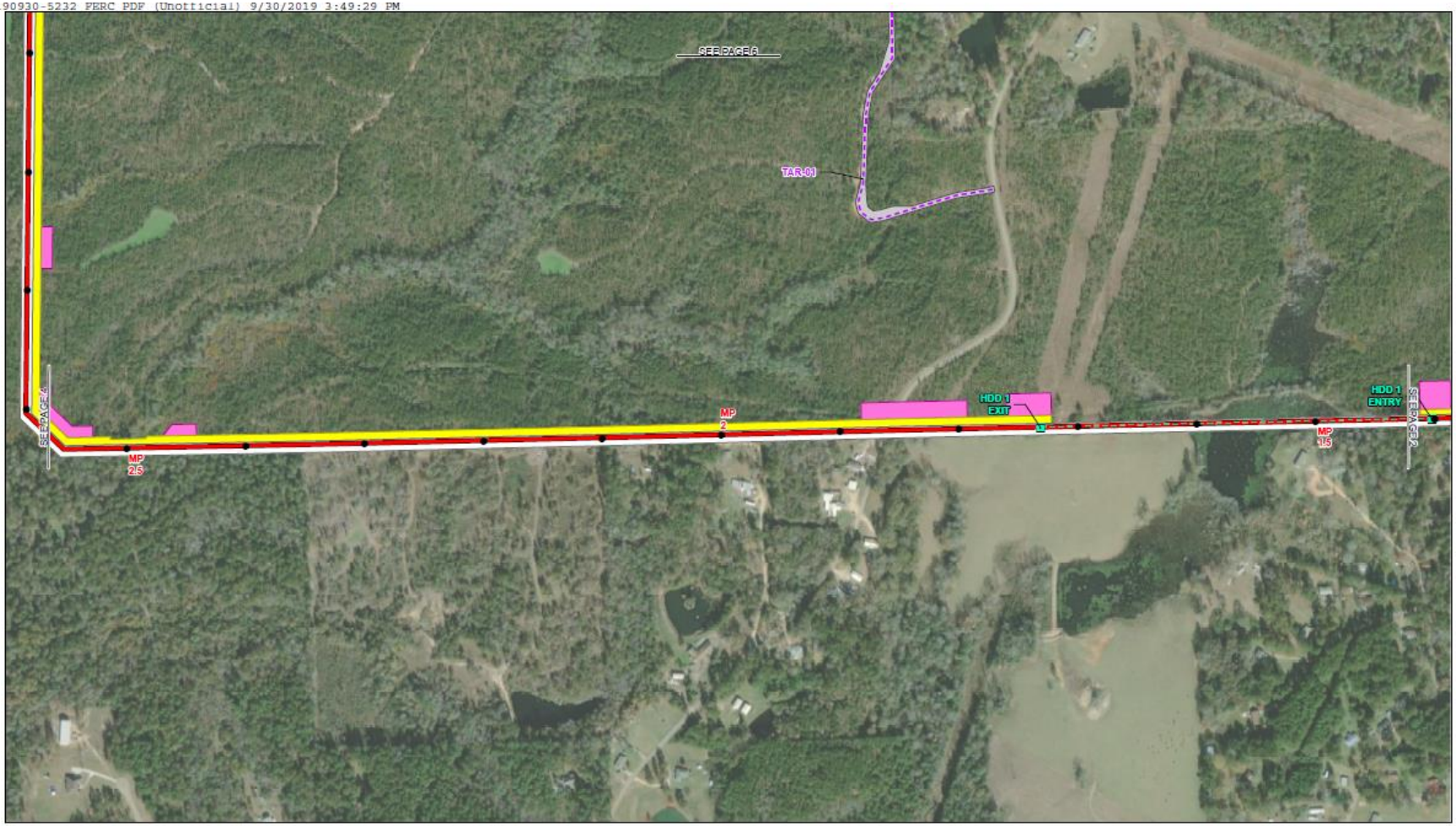

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- HDD
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- ACCESS ROAD CENTERLINE
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- PERMANENT EASEMENT
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- CONTRACTOR YARD
- COUNTY BOUNDARY

DOCUMENTS COMPILED UTILIZING PUBLICLY AVAILABLE GIS RESOURCES AND MINIMAL ON THE GROUND RECONNAISSANCE

GULF SOUTH PIPELINE
LAMAR COUNTY EXPANSION PROJECT
AERIAL MAP SERIES
FORREST & LAMAR COUNTY, MISSISSIPPI

400 200 0 400 FEET

DRAWN BY:	CLR
CHECKED BY:	RH
APPROVED BY:	JLP
PROJECT:	507100901
DATE:	09/2019
KEY:	0

ABSOLUTE SCALE: 1:4,800
REFERENCE SCALE: 1 IN = 400 FT
PAGE: 3 OF 8

GULF SOUTH PIPELINE

MOTT MACDONALD

PROPERTY OF GULF SOUTH PIPELINE

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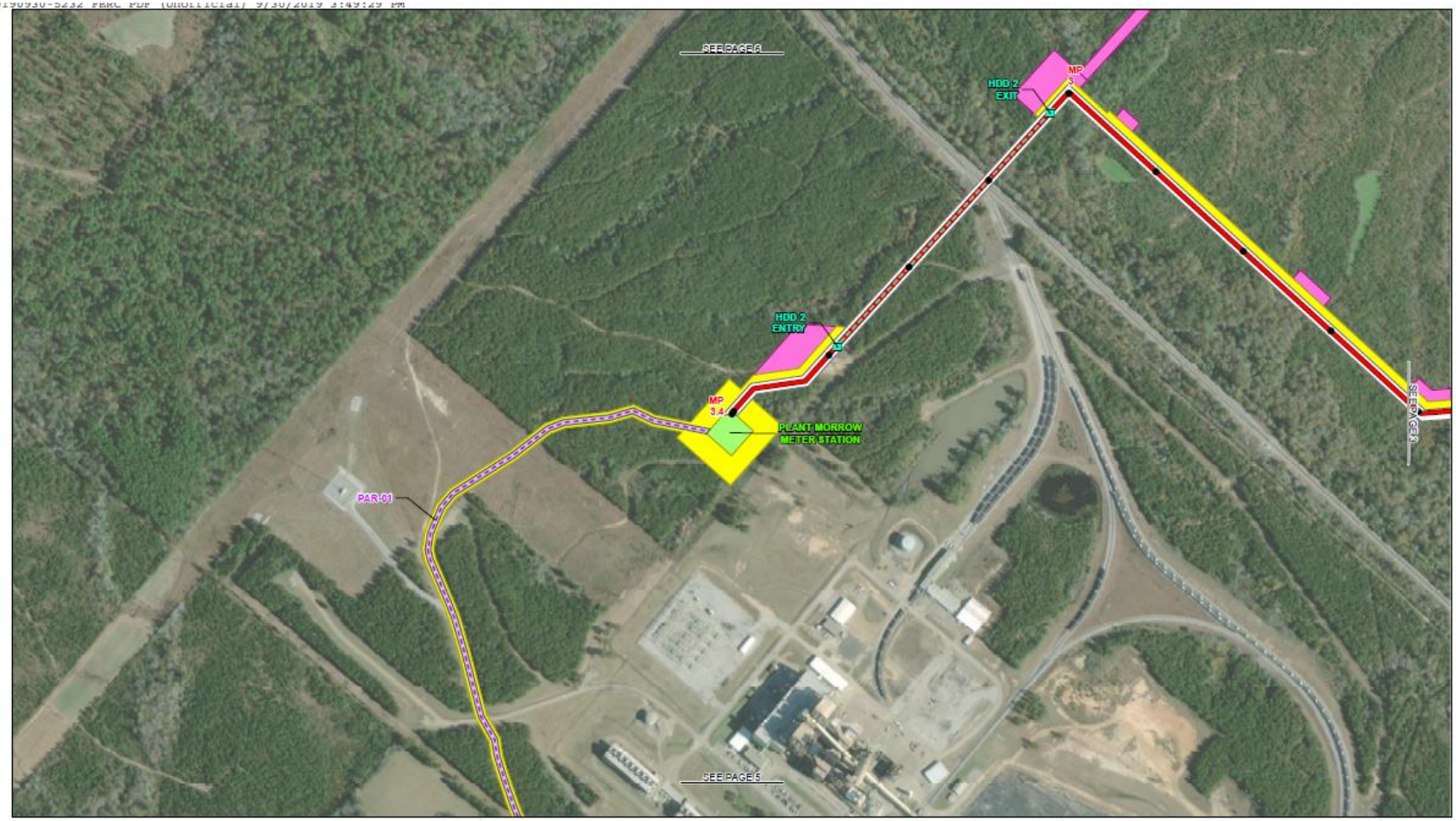

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- HDD
- PIPELINE CENTERLINE
- ACCESS ROAD CENTERLINE
- UTILITY EASEMENT
- ACCESS ROAD EASEMENT
- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- ADDITIONAL TEMPORARY WORKSPACE
- SITE LOCATION
- CONTRACTOR YARD
- COUNTY BOUNDARY

DOCUMENTS COMPILED UTILIZING PUBLICLY AVAILABLE GIS RESOURCES AND MINIMAL ON THE GROUND RECONNAISSANCE

GULF SOUTH PIPELINE
LAMAR COUNTY EXPANSION PROJECT
AERIAL MAP SERIES
FORREST & LAMAR COUNTY, MISSISSIPPI

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DRAWN BY:	CLB
CHECKED BY:	KH
APPROVED BY:	JLF
PROJECT:	507130901
DATE:	09/2019
REV:	0
PAGE:	4 OF 8

GULF SOUTH PIPELINE

MOTT MACDONALD

PROPRIETARY: GULF SOUTH PIPELINE

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- TEMPORARY WORKSPACE
- ADDITIONAL TEMPORARY WORKSPACE
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- COUNTY BOUNDARY

DOCUMENTS COMPILED UTILIZING PUBLICLY AVAILABLE GIS RESOURCES AND MINIMAL ON THE GROUND RECONNAISSANCE

GULF SOUTH PIPELINE
LAMAR COUNTY EXPANSION PROJECT
AERIAL MAP SERIES
FORREST & LAMAR COUNTY, MISSISSIPPI

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DRAWN BY:	CLR
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APPROVED BY:	JLP
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PAGE: 5 OF 8	REV: 0

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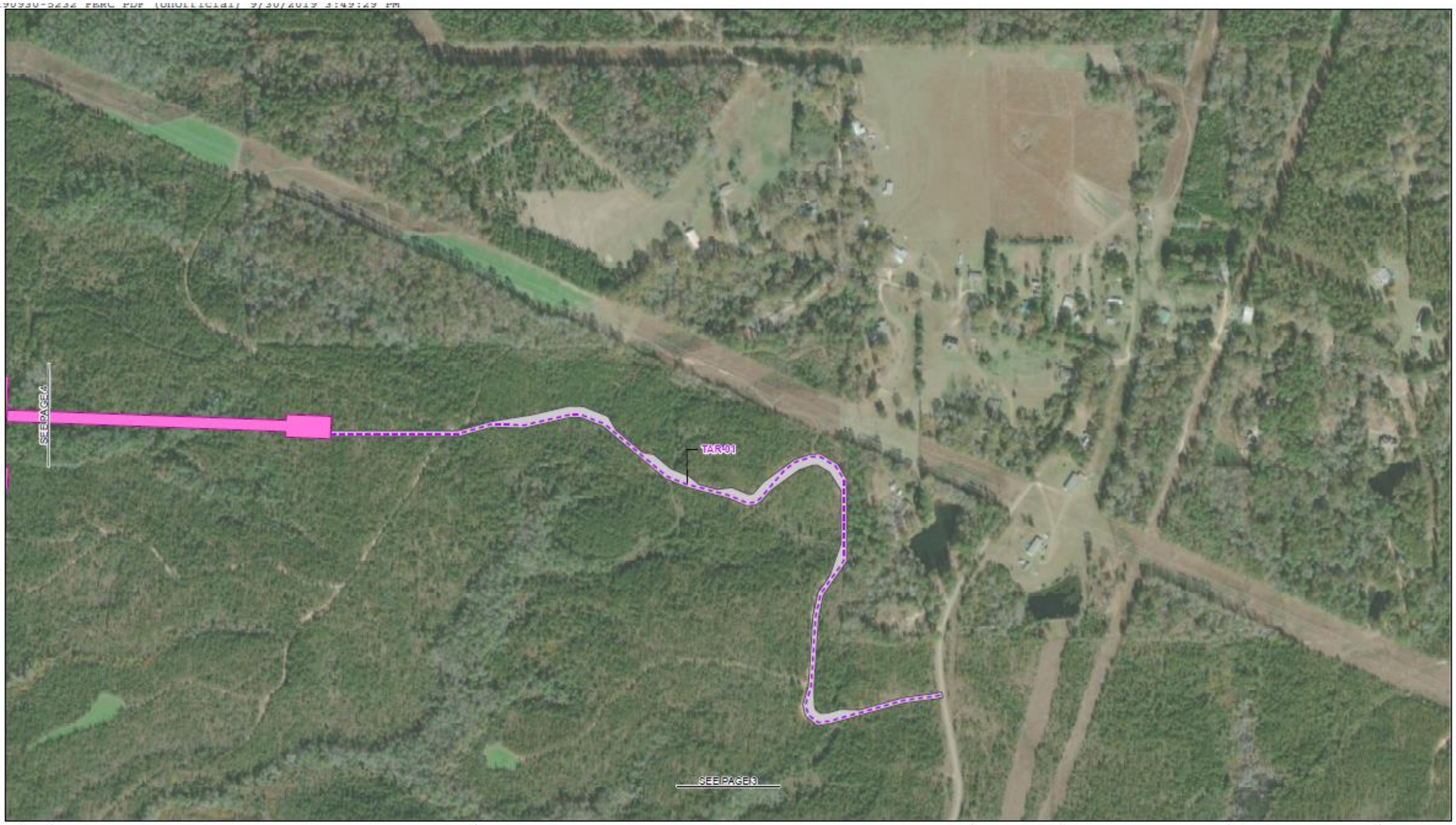
GULF SOUTH ENERGY

MOTT MACDONALD

PROPRIETARY: GULF SOUTH PIPELINE



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HDD	PERMANENT EASEMENT	COUNTY BOUNDARY
PIPELINE CENTERLINE	TEMPORARY WORKSPACE	
ACCESS ROAD CENTERLINE	ADDITIONAL TEMPORARY WORKSPACE	

DOCUMENTS COMPILED UTILIZING PUBLICLY AVAILABLE GIS RESOURCES AND MINIMAL ON THE GROUND RECONNAISSANCE

GULF SOUTH PIPELINE
LAMAR COUNTY EXPANSION PROJECT
AERIAL MAP SERIES
FORREST & LAMAR COUNTY, MISSISSIPPI

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GULF SOUTH PIPELINE

MOTT MACDONALD

PROPRIETARY
GULF SOUTH PIPELINE

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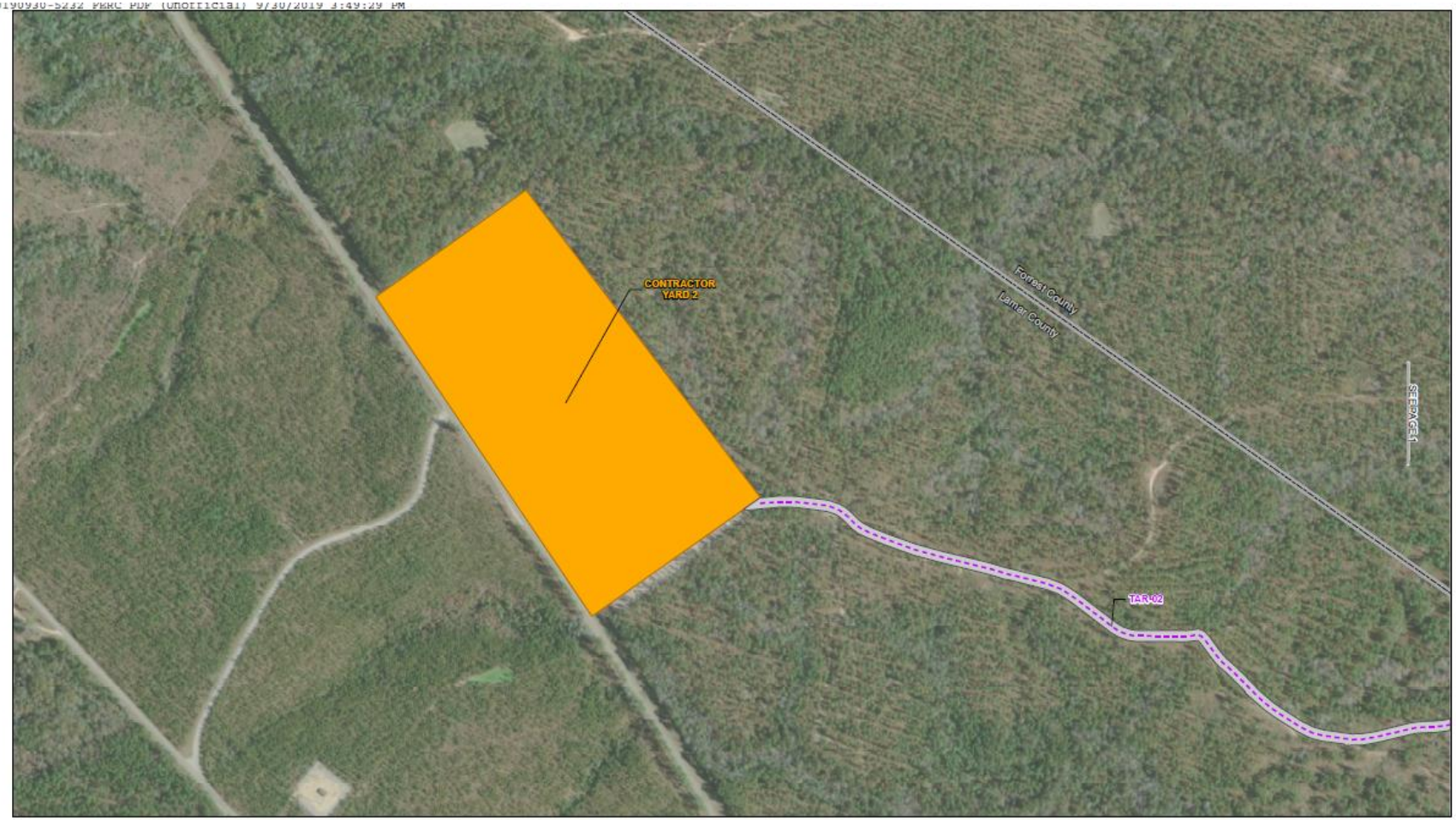

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- PERMANENT EASEMENT
- TEMPORARY WORKSPACE
- ADDITIONAL TEMPORARY WORKSPACE
- SITE LOCATION
- CONTRACTOR YARD
- COUNTY BOUNDARY

DOCUMENTS COMPILED UTILIZING PUBLICLY AVAILABLE GIS RESOURCES AND MINIMAL ON THE GROUND RECONNAISSANCE

GULF SOUTH PIPELINE
LAMAR COUNTY EXPANSION PROJECT
AERIAL MAP SERIES
FORREST & LAMAR COUNTY, MISSISSIPPI

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CHECKED BY:	KH
APPROVED BY:	JLP
PROJECT:	327130681
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GULF SOUTH PIPELINE

MOTT MACDONALD

PROPRIETARY: GULF SOUTH PIPELINE

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Appendix B:
Wetlands Crossed by the Project

Wetland Crossed or Otherwise Impacted by the Lamar County Expansion Project Facilities							
Approximate Milepost / Location	**Feature ID**	**Wetland Type [a]**	**Jurisdictional Status**	**Proposed Crossing Method**	**Approximate Pipeline Crossing Length (feet)**	**Construction Impacts (acres)**	**Operational Impacts (acres) [b]**
Pipeline Facilities							
Forrest County, Mississippi							
0.07	WP1010_PFO_B	PFO	§404	Open Cut	58	0.12	0.05
				Forrest County Subtotals	***58***	***0.12***	***0.05***
Lamar County, Mississippi							
0.08	WP1010_PFO_B	PFO	§404	Open Cut	173	0.29	0.11
0.94	WP1009_PSS	PSS	§404	Open Cut	107	0.19	0.02
1.02	WP1009_PSS_B	PSS	§404	Open Cut	138	0.24	0.03
1.35	WP1011_PFO	PFO	§404	Open Cut / HDD	524	0.77	0.25
2.49	WP1017	PFO	§404	Open Cut	161	0.30	0.12
2.97	WP2004_PFO	PFO	§404	Open Cut	271	0.97	0.19
3.00	WP2004_PFO	PFO	§404	Workspace Only (Timber Mats)	0 [c]	0.01	0.00
3.00	WP2004_PFO	PFO	§404	Workspace Only (Timber Mats)	0 [c]	0.17	0.00
3.39	WP1022_PFO	PFO	§404	Open Cut	57	0.07	0.04
				Lamar County Subtotals	***1,431***	***3.01***	***0.76***
				Pipeline Facilities Totals	**1,489**	**3.13**	**0.81**
Aboveground Facilities							
Forrest County, Mississippi							
Black Creek Compressor Station	WP1010_PFO_B	PFO	§404	Open Cut	N/A	0.44	0.00
Black Creek Compressor Station	WP1010_PFO_B	PFO	§404	Open Cut	N/A	<0.01	0.00
Black Creek Compressor Station	WP1010_PFO_B	PFO	§404	Open Cut	N/A	0.10	0.00
				Forrest County Subtotals	***N/A***	***0.54***	***0.00***
Lamar County, Mississippi							
Plant Morrow Meter Station	WP1022_PFO	PFO	§404	Open Cut	N/A	0.12	0.00

Wetland Crossed or Otherwise Impacted by the Lamar County Expansion Project Facilities							
Approximate Milepost / Location	**Feature ID**	**Wetland Type [a]**	**Jurisdictional Status**	**Proposed Crossing Method**	**Approximate Pipeline Crossing Length (feet)**	**Construction Impacts (acres)**	**Operational Impacts (acres) [b]**
Plant Morrow Meter Station	WP1002_PFO	PFO	§404	Open Cut	N/A	0.03	0.00
				Lamar County Subtotals	***N/A***	***0.15***	***0.00***
				Aboveground Facilities Totals	**N/A**	**0.69**	**0.00**
Access Roads							
Forrest County, Mississippi							
PAR-02	WP1010_PFO_B	PFO	§404	Grading and Gravel	N/A	0.04	0.04
				Forrest County Subtotals	***N/A***	***0.04***	***0.04***
Lamar County, Mississippi							
TAR-01	WP3001	PEM	§404	Timber Mats	N/A	0.03	0.00
PAR-02	WP1010_PFO_B	PFO	§404	Grading and Gravel	N/A	0.22	0.22
PAR-02	WP1009_PSS	PSS	§404	Grading and Gravel	N/A	0.13	0.13
PAR-02	WP1009_PSS_B	PSS	§404	Grading and Gravel	N/A	0.02	0.02
PAR-02	WP1009_PFO_B	PFO	§404	Grading and Gravel	N/A	0.21	0.21
PAR-02	WP1009_PEM_C	PEM	§404	Grading and Gravel	N/A	0.02	0.02
				Lamar County Subtotals	***N/A***	***0.63***	***0.60***
				Access Roads Totals	**N/A**	**0.67**	**0.64**
				Project Totals	**1,489**	**4.49**	**1.45**

Notes: Wetland data is based on field delineations conducted to date.

The permanent easement located between HDDs would not be maintained, in accordance with the FERC Procedures; therefore, no impacts are presented for these areas

HDD – horizontal directional drill; N/A – not applicable

a. Cowardin Wetland Types: PEM - palustrine emergent; PSS - palustrine scrub-shrub; PFO - palustrine forested.
b. There would be no operational impacts on PEM wetlands crossed by the pipeline ROW as these wetlands would revert back to the same type following construction. Operational impacts in this column are based on a 10-foot-wide area in PFO and PSS wetlands that would be converted to other wetland types due to pipeline maintenance. Additionally, operational impacts on forested wetlands in this column reflect potential for selective thinning of trees within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating. Operation of permanent access roads in wetlands would result in the placement of fill.
c. Wetland is not crossed by proposed centerline, but is located within the Project footprint.

Appendix C:
Gulf South Gopher Tortoise Management Plan

Gopher Tortoise Management Plan

INTRODUCTION

Boardwalk Pipelines, LP (Boardwalk) developed the following management plan to allow for routine maintenance operations on pipelines, without adversely effecting gopher tortoise (*Gopherus polyphemus*) or eastern indigo snake (*Drymarchon corais couperi*) populations. The purpose of this management plan is to provide a "plan of action" for necessary and routine pipeline work, such as, small excavations and Right-of-Way (ROW) mowing.

This plan is not intended to allow for the taking of gopher tortoises, eastern indigo snakes or to relinquish Boardwalk's obligation to coordinate with U.S. Fish and Wildlife Service (USFWS) for projects beyond the scope of this plan. This document will provide a plan of action that can be implemented by the employees of Boardwalk with minimal assistance from outside contractors.

ACTIVITIES COVERED

This management plan will provide guidance for small excavation or construction projects including ROW mowing.

SPECIES APPLICABLE

This plan is written for the gopher tortoise as well as the Threatened eastern indigo snake. The eastern indigo snake is included in this plan because it is known to inhabit similar habitats including gopher tortoise burrows.

GEOGRAPHIC APPLICABILITY

This plan will apply to the western population of gopher tortoises. This population is Federally protected as a Threatened Species. This population ranges west of the Mobile and Tombigbee Rivers in Alabama, Louisiana, and Mississippi. The counties/parishes that comprise the western population are as follows:

Alabama Counties	Mississippi Counties		Louisiana Parishes
Choctaw	Covington	Jones	Washington
Mobile	Forrest	Lamar	Tangipahoa
Washington	George	Marion	St. Tammany
	Greene	Pearl River	
	Hancock	Perry	
	Harrison	Stone	
	Jackson	Wayne	

SPECIES DESCRIPTION

The gopher tortoise is a medium sized tortoise with a broad head and a short tail. Adult tortoises average between 9-11 inches in length and weight between 8-10 pounds (Cox et. al. 1987). Gopher tortoises lack

webbed feet, possess distinct sub-maxillary gular glands, and have an unhinged shell (Auffenburg and Franz 1978). Their color ranges from tan-brown to gray.

RANGE AND HABITAT

Gopher tortoises range from eastern Louisiana along the Gulf coast to southern South Carolina. Populations of gopher tortoises west of the Mobile and Tombigbee Rivers in Alabama, Louisiana, and Mississippi are Federally listed as Threatened species. Populations east of this "line" receive no Federal protection however they are listed as a "Species of Concern" in Florida.

Gopher tortoises tend to be found in habitats that contain deep (at least 1 meter) dry sandy soils with a pine (*Pinus* sp.), oak (*Quercus* sp.) overstory and a reduced understory. The sandy soils facilitate the extensive burrows that these tortoises dig for shelter. The herbaceous layer is composed of grasses and forbs. This habitat is typical of fire climax communities historically found in the southeastern United States.

Gopher tortoises eat a variety of foods, however grasses (Poaceae) tend to dominate their diet. Pine needles, seeds, fruits, mast, and basal portions of forbs also compose a significant component of their diet.

Habitat Loss

As with most threatened and endangered species, habitat loss is the major factor for population declines. Urban sprawl and fire suppression have contributed the most to habitat loss. Fire suppression has allowed a woody midstory to grow. This woody growth shades out the grass/forb component that is vital to the diet of the gopher tortoise. Maintained ROWs create a habitat that is similar to the native habitat of the gopher tortoise. For this reason ROWs are often exploited by gopher tortoises. In addition to ROWs, gopher tortoises utilize roadsides, fence rows, clearings, and fallow fields. Utilization of these habitats has increased the mortality rate for the tortoise.

LIFE HISTORY

Breeding activity may occur as early as February or as late as September depending on geography and local weather conditions. The eggs are laid shortly after mating occurs. The female selects a bare spot that receives sunlight to bury her eggs. Typically, this is found just outside the burrow. The eggs hatch in 80-110 days depending on temperature. The vast majority of tortoise eggs laid never hatch (Douglas and Winegarner 1977). In fact, Landers, et al. (1980) found that 88% of gopher tortoise nests in their study, were destroyed by mammalian predators. These included raccoons (*Procyon lotor*), Virginia opossum (*Didelphis virginianus*), and the gray fox (*Urocyon cinereoargenteus*).

After hatching the young remain vulnerable to predation. It takes 2-3 days for the young tortoises shell to dry and harden (Dietlein and Franz 1979). Tortoise mortality remains high throughout the first year. Alford (1980) discovered a 94.2% mortality rate for eggs and young during the first year. Mortality rates after the first year are unknown. Landers (1980), estimates that only 1-3 % of all eggs result in an actively breeding adult.

Gopher tortoises reach maturity in 10-21 years. Time to maturation increases with latitude. Their lifespan is estimated to be 40-60 years, however they may live to 150 years (Landers 1980). A typical clutch is 4-8 eggs. Females may lay eggs every year, but they often skip a year. Because of the lengthy maturation process, the low egg count, and high rate of mortality gopher tortoise populations are slow to recover from disturbances. For these reasons gopher tortoise populations should be protected before population declines occur.

MANAGEMENT PRACTICES

Training

Qualified personnel will be used to determine if gopher tortoises or eastern indigo snakes are present on a job site before work begins. These personnel will be Boardwalk employees or contracted mowing personnel that have been trained to identify gopher tortoises, their habitat, and burrows as well as eastern indigo snakes. A training module, including tortoise identification keys and habitat information will be provided to personnel who will be responsible for the ROW clearance. Maps showing the locations of known active/inactive burrows on the right-of-way will be provided to mowing personnel, as needed. A list of personnel who have completed training will be provided to the USFWS.

Reporting

Reporting of findings will be made, by a trained personnel, on all jobs. A form for these reports is included as an attachment to this plan. Report forms will be retained for inclusion in reporting under the blanket or for any reporting requested by USFWS under the terms of their approval of this plan.

Small Excavations

Small excavations are routinely necessary for replacing valves, sections of pipe or small appurtenance construction. Prior to the excavation the area in which work will be done (which includes the area to be excavated and the path that equipment will be traveling over) should be surveyed for tortoise burrows and individual tortoises. If maintenance activities are required within 50 feet of tortoise burrows, all burrows will be clearly marked for avoidance. Individual tortoises should be moved away from the work area.

Eastern indigo snakes should be allowed to leave the area. If an active burrow cannot be avoided then the USFWS should be contacted.

Except for travel on existing roads and paths, routine maintenance activities (unrelated to vegetation maintenance) will be restricted to areas at least 15 feet from tortoise burrows. Where these maintenance activities require work be performed closer than 15 feet from burrows, only hand-held equipment will be used, and maintenance personnel will avoid the burrow apron, entrance and area immediately behind the entrance.

If excavations are to be left unattended they should be fenced to prevent gopher tortoises from falling into the excavation. All excavation areas within 100 feet of tortoise burrows will be surrounded by a fence with a minimum 2-inch mesh to exclude tortoises. Attention should be paid to the bottom of the fence to make sure that it is secured to prevent tortoises from going underneath the fence. Enough area should be fenced to allow work to proceed within the enclosure. Fencing should remain in place until the excavation is backfilled.

All excavated trenches and underneath vehicles will be checked daily for tortoises before commencing work. All maintenance debris that could hinder tortoise movement will be removed at the completion of construction activities.

Right-of-Way Mowing

The mowing of ROWs is a necessary practice. Since gopher tortoises and eastern indigo snakes have shown an affinity for ROW clearings special attention should be given before mowing begins. The ROW should be walked before mowing begins to determine areas of occupied habitat and potentially occupied habitat. When mowing in these areas, a "tortoise monitor" should clear the ROW immediately ahead of the mowers. Individual tortoises or indigo snakes should be allowed to move off the ROW or relocated off the pipeline ahead of the mowers. When possible, mowing should be conducted in the winter (between November 1st and March 1st) to reduce the likelihood of gopher tortoises being active above the ground. Gopher tortoises are active year round, however their activity slows down in the winter months. If practical mowing should be planned for cloudy days when the temperature is below 50^{o}F. This will reduce the probability of encountering a tortoise on the surface. Mowing will be conducted at a frequency sufficient to maintain suppression of woody growth and no herbicides will be used to control vegetation within areas occupied by tortoises.

Maintenance personnel will use power equipment to mow vegetation surrounding the burrows, but will reduce their speed within 50 feet of burrows. Hand-pushed mowers and hand-held equipment will be used

within 15 feet of tortoise burrows, and maintenance personnel will avoid mowing across the burrow apron, burrow entrance and the area immediately behind the entrance.

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