Office of
Energy Projects

November 2019

Gulf South Pipeline Company, LP **Docket No. CP19-125-000**

Index 99 Expansion Project

Environmental Assessment

Cooperating Agency

U.S. Army Corps
of Engineers

Washington, DC 20426

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A. PROPOSED ACTION

1. INTRODUCTION

The staff of the Federal Energy Regulatory Commission (Commission or FERC) prepared this environmental assessment (EA) to assess the environmental impacts of the Index 99 Expansion Project, proposed by Gulf South Pipeline Company, LP (Gulf South). On March 29, 2019, Gulf South filed an abbreviated application with the Commission (Docket No. CP19-125-000) pursuant to Section 7 of the Natural Gas Act (NGA), as amended, seeking authorization to construct and operate a new pipeline, new launcher and receiver facilities, and a new mainline valve, and to modify an existing compressor station. All project components are in Texas and Louisiana. The project would provide about 500,000 dekatherms per day (Dth/d) of new natural gas firm transportation service to markets along the Gulf Coast region, as well as provide for an additional 250,000 Dth/d of capacity to Gulf South's existing facilities in northern Louisiana, for a total maximum daily quantity of 750,000 Dth/d.

We[1] prepared this EA in compliance with the requirements of the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality regulations for implementing NEPA (Title 40 of the Code of Federal Regulations Parts 1500-1508 [40 CFR 1500-1508]) and the Commission's implementing regulations under 18 CFR 380.

The assessment of environmental impacts is an integral part of the Commission's decision-making process on whether to issue Gulf South a Certificate to construct and operate the proposed facilities. The Commission may grant approval if, after consideration of both environmental and non-environmental issues, the Commission finds that the project is in the public convenience and necessity. As such, we prepared this EA to assess the environmental impacts that would likely occur as a result of the proposed construction of the project. Our principal purposes in preparing this EA are to:

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

Gulf South has requested a Certificate of Public Convenience and Necessity (Certificate) from the Commission by March 19, 2020 in order to begin construction in spring 2020 and to place the project into service by October 1, 2020.

2. PROJECT PURPOSE AND NEED

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

[1] "We," "us," and "our" refers to environmental staff of the Commission's Office of Energy Projects.

to construct and operate them. The Commission bases its decision on financing, rates, market demand, gas supply, environmental impact, and other issues concerning a proposed project.

According to Gulf South, the proposed Index 99 Expansion facilities are necessary to provide 500,000 Dth/d of natural gas for Gulf South's Foundation Shipper (the Customer) to transport Shelby Trough gas shale supplies to serve markets along the Gulf Coast regions of the United States. The Customer has also contracted for an additional 250,000 Dth/d of capacity on Gulf South's existing facilities in Northern Louisiana, for a total contracted maximum daily quantity of 750,000 Dth/d. The proposed pipeline and pipe modifications at Gulf South's existing Hall Summit Compressor Station would enable Gulf South to transport diversified sources of natural gas for existing and future customers and to enhance the overall reliability and flexibility of its mainline transmission system.

3. SCOPE OF THIS ENVIRONMENTAL ASSESSMENT

The topics addressed in section B of this EA include geology and soils; groundwater, surface water, and wetlands; aquatic resources, vegetation, wildlife, and special status species; land use, recreation, and visual resources; cultural resources; air quality and noise; reliability and safety; and cumulative impacts. The EA describes the affected environment as it currently exists, discusses the environmental consequences of the proposed project, identifies measures proposed by Gulf South to reduce impacts, and presents our additional recommended mitigation measures, which are summarized in section D.

As the lead federal agency for the NEPA review of the project, FERC is required to comply with Section 7 of the Endangered Species Act, as amended (ESA) and Section 106 of the National Historic Preservation Act. These statutes have been considered in the preparation of this EA. In addition to FERC, other federal, state, and local agencies may use this EA in approving or issuing any authorizations required for all or part of the proposed project. Permits, approvals, and consultations for the project are discussed in section A.10 of this EA.

The U.S. Army Corps of Engineers (USACE) is a cooperating agency because it has jurisdiction under Section 404 of the Clean Water Act regarding potential project-related discharge of dredged and fill materials into the waters of the United States.

4. PUBLIC REVIEW AND COMMENT

On May 13, 2019, the Commission issued a *Notice of Intent to Prepare an Environmental Assessment for the Proposed Index 99 Expansion Project and Request for Comments on Environmental Issues* (NOI). The NOI was mailed to affected landowners (as defined in the Commission's regulations); federal, state, and local officials; Native American groups; agency representatives; environmental and public interest groups; and local libraries and newspapers.

In response to the NOI, the Commission received comments from two federal agencies (the USACE and the National Park Service [NPS]); one state agency (the Louisiana Department of Wildlife and Fisheries); and two Native American tribes. Generally, comments received from the agencies were procedural and addressed through the development of the EA. As for the comments from the two Native American tribes, the Choctaw Nation requested geographic information system (GIS) shapefiles, the cultural resources survey report(s), and a copy of the

EA once completed; and the Quapaw Nation indicated the project was outside their area of interest.

This EA addresses the potential environmental impacts of the Index 99 Expansion Project as proposed by Gulf South and concerns identified in response to the NOI and presents our independent review of the environmental issues. The comments received that are within the scope of the environmental analysis are addressed in this EA.

5. PROPOSED FACILITIES

The Index 99 Expansion Project would include the construction of the following facilities:

- Installation of approximately 22 miles of new 30-inch-diameter pipeline (Index 99L), including cathodic protection along the proposed pipeline, beginning in San Augustine County, Texas and terminating in Sabine County, Texas, at Gulf South's existing Magasco Compressor Station near Pineland, Texas.
- Installation of a pig[2] receiver at the intersection of the new Index 99L pipeline and Gulf South's existing Index 99 System, in San Augustine County, Texas.
- Installation of a pig launcher at the intersection of the new Index 99L pipeline and Gulf South's existing Index 99 System and Index 129 Legacy System (within Gulf South's existing Magasco Compressor Station), in Sabine County, Texas.
- Installation of one new mainline valve assembly along the new Index 99L pipeline, in San Augustine County, Texas.
- Installation of approximately 250 feet of new 24-inch-diameter station piping and a 24-inch-diameter pressure control valve at the existing Hall Summit Compressor Station in Bienville Parish, Louisiana.

Additionally, Gulf South proposes to use 3 contractor/pipe yards (all in San Augustine County, Texas), as well as 9 temporary and 18 permanent access roads during construction of the Index 99 Expansion Project. The general project location is shown in figure 1.

[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.

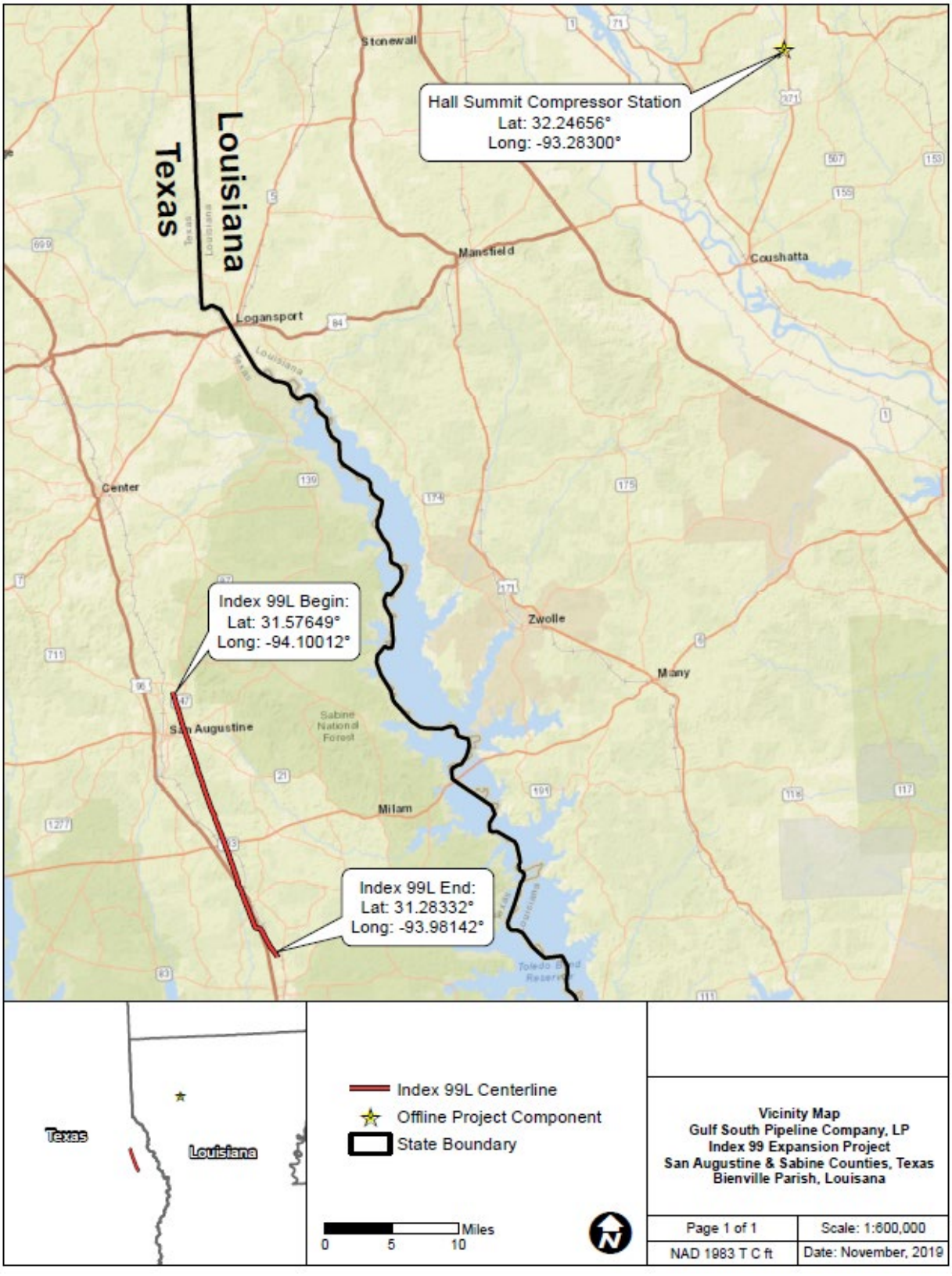

Figure 1: Index 99 Expansion Project Location Map

6. LAND REQUIREMENTS

Construction of the Index 99 Expansion Project would disturb about 389.2 acres of land, including 372.0 acres for construction of the pipelines and 17.1 acres for construction of the aboveground facilities. The total acreage required for operation of all project facilities is 162.6 acres, including 2.1 acres of permanent aboveground facilities. Land requirements for construction and operation of the project are summarized in table 1.

Table 1
Land Requirements for the Index 99 Expansion Project

Facility	Land Affected During Construction (acres) [a]	Land Affected During Operation (acres)
Pipeline Facilities		
Right-of-Way	255.20	131.06
Additional Temporary Workspace	36.02	0.00
Contractor/Pipe Yards	44.81	0.00
Access Roads	36.02	29.45
Pipeline Facilities Subtotal	**372.05**	**160.51**
Aboveground Facilities		
Index 99 Launcher Site	5.69	0.11
Index 99 Receiver Site	1.05	0.11
Mainline Valve and Other Ancillary Facilities	0.09	0.09
Access Roads	1.76	1.76
Existing Index 326 System Facilities		
Hall Summit Compressor Station [b]	8.47	0.00
Access Driveway	0.04	0.00
Aboveground Facilities Subtotal	**17.10**	**2.07**
Project Total	**389.15**	**162.57**

[a] Land affected during construction is inclusive of operational impacts (permanent).
[b] These project facilities would be installed within the existing Hall Summit Compressor Station fenced site and thus do not represent new permanent impacts.

6.1 Pipeline Facilities

Construction of the new Index 99L pipeline would require a typical construction right-of-way width of 100 feet in uplands and 75 feet through wetlands. The construction right-of-way would typically be split into a 70-foot (45-foot in wetlands) working side and 30-foot spoil side. The permanent right-of-way would be 50 feet wide.

The total acreage of land that would be affected by pipeline construction (not including additional temporary workspace [ATWS], contractor/pipe yards, and access roads) is approximately 255.2 acres, of which approximately 131.1 acres are associated with the new permanent easement, and 124.1 acres are associated with the temporary construction right-of-way.

Gulf South proposes to co-locate approximately 20.3 miles (93 percent) of the new pipeline along existing easements. In areas where the pipeline is co-located with existing Gulf South or foreign pipelines, the pipeline would be offset 25 feet or 50 feet, respectively, from adjacent pipeline centerlines and would be installed in the center of the permanent right-of-way to the extent practicable (see Appendix A for construction typicals showing different configurations for co-location). Portions of the construction right-of-way and ATWS would overlap with the existing easements in areas where the pipeline is co-located; however, the amount of overlap varies along the proposed route.

Gulf South would utilize ATWS outside of its pipeline construction right-of-way for equipment and material storage and to facilitate specialized construction procedures such as horizontal directional drills (HDD) and bores; railroad, road, wetland, waterbody, and foreign utility line crossings; areas where topsoil segregation is required; tie-ins with existing pipeline facilities; and pipeline crossovers. ATWS needed for the project would total approximately 36.0 acres. Gulf South would return all ATWS to pre-existing conditions following construction activities, resulting in no permanent impacts on these areas.

During construction of the pipeline, Gulf South would utilize three contractor/pipe yards at locations with access to the project area. The three contractor/pipe yards are located in San Augustine County, Texas and total approximately 44.8 acres. Gulf South would restore all areas utilized as contractor/pipe yards 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 install cathodic protection along the Index 99L pipeline to prevent external corrosion of the new pipeline. All areas disturbed during installation of the cathodic system would be limited to the construction right-of-way. Upon completion of construction, Gulf South would return all disturbed areas related to the cathodic protection system to pre-construction contours and revegetated in accordance with the FERC *Upland Erosion Control, Revegetation & Maintenance Plan* (Plan) and *Wetland & Waterbody Construction & Mitigation Procedures* (Procedures).[3]

6.2 Aboveground Facilities

Construction of the pig receiver at milepost (MP) 0.0 of the new Index 99L pipeline would require approximately 5.7 acres of temporary workspace; while operation (i.e., permanent footprint) of the facility would require about 0.1 acre of land. Construction of the pig launcher at MP 21.75 of the new Index 99L pipeline and within Gulf South's existing Magasco Compressor Station would require approximately 1.1 acres of temporary workspace, while operation of the facility would require about 0.1 acre of land. The mainline valve would be constructed within the permanent pipeline right-of-way and require an approximate 50-foot by 75-foot fenced-in graveled area. Construction and operation of the mainline valve would require 0.09 acre.

[3] The FERC Plan and Procedures are a set of construction and mitigation measures that were developed minimize the potential environmental impacts of the construction of pipeline projects in general. The FERC Plan and Procedures can be viewed on the FERC Internet website at www.ferc.gov/industries/gas/enviro/plan.pdf and http://www.ferc.gov/industries/gas/enviro/procedures.pdf.

Modifications at the Hall Summit Compressor Station, located at MP 30.61 of Gulf South's existing Index 326 System, would require a total of 8.5 acres of temporary workspace, all of which would be within the existing facility fence line and access driveway.

7. CONSTRUCTION SCHEDULE

Gulf South proposes to begin construction of the pipeline facilities, and the aboveground facilities along the new 30-inch-diameter pipeline in the 2nd Quarter 2020; and the existing Hall Summit Compressor Station modifications in July 2020. The planned in-service date for the project is October 1, 2020. Gulf South would employ revegetation and restoration measures as soon as possible following construction per federal and state permit conditions and restore and grade disturbed areas to pre-construction contours as closely as practicable, in accordance with the FERC Plan and Procedures.

Construction would generally take place Monday through Saturday during daylight hours, from 7 a.m. to 7 p.m.; however, Gulf South states that HDD activities, hydrostatic testing, and tie-ins may need to extend beyond typical daytime construction hours. If so, Gulf South has proposed noise mitigation measures as described in section B.9.1.

8. CONSTRUCTION, OPERATION, AND MAINTENANCE PROCEDURES

The project would be designed, constructed, operated, marked, and maintained in accordance with the U.S. Department of Transportation (USDOT) Minimum Federal Safety Standards in 49 CFR 192, which ensure adequate protection for the public and to prevent natural gas facility accidents and failures. Part 192 specifies material selection and qualification; minimum design requirements; and protection from internal, external, and atmospheric corrosion.

Gulf South would adopt the FERC Plan and Procedures for the Index 99 Expansion Project, with some requested modifications. The requested modifications are for areas where the topography, right-of-way, or natural conditions make it impractical to implement some of the required measures. Appendix B summarizes the locations where Gulf South contends that it cannot meet the requirements of the FERC Plan or Procedures due to site-specific conditions and Gulf South's justification for each modification. We have reviewed these modifications and find them acceptable.

In order to minimize potential environmental impacts, Gulf South has developed the following project-specific construction and reclamation plans,[4] which we have reviewed and find acceptable:

- HDD Plans and Profiles;
- Spill Prevention, Containment, and Countermeasures (SPCC) Plan;
- Horizontal Directional Drill Monitoring, Inadvertent Return Response, and Contingency Plan (IR Plan);

[4] Copies of Gulf South's Project-specific construction and reclamation plans have been filed with the Commission and can be viewed on eLibrary at http://www.ferc.gov/docs-filing/elibrary.asp under this docket.

- Plan for Reducing Noise Impacts from Horizontal Directional Drill Operations;
- Plan for Unanticipated Contaminated Environmental Media;
- Unanticipated Discovery of Historic Properties or Human Remains During Construction;
- Stormwater Pollution Prevention Plan;
- Residential Construction Implementation Plan;
- Environmental Complaint Resolution Plan;
- Fugitive Dust Control Plan;
- Exotic and Invasive Species Control Plan; and
- Revegetation Plan.

Gulf South would employ one Chief Inspector, who would be assisted by a Craft Inspector and/or an environmental inspector (EI). The EI would be on site during construction to ensure Gulf South's compliance with the measures outlined in the Plan and Procedures, the FERC Certificate, and all other environmental permit requirements from construction through restoration. The EIs would have the authority to stop activities that are not in compliance with agency requirements until corrective action has been taken.

Gulf South would conduct environmental training sessions in advance of construction to ensure that all individuals working on the project are familiar with environmental compliance with all application environmental mitigation measures appropriate to their jobs and the EI's authority. Gulf South has also prepared an Environmental Complaint Resolution Plan that provides affected landowners with information and procedures to follow for resolving their problems or concerns during construction. Prior to construction, Gulf South would provide the resolution plan, including Gulf South's contact person and telephone number, to all affected landowners and stakeholders, with instructions on logging a concern or asking questions. Gulf South's resolution procedure also includes the FERC's Landowner Helpline telephone number for landowners to call in the event the landowner is not satisfied with the response using Gulf South's established environmental complaint resolution plan.

8.1 Conventional Pipeline Construction Sequence

The majority of the proposed pipeline facilities would be constructed using conventional open-cut construction techniques and standard sequences of activities. This typically consists of a sequential process of surveying, clearing, grading, excavating, pipe stringing and bending, welding, lowering-in and backfilling, hydrostatic testing, cleanup, and restoration. Crews working on each stage of construction generally proceed along the pipeline right-of-way in one continuous operation along a spread[5]. Gulf South anticipates using one construction spread for the project. The entire process would be coordinated to minimize the total time a tract of land would be disturbed and, therefore, exposed to erosion and temporarily precluded from normal use.

During the 4-month duration of peak construction, the maximum number of workers would be approximately 500, which would reduce to approximately 310 – 370 workers after the peak construction period. Due to the location of the project and the availability of skilled

[5] A "spread" is an individual segment of the overall project staffed by its own labor and equipment.

laborers, Gulf South estimates that as much as 89 percent of the construction workforce would be non-local residents.

Prior to ground-disturbing activities, Gulf South would conduct a standard survey to stakeout the pipeline right-of way and workspace boundaries and to locate existing foreign utility lines within the construction right-of-way. Gulf South would require its contractor to make notifications to foreign utility line operators through the state's One-Call services to assist in locating and marking of all underground utility lines.

Gulf South would install temporary soil erosion and sedimentation control devices, as needed, prior to grading to contain disturbed soils in upland areas and near wetlands and waterbodies. These erosion and sediment controls would be inspected and maintained throughout construction and restoration of the project.

Following trenching, pipe lowering, and backfilling, all disturbed areas would be final-graded and restored as closely as possible to preconstruction contours in accordance with the FERC Plan and Procedures. Construction debris, trash, surplus materials, and temporary structures would be removed from the construction right-of-way and disposed of in accordance with applicable federal, state, and local regulations.

8.2 Special Pipeline Construction Procedures

In addition to the conventional construction methods discussed above, Gulf South would implement special construction procedures where warranted by site-specific conditions, as discussed below.

Horizontal Directional Drill

The HDD method allows for construction across a waterbody, road, or other sensitive area without the excavation of a trench, by drilling a hole below the resource and pulling the pipeline through the pre-drilled hole. A small-diameter pilot hole would be drilled under the area to be crossed and enlarged through successive reaming until it is large enough to accommodate a prefabricated segment of pipe. Following the completion of the pilot hole, Gulf South would use reaming tools to enlarge the hole to accommodate the pipeline diameter. The reaming tools would be attached to the drill string at the exit point and then rotated and drawn back to incrementally enlarge the pilot hole. During this process, Gulf South would pump drilling fluid consisting primarily of bentonite clay and water continuously into the pilot hole to lubricate the drill bit, remove cuttings, and maintain the integrity of the hole. When 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. In the event that a particular drill is unsuccessful, Gulf South would implement its contingency plan, included in its IR Plan, which includes abandonment procedures and alternative measures. We have reviewed the content of this plan and find it acceptable.

Gulf South proposes to use the HDD method at three locations (table 2) to minimize impacts on roads, railroads, wetlands, and waterbodies by avoiding ground surface disturbance between the drill entry and exit points. Activity between the HDD entry and exit points would be limited to foot travel and minimal hand clearing by construction personnel, not to exceed 5

feet, to deploy directional cables that guide the drilling head and to monitor for inadvertent release (IR) of drilling fluid to the ground surface.

Table 2
Proposed HDD Locations for the Index 99 Expansion Project

Name of HDD	MP Entry	MP Exit	Length (feet)
FM 3483 HDD	4.39	4.08	1,645
Chinquapin Wetlands HDD	10.86	10.51	1,826
Railroad HDD/Highway 103	12.12	12.49	1,972

Road, Railroad, and Utility Crossings

Gulf South would cross paved roads, railroads, and utility line crossings (including pipelines and electrical lines) along the project via open-cut, subsurface bores, or HDDs. Some paved and most unpaved roads with limited traffic may be open-cut pending appropriate consultation with the affected county or landowner 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 (paved and unpaved). Gulf South would implement appropriate safety procedures and traffic control measures, such as flagmen and signs, as necessary to ensure safety of local traffic.

At railroad crossings, approximately 10 feet of cover over the pipe would be maintained. 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.

For foreign utilities lines, Gulf South would obtain the requirements for crossing the utility line from each foreign utility line operator and solicit their cooperation for facilitating a 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. 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. All crossings would be completed in accordance with the requirements of any agency or local crossing permits obtained for the project.

Waterbody Crossings

Gulf South would cross waterbodies using the open-cut (wet) and HDD methods. The HDD method is described above. The open-cut method employs the same general construction

procedures that were described above for conventional pipeline construction. Equipment would operate from the banks of the waterbody to the maximum extent practicable to excavate a trench. As required by the FERC Procedures, flow would be maintained 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. 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.

Gulf South would minimize impacts on water quality by implementing measures outlined in the FERC 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 (ECDs) would be utilized to prevent the sediment from reentering the waterbody.

The Index 99 Expansion Project would cross via wet open-cut or HDD, or otherwise impact (i.e., within the construction workspace or timber mat), 147 waterbodies, including 61 ephemeral drainages, 57 intermittent streams, 25 perennial streams, 3 manmade ponds, and 1 natural pond. Further details regarding waterbody crossing impacts and mitigation for this project are discussed in section B.3.2.

Wetland Crossings

The pipeline facilities would cross wetlands via a combination of the HDD method and the open-cut method, both described above. Crossing of wetlands would be completed in accordance with the measures specified in the FERC Procedures, USACE permit conditions, and Gulf South's construction plans.

The construction right-of-way width would be limited to 75 feet in wetlands, and buffers would be clearly marked during construction activities. 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 would be segregated in unsaturated wetlands to preserve the seed bank and allow for successful restoration of the disturbed area following completion of project activities. Topsoil would not be segregated in inundated wetlands, per the FERC Procedures. Construction mats would be used for the travel lane to minimize disturbance to wetland hydrology and to maintain soil structure. Disturbed wetlands would be monitored post-construction to ensure successful revegetation.

The Index 99 Expansion Project would cross 56 wetlands via open cut or HDD, or otherwise impacted by the project (i.e., within the construction workspace or timber mat). Further details regarding wetland impacts and mitigation for this project are discussed in section B.3.3.

Residential Areas

Gulf South would implement measures to minimize inconvenience to property owners where residences are located in and near the project's workspace. These measures include completing construction activities as quickly and safely as practicable, installing safety fencing and other safety-related measures, and notifying homeowners in advance of any expected utility interruptions and the estimated duration of outages.

Two residences are within 50 feet of proposed construction workspaces. See section B.5.1 for additional discussion on residential impacts.

8.3 Aboveground Facilities Construction

Construction of the aboveground facilities would be concurrent with construction of the pipeline facilities. Construction of the mainline valve and launcher and receiver facilities would include activities such as clearing and grading, foundation installation, erection of aboveground facilities, installation of piping equipment, testing of equipment, and timely clean-up and restoration of the project areas. Any soils excavated for the placement of the foundations would be compacted in place and excess soil would be used elsewhere on-site or disposed of in an approved offsite location. Fencing, such as 6-foot chain link fences with barbed wire on 1-foot extension arms, would be constructed around the facility sites.

Station and yard piping modifications at the existing Hall Summit Compressor Station would require clearing and grading within the existing fenced facility. Pipe and other equipment would be assembled and welded on-site. Aboveground and belowground piping would be installed and hydrostatically tested prior to being placed in service. Additionally, safety and control devices would be installed and tested prior to operation. Gravel fill, asphalt, or concrete would be used to construct roads and parking areas. Upon completion of construction activities, disturbed areas that have not been paved or covered with gravel would be finish-graded and seeded in accordance with the project-specific Revegetation Plan. All proposed aboveground facilities would be fully automated or capable of being remotely monitored and controlled via a satellite dish for the supervisory control and data acquisition system.

8.4 Hydrostatic Testing

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

8.5 Operations and Maintenance

Maintenance of pipeline facilities would include periodic visual inspections as well as routine pedestrian surveys, as necessary, in accordance with the applicable regulatory requirements and Gulf South's Operations requirements. In accordance with USDOT requirements, periodic leak inspections and cathodic protection maintenance would be

conducted. Additionally, all pipeline markers and signs would be routinely inspected and replaced as necessary to ensure that pipeline locations are clearly identified.

Routine vegetation maintenance along the permanent right-of-way would be conducted periodically in accordance with the FERC Plan and Procedures. Actively cultivated areas would be allowed to revert to pre-construction use for the full width of the right-of-way. In all other upland areas, a 50-foot-wide permanent pipeline right-of-way would be maintained in a primarily herbaceous state in accordance with the mowing restrictions in the FERC Plan. In wetlands, a 10-foot corridor centered over the pipeline would be maintained, in accordance with the FERC Procedures. Additionally, trees within 15 feet of the pipeline with roots that could compromise the integrity of the pipeline coating may be selectively cut and removed from the permanent right-of-way in accordance with the FERC Procedures to ensure the continued integrity of the pipeline.

Gulf South would monitor the aboveground facilities remotely from Gulf South's gas control center. Gulf South would also perform regular operation and maintenance activities on equipment at the aboveground facilities, to include calibration, inspection, and scheduled routine maintenance, in accordance with USDOT's regulations. Operational testing would be performed on safety equipment to ensure proper function, and corrective actions taken as necessary if issues are identified.

9. NON-JURISDICTIONAL FACILITIES

Under section 7 of the NGA, and as part of its decision regarding whether or not to approve the facilities under its jurisdiction, the Commission is required to consider all factors bearing on the public convenience and necessity. Occasionally, proposed projects have associated facilities that do not come under the jurisdiction of the FERC.

The Index 99 Expansion Project would require the installation of a new power transmission line, which would be installed by the local utilities company, to provide power to the new mainline valve at MP 11.72. The power transmission line would connect from an existing overhead powerline, approximately 100 feet northeast of the proposed mainline valve, to a power drop at the valve site. The power transmission line would be installed overhead, and no ground disturbance would be required. The impacts associated with construction of the new power line are included in our cumulative impacts analysis (section B.10).

10. PERMITS, APPROVALS, AND REGULATORY CONSULTATIONS

Table 3 lists the major federal, state, and local permits, approvals, and consultations for construction and operation of the project. Gulf South would be responsible for obtaining and abiding by all permits and approvals required for construction and operation of the project regardless of whether or not they appear in the table.

Table 3 Federal and State Permits and Approvals			
Administering Agency or Organization	**Permit/Approval**	**Submittal / Anticipated Submittal**	**Receipt / Anticipated Receipt**
Federal			
Federal Energy Regulatory Commission	Certificate of Public Convenience and Necessity	March 29, 2019	Pending
U.S. Fish and Wildlife Service, Texas Coastal Ecological Services Field Office	*Endangered Species Act*, Section 7	March 29, 2019 Re-initiated Consultation-June 21, 2019 In-person meeting regarding re-initiated consultation – July 9, 2019 Continued coordination August 12; October 1, and October 25, 2019	4th Quarter 2019
U.S. Fish and Wildlife Service, Louisiana Ecological Services Field Office	*Endangered Species Act*, Section 7	March 29, 2019	April 4, 2019
U.S. Army Corps of Engineers, Fort Worth District	Section 404 (Nationwide Permit 12)	March 29, 2019 Addendum Pre-Construction Notice - May 17, 2019	4th Quarter 2019
State			
Texas Commission on Environmental Quality	Hydrostatic Test Water Appropriations Permit	2nd Quarter 2020	2nd Quarter 2020
Railroad Commission of Texas	Section 401 Water Quality Certification (automatic with Nationwide Permit 12)	March 29, 2019	4th Quarter 2019
	Hydrostatic Test Water Discharge permit	2nd Quarter 2020	2nd Quarter 2020
Texas Parks and Wildlife Department	Threatened and Endangered Species Clearance	March 29, 2019 Updated Habitat Assessment-June 21, 2019	May 7, 2019 August 8, 2019 – Recommendations received
Louisiana Department of Wildlife and Fisheries	Threatened and Endangered Species Clearance	March 29, 2019	April 25, 2019
Texas State Historic Preservation Office	Section 106 of the *National Historic Preservation Act* Clearance	March 29, 2019 Addendum Report - May 16, 2019 Revised Phase I Report - August 2, 2019	April 26, 2019 - Comments received June 3, 2019 – comments received September 3, 2019

Table 3 Federal and State Permits and Approvals			
Administering Agency or Organization	**Permit/Approval**	**Submittal / Anticipated Submittal**	**Receipt / Anticipated Receipt**
Louisiana Office of Cultural Development	Section 106 of the *National Historic Preservation Act* Clearance	March 29, 2019	May 3, 2019
Texas Department of Transportation	Utility Crossing / Temporary Driveway Permit	2nd Quarter 2020	2nd Quarter 2020
Local			
San Augustine County – County Roads	Heavy Load / Pipeline Utility / Permit to Transfer	1st Quarter 2020	2nd Quarter 2020
Sabine County – County Roads	Heavy Load / Pipeline Utility / Permit to Transfer	1st Quarter 2020	2nd Quarter 2020

B. ENVIRONMENTAL ANALYSIS

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

1. GEOLOGY

1.1 Physical Setting

The project is within the West Gulf Coastal Plain section of the Coastal Plain physiographic province (U.S. Geological Survey [USGS] 2002). The West Gulf Coastal Plain section is characterized by nearly level to moderately rolling irregular plains, which were formed by the deposition and subsequent uplift of continental and marine sediments from the end of the Cretaceous period to the Pleistocene epoch (The Nature Conservancy 2003). Topography in the project vicinity is generally flat to gently rolling hills with elevation ranging from 249 to 520 feet above mean sea level. The primary lithology of the project area and vicinity includes sandstone, claystone, and clay, with minor siltstone, limestone, and silt (USGS 2017).

1.2 Mineral Resources

Texas and Louisiana's primary resources include oil and gas production and non-fuel mineral resources including salt, clay, sand and gravel, and crushed stone (USGS 2019a). There are no active quarries, active mines, or mine spoil areas within 1 mile of the project area. With the exception of the Jade Pit parcel (discussed below), inactive, abandoned, or permitted mines were also not identified within 0.25 mile of project workspaces (U.S. Energy Information Administration 2019; USGS 2011).

From approximately MP 4.38 to MP 4.44, the project crosses a parcel of land that is part of a larger inactive crushed stone surface mine (Jade Pit) (Aggregates Manager 2012); however, the project does not cross portions of this parcel that were previously mined. The distance between the nearest point of the project workspace (Temporary Access Road-04) and the historic mined area of the Jade Pit is 121 feet; the proposed permanent easement is approximately 280 feet away at its nearest point. Gulf South is engaged in ongoing negotiations with the landowner of the Jade Pit parcel regarding the permanent easement; however, based on recent aerial imagery the mine has been flooded. Therefore, and given that mining activities are inactive, impacts resulting from project construction and operation at the Jade Pit parcel are not anticipated.

Nine wells associated with oil and gas activities were identified within 0.25 mile of the project area, none of which are within 200 feet of the project workspace (Railroad Commission of Texas 2019; Louisiana Department of Natural Resources [LDNR] 2019a). Although not anticipated, if an inactive oil or gas well is encountered during construction, Gulf South would determine an appropriate buffer and construction procedure around the well based on site-specific conditions and coordination with the well owner. Additionally, Gulf South would implement measures such as flagging wells and flow lines and reducing the construction workspace, if necessary, to keep a safe buffer from the well.

Based on Gulf South's proposed measures and the distance to the nearest active mineral resource extraction, we conclude that project construction and/or operation would not impact the availability of or access to mineral resources.

1.3 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; flooding; and karst terrain or ground subsidence hazards. These hazards, as well as the feasibility of utilizing the HDD construction method, based on hydrogeologic conditions present in the project area, are discussed below.

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; the Louisiana Geological Society (2001) describes this process as gradual creep instead of sudden break or displacement. 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 (Crone and Wheeler 2000). Therefore, we conclude the project is not likely to be adversely impacted by future seismic-related incidents.

1.4 Landslides

The topography in the project area generally ranges from flat to gently rolling hills. The Project area includes slopes up to 35 percent. Specifically, the project would cross 4.5 miles of slopes ranging from 9 to 15 percent; 1.3 total miles of slopes ranging from 16 to 25 percent; and less than 0.1 mile of slopes ranging from 26 to 35 percent. The Index 99L pipeline would be constructed adjacent to the existing Index 99 pipeline, which was placed into service in 2002, and has not exhibited slope failure. Gulf South would install temporary and permanent slope breakers and trench breakers per the FERC Plan to alleviate risks of slope instability. In the event that additional controls are needed to ensure the prevention of slope failure, Gulf South would install additional controls such as armoring rip-rap or reticulated concrete mats/blocks, as needed. Based on these proposed measures, the limited length of disturbance to steep slopes, and because historic incidences of slope failure have not been identified in the project area, we conclude that the project is not likely to significantly adversely impact or be adversely impacted by slope instability.

1.5 Subsidence

Ground subsidence, involving the localized or regional lowering of the ground surface, may be caused by karst dissolution, sediment compaction due to oil and gas and/or groundwater extraction, and the occurrence of underground mines. As previously described, subsurface mines do not occur in the project area and oil and gas extraction activities are not extensive. No karst terrain is present and the lithology that could lead to bedrock dissolution and karst development do not generally occur within the project vicinity (USGS 2004).

Subsidence issues from large-scale groundwater pumping have been prevalent and well documented in several Texas counties along the Gulf Coast; however, there are no publicly available records of these events occurring in San Augustine or Sabine counties or Bienville Parish (Texas Water Development Board [TWDB] 2006; Lovelace 2019).

The project area at the Hall Summit Compressor Station overlies the North Louisiana Salt Basin; however, no salt domes occur within 1 mile of the project area (Beckman and Williamson, 1990). Thus, the project is not anticipated to be affected by subsidence resulting from the collapse of salt domes.

Based on the above assessment we conclude the project would not significantly impact or be significantly impacted by geologic hazards.

1.6 HDD Feasibility

Gulf South has proposed the use of the HDD method to cross infrastructure (roads, railroads, and utility corridors) and sensitive resources (wetlands and waterbodies) at three locations. A summary of geotechnical investigations and feasibility assessments completed for each crossing follows.

Length of an HDD alignment, pipeline diameter, and subsurface material are factors in the technical feasibility of an HDD installation. Subsurface conditions that can affect feasibility of an HDD installation include excessive rock strength and abrasiveness, unconsolidated gravel and boulder materials, poor bedrock quality, solution cavities, and artesian conditions. It is also possible for HDD installations to fail, primarily due to encountering unexpected geologic conditions such as transitioning from coarse unconsolidated materials into bedrock or if the pipe were to become lodged in the hole during pullback operations. During HDD operations, drilling fluid consisting primarily of water and bentonite clay is pumped under pressure through the inside of the drill pipe and flows back (returns) to the drill entry point along an annular space between the outside of the drill pipe and the drilled hole. Because the drilling fluid is pressurized, in certain conditions it can seep into the surrounding rocks and sediment. Formational drilling fluid losses typically occur when the drilling fluid flows through the pore spaces in soil or within fractures in rock formations. IRs are more likely to occur in more permeable soils or via fractures or fissures in 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.

FM 3483 HDD

Gulf South would cross FM 3483 and two small tributaries with one 1,645-foot-long HDD. Four geotechnical borings were completed for this crossing at distances of 140 feet to

1,110 feet from the proposed alignment, and to depths from 100 to 125 feet below the ground surface (fbs). The minimum depth of cover of the HDD installation beneath FM 3483 would be approximately 43 feet, and the minimum depth of cover beneath tributaries would be 41 feet.

Based on the results of geotechnical investigations, the alignment would cross unconsolidated subsurface material consisting primarily of stiff fat clay and silty sand with gravel. Sieve and grain size analysis tests conducted at the depth of the alignment and shallower all contained less than 30 percent gravel; a gravel percentage in soil of less than 30 percent is acceptable and should not pose a significant risk to the HDD installation.

Chinquapin Wetlands HDD

Gulf South would cross a wetland and several tributaries (the Chinquapin Wetlands) with one 1,826-foot-long HDD. Three geotechnical borings were drilled at distances of 75 feet to 1,090 feet from the alignment to depths of 100 fbs. The minimum depth of cover of the HDD installation beneath the Chinquapin Wetlands and the tributaries would be approximately 25 feet. Based on the results of geotechnical investigations, the alignment would cross unconsolidated subsurface material consisting primarily of silty sand and clays.

Railroad/Highway 103 HDD

Gulf South would cross a railroad, a highway (TX 103), two streams, and a wetland with one approximately 1,972-foot-long HDD. Four geotechnical borings were drilled for this crossing at distances from 255 feet to 1,695 feet from the alignment and to depths between 100 and 120 fbs. The minimum depth of cover of the HDD installation beneath these features would be approximately 47 feet. Based on the results of geotechnical investigations, the alignment would cross unconsolidated subsurface materials consisting primarily of fat clay.

Gulf South's geotechnical contractor did not identify "substantial risks" applicable to any of the proposed HDDs. Hydrofracture risk assessments completed for each proposed HDD determined that the required bore pressure to facilitate installation would be below the allowable bore pressure except near the exit locations (last 30 to 150 feet). This condition is common near the entry and exit points but elevates the likelihood of an IR in these areas. Gulf South would implement the measures in its IR Plan in the event of an IR.

According to Gulf South's IR Plan, Gulf South would monitor drilling pressures continuously during active HDD operations and use a down-hole annular pressure tool during the pilot hole drilling phase to ensure that the drilling contractor could respond to a loss or spike in drilling fluid pressure which would be indicative of a potential hydrofracture and IR. Drilling operations would be stopped immediately at the first sign of an IR, and Gulf South would implement response and clean-up efforts specific to the location of the IR (e.g., upland, waterbodies or wetlands, sensitive resources areas). Further, drilling fluids would consist primarily of fresh water (source water to be permitted with each requisite agency) and a high yield bentonite clay. A list of any additional proposed additives (and their respective safety data sheets) would be supplied to FERC for review and approval prior to construction. All proposed fluid additives would be compliant with the NSF International/American National Standards Institute 60 – Drinking Water Treatment Chemicals – Health Effects.

Based on the above analyses, we conclude that the HDDs would likely be successful. With consideration of Gulf South's mitigation measures, we conclude that potential impacts from HDD construction and IRs would not be significant.

2. SOILS

2.1 Existing Characteristics

Project area soils are not hydric or highly compaction prone, but approximately half of the project area is highly susceptible to rutting. The majority of soils in the project area do not have low revegetation potential and are not highly erodible by wind or water. A total of 189.4 acres of soils classified as prime farmland or farmland of statewide importance would be impacted by construction, of which approximately 8.5 acres are within the Hall Summit Compressor Station and have been previously removed from agricultural production. A total of approximately 108.2 acres of project area soils are characterized as underlain by shallow bedrock (bedrock within 60 inches of the ground surface).

2.2 Prime Farmland

With the exception of areas that would be impacted by new permanent aboveground facilities and access roads, project areas would be revegetated and maintained in an herbaceous state. Permanent impacts on prime farmland and farmland of statewide importance due to operation of the aboveground facilities and associated permanent access roads account for approximately 10.3 total acres. However, the total acreages of prime farmland impacted by the project account for less than 0.1 percent of the total area of prime farmland in San Augustine and Sabine Counties, Texas (approximately 748,701 acres) and Bienville Parish, Louisiana (approximately 526,053 acres) (Natural Resources Conservation Service [NRCS] 2018).

2.3 Erosion and Revegetation Potential

Clearing, grading, and equipment movement can accelerate the erosion process and, without adequate protection, result in discharge of sediment to waterbodies and wetlands and/or reduce soil fertility. Increased rainfall in the spring and fall can also result in increased erosion where vegetation has been cleared.

To minimize or avoid potential impacts due to soil erosion, Gulf South would utilize topsoil conservation and segregation controls in accordance with the FERC Plan and Procedures. Temporary ECDs, including interceptor diversions and sediment filter devices such as silt fences, would be installed immediately following land disturbing activities and would be inspected on a regular basis and after each rainfall event of 0.5 inch or greater to ensure proper functioning. During construction, the effectiveness of temporary ECDs would be monitored by Gulf South's EIs, and the effectiveness of revegetation and permanent ECDs would be monitored by Gulf South operating personnel during the long-term operation and maintenance. Gulf South would segregate topsoil to a depth of 12 inches in cultivated or rotated croplands and pastures, residential areas, hayfields, and unsaturated wetlands along the pipeline trench.

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 workspace would be revegetated in accordance with the FERC Plan and Procedures; consultations with the NRCS Field Service; and the project's Exotic and Invasive Species Control Plan and Revegetation Plan.

The land at the existing Hall Summit Compressor Station in Bienville Parish, Louisiana has been permanently converted to developed land. Following the completion of construction activities, disturbed areas not covered with gravel or asphalt would be graded, restored, and reseeded with the typical seed mixes used for maintenance and revegetation at the existing facility.

2.4 Stony/Rocky Soils and Shallow Bedrock

Although shallow bedrock may underlie project areas, no blasting is anticipated for construction of the project. If consolidated rock is encountered during construction, Gulf South would utilize conventional techniques such as excavation with a backhoe; ripping with a dozer followed by backhoe excavation; or hammering with a pointed backhoe attachment followed by backhoe excavation. If these techniques are unsuccessful and blasting becomes necessary, Gulf South would develop a project-specific blasting program that would adhere to all local, state, and federal regulations and appropriate notifications and permits would be obtained prior to blasting activities.

Gulf South would remove any excess stone and rock from surface soils within the project area so that rock contents in the soil would be no higher than similar soils in adjacent locations.

2.5 Soil Contamination

Based on a review of state and federal databases, project activities would not intercept known soil contamination (U.S. Environmental Protection Agency [EPA], 2018; EPA 2016; Texas Commission on Environmental Quality [TCEQ] 2019a, 2019b, and 2018; Louisiana Department of Environmental Quality [LDEQ] 2019a and 2019b). 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.

During construction, contamination from accidental spills or leaks of fuels, lubricants, and coolant from construction equipment could adversely impact soils. Gulf South would implement its SPCC Plan to prevent spills and to ensure that inadvertent spills are contained, cleaned up, and disposed of in an appropriate manner.

Based on the above assessment, we conclude that project impacts on soils would be primarily temporary and would not be significant.

3 WATER RESOURCES AND WETLANDS

3.1 Groundwater

The pipeline would be underlain by the one principal aquifer, the Texas Coastal Uplands aquifer system, and the minor Sparta Aquifer. Both aquifers are comprised of unconsolidated interbedded sand, silt, and clay deposits (USGS 2016; Jones 2008). Groundwater from these aquifers is primarily used for irrigation, municipal, livestock, and industrial needs (USGS 2019c).

The Coastal Lowlands aquifer system, which underlies the Hall Summit Compressor Station, is a principal aquifer that yields large amounts of water for public, agricultural, and industrial needs. Water quality within the Coastal Lowlands aquifer system varies with depth and locality; it is generally good in the central and northeastern parts of the aquifer, where the water contains less than 500 milligrams per liter of total dissolved solids. However, water quality declines as the aquifer system extends south, where groundwater typically contains 1,000 to more than 10,000 milligrams per liter of total dissolved solids and where the productivity of the aquifer decreases (USGS 2019d).

A sole source aquifer is an aquifer designated by the EPA as the "sole or principal source" of drinking water for a given service area. This designation is given to aquifers that supply 50 percent or more of the drinking water for an area and for which there are no reasonably available sources should the aquifer become contaminated. According to the EPA, the project is not underlain by any sole source aquifers (EPA 2019a).

Source water protection areas are designated surface and subsurface zones surrounding public water supply wells or wellfields. These zones are identified in an effort to prevent contaminants from entering the groundwater table and compromising the quality of public drinking water. A review of data from the LDEQ and TCEQ confirmed that the project does not overlie any source water protection areas (Molieri 2019; Ables 2019; TCEQ 2019c).

Public and private water supply wells within the vicinity of the project were identified through field surveys, a review of the Texas Water Development Board (TWDB) Groundwater Database, and a review of water resources data provided by the TCEQ and the LDNR (LDNR 2019a; TWDB 2019). Table 4 identifies known water supply wells within 150 feet of project workspaces. No springs were identified within one mile of the project area based on a review of publicly available resources, as well as field surveys, and landowner discussions (USGS 2019d; TWDB 2019 and 1975). Therefore, no impacts on springs are anticipated.

Table 4 Water Supply Wells within 150 feet of the Index 99 Expansion Project			
Well Owner	**Distance and Direction from Project Workspace (feet)**	**Project Milepost**	**Status**
Sabine/ San Augustine Counties			
Magnolia Pipeline Company	19 East	1.93	Unused
Private Landowner	80 East	3.55	Domestic
Private	45 North	7.16 [a]	Drill Rig Supply
Private	13 North	7.18 [a]	Drill Rig Supply
Private	66 North	7.36 [a]	Drill Rig Supply
United Gas Pipeline	131 Southwest	21.70	Unused
Bienville Parish			
Gulf South Pipeline Company, LP	Four wells within the existing Hall Summit Compressor Station	N/A	Plugged and Abandoned
		N/A	Plugged and Abandoned
		N/A	Plugged and Abandoned
		N/A	Plugged and Abandoned
Source: LDNR 2019a; TWDB 2019c [a] Distance from access road N/A – Not Applicable			

Gulf South would offer both pre- and post-construction quality and yield testing to landowners for water supply wells and springs within 150 feet of construction workspaces. If a well is determined to have been impaired as a result of construction, either during construction or during post-construction quality and yield testing, Gulf South would coordinate with the well owner to provide a temporary source of water and compensate the landowner for the repair of the well, installation of a new well, or otherwise arrange for a suitable water supply. Gulf South's SPCC Plan requires that the storage of petroleum products, refueling, and lubricating operations take place in upland areas that are more than 100 feet from wetlands or waterbodies, 200 feet from private water wells, and 400 feet from community and municipal water wells.

The project would not cross areas of known existing groundwater contamination (EPA 2018, 2016; TCEQ 2019a, 2019b, 2018; and LDEQ 2019a, 2019b). Groundwater contamination could occur from accidental spills of fuels, solvents, and lubricants used during construction at the project site. Gulf South would implement the measures outlined in its SPCC Plan to minimize the risk of potential impacts from fuel or hazardous material spills.

Based on the existing resources in the project area and Gulf South's proposed measures, we conclude that the project would not have a significant impact on groundwater resources.

3.2 Surface Waters

Gulf South completed an assessment of surface water resources in the project areas through field delineations and desktop evaluations (review of current and historic aerial photography, USGS topographic maps and National Wetlands Inventory (NWI) data) conducted in January and February 2019. For surface water resources on parcels where surveys have not been completed (due to ongoing landowner negotiations), Gulf South conducted a desktop analysis using USGS 7.5-minute topographic maps, NWI data, LiDAR data, NRCS soil maps,

and historical aerial photography. To date, surveys are complete on approximately 70 percent of the proposed pipeline facilities.

The project is located within three unique watersheds including Lower Angelina (hydrologic unit code [HUC] 8: 12020005), and Toledo Bend Reservoir (HUC 8: 12010004) associated with the pipeline in Texas, and Black Lake Bayou (HUC 8 11140209) associated with the Hall Summit Compressor Station in Louisiana (EPA 2019b). A majority of the pipeline is in the Lower Angelina watershed, with MPs 11.94 to 12.50 located in the Toledo Bend Reservoir watershed.

The Index 99L pipeline would cross (via open-cut [wet] or HDD), or otherwise impact (i.e., within the construction workspace or timber mat), 147 waterbodies, including 61 ephemeral, 57 intermittent, 25 perennial streams, 3 manmade ponds, and 1 natural pond. Methods for crossing waterbodies are discussed in section A.8.2. No waterbodies would be crossed or otherwise impacted by project activities at the Hall Summit Compressor Station in Bienville Parish, Louisiana. Appendix C lists the waterbodies crossed or otherwise impacted by all project components (i.e., pipeline, access roads, and contractor/pipe yards) including approximate MP, waterbody name, flow regime, crossing length, and proposed crossing method.[6]

No sensitive surface waters (including National Wild or Scenic Rivers, Texas Parks and Wildlife Department [TPWD] Ecologically Significant Stream Segments, LDNR Natural and Scenic Rivers, Section 10 Navigable Waters, or those listed on the NPS Nationwide Rivers Inventory) are located within 0.50 mile of the Index 99 Expansion Project or would be otherwise impacted by the project (LDNR 2019b; NPS 2019a, 2016; TPWD 2019a). No segments listed as 303(d) impaired waters within the 2014 Texas Integrated Report of Surface Water Quality or the Draft 2016 Texas Integrated Report of Surface Water Quality would be crossed by the Index 99 Expansion Project (TCEQ 2016, 2015).

One surface water intake for public water systems is in San Augustine, Texas at San Augustine City Lake approximately 1.7 mile southwest of the project at MP 4.2 (TCEQ, 2019c). The project facilities are situated upstream of the raw water intake and pump station, which is used as a regional water supply source. Gulf South would implement Best Management Practices (BMPs) in accordance with the FERC Plan and Procedures to minimize impacts on the waterbody. We find this acceptable and conclude that the project is not expected to impact the water supply at San Augustine City Lake.

The Index 99L pipeline would cross the 100-year floodplain (Zone A), which is classified as high-risk areas (Federal Emergency Management Agency [FEMA], 2019a), at MP 3.0. Additionally, the Hall Summit Compressor Station is in flood Zone D, which is an area with flood risk due to a levee (FEMA 2019b). The installation of impervious surfaces within floodplains and/or floodways can alter hydrogeology of an area during a flood event; however, all areas of new impervious surfaces associated with both the pipeline facilities (i.e., Index 99 Launcher Site, Index 99 Receiver Site, and valve) and permanent access roads are located outside of the floodplain and/or floodway. In addition, no new impervious surfaces are required

[6] FERC eLibrary Accession no. 20190705-5138.

for the proposed modifications at the existing Hall Summit Compressor Station. As such, local floodplain permits are not required for the pipeline construction in San Augustine County or for the modifications at the Hall Summit Compressor Station.

Most of the waterbodies crossed by the project would be crossed via open-cut. For the open-cut method, construction equipment would operate from the banks of the waterbody to the maximum extent practicable to excavate a trench. As required by the FERC Procedures, flow would be maintained at all times, and excavated material from the trench would be placed on the banks above the ordinary high-water mark for use as backfill. Impacts on surface water could occur as a result of in-stream construction activities or construction activities along the banks and slopes adjacent to the streams. Aquatic habitat modification, increased sedimentation, increased turbidity, decreased dissolved oxygen concentrations, release of chemical and nutrient pollutants from sediments, and introduction of chemical contaminants such as fuel or lubricants could result from clearing and grading stream banks, in-stream trenching, trench dewatering, backfilling, or heavy machinery operation, storage, or refueling.

Gulf South would minimize impacts on water quality by implementing measures outlined in the FERC Plan and Procedures. To minimize erosion and soil compaction impacts, Gulf South would utilize equipment bridges, mats, and pads, when necessary and where possible. To reduce turbidity and sedimentation impacts resulting from construction equipment and vehicular traffic crossing waterbodies, Gulf South would install temporary equipment bridges for access along the right-of-way and access roads. Equipment bridges would be designed to accommodate normal to high stream flow and maintained to prevent restriction of water flow during construction.

To further minimize sedimentation during construction, ECDs (e.g., silt fence and/or straw bales) would be placed around spoil piles near minor or intermittent waterbodies to prevent the spoil from flowing into the waterbody, in accordance with Gulf South's Stormwater Pollution Prevention Plan. Once the pipe has been placed into the trench, excavated material would be immediately replaced. Excavated materials would be stored no less than 10 feet from the edge of the waterbody, and temporary ECDs would be utilized to prevent the sediment from reentering the waterbody. The duration of in-stream construction activities would typically be limited to 24 to 48 hours in order to minimize impacts (per the FERC Procedures), unless otherwise requested by Gulf South and approved by FERC. When possible, Gulf South would conduct stream crossings during low-flow periods to minimize sedimentation and turbidity, stream bank disturbances, and the time it would take to complete in-stream construction. Once construction is completed, the streambed and banks would be restored to pre-construction contours to the maximum extent practicable. Streambanks and riparian areas would be revegetated in accordance with the FERC Procedures.

Use of the HDD method (at three locations as described in sections A.8.2 and B.1.6) would generally avoid and minimize the potential for surface water impacts resulting from erosion, sedimentation, and/or excess turbidity by avoiding ground surface disturbance in and immediately adjacent to the waterbody. An HDD would also avoid disturbance to the bed and banks of waterbodies and would minimize ground disturbance to streams and the land surface between the entry and exit points of the crossing. ATWS would be sited on either side of the waterbody feature to accommodate the entry and exit locations of the HDDs. Vegetation between the HDD entry and exit pits would not be mechanically cleared. One or two travel

lanes, not to exceed 5 feet wide, would be used to follow the tracer wire during HDD installation. Activity within these travel lanes would be limited to foot traffic. Minor vegetation removal (tree/shrub limb removal) may be required along with travel lanes but would be limited to clearing with hand tools.

The execution of the HDD method requires the use of drilling fluid under pressure, and the potential exists for an IR. Drilling fluid would consist primarily of non-toxic bentonite clay and water, which can result in increased turbidity and sedimentation if an IR reaches a waterbody. Impacts on aquatic resources from an IR would be similar to those for an open-cut crossing and would be minimized through the implementation of Gulf South's IR Plan. This plan includes procedures for monitoring, detecting, isolating, stopping, and cleaning up IRs, as well as making necessary agency notifications. We have reviewed the IR Plan and conclude that impacts on waterbodies due to an IR would be minimized to the extent practicable.

A release of fuel or hazardous material into a waterbody may impact aquatic organisms and wildlife that use the waterbody. In order to prevent the introduction of fuels and/or hazardous materials into waterbodies, Gulf South has developed an SPCC Plan to prevent, contain, and clean up spills and address necessary precautions during material storage. As part of the SPCC Plan, fuel storage would not be allowed within 100 feet of waterbody boundaries. Additionally, whenever practicable, Gulf South would not park or refuel heavy equipment parked or refueled less than 100 feet from surface waterbodies; otherwise, additional precautions such as continual monitoring of fuel transfer, secondary containment structures, and utilization of spill kit readiness would be taken. Based on these measures, we find the potential for a release of fuel or hazardous material into a waterbody would be minimized to the extent practicable, and impacts would not be significant.

Precipitation and/or the seepage of groundwater can necessitate the dewatering of trenches and other excavated areas. During dewatering, water would be pumped from the trench or excavated areas, filtered through hay bales or filter bags, and discharged into a well-vegetated upland area, as outlined in the FERC Procedures in order to prevent sediments from entering waterbodies

Gulf South would construct its facilities in accordance with the regulations and requirements of applicable permits such as USACE authorizations under Section 404 of the Clean Water Act and the National Pollutant Discharge Elimination System stormwater discharge permit. Gulf South submitted a Pre-construction Notification for coverage under Nationwide Permit 12 - Utility Lines to the USACE Fort Worth District on March 29, 2019, with an addendum submitted on May 17, 2019. Activities authorized by the USACE under Nationwide Permit 12 are automatically issued water quality certification under Section 401 of the Clean Water Act.

Based on these measures we conclude project impacts on waterbodies would be minimized to the extent practical and would not be significant.

3.3 Wetlands

Gulf South completed an assessment of wetlands of the project areas through field surveys and desktop evaluations in January and February 2019. Gulf South reviewed

background site information including USGS 7.5-minute topographic maps, NWI data, LiDAR data, NRCS soil maps, and historical aerial photography. Field surveys were conducted in accordance with the USACE Wetland Delineation Manual (USACE 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coast Region (Version 2.0) (USACE 2010).

Three classes of palustrine (freshwater) wetland systems are present in the Index 99 Expansion Project area. These classes include palustrine emergent (PEM) wetlands, palustrine scrub shrub (PSS) wetlands, and palustrine forested (PFO) wetlands.

About 2.09 acres of PEM wetland, 0.39 acre of PSS wetland, and 1.17 acre of PFO wetland (a total of approximately 3.7 acres) would be temporarily impacted by construction of the Index 99 Expansion Project. Operations would affect approximately 0.01 acre of PSS and 0.43 acre of PFO (a total of approximately 0.4 acre). No wetlands would be impacted by the Hall Summit Compressor Station modifications. Table 5 provides wetland resources that would be crossed by project.

Table 5
Wetland Resources Crossed by the Index 99 Expansion Project

Wetland Type	Number of Wetlands Crossed	Construction Impacts (acres)	Operational Impacts (acres)
San Augustine County, Texas			
PEM	19	1.50	0.00
PSS	3	0.11	0.01
PFO	7	0.84	0.30
Subtotal	**29**	**2.45**	**0.31**
Sabine County, Texas			
PEM	15	0.59	0.00
PSS	6	0.28	0.00
PFO	6	0.33	0.13
Subtotal	**27**	**1.20**	**0.13**
Project Total	**56**	**3.65**	**0.44**

As discussed in section A.8.2, wetlands would be crossed by either HDD or open-cut installation. In accordance with the FERC Procedures, Gulf South would limit impacts within the open-cut wetlands to a 75-foot-wide construction corridor; the corridor would be used to clear the vegetation, dig the trench, install the pipeline, and restore contours. Construction procedures within unsaturated wetlands would be similar to those used in upland areas.

Construction activities in nearby uplands can disturb surface soils and cause subsequent sedimentation from disturbed areas into wetlands. To minimize the potential for sedimentation of wetlands from construction activities, erosion and sediment control measures would be installed prior to initial ground disturbance.

Compaction of wetland soils and rutting within wetlands due to equipment operation can affect wetland hydrology and revegetation. Compaction would be minimized by limiting

equipment operation in wetlands and installing temporary equipment mats, as necessary. Soil characteristics also can be changed during construction because of inadvertent mixing of topsoil and subsoil during grubbing and trenching. To prevent such mixing in unsaturated wetlands, topsoil would be removed from directly over the trench and stockpiled for restoration. No topsoil segregation would be implemented in saturated wetlands.

Permanent changes in surface and subsurface hydrology through a wetland can have a long-term impact on the habitat type and quality. Trench plugs would be installed at the entrance and exit of the pipeline trench through the wetland to ensure that the wetland is not drained along the pipeline. Any confining layers that are breached during construction would be restored during backfilling. Restoration of each wetland would involve returning contours to pre-construction levels and removing temporary erosion control measures once restoration is successful.

Wetland crossings completed using the HDD method would generally avoid and minimize the potential for wetland impacts resulting from erosion, sedimentation, and/or excess turbidity by avoiding surface disturbance in and immediately adjacent to the wetlands. However, as described above, the potential for IR exists. Impacts from an IR would be minimized by implementation of Gulf South's IR Plan, which includes procedures for monitoring, detecting, isolating, stopping, and cleaning-up IRs, as well as making necessary agency notifications.

Gulf South's SPCC Plan provides restrictions and mitigation measures to limit potential impacts associated with the release of fuels, lubricants, or other potentially toxic materials used during routine construction. Refueling and storage of hazardous materials would be prohibited within 100 feet of wetlands during construction, unless otherwise requested by Gulf South and approved by the FERC. Based on these measures, we find the potential for a release of fuel or hazardous material into a wetland would be minimized to the extent practicable.

After the completion of construction, wetland areas would be allowed to revegetate naturally. PEM wetlands dominated primarily by low-growing sedges, rushes, and other herbaceous vegetation, and PSS wetlands dominated by low woody vegetation, would revert to pre-existing conditions within one to three growing seasons following construction, resulting in no permanent impacts on these wetland types. There would be long-term impacts on PFO/PSS wetlands, as those types of wetlands within the permanent right-of-way would be converted to PEM wetlands. In accordance with the FERC Procedures, wetlands would be monitored for up to 3 years after the completion of construction, or until we conclude that revegetation is successful. Gulf South will continue to coordinate with the USACE Fort Worth District to determine appropriate mitigation for unavoidable impacts on jurisdictional waters of the United States.

We conclude that impacts on wetlands would not be significant.

3.4 Hydrostatic Testing and Water Use

Gulf South would conduct hydrostatic pressure testing of the new pipeline and aboveground facilities prior to placing them into service. Gulf South would use private and municipal sources and would require about 4,236,500 gallons of water to test the new Index 99L pipeline and aboveground facilities. Water used for hydrostatic testing would be depressurized

and passed through an energy-dissipation and/or filtration device before being discharged into a well-vegetated, upland area.

An estimated 1,247,000 gallons of water also would be obtained from private and municipal sources for use during HDD drilling to mix with bentonite in order to remove cuttings from the drill holes. Additionally, Gulf South would use water to control fugitive dust emissions during construction — a maximum of 20,000 gallons of water per day for the pipeline and a maximum of 500 gallons per day for the Hall Summit Compressor Station. Water utilized for dust control would be acquired from municipal water sources.

No significant water quality impacts are anticipated as a result of discharge from hydrostatic testing or HDD operations. For water from municipal sources used for hydrostatic test water, Gulf South may treat the water with a chloride reducer. Gulf South anticipates utilizing up to 0.0042 grams of sodium thiosulfate per 1 gallon of water to reduce the concentration of chlorine in hydrostatic test water. All project facilities would be constructed of new materials that would otherwise be free of chemicals or lubricants, and the use of any hydrostatic test water chemical additives would be in accordance with applicable federal, state, and local regulations.

4. AQUATIC RESOURCES, VEGETATION, WILDLIFE, AND SPECIAL STATUS SPECIES

4.1 Aquatic Resources

All waterbodies crossed by the project are classified as fresh, warmwater fisheries (TPWD 2019a) and are typically comprised of sport fish, rough fish, forage minnows, or a combination of the three groups. Several waterbodies crossed by the project may contain suitable habitat for state listed threatened aquatic species (see discussion in section B.4.4). None of the waterbodies crossed or otherwise impacted by the project contain species managed by National Oceanic and Atmospheric Administration Fisheries, National Marine Fisheries Service (NMFS) (NMFS 2019). No waterbodies would be crossed or otherwise impacted by project activities at the Hall Summit Compressor Station in Bienville Parish, Louisiana.

Crossing waterbodies via open cut could lead to temporary loss of habitat changes in behavior in fish and other aquatic species. Alterations of water quality (i.e., increased turbidly and sedimentation) could also increase stress, injury, and/or mortality among fish and other aquatic species. Additionally, loss of stream bank and aquatic vegetation could affect aquatic species by reducing shade and cover and increasing the temperature of the water. However, Gulf South would follow the FERC's Plan and Procedures to control erosion and minimize turbidity and sedimentation. Once construction is complete, streambeds and banks would be restored to their pre-construction contours and conditions to the maximum extent practicable.

Gulf South would also use the HDD method for installing the pipeline across 13 waterbodies, therefore avoiding direct impacts on the waterbodies and their beds and banks. An IR of drilling fluid during an HDD crossing or a spill of fuel or equipment-related fluids could affect water quality and consequentially impact aquatic resources. To minimize the potential for an IR of drilling fluid to impact aquatic resources, Gulf South would implement its IR Plan that includes procedures for monitoring, detection, isolating, stopping, and restoring IR, and would

make all necessary agency notifications. In the event of a spill, IR, or take or aquatic resources, Gulf South would notify the TPWD's "Kills and Spills" Team.

Gulf South would adhere to its SPCC Plan, which includes preventive measures to minimize potential impacts should a spill of hazardous materials or petroleum products occur. These measures include personnel training, equipment inspection, and refueling procedures, as well as measures for containment and clean-up of a spill if it occurs. We conclude that aquatic resources would not be significantly affected.

4.2 Vegetation

The proposed pipeline lies within both the Southeastern Mixed Forest Province and the Outer Coastal Plain Mixed Forest Province (U.S. Department of Agriculture [USDA] 2019). The northern portion of the pipeline is within the Mid Coastal Plains, Western Section of the Southeastern Mixed Forest Province (USDA 1996a). Predominant vegetation type within this area is evergreen needle-leaved forests. The southern portion of the pipeline lies within the Coastal Plains and Flatwoods, Western Gulf Section within the Outer Coastal Plain Mixed Forest Province. Vegetation is predominantly evergreen needle-leaved forest with small areas of deciduous alluvial forest. The Hall Summit Compressor Station is located within the Mississippi Alluvial Basin Section of the Lower Mississippi Riverine Forest Province (USDA 2019). Vegetation is characterized as southern floodplain forest and oak-hickory forest.

Vegetation cover types impacted by the project include:

- Agriculture – pastureland used for livestock grazing or hay production;
- Forest – hardwood forest, mixed hardwood conifer forest (as described above);
- Open land – non-forested areas that are not otherwise classified as agriculture, and includes existing utility rights-of-way and unimproved pastures that contain mixed herbaceous vegetation interspersed with scrub-shrub vegetation;
- Pine Plantation – planted stands of pine species managed and harvested on rotations for a variety of timber products;
- Wetlands – PEM, PSS, and PFO; and
- Developed – industrial and residential areas with sparse vegetation.

Gulf South conducted field surveys in between January and April 2019 to verify vegetation cover type and wildlife habitat present in the project area.

Open land in the project area is typically vegetated with saw greenbriar, little bluestem, bermudagrass, cumin ragweed, sawtooth blackberry, hairy white oldfield, and bahiagrass. Forest vegetation in the project area comprises saw greenbriar, white fringetree, southern magnolia, American holly, sweetgum, loblolly pine, oak species, and sawtooth blackberry. Dominant vegetation associated with pine plantations in the project area includes loblolly pine, sweetgum, yaupon, American holly, wax myrtle, saw greenbriar, and sawtooth blackberry. Dominant vegetation associated with developed areas consists of bermudagrass, sawtooth blackberry, and saw greenbriar. Pastureland include grasses and forbes such as bermudagrass, little bluestem, white clover, multiflora rose, sawtooth blackberry, and woolly croton.

Dominant vegetation associated with the PEM wetlands consists of sawtooth blackberry, alligatorweed, seedbox, American water horehound, Cherokee sedge, American hornbeam, common rush, sand spikerush, seaside goldenrod, and manyflower marshpennywort. Dominant vegetation associated with the PSS wetlands consists of Chinese tallow, eastern baccharis, Cherokee sedge, American hornbeam, sweetgum, wax myrtle, and loblolly pine. Dominant vegetation associated with the PFO wetlands consists of Chinese tallow, common rush, red maple, sweetbay, wax myrtle, loblolly pine, water oak, American hornbeam, willow oak, Cherokee sedge, sweetgum, saw greenbriar, floating pennywort, white crownbeard, dwarf palmetto, and black willow.

The primary vegetation cover type affected by construction of the project would be open land because approximately 93 percent of the new pipeline would be co-located along existing easements. During construction, the project would temporarily affect about 154 acres of open land, 105 acres of forests, 88 acres of pine plantation, 22 acres of developed areas, 16 acres of agricultural land, and 4 acres of wetlands, for a total of 390 acres. During operations, the project would result in long terms impacts on approximately 77 acres of open land, 34 acres of forests, 28 acres of pine plantation, 14 acres of developed lands, 7 acres of agricultural land, and 2 acres of wetlands, for a total of approximately 163 acres. These areas would be maintained as permanent right-of-way for the Index 99L pipeline, operation of the aboveground facilities, and new permanent access roads.

During construction, the pipeline rights-of-way and workspaces for the project would be cleared of vegetation to the extent necessary to allow for safe working conditions, resulting in direct impacts on vegetation.

Following construction, areas cleared or otherwise disturbed for construction would be allowed to revert to pre-construction vegetation cover types, with the exception of areas of permanent aboveground facilities and forested areas and pine plantations within the permanent pipeline right-of-way. Following the completion of construction activities, Gulf South would reseed the disturbed areas per consultations with the NRCS Field Service Center in Texas and consultation with state resource agencies, the FERC Plan, and Gulf South project-specific Revegetation Plan. During operation, routine vegetation maintenance of the permanent pipeline right-of-way, including tree removal, would be necessary to allow for visibility and access to the pipeline for required patrols and surveys.

The clearing of forested areas and pine plantations would result in long-term impacts (from construction) and permanent impacts (from operations). Maintenance of the permanent right-of-way in forested areas (approximately 34 acres) and pine plantations (approximately 28 acres) would preclude the reestablishment of trees and shrubs following construction, thereby permanently converting forests and pine plantations to open land and industrial land. Pine plantations are, however, disturbed at normal intervals as the trees planted are harvested when they are merchantable.

The landscape along the project right-of-way has already been fragmented in places by existing roads, utility rights-of-way, residential and commercial development, agriculture, and open land. Even though this fragmentation exists, the project could contribute to additional forest fragmentation (affecting migratory bird and other wildlife habitat). 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. To minimize impacts on forests, Gulf South has co-located approximately 93 percent of the proposed Index 99L pipeline with existing pipeline corridors.

At the Hall Summit Compressor Station site, negligible impacts on vegetation would be expected as the site has already been converted to developed land for the existing compressor station. Following the completion of construction activities at Hall Summit Compressor Station, disturbed areas not covered with gravel or asphalt would be graded, restored, and reseeded with the typical seed mixes used for maintenance and revegetation at the existing facility.

In general, the majority of construction impacts on vegetation types, such as agricultural, open lands, and wetlands, would be short-term, as these areas would be expected to return to preconstruction conditions within one or two growing seasons after restoration is complete. Impacts on forested areas, however, represent a long-term impact, as vegetation would take longer to return to pre-construction conditions in construction workspaces, or permanent impacts in areas within the permanent pipeline right-of-way.

Gulf South has developed a project-specific Exotic and Invasive Species Control Plan to minimize the spread of exotic and invasive plant species during project. We have reviewed this plan and find the measures contained in the plan, as well as Gulf South's adherence to the FERC Plan, adequate to minimize the potential for invasive species to be introduced or spread due to the project.

In conclusion, construction and operation of the project would result in short- and long-term impacts on vegetation, and the majority of the impacts would occur on open lands, forests, and pine plantations. Additionally, with the implementation of restoration methods outlined in the FERC Plan and Procedures and Gulf South's Revegetation Plan, impacts on vegetation would not be significant.

4.3 Wildlife and Migratory Birds

Wildlife species common to the project areas within the Southeastern Mixed Forest, Outer Coastal Plain Mixed Forest, and Lower Mississippi Riverine Forest Provinces include white-tailed deer, black bear, bobcat, gray fox, raccoon, striped skunk, swamp rabbit, eastern cottontail, gray squirrel, fox squirrel, common garter snake, timber rattlesnake, box turtle, kingfisher, hooded warbler, red-eyed vireo, cormorant, tufted titmouse, bobwhite, summer tanager, egret, turkey, heron, ibis, blue-gray gnatcatcher, mourning dove, cardinal, wood thrush, and Carolina wren (USDA 1996a, 1996b). 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.

Most wildlife occurrences would be birds, reptiles, and smaller mammals, as well as various invertebrate species. Construction and operation of the project would result in short- and long-term impacts on these species. Short-term impacts include the displacement of wildlife from construction areas and adjacent habitats as a result of construction activities, dust, and noise. We expect that the more mobile species would temporarily relocate to adjacent available habitat during construction activities. Construction could result in the mortality of less mobile animals such as rodents, reptiles, and invertebrates, which may be unable to escape the

immediate construction area. Gulf South would minimize the time between trenching and backfilling to the greatest extent practicable. Gulf South's EIs and contractors would inspect the trench prior to backfilling to ensure no wildlife is trapped. If wildlife is observed within the trench, Gulf South would contact appropriate personnel to remove and relocate the individuals. We do not expect the presence of larger wildlife species within the existing fenced Hall Summit Compressor Station as the site has already been converted to developed land for the existing station.

Long-term impacts on wildlife could result from the permanent removal of forested areas for the permanent pipeline right-of way, permanent access roads, and aboveground facilities. These areas would be permanently converted from forested to non-forested habitats for the operational life of the project. Forest fragmentation could result from the alteration of wildlife species composition by creating suitable habitat for edge species, while removing habitat for interior forest dwelling species. To reduce the potential for forest fragmentation, Gulf South co-located approximately 93 percent of the proposed Index 99L pipeline with existing pipeline corridors.

Following construction, workspaces outside the permanent right-of-way, permanent access roads, and aboveground facilities would be allowed to revert to pre-construction conditions in accordance with the FERC's Plan and Procedures. Effects on non-forested upland and wetland habitats disturbed by construction would be temporary and are expected to return to pre-construction conditions within one or two growing seasons after construction is completed. Based on the presence of similar habitats adjacent to and in the vicinity of construction activities, and the implementation of the FERC's Plan and Procedures, we conclude that construction and operation of the project would not significantly impact wildlife.

Migratory birds are species that nest in the United States and Canada during the summer and then migrate south to the tropical regions of Mexico, Central and South America, and the Caribbean for the non-breeding season. Migratory birds are protected under the Migratory Bird Treaty Act (16 USC 703–711). Executive Order 13186 directs federal agencies to, among other things, identify where unintentional take is likely to have a measurable negative effect on migratory bird populations. The goal is to work with the USFWS in avoiding or minimizing adverse impacts on migratory birds, with emphasis placed on species of concern, priority habitats, and key risk factors. Particular focus is given to addressing population-level impacts.

On March 30, 2011, the USFWS and the Commission entered into a *Memorandum of Understanding Between the Federal Energy Regulatory Commission and the U.S. Department of the Interior United States Fish and Wildlife Service Regarding Implementation of Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds"* (MBTA MOU) that focuses on avoiding or minimizing adverse impacts on migratory birds and strengthening migratory bird conservation through enhanced collaboration between the two agencies.

The Index 99 Expansion Project is in Bird Conservation Region 25 — West Gulf Coastal Plain/Ouachitas. Year-round suitable habitat for the bald eagle and suitable wintering habitat for the red-headed woodpecker (birds protected under the Migratory Bird Treaty Act) occurs within the project area. While suitable habitat for bald eagles may be present in the project area, no bald eagle nests were observed during Gulf South's field surveys conducted in January and February 2019. Based on the Texas Natural Diversity Database occurrence data (2018), bald

eagles have been documented at Lake Sam Rayburn, located approximately 5 miles southwest of the project area. If an active bald eagle nest were observed in the project area prior to or during construction, Gulf South would adhere to the buffer requirements established in the U.S. Fish and Wildlife Service (USFWS) National Bald Eagle Management Guidelines (USFWS 2007). As for the red-headed woodpecker, while suitable wintering habitat for the species exists in the project area, tree clearing is expected to take place from May through October. Any individuals present during construction would likely avoid the area or displace to similar adjacent habitats. To minimize impacts on forest habitat, Gulf South has co-located approximately 93 percent of the proposed Index 99L pipeline with existing pipeline corridors, which minimizes the amount of forest clearing required for the project. We conclude that although individual birds or nests may be impacted by the project (including those of ground-nesting birds such as the Bachman's sparrow, discussed below for state-listed species), we do not expect population-level impacts, or any impacts on particularly sensitive species that would contribute to a trend toward federal listing. As such, we conclude that impacts on migratory birds would not be significant.

4.4 Special Status Species

Special status species are those species for which state or federal agencies afford an additional level of protection by law, regulation, or policy. Included in this category are federally listed species that are protected under the Endangered Species Act of 1973, as amended (ESA), and those species that are state endangered or threatened.

Gulf South utilized the USFWS' on-line Information for Planning and Consultation System; the USFWS Louisiana Ecological Services Office's online project review application; the TPWD list of Rare, Threatened, and Endangered Species of Texas; and the LDWF list of Species by Parish to determine whether any federally or state-listed threatened or endangered species, species of concern, or designated critical habitats occur in the project areas.

Gulf South conducted field surveys between January and April 2019, for project components in Texas, to determine if any of the listed species or their associated habitats were present within the project areas. Gulf South did not conduct field surveys of the Hall Summit Compressor Station site, as the project would take place within the existing compressor station site. Instead, Gulf South used aerial photographs and topographic maps to determine if suitable special status species habitat is present within the compressor station site.

Federally Listed Species

Five species listed by the USFWS with protection under the ESA have the potential to occur within the project vicinity.[7] These include the Northern long-eared bat (NLEB) (*Myotis septentrionalis*), Louisiana pine snake (*Pituophis ruthveni*), red-cockaded woodpecker (RCW) (*Picoides borealis*), Texas golden gladecress (*Leavenworthia texana*), and white bladderpod (*Physaria pallida*). The project crosses federally designated critical habitat for the Texas golden

[7] The official species list identified three other federally listed species with the potential to occur in the project area — the least tern (*Sterna antillarum*), red knot (*Calidris canutus rufa*), and piping plover (*Charadrius melodus*); however, the USFWS' on-line consultation system states these species should only be evaluated for wind-related projects.

gladecress within San Augustine County, Texas. Appendix D shows the federally listed species with the potential to occur within the project areas and our determination of effect for each.

Northern Long-eared Bat, Louisiana pine snake, and red-cockaded woodpecker

Gulf South, acting as our non-federal representative for the purpose of complying with Section 7(a)(2) of the ESA, initiated informal consultation with the USFWS Texas Coastal Ecological Services Field Office and Louisiana Ecological Services Field Office on March 29, 2019. The March 29, 2019 letter to the Texas Coastal Ecological Services Field Office also requested concurrence with *no effec*t determinations for the Louisiana pine snake and the RCW for the proposed project activities in Sabine and San Augustine Counties, Texas. We agree with the *no effect* determination for these two species, as no known clusters of RCW are known within 2 miles of the project in San Augustine and Sabine Counties, and the nearest known records of the Louisiana pine snake are 12 miles and 17 miles from the project in San Augustine and Sabine Counties, respectively.

The letter to the Louisiana Ecological Services Field Office also requested concurrence with *no effect* determinations for the NLEB and the RCW for the proposed project activities in Bienville Parish, Louisiana. We agree with this determination, as no suitable habitat for the NLEB exist in the project area in Louisiana, and all work in Bienville Parish would occur within the existing Hall Summit Compressor station and would not require tree clearing. In a phone call on April 3, 2019 between Gulf South and the Louisiana Ecological Services Field Office, the USFWS stated that consultation under Section 7 of the ESA is not required for projects that are anticipated to have *no effect* on listed species; therefore, section 7 consultation with USFWS Louisiana Ecological Services Field Office for project activities in Louisiana is complete.

Texas golden gladecress and White bladderpod

Gulf South conducted surveys for Weches glade habitat, which supports populations of the federally endangered Texas golden gladecress and white bladderpod, in March 2019. Surveys did not identify any listed plants within the survey corridor; however, two unoccupied glades were identified within designated critical habitat for the Texas golden gladecress. Gulf South proposes using HDD to avoid impacts on the Texas golden gladecress and its designated critical habitat, and the white bladderpod. The proposed drill would be at a depth of approximately 40-65 feet below ground and would avoid damaging the clay pan associated with the glades. If an IR occurs within the federally designated Texas golden gladecress critical habitat, Gulf South has committed to notifying the USFWS and FERC. Containment and clean-up efforts would be implemented per the project's IR Plan. Gulf South has also committed to clearly marking glade habitats with signage and having a dedicated EI onsite through clearing and construction activities to ensure that glad habitats are not impacted.

The USFWS is developing recommendations and conservation measures for the golden gladecress (and its designated critical habitat) and for the white bladderpod and expects to finalize these measures in the near future. Based on our informal consultation to date with the USFWS, and Gulf South's technical discussions with the USFWS in which Gulf South has agreed in principle to the draft conservation measures, we determine that the project will not likely adversely affect these two species and not likely to destroy or adversely modify the designated critical habitat. Once the mitigation measures are finalized between the USFWS and

Gulf South and filed into the FERC docket, we will be able to complete ESA section 7 consultation with the USFWS. However, because ESA section 7 consultation is ongoing for the Texas golden gladecress and white bladderpod, **we recommend that:**

- **Gulf South should <u>not begin</u> construction activities <u>until</u>:**
  - **a. FERC staff receives comments from the USFWS regarding the proposed action;**
  - **b. FERC staff completes ESA consultation with the USFWS for the Texas golden gladecress and its federally-designated critical habitat, and the white bladderpod; and**
  - **c. Gulf South has received written notification from the Director of the Office of Energy Projects (OEP) that construction or use of mitigation may begin.**

<u>State-Listed Species</u>

In Louisiana, the only state-listed species is the RCW, which is also federally listed and discussed in the section above. On March 29, 2019, Gulf South submitted an informal consultation letter to the LDWF, including a project description and map, and requested the LDWF's review of Gulf South's impacts assessment regarding state-listed threatened or endangered species. On April 25, 2019, the LDWF issued a response to Gulf South indicating that no impacts on rare, threatened, or endangered species or critical habitat are anticipated from the project in Bienville Parish.

On March 29, 2019, Gulf South submitted an informal consultation letter to the TPWD, including a project description and map, and requested the TPWD's review of Gulf South's impacts assessment regarding state-listed threatened or endangered species. On May 7, 2019, the TPWD issued responses with information, comments, and recommendations to minimize impacts on state wildlife resources. In June 2019, Gulf South provided to the TPWD an updated species habitat assessment report for state-listed species. Subsequently, the TPWD provided additional recommendations on August 8, 2019, regarding state wildlife resources.

Texas state-listed species that are also federally listed and could be impacted by the project are RCW, NLEB, Louisiana pine snake, Texas golden gladecress, and white bladderpod. These species are discussed in the section above. Appendix E shows the state-listed species (that are not also federally listed and discussed above) with the potential to occur in the project areas and our determination of potential impacts on each.

The project would have no impacts on the piping plover, Louisiana black bear, blue sucker, paddlefish, southern hickorynut, or Texas pigtoe due to lack of suitable habitat in the project area. The project would also have no impacts on the red wolf due to the extirpation of the species in Texas; the Texas horned lizard, as the project area is outside of the current range of the species; and the triangle pigtoe as the project area is not within drainages that the species is endemic to.

The project may impact the following species — the peregrine falcon, Bachman's sparrow, bald eagle, swallow-tailed kite, white-faced ibis, wood stork, black bear, Rafinesque's big-eared bat, blackside darter, creek chubsucker, alligator snapping turtle, Northern scarlet snake, timber rattlesnake, Louisiana pigtoe, sandbank pocketbook, and Texas heelsplitter. Gulf

South would implement measures outlined in the FERC Plan and Procedures, USACE Section 404 permit conditions, the project-specific Revegetation Plan, Stormwater Pollution Prevention Plan, and IR Plan.

In its May 7, and August 8, 2019 letters, the TPWD provided specific comments and recommendations for the Bachman's sparrow, Rafinesque's big-eared bat, creek chubsucker, alligator snapping turtle, northern scarlet snake, and three mussel species (Louisiana pigtoe, sandbank pocketbook, and Texas heelsplitter). The TPWD noted that of the terrestrial species potentially occurring in San Augustine and Sabine Counties, the timber rattlesnake, Northern scarlet snake, and Rafinesque's big-eared bat are more at risk for being impacted by construction activities than other state-listed species due to their limited mobility or susceptibility to disturbance. In response to the TPWD's comments, Gulf South has committed to implement the following measures:

- Gulf South will have dedicated EIs on site during construction who would be trained to identify all state-listed species with the potential to occur within the project area.
- Gulf South will conduct training for all project personnel to inform them of the potential presence of timber rattlesnakes and Northern scarlet snakes. Training will include methods of identification and use of BMPs to minimize impacts on these species.
- If a state-listed species is observed within the project area, the EI will notify Gulf South's Environmental Project Manager, who will coordinate with the TPWD for appropriate relocation strategies.
- Where nighttime work may occur (during HDD operations) Gulf South will use minimum amount of temporary nighttime lighting needed for safety and security.
- Gulf South will notify the TPWD's "Kills and Spills" Team in the event of a spill, IR, or take of state-listed aquatic species, including mussels, fish, and reptiles.

The Bachman's sparrow is a ground-nesting species and year-round resident of San Augustine and Sabine Counties, and is listed as a Bird of Conservation Concern in BCR 25.[8] Historically, the species inhabits mature, open pine forest. Most of the species historic habitat has been logged, and the species is rare in many areas it was formerly common (Dunning et. al., 2018). This species was specifically mentioned by the TPWD as particularly sensitive and warranting additional protective measures, to include pre-construction nest surveys and excluding vegetation clearing activities during the general bird nesting season (March 15 to September 15) to avoid adverse impacts to breeding birds. If construction of the right-of-way were to begin prior to the nesting season for, birds could simply avoid the active area and nest elsewhere. However, if construction were to commence after March 15, nests could be destroyed. We agree that Gulf South should continue to consult the TPWD to determine if additional mitigation is appropriate. Therefore, **we recommend that**:

- **Prior to commencing construction activity during the Bachman's sparrow primary nesting season (March 15 to September 15), Gulf South should file with the Secretary of the Commission (Secretary), for review and written approval by**

[8] In response to the 1998 amendment to the Fish and Wildlife Conservation Act, the USFWS established a list of Birds of Conservation Concern that, without conservation action, were expected to become candidate species for listing under the Endangered Species Act (USFWS, 2008).

the Director of OEP, documentation of consultation with the TPWD regarding pre-construction nest surveys and any TPWD recommended mitigation measures that Gulf South would implement for the Bachman's sparrow.

Based on our review of the species habitat and distribution information, as well as Gulf South's implementation of the measures outlined above, we conclude that the project would not have significant impacts on state-listed species.

5. LAND USE, RECREATION, AND VISUAL RESOURCES

5.1 Land Use

Land uses in the project areas consist primarily of open, forest, pine plantation, agriculture, and industrial lands. Land would be temporarily affected by construction activities and permanently affected by operations. Construction period impacts to land use would be adverse, but short-term, affecting approximately 389 acres of land. However, except for the new mainline valve, pig launcher and receiver facilities, and permanent access roads, lands used during construction would be regraded to match the existing contours, reseeded, and returned to their previous use at project completion.

Permanent (operational) impacts on land use/land cover would occur within the new permanent right-of-way (about 131 acres) and access roads (approximately 30 acres). While previous land uses on the right-of-way would be allowed to resume following completion of construction, some new use restrictions including limits on the placement of new structures would limit future use of the new pipeline easement. Approximately 0.3 acre of land (0.1 acre of open land, 0.2 acre of forest) would be permanently converted to aboveground pipeline facilities.

The project would affect approximately 16 acres of agricultural land, mainly pasture and hay fields. With the exception of 0.9 acre of agricultural land impacted by permanent access roads, all agricultural land affected by the project would be restored to its original use, including the permanent pipeline right-of-way.

Gulf South would minimize adverse impacts on agricultural land by implementing the FERC Plan. During construction, Gulf South would segregate topsoil in agricultural areas to preserve soil productivity and would negotiate with and reimburse landowners for any damages or loss of production resulting from the project's construction activities. The reimbursement to the landowner would be based on the market prices for the specific agricultural products at the time of easement negotiations with each affected landowner.

Gulf South would also work with landowners to identify and locate areas where there are drainage or irrigation systems. If drainage or irrigation systems are damaged by construction of the pipeline, Gulf South would repair or replace those damaged systems.

Gulf South has proposed to use up to three temporary contractor/pipe yards in the area of the project in San Augustine County, Texas, totaling about 45 acres of land. The contractor/pipe yards would be used primarily for the staging, parking, and storage of construction equipment and materials. The contractor yards are currently open land, and following completion of construction, Gulf South would restore the yard to its preconstruction condition.

No designated Coastal Zone Management Areas (Texas General Land Office 2019), registered National Historic Landmarks (NPS, 2018), designated Wilderness Areas (Wilderness Institute 2019b), Wild and Scenic Rivers (National Wild and Scenic Rivers System 2019), Indian Reservations (NPS 2019b), or designated National Trails or Wildlife Refuges are within 0.25 mile of any proposed project activities (NPS 2019a, 2019c, 2019d; USFWS 2019; Wilderness Institute 2019a). No National Scenic Byway would be crossed or impacted by the project (Federal Highway Administration 2019). In addition, there are no lands enrolled in the NRCS Wetland Reserve Program within the project area (NRCS 2019; Sullivan 2019; Claude 2019; Garner 2019).

The project crosses the El Camino Real de los Tejas National Historic Trail at MP 3.54 and MP 3.64 (NPS 2019c). The trail, on private property, is not maintained for the public to use in this area, and no aboveground facilities are proposed within the vicinity of the trail. The trail crossings would be open cut, and project impacts within the trail vicinity would be temporary and primarily limited to construction activities, with the exception of maintenance of the pipeline right-of-way, which will be permanent. However, the proposed Index 99L pipeline is co-located with existing pipeline rights-of-way at the trail crossing locations; therefore, permanent impacts associated with the project would be consistent with the existing landscape. In addition, there would be no appreciable effect on the aesthetics of the area, and construction and operation of the project would not result in impediments or detours to travelers. In response to our NOI, the NPS provided comments indicating the project was in the direct vicinity of El Camino Real de Los Tejas National Historic Trail, and requested information showing that the project would not impact the trail. Gulf South provided additional information to the NPS (see discussion in Cultural Resources section below). On July 16, 2019, the NPS indicted it had no further concerns with the project.

In addition, the project is not located within 0.25 mile of any state park, forest, or wildlife management area (WMA) (TPWD 2019b, 2019c; Texas A&M Forest Service 2019; Louisiana Department of Culture, Recreation and Tourism 2019; State Parks 2019; LDWF 2019).

Residential Land and Commercial Areas

Project construction would impact about 1.8 acres of residential land. A total of 20 structures are within 100 feet of the proposed construction work area. Two residences are within 50 feet of the construction work area, at MPs 1.99 and 3.54.

Gulf South plans to conduct HDD operations near residences at MPs 4.4 (FM 3483 HDD) and 12.1 (Railroad/Highway 103 HDD). Construction would be generally limited to daytime, with the exception of certain HDD activities, which may extend beyond the typical 7:00 am to 7:00 pm construction work hours. Gulf South would implement its Plan for Reducing Noise Impacts from HDD Operations and would use shielded lights to reduce impacts to neighboring residences where work would extend beyond normal working hours. Gulf South intends that any nighttime HDD operations would be conducted with the goal of limiting nighttime noise to a day-night noise level (L_{dn}) of 55 decibels on the A-weighted scale (dBA) at surrounding noise-sensitive areas (NSAs). Gulf South would contact, no later than one week in advance of and during construction, those neighboring residences within close proximity to the HDD operations to consult with the landowner on the effectiveness of the noise mitigation. Gulf

South may propose to temporarily relocate the affected landowners or offer other compensation if noise mitigation measures are unsuccessful in satisfying landowner concerns.

Gulf South would follow the requirements of its Residential Construction Implementation Plan and the FERC Plan to avoid and reduce impacts on residential areas. For residences within 50 feet of the construction work area, mitigation measures include:

- provide notifications to affected and adjacent landowners no later than two weeks prior to the start of construction;
- construction activities would generally be restricted to the hours of 7:00 am to 7:00 pm, Monday through Saturday; however, HDD operations and tie-ins could take place on Sundays or during nighttime hours;
- safety fencing would be installed around the edge of the construction area adjacent to the residence for a distance of 100 feet on either side of the residence;
- as many trees as possible would be left on the property. Branches may be trimmed to allow for safe operation and passage of construction equipment. Any vegetation cleared from the property would be disposed of as negotiated by the landowner and Gulf South;
- lawns and landscaping would be restored to pre-construction conditions, as would any walls or other structures that were damaged or removed during construction as negotiated by the landowner and Gulf South;
- topsoil would be segregated where appropriate or at the request of the landowner;
- Gulf South would take all measures necessary to ensure that utilities are not disrupted during construction. If the need to disrupt utilities arises, Gulf South will provide as much notice as possible to the landowner prior to the disruption;
- clean-up and backfill would occur immediately following installation of the pipeline, with final grading being completed within 10 days following backfill operations;
- revegetation activities would take place at the first seasonal opportunity;
- specialized construction techniques designed to minimize disturbances to residences, such as the stovepipe or drag section techniques, would be used where feasible;
- traffic flow and emergency vehicle access would be maintained on residential roadways and traffic detail personnel and/or detour signs used where appropriate;
- any section of the trench left open at the end of the workday would be fenced off or covered with a steel plate; and
- road surfaces near residences would be periodically inspected and cleaned of any soil and other debris as necessary.

Gulf South would also implement its Environmental Complaint Resolution Plan to address environmental concerns of landowners or abutters during construction. Gulf South would also implement its Plan for Reducing Noise Impacts from HDD Operations to reduce impacts on residences in proximity to the HDD sites. The potential for dust and noise impacts on nearby residential areas are further discussed in section B.8.

No known future planned residential or commercial developments would be within 0.25 mile of the project area (Lloyd 2019; Cryer 2019; Jenkins 2019; Johnson 2019; Warren 2019; and Kemp, 2019).

5.2 Visual Resources

The project is not within or in proximity to any federal, state, or locally designated scenic areas, such as National Wild and Scenic Rivers and scenic roads/highways. The project could alter existing visual resources in three ways: (1) construction activity and equipment may temporarily alter the viewshed; (2) clearing along the right-of-way during construction would alter existing vegetation patterns; and (3) aboveground facilities would create permanent alterations to the viewshed.

The project would be constructed over an approximate 6-month period, and during this time, the presence of construction equipment and disturbed soil areas would be noticeable. Following completion of the project, all areas, with the exception of the aboveground facilities, would be restored to their previous condition. Approximately 93 percent of the proposed pipeline would be co-located with existing utility rights-of-way; therefore, there would be little change in existing viewsheds along the pipeline route. The new pig launcher and receiver aboveground facilities at MPs 0.0 and 21.76 would be set back from public roads and screened from view by existing vegetation. The new mainline valve at MP 11.7 may be visible within the shared pipeline corridor from adjacent FM 3229. We conclude that the project would not have a significant impact on visual resources.

Based on the proximity of existing industrial infrastructure and the limited scope of activity, we do not anticipate that the project would have a significant impact on land use, recreational activities, or visual resources.

6. CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act, as amended, requires the FERC to take into account the effects of its undertakings on 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 the FERC in meeting our obligations under Section 106 and its implementing regulations at 36 CFR Part 800.

6.1 Survey Results

Gulf South conducted a cultural resources survey for the project and provided the resulting Phase I Cultural Resources Survey report (Phase I report) to the FERC and Texas State Historic Preservation Office (SHPO). The survey included both archaeological and architectural resources and was augmented by the excavation of 1,403 shovel test units. Approximately 883 acres were surveyed, including a 300-foot-wide corridor for the pipeline, a 50-foot-wide corridor for access roads, as well as extra workspace and contractor yards. Some survey remains to be completed due to denied access. Two historic archaeological sites, 41SA361 and 41SA362, were identified as a result of the survey. Site 41SA361, an abandoned wastewater lagoon with concrete features, was recommended as not eligible for the NRHP. Site 42SA362, a refuse area, was undetermined for NRHP-eligibility and would be avoided. In addition, the project crosses two sections of the mapped location of the historic trade route known as the El Camino Real de los Tejas National Historic Trail. No evidence of the trail was identified during the survey. In a letter dated April 26, 2019, the SHPO requested additional information to be provided in a

revised Phase I report. Gulf South provided a revised report addressing the SHPO's comments. In a letter dated September 3, 2019, the SHPO indicated that no historic properties were present or affected by the project.

Subsequently, Gulf South provided an addendum report covering previously denied access areas along the pipeline, access roads, and three contractor yards. Approximately 860 acres were surveyed, including a 300-foot-wide corridor for the pipeline segments and a 50-foot-wide corridor for access roads, augmented by the excavation of 570 shovel test units. As a result of the survey, no cultural resources were identified. Some survey remains to be completed due to due to denied access. In a letter dated June 3, 2019, the SHPO commented on the addendum report and requested additional information be provided in a revised addendum report. Gulf South has not yet provided a revised addendum report addressing the SHPO's comments. **Therefore, we recommend that:**

- **Gulf South should <u>not begin</u> construction of facilities and/or use of staging, storage, or temporary work areas and new or to-be-improved access roads <u>until</u>:**

    a. Gulf South files with the Secretary:

        (1) a revised addendum report, and the Texas SHPO's comments on the report; and

        (2) a second addendum report for the outstanding survey areas, and the Texas SHPO's comments on the report.

    b. the Advisory Council on Historic Preservation is afforded an opportunity to comment if historic properties would be adversely affected; and

    c. FERC staff reviews and the Director of the OEP approves the survey report and notifies Gulf South in writing that treatment plans/mitigation measures (including archaeological data recovery) may be implemented and/or construction may proceed.

All materials filed with the Commission containing <u>location, character, and ownership information</u> about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: <u>"CUI//PRIV - DO NOT RELEASE."</u>

Gulf South contacted the Louisiana SHPO regarding the activities at the Hall Summit Compressor Station. On May 3, 2109, the SHPO indicated no known historic properties would be affected by the project. We agree with the SHPO. Gulf South also provided a "blanket environmental clearance" with the Louisiana SHPO, to be used as applicable.

6.2 Unanticipated Discoveries Plan

Gulf South provided a plan to address the unanticipated discovery of historic properties and human remains during construction. We requested minor revisions to the plan. Gulf South provided a revised plan which we find acceptable.

6.3 Native American Consultations

Gulf South contacted the following Native American tribes regarding the project, and also conducted numerous follow-ups with the tribes: Absentee Shawnee Tribe of Oklahoma; Alabama-Coushatta Tribe of Texas; Caddo Nation of Oklahoma; Choctaw Nation of Oklahoma; Coushatta Tribe of Louisiana; Delaware Nation; Jena Band of Choctaw Indians; Mississippi Band of Choctaw Indians; Muscogee (Creek) Nation of Oklahoma; Tonkawa Tribe of Oklahoma; Tunica-Biloxi Tribe of Louisiana; Osage Nation; Quapaw Nation; and United Keetoowah Band of Cherokee Indians in Oklahoma. The Alabama-Coushatta Tribe of Texas responded and indicated that the project should avoid impacting the El Camino Real de Los Tejas Trail, and requested to be notified of inadvertent discoveries. The Delaware Nation, Quapaw Nation, and Muscogee (Creek) Nation indicated the project was outside their area of interest. The Coushatta Tribe of Louisiana did not wish to consult further on the project, but requested to be notified of inadvertent discoveries. The Jena Band of Choctaw Indians wished to be a consulting party and receive the survey report(s). The project unanticipated discovery plan provides for notification of tribes. Gulf South indicated it would provide the report(s) to those tribes requesting it following SHPO approval. No other responses have been received. We sent our NOI to these same tribes. The Choctaw Nation responded and requested geographic information system (GIS) shapefiles, the cultural resources survey report(s), and a copy of the EA once completed. As noted above, Gulf South would provide the Choctaw Nation with the survey report(s). The EA is available for viewing on the FERC eLibrary. The Quapaw Nation indicated the project was outside their area of interest. No other responses to our NOI have been received.

In response to our NOI, the NPS provided comments indicating the project was in the direct vicinity of El Camino Real de Los Tejas National Historic Trail, and requested information showing that the project would not impact the trail. Gulf South provided the Phase I report and the addendum report to the NPS. On July 16, 2019, the NPS indicted it had no further concerns with the project.

7. AIR QUALITY

Federal and state air quality standards are designed to protect human health. The EPA has developed National Ambient Air Quality Standards (NAAQS) for criteria air pollutants such as oxides of nitrogen (NO_x) and carbon monoxide (CO), sulfur dioxide (SO_2), and inhalable particulate matter ($PM_{2.5}$ and PM_{10}). $PM_{2.5}$ includes particles with an aerodynamic diameter less than or equal to 2.5 micrometers, and PM_{10} includes particles with an aerodynamic diameter less than or equal to 10 micrometers. The NAAQS were set at levels the EPA believes are necessary to protect human health and welfare. Volatile organic compounds (VOC) are regulated by EPA mostly to prevent the formation of ozone, a constituent of photochemical smog. Many VOCs form ground-level ozone by reacting with sources of oxygen molecules such as NO_x in the atmosphere in the presence of sunlight. NO_x and VOCs are referred to as ozone precursors. Hazardous air pollutants (HAP) are also emitted during fossil fuel combustion and are suspected or known to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects.

Greenhouse gases (GHG) produced by fossil-fuel combustion are carbon dioxide (CO_2), methane, and nitrous oxide (N_2O). GHGs' status as a pollutant is not related to toxicity. GHGs are non-toxic and non-hazardous at normal ambient concentrations, and there are no applicable ambient standards or emission limits for GHG under the Clean Air Act. Increased atmospheric concentrations of GHGs since the industrial age are the primary cause of warming of the climatic system.

During construction of the project, GHGs would be emitted from various types of construction equipment and vehicles (e.g., cranes, trenching machines, bulldozers, excavators, backhoes, haul trucks, construction worker commuter vehicles, etc.). Emissions of GHGs are typically expressed in terms of CO_2 equivalents (CO_2e). A summary of estimated emissions from project construction is presented in table 6.

Table 6
Estimated Construction Emissions for the Project
(total tons)

Project Component	NO_x	CO	VOC	SO_2	PM_{10}	$PM_{2.5}$	GHG (as CO_2e)	HAP
Index 99L activities (San Augustine and Sabine Counties, TX)	51.1	34.0	4.86	0.06	7.26	3.36	6,999	0.15
Hall Summit Compressor Station modifications (Bienville Parish, LA)	5.56	6.72	0.56	0.01	0.40	0.40	964	0.02
Total [a/]	56.7	40.7	5.42	0.07	7.66	3.76	7,963	0.17
[a/] Figures are rounded.								

If measured ambient air pollutant concentrations for a subject area remain below the NAAQS criteria, the area is considered to be in attainment with the NAAQS. The project is within areas classified as unclassifiable or in attainment for all NAAQS.

The Clean Air Act is the basic federal statute governing air pollution in the United States. We have reviewed the following federal requirements and determined that they are not applicable to the proposed project because Gulf South does not propose any new or modified compressor stations or operating emission sources as part of the project:

- New Source Review;
- Title V;
- National Emissions Standards for Hazardous Air Pollutants;
- New Source Performance Standards; and
- The Greenhouse Gas Reporting Rule.

During construction, a temporary reduction in ambient air quality may result from criteria pollutant emissions and fugitive dust generated by construction equipment. The quantity of fugitive dust emissions would depend on the moisture content and texture of the soils that would be disturbed. Fugitive dust and other emissions due to construction activities generally do not pose a significant increase in regional pollutant levels; however, local pollutant levels could increase. As detailed within its Fugitive Dust Control Plan, Gulf South would use dust suppression techniques, such as: watering access roads and construction workspaces; reducing

vehicle speeds on unpaved roads; generally placing priority of dust control in proximity to residences; cleaning up mud track-out at ingress and egress points at paved road access intersections and generally maintaining construction entrances to minimize track-out, and completing clean-up within one hour for track-out extending more than 50 feet from the point of origin and otherwise by the end of each working day; covering open-bodied trucks transporting materials that may generate dust; and revegetating all disturbed areas not rocked or cultivated in accordance with the FERC Plan and Procedures.

Following construction, the project would not result in permanent, operational air emissions as the project does not involve new or modified compressor stations or meter stations. However, project facilities would emit very small quantities of methane during normal operation through leaks from valves, fittings, and other project components, and as a result of periodic maintenance and inspection activities involving use of the new pig launcher and receiver. Gulf South estimates that the project facilities, including operation of the pig launchers and receivers, would result in approximately 74.1 tons per year and 22.4 tons per year of fugitive methane (as CO_2e) releases from project equipment leaks and pig launcher/receiver operations, respectively.

Gulf South does not currently participate in the EPA's Methane Challenge Program; however, as part of its efforts to minimize fugitive methane losses from the pipeline, Gulf South would install low-bleed pneumatic devices when driven by natural gas, as required by 40 CFR 60 Subpart OOOOa, and would periodically inspect and repair leaking components as required by the USDOT.

Based on the short duration of construction activities, and our review of the estimated emissions from construction of the proposed project, we conclude that the project would not result in regionally significant impacts on air quality.

8. NOISE

The noise environment can be affected both during construction and operation of pipeline projects. The magnitude and frequency of environmental noise may vary considerably over the course of the day, throughout the week, and across seasons, in part due to changing weather conditions and the effects of seasonal vegetation cover. Two measures to relate the time-varying quality of environmental noise to its known effect on people are the 24-hour equivalent sound level (L_{eq}) and L_{dn}. The L_{eq} is the level of steady sound with the same total (equivalent) energy as the time-varying sound of interest, averaged over a 24-hour period. The L_{dn} is the L_{eq} plus 10 dBA added to account for people's greater sensitivity to nighttime sound levels during late evening and early morning hours (between the hours of 10:00 pm and 7:00 am). The A-weighted scale is used because human hearing is less sensitive to low and high frequencies than mid-range frequencies. The human ear's threshold of perception for noise change is considered to be 3 dBA; 6 dBA is clearly noticeable to the human ear, and 10 dBA is perceived as a doubling of noise.

Construction noise is highly variable. Many construction machines operate intermittently, and the types of machines in use at a construction site change with the construction phase. The sound level impacts on residences due the construction activities would depend on the type of equipment used, the duration of use for each piece of equipment, the

number of construction vehicles and machines used simultaneously, and the distance between the sound source and receptor.

An exception to the typical daytime construction hours would be certain HDD activities, which may continue into nighttime hours and could operate 24 hours per day for several days to weeks (excluding days for mobilization and demobilization of construction equipment). Because of the nighttime activity and the fact that the equipment used for the HDDs would be stationary for an extended period of time, there is a greater potential for a prolonged noise impact.

Several NSAs are within 0.5 mile of the entry and exit sites associated with the FM 3483 HDD, and the Railroad/Highway 103 HDD. No NSAs are within 0.5 mile of the Chinquapin Wetlands HDD. Gulf South conducted an acoustical analysis to estimate the noise levels attributable to the FM 3483 and Railroad/Highway 103 HDDs and the total noise level at nearby NSAs, summarized in table 7.

Table 7
Noise Impacts of Project HDDs at nearby NSAs

HDD Entry/Exit	Distance and direction of nearest NSA	Ambient L_{dn} (dBA)	Estimated HDD L_{dn} (dBA)	Total L_{dn} without entry mitigation (dBA)	Total L_{dn} with entry mitigation (dBA)	Increase above ambient (dB)
FM 3483 Entry (MP 4.39)	800 ft E	49.1	61.0	61.2	54.5	5.4
FM 3483 Exit (MP 4.08)	1,400 ft NW	48.9	45.4	50.5	50.5	1.6
Railroad/Hwy 103 Entry (MP 12.12)	150 ft SW	50.3	78.6	78.6	55.9	5.6
Railroad/Hwy 103 Exit	1,750 ft N	50.3	39.0	50.6	50.6	0.3

Depending on site-specific conditions, Gulf South would employ some combination of the following measures to mitigate noise at nearby NSAs from the FM 3483 HDD and Railroad/Highway 103 HDD entry (drill rig) sites:

- a temporary noise barrier around the HDD entry site workspace;
- residential–grade exhaust silencers on all engines in conjunction with the HDD equipment;
- a "close-fit" noise barrier system around the hydraulic power unit and engine-driven pumps;
- a partial noise barrier around any engine jacket-water cooler;
- a partial barrier or partial enclosure around the mud mixing/cleaning system;
- "low-noise" generators designed with a factory-installed acoustical enclosures; and
- offer temporary housing to affected landowners in close proximity to the drill site.

Gulf South's Plan for Reducing Noise Impacts from HDD Operations includes the implementation of the above noise control measures.

As shown in table 7, at the entry point for the Railroad/Highway 103 HDD is 150 feet from the nearest NSA and noise levels would exceed 55 dBA with mitigation. To ensure that the noise attributable to HDD operations would not have a significant impact on local residents, **we recommend that:**

- **<u>During HDD operations at MP 12.12,</u> Gulf South should monitor noise levels and report the monitored noise levels in its weekly construction status reports, and make all reasonable efforts to restrict the noise attributable to the drilling operations to no more than a L_{dn} of 55 dBA at the nearby NSAs.**

On the basis that the Chinquapin Wetlands HDD entry and exit points are greater than 0.5 mile from the nearest NSAs, and with Gulf South's implementation of mitigation measures to reduce noise impacts from the FM 3483 HDD and Railroad/Highway 103 HDD, and our recommendation, we conclude that noise impacts from HDDs at nearby NSAs would not be significant.

Nighttime noise due to construction would be limited since construction would generally occur during daylight hours (7:00 am to 7:00 pm), Monday through Saturday, as described in section A of this EA. However, Gulf South has requested to conduct construction activities in residential areas on Sundays, federal holidays, and/or between 7:00 pm and 7:00 am in order to minimize the number of days required for construction and to meet the scheduled project in-service date. We have reviewed this request, and while we understand certain construction activities, such as HDD drilling operation, hydrostatic testing, and tie-ins may require construction that extends into the nighttime, we believe that general construction in residential areas or near NSAs should not extend beyond the identified daytime construction hours of 7:00 am to 7:00 pm. If, during construction, Gulf South believes extended work hours or days beyond those described in this EA or authorized by any Commission Certificate are necessary, Gulf South could request a variance from FERC in accordance with the Commission's established variance procedures (see recommended condition 1 in section D of this EA). To minimize construction noise impacts on residences, **we recommend that**:

- **Gulf South should conduct general project construction activities (excluding HDDs) in residential areas between the daytime hours of 7:00 am and 7:00 pm.**

The nearest residences from the Hall Summit Compressor Station site are approximately 215 feet away; therefore, we expect construction noise impacts from construction at this site on NSAs to be minimal as most construction would be limited to daytime hours.

Because of the temporary nature of construction activities, our HDD noise recommendation, and our general construction noise recommendation, we conclude that no significant noise impacts are anticipated from construction of the proposed project. The project pipeline facilities during normal operation would not produce noise at levels that would be noticeable at any nearby NSAs, including residences. The modifications at the Hall Summit Compressor Station would not change the noise levels currently produced by the station.

9. RELIABILITY AND SAFETY

The transportation of natural gas by pipeline involves some risk to the public in the event of an accident and subsequent release of gas. The greatest hazard is a fire or explosion following

a 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.

The pipeline and aboveground facilities associated with the project must be designed, constructed, operated, and maintained in accordance with the USDOT Minimum Federal Safety Standards in 49 CFR Part 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures.

The USDOT pipeline standards are published in 49 CFR Parts 190-199. For example, Part 192 specifically addresses natural gas pipeline safety issues, prescribes the minimum standards for operating and maintaining pipeline facilities, and incorporates compressor station design, including emergency shutdowns and safety equipment. Part 192 also requires a pipeline operator to establish a written emergency plan that includes procedures to minimize the hazards in a natural gas pipeline emergency.

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.

Facilities associated with the project must be designed, constructed, operated, and maintained in accordance with USDOT standards, including the 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 in service.

Gulf South's pipeline construction and operation would represent a minimum increase in risk to the public and we are confident that with the options available in the detailed design of the project facilities, that they would be constructed and operated safely.

10. CUMULATIVE IMPACTS AND CLIMATE CHANGE

10.1 Cumulative Impacts

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

We have evaluated the cumulative impacts of the proposed project consistent with other recent assessments issued by the Commission and in accordance with recommended CEQ and EPA methodologies (CEQ 1997). Our cumulative effects analysis focuses on potential impacts from the proposed project on resource areas or issues where the incremental contribution could result in cumulative impacts when added to the potential impacts of other actions. To avoid unnecessary discussions of insignificant impacts and projects, and to adequately address and accomplish the purposes of this analysis, an action must first meet the following three criteria to be included in the cumulative analysis:

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

As described in section B of this EA, constructing and operating the project would temporarily and permanently impact the environment. The project would affect geology and soils, water resources and wetlands, vegetation and wildlife, land use, visual resources, air quality, and noise. Thus, the proposed facilities could contribute to cumulative impacts on each of these resources; however, Gulf South would minimize adverse impacts associated with the project by implementing mitigation measures identified in section B of this EA. We note that no historic properties have been identified by surveys conducted to date and that if any historic properties were identified by remaining surveys and would be adversely affected, Gulf South would either avoid them or be required to implement treatment measures. Therefore, the Index 99 Expansion Project would not contribute to cumulative impacts on cultural resources. Further, cumulative impacts for operational air quality and noise were not considered because the proposed project does not include operational emissions or noise sources.

We defined resource-specific geographic boundaries that were used to conduct our analysis. These are summarized in table 8. Actions outside of our defined boundaries are not evaluated because their potential to contribute to a cumulative impact diminishes with increasing distance from the project. In addition to the geographic scope, the temporal relationship between the project and other activities in the areas was considered.

Table 8
Resource-Specific Geographic Boundary for Determining Cumulative Impacts of the Project

Environmental Resource(s)	Cumulative Impact Geographic Scope	Justification for Geographic Scope
Soils and Geology	Construction workspaces and immediately adjacent areas	Soil and geologic resources occur within site-specific locations and are usually not affected by activities occurring outside the designated areas. Geologic impacts resulting from project activities are generally limited to impacts related to current and future mineral and non-mineral mining activities rather than geologic hazards or formations.

Table 8 Resource-Specific Geographic Boundary for Determining Cumulative Impacts of the Project		
Environmental Resource(s)	**Cumulative Impact Geographic Scope**	**Justification for Geographic Scope**
Groundwater, Surface Water, and Wetlands; Fisheries, Vegetation, and Wildlife	Hydrologic Unit Code 12 Watershed	Watersheds are natural, well-defined boundaries for surface water flow, and commonly contribute to the recharge of groundwater resources. Vegetation and wildlife possess an interconnected relationship to surface water resources; therefore, these resources are also considered during the watershed evaluation process.
Land Use	1-mile radius	Land use, recreation, and aesthetics are generally impacted within and nearby to project areas.
Visual Resources	0.25 mile from pipeline and road crossings and 1 mile from aboveground facilities	Surrounding terrain, vegetation, and existing development are common factors that affect visual resources. The pipeline right-of-way is less visible due to its size; therefore, a smaller geographic scope is utilized for it compared to the permanent aboveground facilities.
Noise – Construction	0.25 mile from pipeline and aboveground facilities	Construction noise is limited and is commonly associated with the utilization of large equipment.
Air Quality – Construction	0.25 mile from pipeline and aboveground facilities	Construction equipment is the primary source of emissions during construction; however, these emissions will be minimal and will quickly dissipate to ambient levels as distance increases from the site.

We considered recently completed projects (one year prior to construction of the Index 99 Expansion Project), present, and reasonably foreseeable future major projects including infrastructure projects, pipelines, commercial and residential developments, and large industrial projects within the project area for which a definitive project scope has been developed and necessary facilities have been identified.

Since the Index 99 Expansion Project would be constructed in 2020 (based on Gulf South's current estimates), the majority of project's direct impacts are anticipated to occur the same year, with restoration quickly following construction. Therefore, short-term (construction-related) cumulative impacts were considered for other actions in the geographic scope and same temporal scope. Operational impacts were evaluated on a longer-term basis.

Table 9 and figure 2 identify past, present, and reasonably foreseeable projects or actions that occur within the geographic scope of each resource area. These projects were identified through Gulf South's consultations with local planning and development offices, review of the FERC docket, and our on-line review of publicly available resources. All such potential cumulative

impacts were identified for the Texas portions of the proposed project. No projects that could contribute to cumulative impacts were identified in the vicinity of the Hall Summit Compressor Station (Bienville Parish, Louisiana).

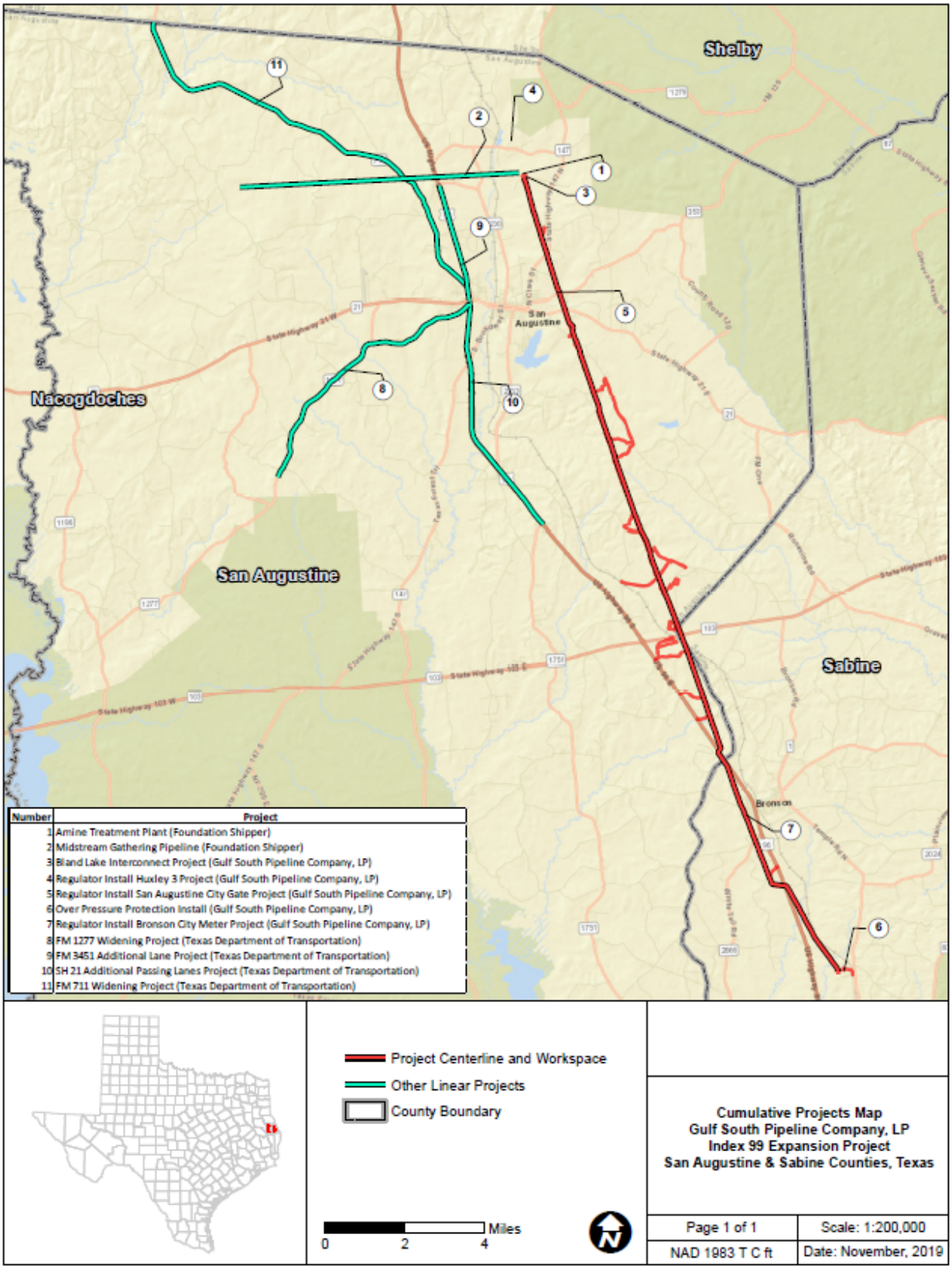

Figure 2 Location of Projects Considered for Cumulative Impacts Analysis

Table 9
Past, Present, and Reasonably Foreseeable Projects Considered in the Cumulative Impacts Analysis for the Index 99 Expansion Project

Project (Project Proponent) (No. on Map)	Project Description	County	Estimated Construction Timeframe	Project Size [a]	Closest Distance from Project [b]	Included in Cumulative Impact Analysis	Resources Potentially Affected within the Proposed Project's Geographic Scope
Natural Gas Facilities Projects							
Amine Treatment Plant (Foundation Shipper) (1)	Construction of a new amine and dehydration treatment plant.	San Augustine County, Texas	Construction: currently underway Operation: June 2020	Information unavailable	Overlaps with the Index 99 Receiver Site	Yes	Groundwater, Surface Water, and Wetlands; Fisheries, Vegetation, and Wildlife; Soils and Geology; Land Use; Visual Resources; Noise (Construction); Air Quality (Construction)
Midstream Gathering Pipeline (Foundation Shipper) (2)	Construction of a midstream gathering pipeline terminating at the Amine Treatment Plant identified above.	San Augustine County, Texas	Construction: currently underway Operation: June 2020	6 – 7 miles	Within an approximate 0.50-mile radius of the Index 99 Receiver Site	Yes	Groundwater, Surface Water, and Wetlands; Fisheries, Vegetation, and Wildlife; Land Use; Visual Resources; Noise (Construction); Air Quality (Construction)
Bland Lake Interconnect Project (Gulf South Pipeline Company, LP) [c] (3)	Installation of a grassroots receipt meter station on existing Index 99 near MP 21.50. Project activities include temporary minor modifications to County Road 113 to facilitate construction traffic.	San Augustine County, Texas	Construction: currently underway Operation: December 2019	5.50 acres	Overlaps with the Index 99 Receiver Site	Yes	Groundwater, Surface Water, and Wetlands; Fisheries, Vegetation, and Wildlife; Soils and Geology; Land Use; Visual Resources
Regulator Install Huxley 3 Project (Gulf South Pipeline Company, LP) [d] (4)	Installation of a heater and regulator on existing Index 99.	San Augustine County, Texas	Construction: completed Operation: in service	0.07 acre	0.91 mile northwest of the Index 99 Receiver Site	Yes	Groundwater, Surface Water, and Wetlands; Fisheries, Vegetation, and Wildlife; Land Use; Visual Resources

Table 9
Past, Present, and Reasonably Foreseeable Projects Considered in the Cumulative Impacts Analysis for the Index 99 Expansion Project

Project (Project Proponent) (No. on Map)	Project Description	County	Estimated Construction Timeframe	Project Size [a]	Closest Distance from Project [b]	Included in Cumulative Impact Analysis	Resources Potentially Affected within the Proposed Project's Geographic Scope
Regulator Install San Augustine City Gate Project (Gulf South Pipeline Company, LP) [d] (5)	Installation of a heater and regulator on existing Index 99.	San Augustine County, Texas	Construction: completed Operation: in service	0.11 acre	130 feet west of MP 3.0	Yes	Groundwater, Surface Water, and Wetlands; Fisheries, Vegetation, and Wildlife; Land Use; Visual Resources
Over Pressure Protection Install (Gulf South Pipeline Company, LP) [d] (6)	Installation of a new dual 10- inch Over Pressure Protection skid and demolition of existing check measurement and regulation on existing facilities at compressor station.	Sabine County, Texas	Construction: completed Operation: in service	12 acres	Overlaps with the permanent access road (PAR)-25 and directly adjacent to the Index 99 Launcher Site	Yes	Groundwater, Surface Water, and Wetlands; Fisheries, Vegetation, and Wildlife; Soils and Geology; Land Use; Visual Resources
Regulator Install Bronson City Meter Project (Gulf South Pipeline Company, LP) [d] (7)	Installation of a heater and regulator on existing Index 99.	Sabine County, Texas	Construction: completed Operation: in-service	0.08 acre	64 feet east of MP 17.03	Yes	Groundwater, Surface Water, and Wetlands; Fisheries, Vegetation, and Wildlife; Land Use; Visual Resources
Transportation Projects							
FM 1277 Widening Project (Texas Department of Transportation) (8)	Reconstruct existing pavement and widen to 26 feet.	San Augustine County, Texas	Construction: Anticipated to begin by 2023	7.70 miles	2.27 miles northwest of MP 3.12	No. Outside of Index 99 Expansion Project construction period.	N/A

Table 9
Past, Present, and Reasonably Foreseeable Projects Considered in the Cumulative Impacts Analysis for the Index 99 Expansion Project

Project (Project Proponent) (No. on Map)	Project Description	County	Estimated Construction Timeframe	Project Size [a]	Closest Distance from Project [b]	Included in Cumulative Impact Analysis	Resources Potentially Affected within the Proposed Project's Geographic Scope
FM 3451 Additional Lane Project (Texas Department of Transportation) (9)	Reconstruct pavement and add passing lanes.	San Augustine County, Texas	Construction: Anticipated to begin by 2023	2.72 miles	2.11 miles west of MP 1.41	No. Outside of Index 99 Expansion Project construction period.	N/A
SH 21 Additional Passing Lanes Project (Texas Department of Transportation) (10)	Reconstruct pavement and add passing lanes.	San Augustine County, Texas	Construction: Anticipated to begin by 2023	6.27 miles	2.05 miles southwest of TAR-10	No. Outside of Index 99 Expansion Project construction period.	N/A
FM 711 Widening Project (Texas Department of Transportation) (11)	Reconstruct existing pavement and widen to 24 feet.	San Augustine County, Texas	Construction began in March 2018; Operation: July 2019	11.33 miles	2.14 miles southwest of MP 2.24	Yes	Groundwater, Surface Water, and Wetlands; Fisheries, Vegetation, and Wildlife
Non-jurisdictional Projects							

Table 9
Past, Present, and Reasonably Foreseeable Projects Considered in the Cumulative Impacts Analysis for the Index 99 Expansion Project

Project (Project Proponent) (No. on Map)	Project Description	County	Estimated Construction Timeframe	Project Size [a]	Closest Distance from Project [b]	Included in Cumulative Impact Analysis	Resources Potentially Affected within the Proposed Project's Geographic Scope
New Powerline at Mainline Valve, Milepost 11.72	Construct overhead power transmission line from existing overhead powerline to the proposed Index 99 mainline valve at milepost 11.72. The power transmission line would be installed overhead, and no ground disturbance would be required.	San Augustine County, Texas	Construction: Concurrent with the Index 99 Expansion Project	100 feet	100 feet northeast of new mainline valve at milepost 11.72	Yes	Visual Resources and Noise (Construction)

N/A – not applicable
a Project size is based on publicly available information, including reported acreages or review of mapping exhibits.
b Distance is measured from nearest portion of the proposed project workspace to the identified project's location.
c Gulf South will be constructing a new interconnect on its existing Index 99 pipeline under its Automatic Blanket Certificate in Docket No. CP82-430-000.
d Gulf South will be installing auxiliary and appurtenant equipment solely on existing Index 99 facilities pursuant to Section 2.55(a) of FERC's regulations.

The actions considered in our cumulative impact analysis are included based on the likelihood of their impacts coinciding with impacts of Gulf South's Index 99 Expansion Project, meaning the other actions have current or ongoing impacts or are "reasonably foreseeable." The actions we considered are those that could affect similar resources during the same timeframe as the proposed project. The anticipated cumulative impacts of the projects and these other actions are discussed below.

Geology and Soils

The geographic scope for cumulative impacts on geologic and soils resources is limited to the project workspace and adjoining land. The proposed project workspace overlaps with both the Amine Treatment Plant, Bland Lake Interconnect at the Index 99 Receiver Site, and the Over Pressure Protection Install at PAR-25. Publicly available information regarding the exact location and extent of the Midstream Gathering Pipeline is unknown; however, it is reasonable to assume that it may also overlap with the proposed project at the Index 99 Receiver Site. The Index 99 Expansion Project, the Midstream Gathering Pipeline, the Amine Treatment Plant, and the Over Pressure Protection Install would result in minor modifications to surficial topography during construction. A majority of these areas would be returned to pre-construction contours, and workspace overlap occurs in areas of flat or gently sloping topography. Therefore, we conclude that cumulative impacts on geologic resources would not be significant.

Construction of the proposed project, concurrently with the Amine Treatment Plant and Midstream Gathering Pipeline and following construction of the Bland Lake Interconnect and Over Pressure Protection Install, would prolong disturbance of soils and could increase the potential for erosion, compaction, rutting, and the establishment of invasive species. The Bland Lake Interconnect and Over Pressure Protection Install would be constructed pursuant to Gulf South's Automatic Blanket Certificate and would be required to adhere to the BMPs outlined in the FERC Plan and Procedures; and all identified projects would be required to implement similar BMPs in accordance with applicable federal and state regulations to minimize soil erosion and impacts. Therefore, we conclude that cumulative impacts on soils would not be significant.

Operation of the Index 99 Expansion Project and the identified projects (excluding the Over Pressure Protection Install) would result in the permanent conversion of prime farmland to industrial use. The impacts on prime farmland from the Index 99 Expansion Project would be minor as the total impacts on prime farmland represent a small portion of the total area of prime farmland within the affected counties; therefore, the contribution to cumulative impacts on prime farmland would not be significant.

Groundwater

The greatest potential for impacts on groundwater from the project would be during construction; these impacts would be temporary and associated with trenching, backfilling, dewatering, clearing and grading. Groundwater could also be affected if there were a spill of hazardous materials. Gulf South would implement mitigation measures to avoid or minimize direct and indirect impacts on groundwater resources including the use of measures specified in the FERC Plan and Procedures and its SPCC.

All other major actions, although perhaps not the smaller scale projects, that are within the geographic scope of the proposed project, including other FERC-regulated projects, would be required to obtain water use and discharge permits, implement erosion and sediment controls, and adhere to various spill plans as mandated by federal and state agencies. All project proponents would also have to coordinate with applicable regulatory agencies and/or local water supply districts to ensure that there are adequate water supplies for each respective project. 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. Impacts from the Index 99 Expansion Project on groundwater quality would be minor; therefore, we conclude that cumulative impacts on groundwater quality or withdrawal and depletion would not be significant.

Surface Water and Wetlands

The geographic scope for assessing cumulative impacts on surface water resources and wetlands includes each HUC-12 watershed crossed by the project. The actions in table 9 that fall within the geographic and temporal scopes for surface water resources and wetlands include the Amine Treatment Plan, Midstream Gathering Pipeline, Bland Lake Interconnect Project, Huxley 3 Project, San Augustine City Gate Project, Over Pressure Protection Install, and Bronson City Meter Project. These projects could have direct or indirect impacts on surface water resources and wetlands.

Most of the waterbodies crossed by the Index 99 Expansion Project would be crossed via open-cut. Additionally, Gulf South would cross several waterbodies by the HDD method, thereby avoiding impacts on those waterbodies. Approximately 0.4 acre of PFO/PSS wetlands would be converted to PEM wetlands as a result of construction of the Index 99 Expansion Project; there would be no net loss of wetlands. Gulf South would minimize impacts on water quality and wetlands by implementing measures outlined in the FERC Plan and Procedures, as well as its SPCC and IR Plans. We do not believe that even if an inadvertent release were to occur, it would result in a significant impact. Other projects listed in table 9 that could impact waterbodies and/or wetlands would presumably adhere to BMPs and/or applicable permit conditions. We conclude that cumulative impacts on surface water resources and wetlands would not be significant.

Vegetation and Wildlife

Cumulative impacts on vegetation and wildlife, including threatened and endangered species affected by the projects, could occur in the HUC-12 watersheds crossed by the Index 99 Expansion Project with other actions constructed at the same time. Other actions that share a HUC-12 with the Index 99 Expansion Project are identified in the surface water/wetlands discussion above and could also have direct or indirect impacts on vegetation and wildlife. Construction activities associated with clearing, grading, removal of vegetation, and the potential for the establishment of invasive plant species occurring during the same timeframe and area can result in cumulative impacts. In addition, changes of these environments can also cause alteration of wildlife habitat, displacement of wildlife, and other secondary effects such as forest fragmentation.

The Index 99 Expansion Project's construction and operation activities within this HUC-12 would primarily impact open land, forests, and pine plantations. The projects listed in table 9 could also require tree clearing or removal of other types of vegetation, which would result in short- (during construction) and long-term (during the operation life) impacts on vegetation and wildlife and its habitat. Approximately 18 acres of undeveloped lands would be affected by construction of the other natural gas infrastructure projects. Additionally, undeveloped lands adjacent to existing roads could be affected by the transportation projects listed in table 9.

Cumulative impacts on open lands would generally be short-term and the areas would be expected to return to preconstruction conditions within one or two growing seasons after restoration is complete. Impacts on forested areas and pine plantations, however, represent long-term impacts (from construction) as vegetation would take longer to return to pre-construction conditions in temporary workspaces and permanent impacts (from operations) as vegetation would be precluded within the permanent right-of-way or where other project footprints or rights-of-way are established. Thus, there could be noticeable cumulative impacts on forests and pine plantations, and associated wildlife habitat. There could also be a cumulative impact on forest fragmentation; however, to minimize impacts on forests, Gulf South co-located approximately 93 percent of the proposed Index 99L pipeline with existing pipeline corridors, which minimizes the amount of forest clearing required for the Index 99 Expansion Project. Additionally, land not used for operations of the Index 99 Expansion Project would be allowed to revert to pre-construction conditions following construction.

We expect short-term impacts on wildlife as a result from displacement of wildlife from construction activities. There could be a cumulative impact if wildlife is disturbed by more than one project being constructed in a given area at the same time. However, we expect that most wildlife would relocate to similar nearby habitat. Long-term impacts on wildlife could result from the permanent removal of forested areas as these areas would be permanently converted from forested to non-forested habitats for the operational life of the project. We conclude that these impacts would be minor, and not significant.

Land Use and Visual Resources

Projects with permanent aboveground components, such as buildings, residential projects, and roads, and aboveground electric transmission lines generally have greater impacts on land use than the operational impacts of a pipeline (including non-jurisdictional gathering lines for oil and gas development). Pipelines are generally buried and thus allow for most uses of the land following construction. The clearing of forest does have permanent land use and visual impacts, with land use conversion to herbaceous and shrub vegetation within the permanent operational easement of pipelines. Otherwise, pipeline projects typically only have short-term impacts on most land uses.

The projects listed in table 9 combined would disturb approximately 30 acres of land within the combined geographic scope affecting a variety of land uses. Of these, approximately 12 acres would be disturbed by construction activities at existing natural gas facilities, while the remaining 18 acres of disturbance would be for the construction of natural gas pipeline facilities on undeveloped land. Again, we use total disturbance by projects as a proxy for impacts on land uses.

Construction of the Index 99 Expansion Project would disturb about 390 acres of mostly open, forest, pine plantation, or agricultural land. To reduce impacts on soils, and curtail erosion, Gulf South would follow the measures in the FERC Plan and Procedures, which include installation of erosion control devices, topsoil segregation, soil decompaction, and revegetation.

The Index 99 Expansion Project would result in cumulative impacts on land use due to the construction of about 2 acres of new aboveground facilities in proximity to the 12 acres of aboveground facilities to be constructed by others as listed in table 9. For the most part, however, the project and other facilities would be constructed on or adjacent to existing natural gas or other utility rights-of-way; and therefore, there would be little change in land use from construction and operation of these projects and only minor cumulative impacts on land use.

Visual resources represent the aesthetic quality of the landscape as perceived subjectively by the viewer. Visual impacts would be recognized based on the amount of contrast construction and operation of facilities would create against the original background. Landscapes are rarely pristine, and visual quality may be modified by existing infrastructure, including other pipelines, powerlines, highways, railroads, houses, commercial buildings, farmsteads, and fencing. Further, the quality of the view would be influenced by the time span of the view, and surrounding topography and vegetation.

Aboveground facilities, including meter stations and pig launching and receiving facilities, have the most potential to impact a visual setting. The Index 99 Expansion Project includes only minor aboveground facilities within an existing utility corridor. There are no federal, state, or local recreation or special interest areas within the visual geographic scope. The potentially cumulative projects listed in table 9 would be similar in nature, and together with the proposed project facilities could result in a cumulative impact on visual resources. The primary visual impact of the proposed project would occur from the conversion of forested land or pine plantation to scrub-shrub or herbaceous vegetation types. The project would add incrementally forest and pine plantation clearing by the other natural gas projects, but the overall contribution would not be significant given that the majority of projects would be buried pipeline and because the project pipeline would be collocated with existing corridors for approximately 93 percent of the route. The project facilities would also be set back from local roadways, and existing vegetation around the project's aboveground facilities would shield surrounding areas from visual impacts. Additionally, disturbed areas would be revegetated as appropriate.

The Index 99 Expansion Project's contribution to cumulative impacts on land use, recreation, special interest areas, and visual resources would mostly be limited to the construction phase (except as noted above) and would be short-term. In addition, we did not identify any major land use impacts from the other projects. Thus, we conclude that cumulative impacts on land use and visual resources would not be significant.

Air Quality and Noise

The Amine Treatment Plant and Midstream Gathering Pipeline projects identified in table 9 would occur concurrently with Index 99 Expansion Project construction, and cumulative air impacts could result; however, these impacts would be minor, temporary, and last only during the two-month period during which active concurrent construction would take place within the

0.25-mile geographic scope. Gulf South does not propose new compressor station or meter station facilities; therefore, no permanent, operational emissions would result.

As discussed in section B.8, construction of the Index 99 Expansion Project's facilities would result in intermittent, short-term noise impacts in areas of active construction. Construction of the Amine Treatment Plant, Midstream Gathering Pipeline, and the new powerline at the mainline valve identified in table 9 would overlap with project construction, and combined with project construction noise, result in cumulative noise impacts. However, as with cumulative air quality impacts, these impacts would be minor, temporary, and last only during the periods during which active construction of either of these projects and the project would take place within the 0.25-mile geographic scope. We therefore, conclude that the Index 99 Expansion Project's contribution to potential cumulative impacts on air quality and noise would not be minor, and overall cumulative impacts for these resources would not be significant.

10.3 Conclusions on Cumulative Impacts

Impacts associated with the Index 99 Expansion Project would be relatively minor to moderate. The impacts from other existing and proposed actions or general activities within the geographic scope of analysis are also expected to be minor. Our project-specific and resource specific (based on appropriate geographic scope) analysis leads us to conclude that the projects would have a minor to noticeable contribution to cumulative impacts when added to the effects of past, present, and reasonably foreseeable actions.

C. ALTERNATIVES

In accordance with NEPA and Commission policy, we evaluated alternatives to the project to determine whether they would be reasonable and environmentally preferable to the proposed action, while meeting the project objective. These alternatives included the no-action alternative and system alternatives. We received no comments regarding the proposed pipeline routing and did not identify any environmental impacts that would prompt us to evaluate alternate routes. Likewise, the proposed aboveground facilities would be constructed within existing sites or otherwise not result in significant environmental impacts. Thus, we did not assess facility site alternatives. Our evaluation criteria used for developing and reviewing alternatives were:

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

1. NO-ACTION ALTERNATIVE

Under the no-action alternative, the environmental impacts associated with the Index 99 Expansion Project would not occur. However, Gulf South's objectives would also not be met. Gulf South would not be able to meet the project's stated need in section A.2, including providing 500,000 Dth/d of natural gas capacity to its customer to supply markets in the Gulf Coast regions, as well as providing an additional 250,000 Dth/d of capacity on Gulf South's existing facilities in Northern Louisiana.

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

2. SYSTEM ALTERNATIVES

System alternatives are alternatives to the proposed action that would make use of Gulf South's (or other companies') existing, modified, or proposed pipeline systems to meet the stated objective of the proposed project.

In addition to Gulf South's existing 12-inch Index 99 pipeline system, there are three other natural gas pipeline systems in the immediate project area. Gulf South's system currently provides low- and high-pressure service. Gulf South's existing Index 99, which the proposed Index 99L would be co-located with, is not a feasible system alternative because it is restricted by an existing maximum capacity of 120,000 Dth/d; therefore, Gulf South's existing Index 99 would be reserved for low-pressure service while the proposed 30-inch Index 99L pipeline would be reserved for high-pressure service. Gulf South's existing Index 59 to the west of the proposed project is a major Gulf South pipeline located in the region. Expansion of this pipeline

and a new 80-mile lateral to the Customer's assets would be necessary to meet the purpose and need of the project and would result in its own environmental impacts either the same or greater than the project's potential environmental impacts. Due to Gulf South's existing system capacity constraints, we identified no system alternative using Gulf South's existing system that would meet the project's objective. Furthermore, no comments were filed suggesting that the objectives of Gulf South's proposed project could be met by other systems.

3. ALTERNATIVES CONCLUSION

We conclude that the proposed project is the preferred alternative to meet the project objectives.

D. STAFF'S CONCLUSIONS AND RECOMMENDATIONS

Based upon 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 staff's recommended mitigation measures below, approval of the Index 99 Expansion Project would not constitute a major federal action significantly affecting the quality of the human environment.

We recommend that the Commission Order contain a finding of no significant impact and that the following mitigation measures be included 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 locations 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 NGA 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 NGA 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 that 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(s) shall be:

a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;

b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;

c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;

d. 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 **weekly** 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 that 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 projects where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

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

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

    b. FERC staff completes ESA consultation with the USFWS for the Texas golden gladecress and its federally designated critical habitat, and the white bladderpod; and

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

13. **Prior to commencing construction activity during the Bachman's sparrow primary nesting season** (March 15 to September 15), Gulf South shall file with the Secretary, for review and written approval by the Director of OEP, documentation of consultation with the TPWD regarding pre-construction nest surveys and any TPWD recommended mitigation measures that Gulf South will implement for the Bachman's sparrow.

14. Gulf South shall **not begin** construction of facilities and/or use of staging, storage, or temporary work areas and new or to-be-improved access roads **until**:

    a. Gulf South files with the Secretary:

        (1) a revised addendum report, and the Texas State Historic Preservation Office's comments on the report; and

        (2) a second addendum report for the outstanding survey areas, and the Texas State Historic Preservation Office's comments on the report.

    b. the Advisory Council on Historic Preservation is afforded an opportunity to comment if historic properties would be adversely affected; and

    c. FERC staff reviews and the Director of the OEP approves the survey report and notifies Gulf South in writing that treatment plans/mitigation measures (including

archaeological data recovery) may be implemented and/or construction may proceed.

All materials filed with the Commission containing **location, character, and ownership information** about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "**CUI//PRIV - DO NOT RELEASE**."

15. **During horizontal directional drilling operations at MP 12.12,** Gulf South shall monitor noise levels and report the monitored noise levels in its weekly construction status reports, 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 nearby NSAs.

16. Gulf South shall conduct general project construction activities (excluding horizontal directional drills) in residential areas between the daytime hours of 7:00am and 7:00pm.

E. REFERENCES

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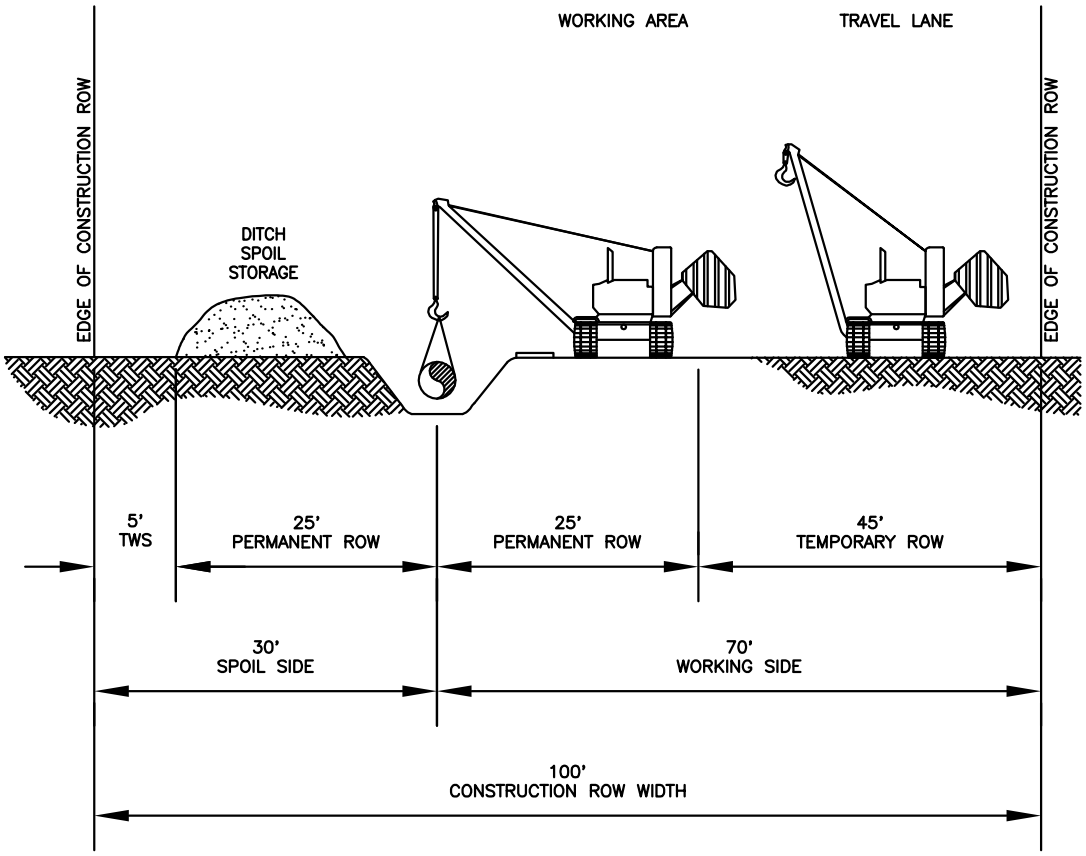
Appendix A

Construction Typicals



NOTES:

1. TYPICAL UPLAND CONSTRUCTION ROW WILL BE 100 FEET IN WIDTH CONSISTING OF A PERMANENT EASEMENT 50 FEET WIDE AND 45 FEET OF TEMPORARY WORKSPACE ON THE WORKING SIDE AND 5 FEET OF TEMPORARY WORKSPACE IN THE SPOIL SIDE.
2. TEMPORARY WORKSPACE WILL NOT BE REQUIRED BETWEEN HDD PADS.

NO.	DATE	BY	DESCRIPTION	PROJ. ID	CHK.	APP.
A	03 29 19	BVN	ISSUED FOR FERC	19AB	COC	CEN

REVISIONS

GULF SOUTH® PIPELINE

TYPICAL UPLAND CONSTRUCTION CONFIGURATION NON-COLOCATED

Co./Par.: SAN AUGUSTINE/SABINE		State: TEXAS	
Division: N/A		Op. Area: N/A	
Latitude: N/A		Longitude: N/A	
Section: N/A	Township: N/A	Range: N/A	
Drafter: BVN	Date: 03/29/19	Project ID: 19AB	Loc. No. XXXXXXX
Chk'd: COC	Date: 03/29/19	Scale: NOT TO SCALE	
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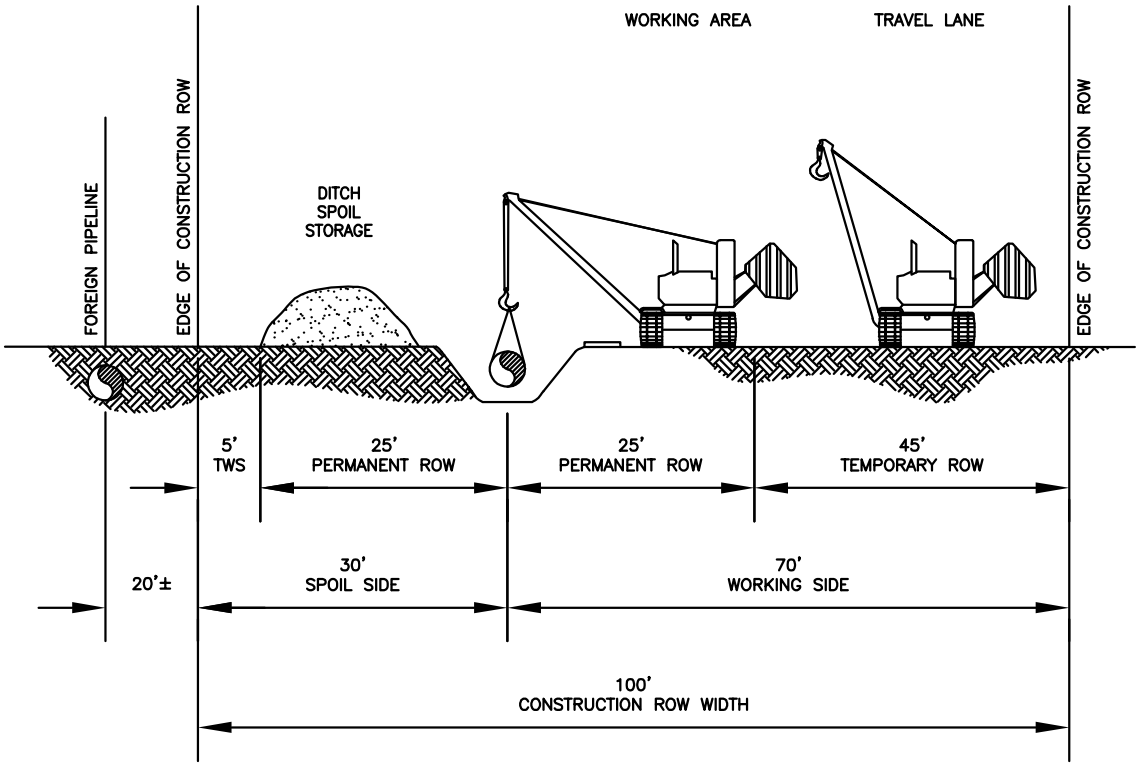
Dwg. No. 19AB-TYP-001		Sheet: 1 of 1	Rev. A

ISSUE DATE:



NOTES:

1. TYPICAL UPLAND CONSTRUCTION ROW WILL BE 100 FEET IN WIDTH CONSISTING OF A PERMANENT EASEMENT 50 FEET WIDE AND 45 FEET OF TEMPORARY WORKSPACE ON THE WORKING SIDE AND 5 FEET OF TEMPORARY WORKSPACE IN THE SPOIL SIDE.
2. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT ROAD, RAIL, AND WATERBODY CROSSINGS AND OTHER SPECIFIC LOCATIONS WHERE SPECIAL CIRCUMSTANCES REQUIRE.
3. AN ADDITIONAL 25 FEET OF ADDITIONAL TEMPORARY WORKSPACE WILL BE REQUIRED FOR TOPSOIL STORAGE IN AREAS WHERE TOPSOIL SEGREGATION IS REQUIRED (TYPICALLY CULTIVATED AND IMPROVED PASTURE LANDS)
4. TEMPORARY WORKSPACE WILL NOT BE REQUIRED BETWEEN HDD PADS.

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REVISIONS

GULF SOUTH® PIPELINE

TYPICAL UPLAND CONSTRUCTION CONFIGURATION COLOCATED WITH FOREIGN PIPLEINE

Co./Par.: SAN AUGUSTINE/SABINE		State: TEXAS	
Division: N/A		Op. Area: N/A	
Latitude: N/A		Longitude: N/A	
Section: N/A	Township: N/A	Range: N/A	
Drafter: BVN	Date: 03/29/19	Project ID: 19AB	Loc. No.
Chk'd: COC	Date: 03/29/19	Scale: NOT TO SCALE	XXXXXXX
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Dwg. No. 19AB-TYP-002		Sheet: 1 of 1	Rev. A

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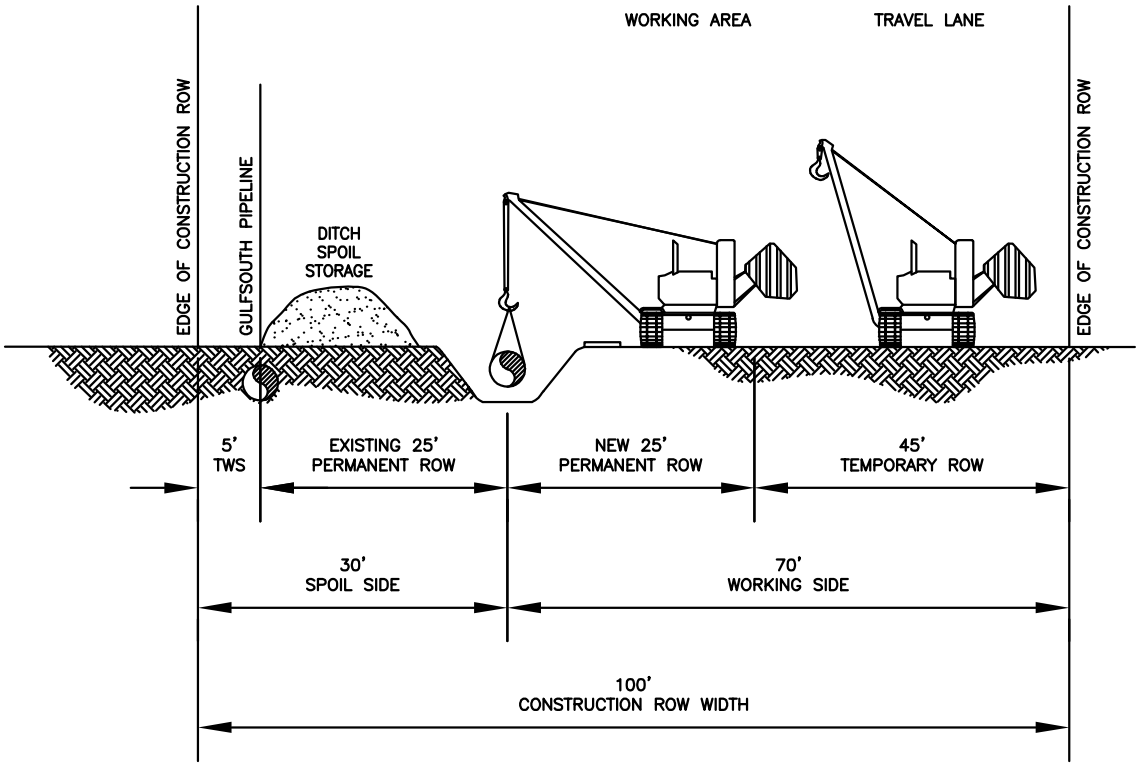

NOTES:

1. GULF SOUTH'S NEW PIPELINE ROW WILL CONSIST OF 25' OF EXISTING PERMANENT ROW AND 25' OF NEW PERMANENT ROW.
2. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT ROAD, RAIL, AND WATERBODY CROSSINGS AND OTHER SPECIFIC LOCATIONS WHERE SPECIAL CIRCUMSTANCES REQUIRE.
3. AN ADDITIONAL 25 FEET OF ADDITIONAL TEMPORARY WORKSPACE WILL BE REQUIRED FOR TOPSOIL STORAGE IN AREAS WHERE TOPSOIL SEGREGATION IS REQUIRED (TYPICALLY CULTIVATED AND IMPROVED PASTURE LANDS)
4. TEMPORARY WORKSPACE WILL NOT BE REQUIRED BETWEEN HDD PADS.

NO.	DATE	BY	DESCRIPTION	PROJ. ID	CHK.	APP.
A	03 29 19	BVN	ISSUED FOR FERC	19AB	COC	CEN

REVISIONS

GULF SOUTH® PIPELINE

TYPICAL UPLAND CONSTRUCTION CONFIGURATION COLOCATED WITH GULFSOUTH PIPELINE

Co./Par.: SAN AUGUSTINE/SABINE		State: TEXAS	
Division: N/A		Op. Area: N/A	
Latitude: N/A		Longitude: N/A	
Section: N/A	Township: N/A	Range: N/A	
Drafter: BVN	Date: 03/29/19	Project ID: 19AB	Loc. No. XXXXXXX
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Dwg. No. 19AB-TYP-003		Sheet: 1 of 1	Rev. A

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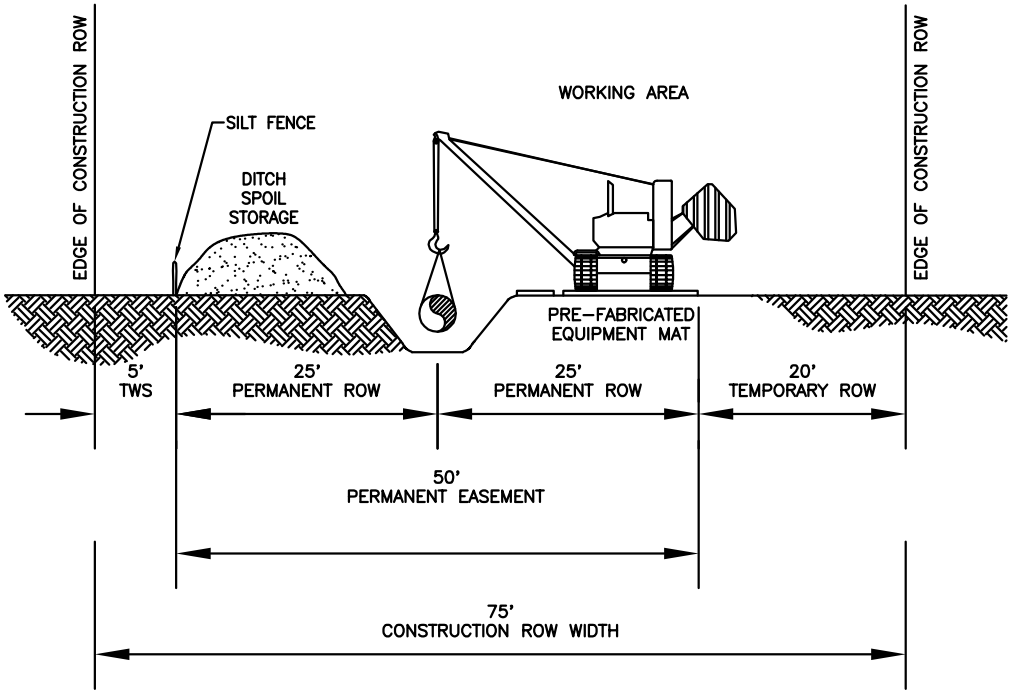

NOTES:

1. FLAG WETLAND BOUNDARIES PRIOR TO CLEARING. VEGETATION CANNOT BE CLEARED WITHIN A 10' BUFFER BETWEEN WETLAND BOUNDARIES AND CONSTRUCTION ROW EXCEPT OVER THE TRENCH.
2. NO REFUELING OF MOBILE EQUIPMENT IS ALLOWED WITHIN 500 FEET OF WETLAND. PLACE "NO FUELING" SIGN POSTS 500 FEET BACK FROM WETLAND BOUNDARY. REFUEL STATIONARY EQUIPMENT AS PER SPCC PLAN.
3. INSTALL TEMPORARY SLOPE BREAKER UNSLOPE WITHIN 100 FEET OF WETLAND BOUNDARY IF DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
4. MINIMIZE SOIL COMPACTION BY UTILIZING PREFABRICATED EQUIPMENT MATS.
5. AVOID ADJACENT WETLANDS. INSTALL SEDIMENT BARRIERS (STRAW BALES AND/OR SILT FENCE) AT DOWN SLOPE EDGE OF RIGHT-OF-WAY AND ALONG WETLAND EDGE AS REQUIRED.
6. RESTRICT ROOT GRUBBING TO ONLY THAT AREA OVER THE DITCHLINE AND DITCH SPOIL AREAS. GRIND STUMPS IF NECESSARY IN OTHER AREAS TO FACILITATE CONSTRUCTION.
7. TOPSOIL STRIPPING SHALL NOT BE REQUIRED IN SATURATED SOIL CONDITIONS.
8. LEAVE HARD PLUGS AT THE EDGE OF WETLAND UNTIL JUST PRIOR TO TRENCHING.
9. INSTALL TIMBER MATS THROUGH WETLAND AREA AS NEEDED OR DIRECTED BY ENVIRONMENTAL INSPECTOR. EQUIPMENT NECESSARY FOR RIGHT-OF-WAY CLEARNING MAY MAKE ONE (1) PASS THROUGH THE WETLAND BEFORE MATS ARE INSTALLED.
10. TRENCH THROUGH WETLANDS.
11. PIPE SECTION MAY BE FABRICATED WITHIN THE WETLAND AND ADJACENT TO ALIGNMENT, OR IN STAGING AREA OUTSIDE THE WETLAND AND WALKED IN.
12. LOWER IN PIPE, INSTALL TRENCH PLUGS AT WETLAND EDGES IF DIRECTED BY THE ENVIRONMENTAL INSPECTOR AND BACKFILL IMMEDIATELY.
13. REMOVE ANY TIMBER MATS OR PREFABRICATED MATS FORM WETLANDS UPON COMPLETION.
14. RESTORE GRADE TO NEAR PRE-CONSTRUCTION TOPOGRAPHY, REPLACE TOPSOIL AND INSTALL PERMANENT EROSION CONTROL.
15. GENERALLY, SEEDING IN WETLANDS WILL NOT BE NECESSARY SINCE WETLANDS REVEGETATE QUICKLY AND SOD WILL REMAIN INTACT EXPECT OVER TRENCH. THE CONTRACTOR SHALL SEED ANY WETLANDS THAT MAY REQUIRE SEEDING AS DETERMINED BY ENVIRONMENTAL INSPECTOR.

NO.	DATE	BY	DESCRIPTION	PROJ. ID	CHK.	APP.
A	03 29 19	BVN	ISSUED FOR FERC	19AB	COC	CEN

REVISIONS

GULF SOUTH® PIPELINE

TYPE II
SATURATED WETLAND CROSSING

Co./Par.: SAN AUGUSTINE/SABINE		State: TEXAS	
Division: N/A		Op. Area: N/A	
Latitude: N/A		Longitude: N/A	
Section: N/A	Township: N/A	Range: N/A	
Drafter: BVN	Date: 03/29/19	Project ID: 19AB	Loc. No. XXXXXXX
Chk'd: COC	Date: 03/29/19	Scale: NOT TO SCALE	
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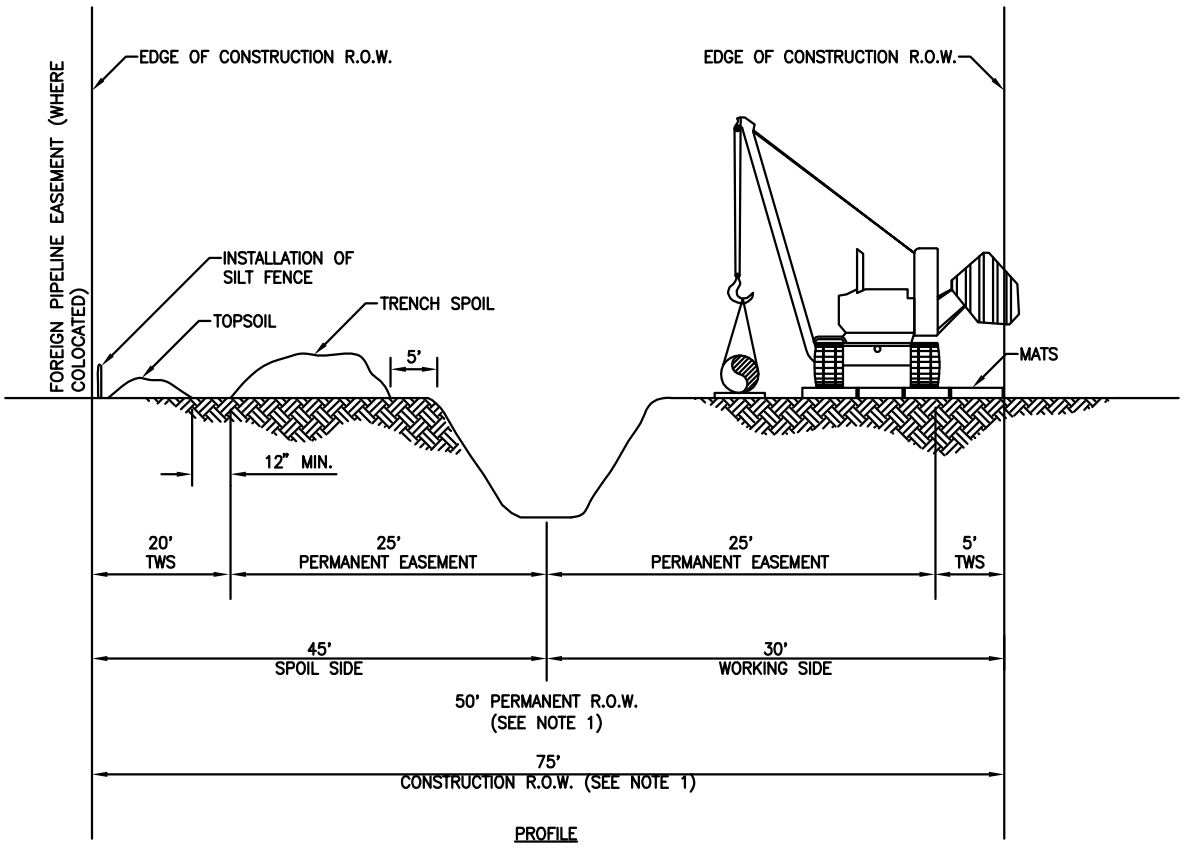
Dwg. No. 19AB-TYP-004		Sheet: 1 of 1	Rev. A

ISSUE DATE:



PROFILE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 75 FEET WIDE IN WETLANDS CONSISTING OF 50 FEET OF PERMANENT EASEMENT AND 25 FEET OF TEMPORARY WORKSPACE.
2. EQUIPMENT MATS OR LOW GROUND WEIGHT EQUIPMENT SHALL BE USED IN SATURATED CONDITIONS.
3. UTILIZE THE "TRENCH ONLY" WETLAND TOPSOIL SEGREATION METHOD, EXCEPT IN SATURATED CONDITIONS.
4. FOR TRENCH ONLY STRIPPING, THE STRIPPING AREA SHALL BE WIDE ENOUGH TO ACCOMMODATE TRENCHING EQUIPMENT.
5. DEPTH OF TOPSOIL TRENCHING NOT TO EXCEED 12 INCHES EXCEPT WHERE DEEPER STRIPPING IS STIPULATED BY THE CONSTRUCTION LINE LISTS OR CONSTRUCTION ALIGNMENT SHEETS.
6. KEEP TOPSOIL CLEAN OF ALL CONSTRUCTION DEBRIS. MAINTAIN ADEQUATE SEPARATION BETWEEN TOPSOIL AND TRENCH SPOIL PILES.
7. LEAVE GAPS IN SOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO WATERBODIES OR WETLANDS. DO NOT USE TOPSOIL FOR PADDING.
8. TOPSOIL MAY BE REMOVED AND STORED ON TEMPORARY EXTRA WORKSPACE OUTSIDE OF THE WETLAND AREA WHERE CONDITIONS DO NOT ALLOW FOR PROPER SEPARATION OF THE SPOIL.

NO.	DATE	BY	DESCRIPTION	PROJ. ID	CHK.	APP.
A	03 29 19	BVN	ISSUED FOR FERC	19AB	COC	CEN

REVISIONS

GULF SOUTH® PIPELINE

TYPICAL NON-SATURATED WETLAND CROSSING CONSTRUCTION AREA WITH MATTING

Co./Par.: SAN AUGUSTINE/SABINE		State: TEXAS	
Division: N/A		Op. Area: N/A	
Latitude: N/A		Longitude: N/A	
Section: N/A	Township: N/A	Range: N/A	
Drafter: BVN	Date: 03/29/19	Project ID: 19AB	Loc. No. XXXXXXX
Chk'd: COC	Date: 03/29/19	Scale: NOT TO SCALE	
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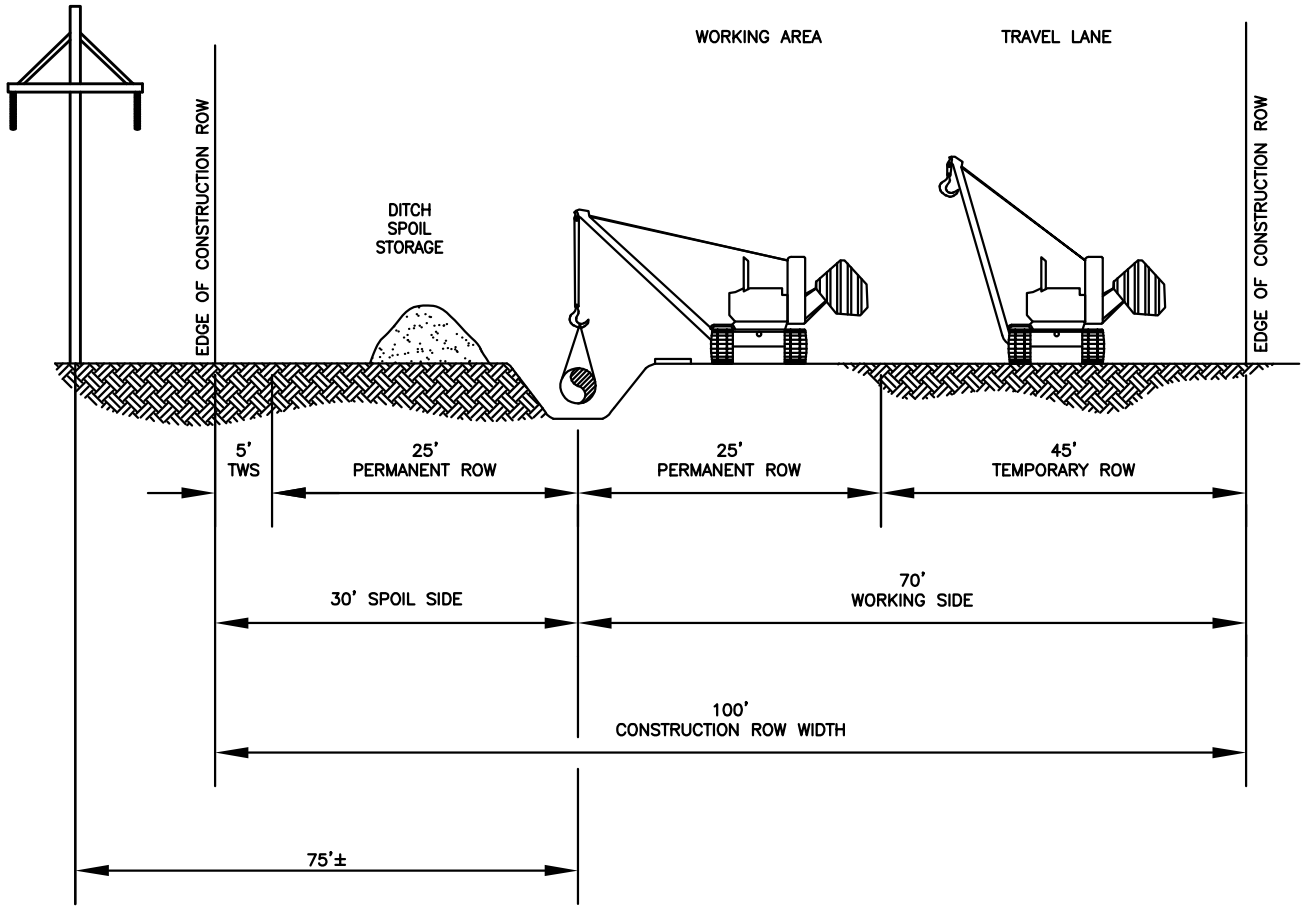
Dwg. No. 19AB-TYP-007		Sheet: 1 of 1	Rev. A

ISSUE DATE:



NOTES:

1. TYPICAL UPLAND CONSTRUCTION ROW WILL BE 100 FEET IN WIDTH CONSISTING OF A PERMANENT EASEMENT 50 FEET WIDE AND 45 FEET OF TEMPORARY WORKSPACE ON THE WORKING SIDE AND 5 FEET OF TEMPORARY WORKSPACE IN THE SPOIL SIDE.
2. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT ROAD, RAIL, AND WATERBODY CROSSINGS AND OTHER SPECIFIC LOCATIONS WHERE SPECIAL CIRCUMSTANCES REQUIRE.
3. AN ADDITIONAL 25 FEET OF ADDITIONAL TEMPORARY WORKSPACE WILL BE REQUIRED FOR TOPSOIL STORAGE IN AREAS WHERE TOPSOIL SEGREGATION IS REQUIRED (TYPICALLY CULTIVATED AND IMPROVED PASTURE LANDS)
4. TEMPORARY WORKSPACE WILL NOT BE REQUIRED BETWEEN HDD PADS.

GULF SOUTH® PIPELINE

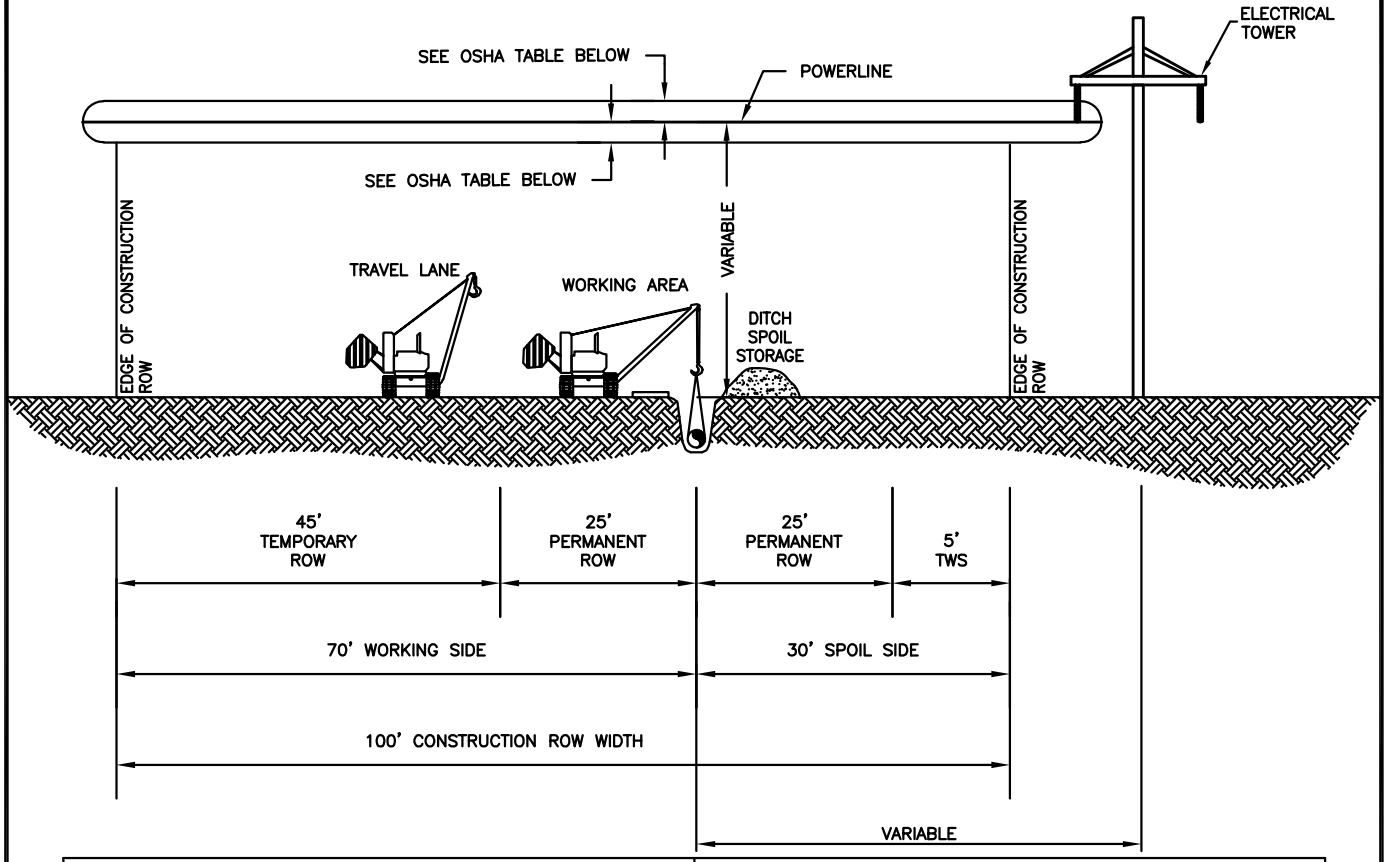
TYPICAL UPLAND COLOCATION WITH POWERLINES

Co./Par.: SAN AUGUSTINE/SABINE		State: TEXAS	
Division: N/A		Op. Area: N/A	
Latitude: N/A		Longitude: N/A	
Section: N/A	Township: N/A	Range: N/A	
Drafter: BVN	Date: 03/29/19	Project ID: 19AB	Loc. No. XXXXXXX
Chk'd: COC	Date: 03/29/19	Scale: NOT TO SCALE	
Appr: CEN	Date: 03/29/19	Filename:	
Dwg. No. 19AB-TYP-005		Sheet: 1 of 1	Rev. A

NO.	DATE	BY	DESCRIPTION	PROJ. ID	CHK.	APP.
A	03 29 19	BVN	ISSUED FOR FERC	19AB	COC	CEN

REVISIONS

ISSUE DATE:



POWER LINE VOLTAGE	OSHA MINIMUM APPROACH DISTANCE
UP TO 50 kV	10 FEET
OVER 50 TO 200 kV	15 FEET
OVER 200 TO 350 kV	20 FEET
OVER 350 TO 500 kV	25 FEET
OVER 500 TO 750 kV	35 FEET
OVER 750 TO 1,000 kV	45 FEET
OVER 1,000 kV	(AS ESTABLISHED BY THE UTILITY OWNER/OPERATOR OR REGISTERED PROFESSIONAL ENGINEER WHO IS A QUALIFIED PERSON WITH RESPECT TO ELECTRICAL POWER TRANSMISSION AND DISTRIBUTION)

GULF SOUTH® PIPELINE

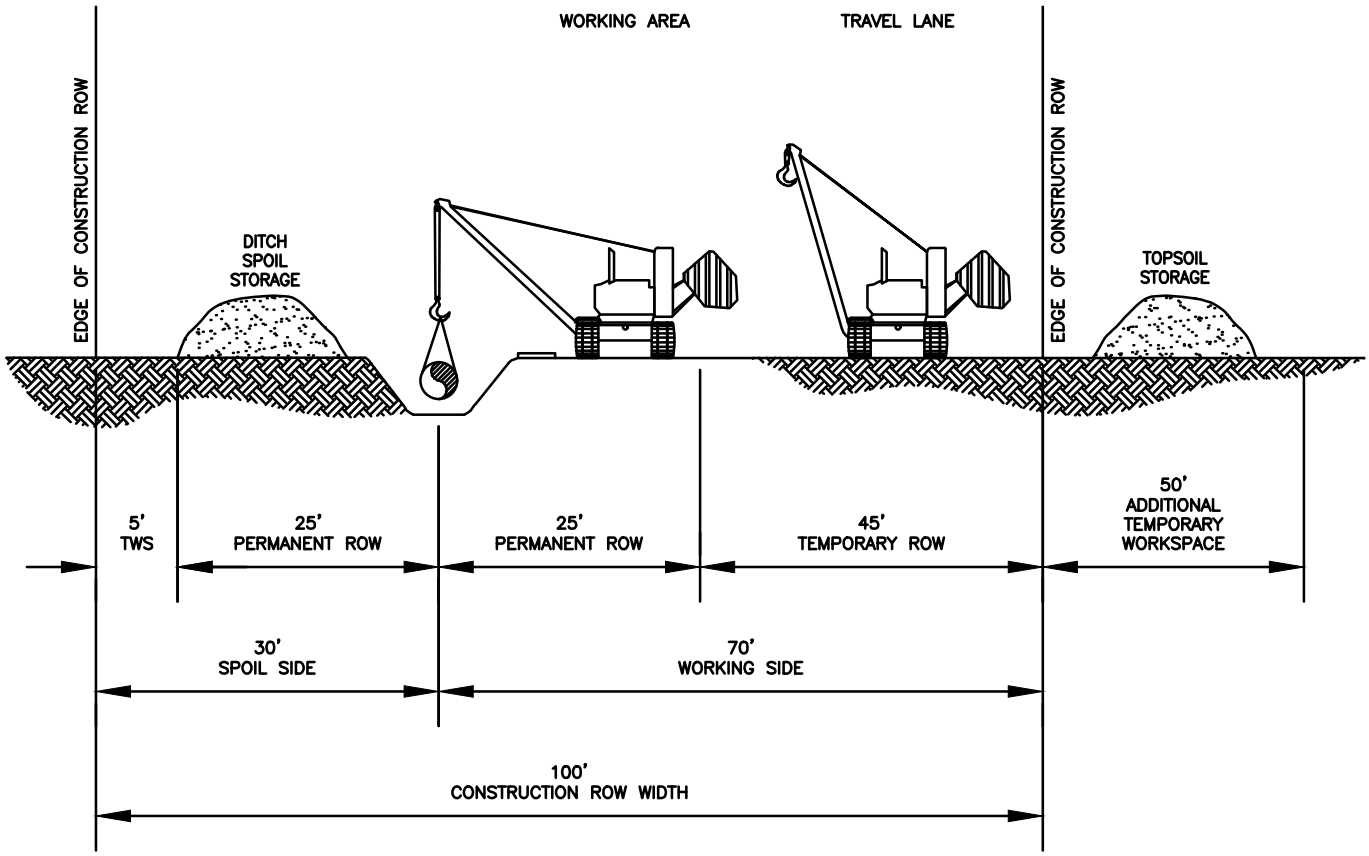
POWERLINE EASEMENT CROSSING (TYPICAL)

Co./Par.: SAN AUGUSTINE/SABINE		State: TEXAS	
Division: N/A		Op. Area: N/A	
Latitude: N/A		Longitude: N/A	
Section: N/A	Township: N/A	Range: N/A	
Drafter: BVN	Date: 03/29/19	Project ID: 19AB	Loc. No. XXXXXXX
Chk'd: COC	Date: 03/29/19	Scale: NOT TO SCALE	
Appr: CEN	Date: 03/29/19	Filename:	
Dwg. No. 19AB-TYP-006		Sheet: 1 of 1	Rev. A

REVISIONS

NO.	DATE	BY	DESCRIPTION	PROJ. ID	CHK.	APP.
A	03 29 19	KLH	ISSUED FOR FERC	19AB	COC	CEN

ISSUE DATE:



NOTES:

1. AGRICULTURAL CONSTRUCTION WORKSPACE WILL TYPICALLY REQUIRE 150 FEET WIDTH CONSISTING OF 50 FEET OF PERMANENT EASEMENT, 50 FEET OF TEMPORARY WORKSPACE AND 50 FEET OF ADDITIONAL TEMPORARY WORKSPACE, FURTHER ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT ROAD, RAIL AND RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.

NO.	DATE	BY	DESCRIPTION	PROJ. ID	CHK.	APP.
A	03 29 19	BVN	ISSUED FOR FERC	19AB	COC	CEN

REVISIONS

GULF SOUTH® PIPELINE

TYPICAL CONSTRUCTION CORRIDOR AGRICULTURAL RESIDENT LAND

Co./Par.: SAN AUGUSTINE/SABINE		State: TEXAS	
Division: N/A		Op. Area: N/A	
Latitude: N/A		Longitude: N/A	
Section: N/A	Township: N/A	Range: N/A	
Drafter: BVN	Date: 03/29/19	Project ID: 19AB	Loc. No. XXXXXXX
Chk'd: COC	Date: 03/29/19	Scale: NOT TO SCALE	
Appr: CEN	Date: 03/29/19	Filename:	
Dwg. No. 19AB–TYP–008		Sheet: 1 of 1	Rev. A

ISSUE DATE:

Appendix B

Gulf South's Proposed Site-Specific Modifications to the FERC Plan and Procedures

Appendix B Table Proposed Site-Specific Modifications to the FERC Plan and Procedures							
Workspace Type / ID	**Milepost**	**Waterbody or Wetland**	**Section of Plan and Procedures**	**Deviations to FERC Plan and Procedures**	**Distance from ATWS to Waterbody or Wetland (feet)**	**Justification**	**Equal Compliance Measures**
TAR-14	10.60	WP1018	Procedures Section V.B.6.d	Clearing/ground disturbance between HDD pads	N/A	Necessary to provide safe access from PAR-16 to conduct HDD operations.	Place temporary timber matting to prevent rutting and install temporary erosion and sediment control measures prevent flow of spoil of silt-laden water into wetlands.
ATWS 46	4.61	WP1006	Procedures Section VI.B.1.a	ATWS impact on Wetland	0 [a]	Placement of spoil from excavation of road boring pit.	Install temporary erosion and sediment control measures on the right-of-way to prevent the flow of spoil or heavily silt-laden water into the wetland.
ATWS 93	10.50	SP1080; SP1080_DT	Procedures Section V.B.2.a	ATWS impact on Waterbody; ATWS within 50' of Waterbody	10	Necessary for HDD operations	Install temporary erosion and sediment control measures at the edge of the ATWS as necessary to prevent the flow of spoil or heavily silt laden water into the waterbody.
ATWS 128	15.12	SP1164	Procedures Section V.B.2.a	ATWS within 50' of Waterbody	4	Necessary for spoil storage for stream crossing	Install temporary erosion and sediment control measures at the edge of the ATWS and waterbody as necessary to prevent the flow of spoil or heavily silt laden water into the wetland and waterbody.

Appendix B Table Proposed Site-Specific Modifications to the FERC Plan and Procedures							
Workspace Type / ID	**Milepost**	**Waterbody or Wetland**	**Section of Plan and Procedures**	**Deviations to FERC Plan and Procedures**	**Distance from ATWS to Waterbody or Wetland (feet)**	**Justification**	**Equal Compliance Measures**
ATWS 138	16.34	SP4008_DT	Procedures Section V.B.2.a	ATWS within 50' of Waterbody	11	Necessary for spoil storage for stream crossing	Install temporary erosion and sediment control measures at the edge of the ATWS and waterbody as necessary to prevent the flow of spoil or heavily silt laden water into the wetland and waterbody.
ATWS 142	16.82	SP1100	Procedures Section V.B.2.a	ATWS impact on Waterbody	0 [a]	Necessary for spoil storage for road bore	Install temporary erosion and sediment control measures at the edge of the ATWS and waterbody as necessary to prevent the flow of spoil or heavily silt laden water into the wetland and waterbody.
ATWS 143	16.84	SP1101	Procedures Section V.B.2.a	ATWS impact on Waterbody	0 [a]	Necessary for spoil storage for road bore and parking	Install temporary erosion and sediment control measures at the edge of the ATWS as necessary to prevent the flow of spoil or heavily silt laden water into the waterbody.

Appendix B Table Proposed Site-Specific Modifications to the FERC Plan and Procedures							
Workspace Type / ID	**Milepost**	**Waterbody or Wetland**	**Section of Plan and Procedures**	**Deviations to FERC Plan and Procedures**	**Distance from ATWS to Waterbody or Wetland (feet)**	**Justification**	**Equal Compliance Measures**
ATWS 151	17.6	SP3018	Procedures Section V.B.2.a	ATWS impact on Waterbody	0 [a]	Necessary for spoil storage for road bore and parking	Install temporary erosion and sediment control measures at the edge of the ATWS as necessary to prevent the flow of spoil or heavily silt laden water into the waterbody.
ATWS 153A	17.72	SP3019	Procedures Section V.B.2.a	ATWS impact on Waterbody	0 [a]	Necessary for spoil storage for road bore and parking	Install temporary erosion and sediment control measures at the edge of the ATWS as necessary to prevent the flow of spoil or heavily silt laden water into the waterbody.
ATWS 153	17.73	SP3019	Procedures Section V.B.2.a	ATWS impact on Waterbody	0 [a]	Necessary for spoil storage for road bore and parking	Install temporary erosion and sediment control measures at the edge of the ATWS as necessary to prevent the flow of spoil or heavily silt laden water into the waterbody.
ATWS 157	18.49	SP9011	Procedures Section V.B.2.a	ATWS within 50' of Waterbody	9	Necessary for spoil storage for stream crossing	Install temporary erosion and sediment control measures at the edge of the ATWS as necessary to prevent the flow of spoil or heavily silt laden water into the waterbody.

Appendix B Table Proposed Site-Specific Modifications to the FERC Plan and Procedures							
Workspace Type / ID	**Milepost**	**Waterbody or Wetland**	**Section of Plan and Procedures**	**Deviations to FERC Plan and Procedures**	**Distance from ATWS to Waterbody or Wetland (feet)**	**Justification**	**Equal Compliance Measures**
ATWS 159	18.86	SP4004, SP4011_DT	Procedures Section V.B.2.a	ATWS impact on Waterbody; ATWS within 50' of Waterbody	0 [a], 1	Necessary for spoil storage for stream crossing and major PI tie-in's	Install temporary erosion and sediment control measures at the edge of the ATWS as necessary to prevent the flow of spoil or heavily silt laden water into the waterbody.
ATWS 160	19.12	SP4010	Procedures Section V.B.2.a	ATWS impact on Waterbody	0 [a]	Necessary for spoil storage for stream crossing	Install temporary erosion and sediment control measures at the edge of the ATWS as necessary to prevent the flow of spoil or heavily silt laden water into the waterbody.
ATWS 161	19.17	SP4009	Procedures Section V.B.2.a	ATWS impact on Waterbody	0 [a]	Necessary for spoil storage for stream crossing	Install temporary erosion and sediment control measures at the edge of the ATWS as necessary to prevent the flow of spoil or heavily silt laden water into the waterbody.

Appendix B Table Proposed Site-Specific Modifications to the FERC Plan and Procedures							
Workspace Type / ID	**Milepost**	**Waterbody or Wetland**	**Section of Plan and Procedures**	**Deviations to FERC Plan and Procedures**	**Distance from ATWS to Waterbody or Wetland (feet)**	**Justification**	**Equal Compliance Measures**
ATWS 163	19.21	SP1107	Procedures Section V.B.2.a	ATWS impact on Waterbody	0 [a]	Necessary to provide space for parking at a major highway crossing and safe access from Charlie Force Rd.	Install timber matting for crossing over the bar ditch and temporary erosion and sediment control measures will be installed at the edge of the ATWS as necessary to prevent the flow of spoil or heavily silt laden water into the waterbody.
Construction Corridor	19.91-19.93	WP1056	Procedures Section VI.A.3	Construction corridor width of 100' in wetland	N/A	Necessary to safely work through the area due to steep terrain at a deep stream crossing with an adjacent stream encroaching parallel to the pipeline and several isolated wetland pockets.	Install temporary matting and temporary erosion and sediment control measures as necessary to prevent the flow of spoil or heavily silt laden water into the wetland.
ATWS 182	21.73	SP1199	Procedures Section V.B.2.a	ATWS within 50' of Waterbody	7	Necessary for parking and storage of material and equipment loadout	Install temporary erosion and sediment control measures at the edge of the ATWS as necessary to prevent the flow of spoil or heavily silt laden water into the waterbody.

[a] Waterbody or wetland is located within the ATWS.
N/A - Not Applicable

Appendix C

Waterbodies Crossed/Impacted by the Index 99 Expansion Project

Appendix C Table Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project								
Milepost	**Feature ID**	**Waterbody Name**	**State Water Quality Classification** [a]	**Fishery Classification**	**Flow Regime**	**FERC Classification**	**Pipeline Crossing Length (feet)**	**Proposed Crossing Method**
Pipeline Facilities								
San Augustine County, Texas								
0.26	SP1001	Frizell Branch	PCR, M	Warmwater	Intermittent	Minor	25	Open Cut
0.38	SP1002	Unnamed Tributary to Frizell Branch	PCR, M	Warmwater	Intermittent	Minor	7	Open Cut
0.60	SP1003	Unnamed Tributary to Frizell Branch	PCR, M	Warmwater	Intermittent	Minor	4	Open Cut
0.93	SP1006	Unnamed Tributary to Frizell Branch	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
1.10	SP1010	Unnamed Tributary to Frizell Branch	PCR, M	Warmwater	Intermittent	Minor	8	Open Cut
1.45	SP1012	Unnamed Tributary to Ghost Branch	PCR, H	Warmwater	Perennial	Intermediate	25	Open Cut
1.69	SP1013	Ghost Branch	PCR, H	Warmwater	Perennial	Intermediate	44	Open Cut
2.24	OWP1002	Natural Pond	N/A	N/A	Natural Pond	N/A	100	Open Cut
2.51	OWP1003	Manmade Pond	N/A	N/A	Manmade Pond	N/A	0 [b]	Workspace Only
2.63	SP1020	Unnamed Tributary to Carrizo Creek	PCR, H	Warmwater	Perennial	Minor	9	Open Cut
2.63	SP1022	Unnamed Tributary to Carrizo Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
2.98	SP1023	Carrizo Creek	PCR, H	Warmwater	Perennial	Intermediate	21	Open Cut
3.21	SP1024	Unnamed Tributary to Carrizo Creek	PCR, H	Warmwater	Perennial	Minor	5	Open Cut
3.48	SP1026	Unnamed Tributary to Carrizo Creek	PCR, M	Warmwater	Ephemeral	Minor	1	Bore

Appendix C Table Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project								
Milepost	**Feature ID**	**Waterbody Name**	**State Water Quality Classification** [a]	**Fishery Classification**	**Flow Regime**	**FERC Classification**	**Pipeline Crossing Length (feet)**	**Proposed Crossing Method**
3.88	SP1027	Unnamed Tributary to Caney Creek	PCR, M	Warmwater	Intermittent	Minor	7	Open Cut
3.88	SP1027	Unnamed Tributary to Caney Creek	PCR, M	Warmwater	Intermittent	Minor	0 [b]	Timber Mat
3.94	SP1028	Unnamed Tributary to Caney Creek	PCR, M	Warmwater	Intermittent	Minor	0 [b]	Timber Mat
3.94	SP1029	Unnamed Tributary to Caney Creek	PCR, M	Warmwater	Intermittent	Minor	3	Open Cut
4.15	SP1030	Unnamed Tributary to Caney Creek	PCR, M	Warmwater	Intermittent	Minor	2	HDD
4.21	SP1031	Unnamed Tributary to Caney Creek	PCR, H	Warmwater	Perennial	Minor	4	HDD
4.44	SP1033	Unnamed Tributary to Caney Creek	PCR, M	Warmwater	Ephemeral	Minor	1	Open Cut
4.49	SP1035	Unnamed Tributary to Caney Creek	PCR, M	Warmwater	Ephemeral	Minor	1	Open Cut
4.92	SP1036_DT	Unnamed Tributary to Carrizo Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
5.03	SP1037_DT	Unnamed Tributary to Carrizo Creek	PCR, M	Warmwater	Intermittent	Minor	2	Open Cut
5.06	SP1038_DT	Unnamed Tributary to Carrizo Creek	PCR, M	Warmwater	Intermittent	Minor	3	Open Cut
5.14	SP1039_DT	Unnamed Tributary to Carrizo Creek	PCR, M	Warmwater	Intermittent	Minor	3	Open Cut

Appendix C Table Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project								
Milepost	**Feature ID**	**Waterbody Name**	**State Water Quality Classification** [a]	**Fishery Classification**	**Flow Regime**	**FERC Classification**	**Pipeline Crossing Length (feet)**	**Proposed Crossing Method**
5.36	SP1040	Unnamed Tributary to Carrizo Creek	PCR, M	Warmw ater	Intermittent	Minor	3	Open Cut
5.91	SP1133	Unnamed Tributary to Steep Creek	PCR, M	Warmw ater	Ephemeral	Minor	3	Open Cut
5.93	SP1134	Unnamed Tributary to Steep Creek	PCR, M	Warmw ater	Intermittent	Minor	0 [b]	Workspace Only
5.93	SP1044	Steep Creek	PCR, H	Warmw ater	Perennial	Minor	5	Open Cut
6.31	SP1047	Unnamed Tributary to Steep Creek	PCR, M	Warmw ater	Intermittent	Minor	3	Open Cut
6.35	SP1048	Unnamed Tributary to Steep Creek	PCR, M	Warmw ater	Intermittent	Minor	3	Open Cut
6.78	SP1050	Unnamed Tributary to Steep Creek	PCR, M	Warmw ater	Perennial	Minor	6	Open Cut
6.96	SP1051	Unnamed Tributary to Steep Creek	PCR, H	Warmw ater	Perennial	Minor	2	Open Cut
7.22	SP1052	Unnamed Tributary to Steep Creek	PCR, M	Warmw ater	Ephemeral	Minor	2	Open Cut
7.50	SP1053	Unnamed Tributary to Tebo Creek	PCR, M	Warmw ater	Ephemeral	Minor	6	Open Cut
7.51	SP1054	Unnamed Tributary to Tebo Creek	PCR, M	Warmw ater	Intermittent	Minor	2	Open Cut
7.70	SP1056	Unnamed Tributary to Tebo Creek	PCR, M	Warmw ater	Intermittent	Minor	2	Open Cut
7.70	SP1055	Unnamed Tributary to Tebo Creek	PCR, M	Warmw ater	Intermittent	Minor	4	Open Cut

Appendix C Table Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project								
Milepost	**Feature ID**	**Waterbody Name**	**State Water Quality Classification** [a]	**Fishery Classification**	**Flow Regime**	**FERC Classification**	**Pipeline Crossing Length (feet)**	**Proposed Crossing Method**
7.87	SP1058	Unnamed Tributary to Tebo Creek	PCR, M	Warmwater	Ephemeral	Minor	1	Open Cut
7.88	SP1057	Unnamed Tributary to Tebo Creek	PCR, M	Warmwater	Ephemeral	Minor	1	Open Cut
8.07	SP1059	Unnamed Tributary to Tebo Creek	PCR, M	Warmwater	Ephemeral	Minor	2	Open Cut
8.07	SP1060	Unnamed Tributary to Tebo Creek	PCR, M	Warmwater	Ephemeral	Minor	1	Open Cut
8.39	SP1062	Unnamed Tributary to Tebo Creek	PCR, M	Warmwater	Ephemeral	Minor	1	Open Cut
8.67	SP1063	Unnamed Tributary to Tebo Creek	PCR, H	Warmwater	Perennial	Minor	5	Open Cut
9.04	SP1067	Unnamed Tributary to Tebo Creek	PCR, H	Warmwater	Perennial	Minor	3	Open Cut
9.17	SP1069	Unnamed Tributary to Tebo Creek	PCR, M	Warmwater	Intermittent	Minor	3	Open Cut
9.18	SP1070	Unnamed Tributary to Tebo Creek	PCR, M	Warmwater	Ephemeral	Minor	11	Open Cut
9.67	SP1072	Unnamed Tributary to Rocky Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
9.81	SP1073	Rocky Creek	PCR, H	Warmwater	Perennial	Minor	33	Open Cut
9.83	SP1075	Unnamed Tributary to Rocky Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
10.09	SP1077	Unnamed Tributary to Rocky Creek	PCR, M	Warmwater	Intermittent	Minor	3	Open Cut

Appendix C Table Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project								
Milepost	**Feature ID**	**Waterbody Name**	**State Water Quality Classification [a]**	**Fishery Classification**	**Flow Regime**	**FERC Classification**	**Pipeline Crossing Length (feet)**	**Proposed Crossing Method**
10.11	SP1076	Unnamed Tributary to Rocky Creek	PCR, M	Warmw ater	Ephemeral	Minor	2	Open Cut
10.18	SP1079	Unnamed Tributary to Rocky Creek	PCR, M	Warmw ater	Ephemeral	Minor	1	Open Cut
10.42	SP1080	Unnamed Tributary to Clear Creek	PCR, M	Warmw ater	Ephemeral	Minor	2	Open Cut
10.62	SP1082	Unnamed Tributary to Clear Creek	PCR, M	Warmw ater	Intermittent	Minor	3	HDD
10.62	SP1083	Unnamed Tributary to Clear Creek	PCR, M	Warmw ater	Intermittent	Minor	2	HDD
10.65	SP1083	Unnamed Tributary to Clear Creek	PCR, M	Warmw ater	Intermittent	Minor	9	HDD
10.69	SP1082	Unnamed Tributary to Clear Creek	PCR, M	Warmw ater	Intermittent	Minor	3	HDD
10.73	SP1082	Unnamed Tributary to Clear Creek	PCR, M	Warmw ater	Intermittent	Minor	10	HDD
10.76	SP1082	Unnamed Tributary to Clear Creek	PCR, M	Warmw ater	Intermittent	Minor	12	HDD
10.81	SP1082	Unnamed Tributary to Clear Creek	PCR, M	Warmw ater	Intermittent	Minor	3	HDD
10.83	SP1082	Unnamed Tributary to Clear Creek	PCR, M	Warmw ater	Intermittent	Minor	4	HDD
11.16	SP1086	Unnamed Tributary to Donahue Creek	PCR, M	Warmw ater	Intermittent	Minor	4	Open Cut

Appendix C Table Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project								
Milepost	**Feature ID**	**Waterbody Name**	**State Water Quality Classification** [a]	**Fishery Classification**	**Flow Regime**	**FERC Classification**	**Pipeline Crossing Length (feet)**	**Proposed Crossing Method**
11.68	SP1087	Unnamed Tributary to Donahue Creek	PCR, M	Warmwater	Intermittent	Minor	6	Open Cut
13.30	SP1150	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Intermittent	Minor	2	Open Cut
13.47	SP1151	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Intermittent	Minor	3	Open Cut
13.68	SP9015	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
13.69	SP9016	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
13.92	SP9017	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
13.94	SP1154	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Intermittent	Minor	1	Open Cut
13.96	SP1153	Unnamed Tributary to Chiamon Bayou	PCR, H	Warmwater	Perennial	Minor	4	Open Cut
13.98	SP1155	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Ephemeral	Minor	1	Open Cut

Appendix C Table Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project								
Milepost	**Feature ID**	**Waterbody Name**	**State Water Quality Classification** [a]	**Fishery Classification**	**Flow Regime**	**FERC Classification**	**Pipeline Crossing Length (feet)**	**Proposed Crossing Method**
14.01	SP3009	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
14.05	SP3010	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Ephemeral	Minor	2	Open Cut
14.06	SP1153	Unnamed Tributary to Chiamon Bayou	PCR, H	Warmwater	Perennial	Minor	0 [b]	Workspace Only
14.07	SP3011	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
14.20	SP1156	Unnamed Tributary to Chiamon Bayou	PCR, H	Warmwater	Perennial	Minor	2	Open Cut
14.20	SP9001	Unnamed Tributary to Chiamon Bayou	PCR, H	Warmwater	Perennial	Minor	0 [b]	Workspace Only
14.22	SP3012	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Ephemeral	Minor	3	Open Cut
14.42	SP1157	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Ephemeral	Minor	1	Open Cut
14.51	SP1158	Chiamon Bayou	PCR, H	Warmwater	Perennial	Minor	3	Open Cut
14.58	SP1160	Unnamed Tributary to Chiamon Bayou	PCR, H	Warmwater	Perennial	Minor	3	Open Cut

Appendix C Table Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project								
Milepost	**Feature ID**	**Waterbody Name**	**State Water Quality Classification** [a]	**Fishery Classification**	**Flow Regime**	**FERC Classification**	**Pipeline Crossing Length (feet)**	**Proposed Crossing Method**
14.67	SP9019	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
14.88	SP1162	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Intermittent	Minor	2	Open Cut
15.10	SP1164	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Intermittent	Minor	1	Open Cut
15.11	SP1164	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Intermittent	Minor	0 [b]	Workspace Only
15.56	SP3014	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Ephemeral	Minor	2	Open Cut
Sabine County, Texas								
12.01	SP1088	Donahue Creek	PCR, M	Warmwater	Intermittent	Minor	4	Open Cut
12.03	SP1089	Donahue Creek	PCR, M	Warmwater	Intermittent	Minor	5	Open Cut
12.18	SP1090	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	1	HDD
12.35	SP1091	Unnamed Tributary to Donahue Creek	PCR, M	Warmwater	Intermittent	Minor	13	HDD
12.46	SP1148	Unnamed Tributary to Donahue Creek	PCR, M	Warmwater	Ephemeral	Minor	2	HDD

Appendix C Table Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project								
Milepost	**Feature ID**	**Waterbody Name**	**State Water Quality Classification** [a]	**Fishery Classification**	**Flow Regime**	**FERC Classification**	**Pipeline Crossing Length (feet)**	**Proposed Crossing Method**
15.81	SP1092	Unnamed Tributary to Steep Mile Creek	PCR, M	Warmwater	Intermittent	Minor	3	Open Cut
15.83	SP1093	Unnamed Tributary to Steep Mile Creek	PCR, M	Warmwater	Ephemeral	Minor	1	Open Cut
15.95	SP1094	Unnamed Tributary to Steep Mile Creek	PCR, M	Warmwater	Intermittent	Minor	1	Open Cut
15.98	SP1095	Unnamed Tributary to Steep Mile Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
16.18	SP1141	Unnamed Tributary to Steep Mile Creek	PCR, M	Warmwater	Intermittent	Minor	2	Open Cut
16.23	SP1141	Unnamed Tributary to Steep Mile Creek	PCR, M	Warmwater	Intermittent	Minor	0 [b]	Workspace Only
16.30	SP1140	Unnamed Tributary to Steep Mile Creek	PCR, H	Warmwater	Perennial	Minor	3	Open Cut
16.32	SP4007	Unnamed Tributary to Steep Mile Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
16.33	SP4008	Unnamed Tributary to Steep Mile Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only

Appendix C Table Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project								
Milepost	**Feature ID**	**Waterbody Name**	**State Water Quality Classification** [a]	**Fishery Classification**	**Flow Regime**	**FERC Classification**	**Pipeline Crossing Length (feet)**	**Proposed Crossing Method**
16.39	SP1139	Unnamed Tributary to Steep Mile Creek	PCR, M	Warmwater	Ephemeral	Minor	4	Open Cut
16.71	SP1096	Unnamed Tributary to Manmade Pond	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
16.72	SP1097	Unnamed Tributary to Manmade Pond	PCR, M	Warmwater	Intermittent	Minor	0 [b]	Workspace Only
16.73	SP1098	Unnamed Tributary to Manmade Pond	PCR, M	Warmwater	Intermittent	Minor	0 [b]	Workspace Only
16.75	OWP1008	Manmade Pond	N/A	N/A	Manmade Pond	N/A	0 [b]	Workspace Only
16.84	SP1100	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	2	Bore
16.85	SP1101	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	2	Bore
17.32	SP2001	Sandy Creek	PCR, H	Warmwater	Perennial	Intermediate	13	Open Cut
17.49	SP9003	Unnamed Tributary to Sandy Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
17.50	SP9003	Unnamed Tributary to Sandy Creek	PCR, M	Warmwater	Ephemeral	Minor	5	Open Cut
17.60	SP3018	Unnamed Tributary to Sandy Creek	PCR, M	Warmwater	Ephemeral	Minor	2	Open Cut
17.72	SP3019	Unnamed Tributary to Sandy Creek	PCR, M	Warmwater	Ephemeral	Minor	2	Open Cut

Appendix C Table Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project								
Milepost	**Feature ID**	**Waterbody Name**	**State Water Quality Classification** [a]	**Fishery Classification**	**Flow Regime**	**FERC Classification**	**Pipeline Crossing Length (feet)**	**Proposed Crossing Method**
18.08	SP3020	Unnamed Tributary to Sandy Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
18.12	SP3022	Unnamed Tributary to Sandy Creek	PCR, M	Warmwater	Intermittent	Minor	6	Open Cut
18.14	SP3023	Unnamed Tributary to Sandy Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
18.19	SP3024	Unnamed Tributary to Sandy Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
18.44	SP9010	Unnamed Tributary to Sandy Creek	PCR, M	Warmwater	Intermittent	Minor	2	Open Cut
18.44	SP9010	Unnamed Tributary to Sandy Creek	PCR, M	Warmwater	Intermittent	Minor	0 [b]	Workspace Only
18.87	SP4004	Unnamed Tributary to Sandy Creek	PCR, M	Warmwater	Ephemeral	Minor	3	Open Cut
19.14	SP4010	Unnamed Tributary to Bear Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
19.15	SP4003	Unnamed Tributary to Bear Creek	PCR, M	Warmwater	Intermittent	Minor	6	Open Cut
19.15	SP4010	Unnamed Tributary to Bear Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
19.21	SP1107	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	2	Bore
19.21	SP1107	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
19.80	SP1171	Unnamed Tributary to Bear Creek	PCR, M	Warmwater	Intermittent	Minor	0 [b]	Workspace Only

Appendix C Table Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project								
Milepost	**Feature ID**	**Waterbody Name**	**State Water Quality Classification** [a]	**Fishery Classification**	**Flow Regime**	**FERC Classification**	**Pipeline Crossing Length (feet)**	**Proposed Crossing Method**
19.82	SP1169	Unnamed Tributary to Bear Creek	PCR, M	Warmwater	Ephemeral	Minor	1	Open Cut
19.83	SP1171	Unnamed Tributary to Bear Creek	PCR, M	Warmwater	Intermittent	Minor	0 [b]	Workspace Only
19.85	SP1173	Unnamed Tributary to Bear Creek	PCR, M	Warmwater	Ephemeral	Minor	1	Open Cut
19.90	SP1174	Unnamed Tributary to Bear Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
19.92	OWP1010	Manmade Pond	N/A	N/A	Manmade Pond	N/A	3	Open Cut
19.92	SP1172	Unnamed Tributary to Bear Creek	PCR, H	Warmwater	Perennial	Minor	0 [b]	Workspace Only
19.95	SP1176	Bear Creek	PCR, H	Warmwater	Perennial	Intermediate	21	Open Cut
20.04	SP1179	Unnamed Tributary to Bear Creek	PCR, H	Warmwater	Perennial	Minor	3	Open Cut
20.32	SP1182	Unnamed Tributary to Bear Creek	PCR, M	Warmwater	Intermittent	Minor	7	Open Cut
20.69	SP1184	Unnamed Tributary to Bear Creek	PCR, M	Warmwater	Intermittent	Minor	2	Open Cut
20.95	SP1185	Unnamed Tributary to Bear Creek	PCR, H	Warmwater	Perennial	Minor	3	Open Cut
20.96	SP1188	Unnamed Tributary to Bear Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
21.05	SP1189	Unnamed Tributary to Bear Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only

Appendix C Table Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project								
Milepost	**Feature ID**	**Waterbody Name**	**State Water Quality Classification** [a]	**Fishery Classification**	**Flow Regime**	**FERC Classification**	**Pipeline Crossing Length (feet)**	**Proposed Crossing Method**
21.07	SP1190	Unnamed Tributary to Bear Creek	PCR, M	Warmwater	Intermittent	Minor	5	Open Cut
21.23	SP1191	Unnamed Tributary to Easley Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
21.35	SP1192	Unnamed Tributary to Easley Creek	PCR, M	Warmwater	Ephemeral	Minor	2	Open Cut
21.38	SP1193	Unnamed Tributary to Easley Creek	PCR, M	Warmwater	Intermittent	Minor	2	Open Cut
21.44	SP1196	Easley Creek	PCR, H	Warmwater	Perennial	Minor	8	Open Cut
21.68	SP1197	Unnamed Tributary to Easley Creek	PCR, M	Warmwater	Intermittent	Minor	2	Open Cut
21.70	SP1198	Unnamed Tributary to Easley Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
Aboveground Facilities								
Index 99 Receiver	SP3015	Unnamed Tributary to Easley Creek	PCR, M	Warmwater	Ephemeral	Minor	0 [b]	Workspace Only
Access Roads								
San Augustine County, Texas								
PAR-03 (4.10)	SP3001	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	N/A	Existing Culvert / Timber Mat
TAR-04 (4.50)	SP1033	Unnamed Tributary to Caney Creek	PCR, M	Warmwater	Ephemeral	Minor	N/A	Temporary Culvert / Timber Mat
TAR-04 (4.50)	SP1034	Unnamed Tributary to Caney Creek	PCR, M	Warmwater	Ephemeral	Minor	N/A	Temporary Culvert / Timber Mat

Appendix C Table Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project								
Milepost	**Feature ID**	**Waterbody Name**	**State Water Quality Classification** [a]	**Fishery Classification**	**Flow Regime**	**FERC Classification**	**Pipeline Crossing Length (feet)**	**Proposed Crossing Method**
PAR-06 (5.67)	SP1131	Unnamed Tributary to Steep Creek	PCR, M	Warmwater	Ephemeral	Minor	N/A	Existing Culvert
PAR-07 (7.41)	SP4015	Unnamed Tributary to Tebo Creek	PCR, M	Warmwater	Ephemeral	Minor	N/A	Existing Culvert
PAR-07 (7.41)	SP4016	Unnamed Tributary to Tebo Creek	PCR, M	Warmwater	Ephemeral	Minor	N/A	Existing Culvert
PAR-07 (7.41)	SP4019	Unnamed Tributary to Tebo Creek	PCR, M	Warmwater	Ephemeral	Minor	N/A	Existing Culvert
PAR-08 (6.92)	SP4013	Unnamed Tributary to Steep Creek	PCR, H	Warmwater	Perennial	Minor	N/A	Existing Culvert
PAR-08 (6.92)	SP4014	Unnamed Tributary to Steep Creek	PCR, M	Warmwater	Ephemeral	Minor	N/A	Existing Culvert
PAR-10 (9.39)	SP1127	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	N/A	N/A [c]
PAR-10 (9.39)	SP1129	Unnamed Tributary to Sixmile Hollow	PCR, M	Warmwater	Ephemeral	Minor	N/A	Existing Culvert
PAR-11 (9.88)	SP1122	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	N/A	Existing Culvert
PAR-11 (9.88)	SP1123	Unnamed Tributary to Rocky Creek	PCR, H	Warmwater	Perennial	Intermediate	N/A	Existing Culvert
PAR-11 (9.88)	SP1124	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	N/A	N/A [c]
PAR-11 (9.88)	SP1125	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	N/A	Low Waterbody Crossing
PAR-11 (9.88)	SP1121	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	N/A	Existing Culvert

Appendix C Table Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project								
Milepost	**Feature ID**	**Waterbody Name**	**State Water Quality Classification** [a]	**Fishery Classification**	**Flow Regime**	**FERC Classification**	**Pipeline Crossing Length (feet)**	**Proposed Crossing Method**
PAR-11 (9.88)	SP1126	Unnamed Tributary to Rocky Creek	PCR, M	Warmwater	Ephemeral	Minor	N/A	Existing Culvert
PAR-11 (9.88)	SP1117	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	N/A	N/A [c]
PAR-11 (9.88)	SP1115	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	N/A	Existing Culvert
TAR-12 (9.88)	OWP9003	Manmade Lake	N/A	N/A	Manmade Lake	N/A	N/A	N/A [d]
PAR-13 (10.60)	SP1119	Unnamed Tributary to Clear Creek	PCR, M	Warmwater	Intermittent	Minor	N/A	Existing Culvert
PAR-13 (10.60)	SP1121	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	N/A	Timber Mat
TAR-15 (10.60)	SP1082	Unnamed Tributary to Clear Creek	PCR, M	Warmwater	Intermittent	Minor	N/A	Timber Mat
TAR-15 (10.60)	SP1113	Unnamed Tributary to Clear Creek	PCR, M	Warmwater	Intermittent	Minor	N/A	Existing Culvert
TAR-15 (10.60)	SP1114	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	N/A	N/A [c]
TAR-15 (10.60)	SP1109	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	N/A	N/A [c]
TAR-15 (10.60)	SP1108	Unnamed Tributary to Clear Creek	PCR, M	Warmwater	Intermittent	Minor	N/A	Timber Mat
TAR-19 (12.20)	SP3002	Unnamed Tributary to Donahue Creek	PCR, M	Warmwater	Ephemeral	Minor	N/A	Existing Culvert
TAR-21 (12.68)	SP3003	Unnamed Tributary to Donahue Creek	PCR, M	Warmwater	Ephemeral	Minor	N/A	Existing Culvert

Appendix C Table Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project								
Milepost	**Feature ID**	**Waterbody Name**	**State Water Quality Classification** [a]	**Fishery Classification**	**Flow Regime**	**FERC Classification**	**Pipeline Crossing Length (feet)**	**Proposed Crossing Method**
TAR-21 (12.68)	SP3003	Unnamed Tributary to Donahue Creek	PCR, M	Warmwater	Ephemeral	Minor	N/A	Maintenance grading and gravel
PAR-22 (13.78)	SP3006	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Ephemeral	Minor	N/A	Add culverts and maintenance
PAR-22 (13.78)	SP3005	Unnamed Tributary to Chiamon Bayou	PCR, M	Warmwater	Ephemeral	Minor	N/A	Maintenance grading, gravel, and culvert
PAR-25 (21.76)	SP4001	Unnamed Tributary to Easley Creek	PCR, M	Warmwater	Ephemeral	Minor	N/A	Existing Culvert
Sabine County, Texas								
TAR-18 (12.12)	SP1090	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	N/A	Temporary Culvert
TAR-26 (21.76)	OWP4001	Manmade Pond	N/A	N/A	Manmade Pond	N/A	N/A	N/A [d]
Contractor/Pipe Yards								
San Augustine County, Texas								
Yard 1 (MP 10.85)	SP1168	Unnamed Tributary to Clear Creek	PCR, M	Warmwater	Intermittent	Minor	N/A	N/A [c]
Yard 2 (MP 11.90)	SP1138	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	N/A	N/A [c]
Yard 2 (MP 11.90)	SP1137	Roadside Ditch	PCR, M	Warmwater	Ephemeral	Minor	N/A	Existing Culvert
Yard 2 (MP 11.90)	SP1136	Unnamed Tributary to Donahue Creek	PCR, M	Warmwater	Ephemeral	Minor	N/A	N/A [c]

Appendix C Table
Surface Waterbodies Crossed or Otherwise Impacted by the Index 99 Expansion Project

Milepost	Feature ID	Waterbody Name	State Water Quality Classification [a]	Fishery Classification	Flow Regime	FERC Classification	Pipeline Crossing Length (feet)	Proposed Crossing Method
Yard 2 (MP 11.90)	OWP1009	Manmade Lake	N/A	N/A	Manmade Lake	N/A	N/A	N/A [c]

Notes: Features documented during desktop (DT) analysis are notated with a DT at the end of the feature name.
State Water Quality Classifications and Fisheries Classifications were obtained from the *Texas Water Quality Standards* (Texas Administrative Code §307.1-307.10).
N/A – not applicable.

[a] PCR-primary contact recreation; M-minimal aquatic life use, and H-high aquatic life use.
[b] Waterbody would not be crossed by the pipeline centerline but is located within the project footprint.
[c] Waterbody is located within the project footprint but would not be impacted during construction.
[d] Waterbody is located within the project footprint of access road; however, project activities within the waterbody would be limited to temporary water withdrawal for hydrostatic testing.

Appendix D

Federally Listed Species

Appendix D Table Federally Listed Threatened and Endangered Species that Potentially Occur in the Vicinity of the Index 99 Expansion Project				
Species (Scientific name)	**Status**	**County/Parish, State**	**Habitat**	**Determination of Effect**
Red-cockaded woodpecker *(Leuconotopicus borealis)*	Endangered	San Augustine and Sabine, TX and Bienville Parish, LA	RCW prefer old growth pine trees that are infected with red heart fungus. Suitable foraging habitat occurs within the project area in San Augustine and Sabine Counties, Texas. However, no known clusters of RCWs are known within 2 miles of the project in San Augustine or Sabine Counties, Texas. All work in Bienville Parish would occur within the existing Hall Summit compressor station and would not require tree clearing.	*No effect*
Northern long-eared bat *(Myotis septentrionalis)*	Threatened	Bienville, LA	Northern long-eared bats (NLEB) hibernate in caves and abandoned mines during the winter months, and occupy hardwood forests for roosting and foraging during the summer months. The bats roost singly or in colonies underneath exfoliating tree bark, in cavities, or in crevices of both living and dead trees. NLEB are occasionally found utilizing structures as roost sites (e.g., barns and sheds). No suitable habitat exists within the project area.	*No effect*
Louisiana pine snake *(Pituophis ruthveni)*	Threatened	San Augustine and Sabine, TX	Louisiana pine snake habitat consists of sandy, well drained soils in open pine forest, a sparse mid-story, and well-developed herbaceous groundcover where forbs and grasses dominate. Suitable habitat is present in the project area within both San Augustine and Sabine Counties. The nearest known San Augustine record was from 1979 about 12 miles west of the project, and no other records have been recorded since; therefore, the county is not considered within the species current range. The closest record in Sabine County is 16.5 miles away from the project.	*No effect*
Texas golden gladecress *(Leavenworthia texana)*	Endangered	San Augustine and Sabine, TX	Texas golden gladecress occurs on chalky soils over the Weches Formation in glades composed of ironstone or glauconitic outcrops. The glade habitat occupied by the species can fluctuate from being flooded in the winter and spring to being arid in the summer. The Weches Formation occurs intermittently at the northern end of the project, from approximately MP 0.4 to MP 4.2, for a total of 2.59 miles. Gulf South would use an HDD to avoid impacts to the Texas golden gladecress. The proposed drill would be deep enough (~40-65 feet) to avoid damaging the clay pan associated with the glades. No heavy machinery would be used between the drill entry and exit locations.	*Not Likely to Adversely Affect*

Appendix D Table Federally Listed Threatened and Endangered Species that Potentially Occur in the Vicinity of the Index 99 Expansion Project				
Species (Scientific name)	**Status**	**County/Parish, State**	**Habitat**	**Determination of Effect**
Texas golden gladecress	Critical Habitat	San Augustine and Sabine, TX	Texas golden gladecress designated critical habitat (DCH) occurs on Weches glades (open areas in forests) over associated soils for the listed plant. Physical and biological features of the glades are open, sunny glauconite exposures of the Weches Formation with intact hydrology and seedbed. The project crosses federally DCH units #3 and #4; however, only two glades were identified that fit the physical and biological features of DCH. Gulf South would use an HDD to avoid impacts to federally designated Texas golden gladecress critical habitat.	*Not likely to destroy or adversely modify designated critical habitat*
White bladderpod *(Physaria pallida)*	Endangered	San Augustine, TX	White bladderpod is restricted to a small area of San Augustine County, Texas. The species occurs in openings of pine-oak forests on alkaline, silty-sandy soils over ironstone, which is generally seep-fed in the winter and dry in the summer. Suitable habitat exists within the project area and Gulf South's field surveys identified potentially suitable habitat within the project area (same Weches glade habitat as the Texas golden gladecress). Gulf South would use an HDD to avoid impacts to the glades. No white bladderpod DCH exists in the project area.	*Not Likely to Adversely Affect*

Appendix E

State Listed Species

Appendix E Table State Listed Threatened and Endangered Species Potentially Occurring within the Project Area					
Common Name	**Scientific Name**	**Status**	**County, State**	**Species Habitat Assessment**	**Potential Impact**
Birds					
Bachman's sparrow	*Peucaea aestivalis*	Threatened	San Augustine and Sabine, TX	Bachman's sparrow prefers old longleaf pine forests with open understory, but will utilize pastures and powerline rights-of-ways if its preferred habitat is sparse. Although preferred habitat is present within the project counties, no occurrences have been documented within the project area, and no individuals were observed during field surveys. As a non-migratory breeding resident in east Texas, the Bachmann's sparrow may occur nesting in the project area in regenerating pine clearcuts or open grassy areas with dense ground vegetation. Nest sites are primarily on the ground.	No significant impact
Bald eagle	*Haliaeetus leucephalus*	Threatened	San Augustine and Sabine, TX	Bald eagles prefer to nest in tall trees or cliffs near large waterbodies that can provide a sufficient source of prey. Based on Texas Natural Diversity Database occurrence data, bald eagle nests have been documented southwest of the project area at Lake Sam Rayburn (~approximately 5 miles southwest of the project area); however, no bald eagle nests were observed within the project area during field surveys. The species is highly mobile and would likely disperse during construction. In the event that a nest is observed in the project area, Gulf South would adhere to the buffer requirements established in the USFWS National Bald Eagle Management Guidelines.	No significant impact
Peregrine falcon	*Falco peregrinus*	Threatened	San Augustine and Sabine, TX	Peregrine falcons are a utilitarian species that nests in open habitats with cliffs, trees, and tall buildings. The species may be found along rivers or coastlines, or in cities. Suitable habitat is present in the project area; however, no occurrences have been documented within the project area. This species is highly mobile and would likely disperse during construction.	No significant impact

Appendix E Table State Listed Threatened and Endangered Species Potentially Occurring within the Project Area					
Common Name	**Scientific Name**	**Status**	**County, State**	**Species Habitat Assessment**	**Potential Impact**
Piping plover	*Charadrius melodus*	Threatened	San Augustine and Sabine, TX	Piping plover utilizes sparsely vegetated to bare shorelines along beaches, rivers, and mudflats. In east Texas, the piping plover is a rare migrant. Suitable habitat is not present within the project area.	No impact
Swallow-tailed kite	*Elanoides forficatus*	Threatened	San Augustine and Sabine, TX	Swallow-tailed kites prefer tall trees in pine forests or swamps in areas with abundance of prey to support young. Suitable migration habitat is present in the project area; however, no occurrences have been documented within the project area. This species is highly mobile and would likely disperse during construction.	No significant impact
White-faced ibis	*Plegadis chihi*	Threatened	San Augustine and Sabine, TX	White-faced ibis prefer freshwater marsh habitat, ponds, and rivers. Breeding habitat is not present in the project area; however, suitable migration habitat is present. This species is highly mobile and would likely disperse during construction.	No significant impact
Wood stork	*Mycteria americana*	Threatened	San Augustine and Sabine, TX	Wood storks prefer wetland habitats and waterbodies for foraging. The wood stork is seen in Texas during the late summer/fall months. Suitable habitat is present in the project area; however, no individuals were identified during field surveys, and there is no occurrence data for the project area. This species is highly mobile and would likely disperse during construction if they were present when construction began.	No significant impact
Mammals					
Black bear	*Ursus americanus*	Threatened	San Augustine and Sabine, TX	Black bears prefer a combination of forest, edge habitats, riparian borders, and forest openings spread throughout remote areas. The species dens within mature or old-growth forest containing coarse, woody debris, snags, and adequate cover. Suitable habitat is present within the project area; however, the species is highly mobile and would likely disperse during construction.	No significant impact

Appendix E Table State Listed Threatened and Endangered Species Potentially Occurring within the Project Area					
Common Name	**Scientific Name**	**Status**	**County, State**	**Species Habitat Assessment**	**Potential Impact**
Louisiana black bear	*Ursus americanus luteolus*	Threatened	San Augustine and Sabine, TX	Louisiana black bears prefer remote areas with bottomland hardwood forests, brackish and freshwater marshes, salt domes, and wooded spoil levees. Suitable habitat is not present with the project area. Louisiana black bears are not known to breed in Texas; however, young males have been known to be transient in east Texas.	No Impact
Rafinesque's big-eared bat	*Corynorhinus rafinesquii*	Threatened	San Augustine and Sabine, TX	Rafinesque's big-eared bat is a nocturnal species that prefers pine forests. Roosting habitat consists of mature, hollow trees, abandoned buildings, bunkers, cave entrances, tunnels, and bridges. Suitable habitat is potentially present within the project area. The closest documented occurrence of the Rafinesque's big-eared bat is over 14 miles away from the project area.	No significant impact
Red wolf	*Canis rufus*	Endangered	San Augustine and Sabine, TX	Red wolf inhabits coastal prairie and marsh habitat in the southeastern United States. This species is presumed extirpated throughout the state of Texas.	No Impact
Fish					
Blackside darter	*Percina maculata*	Threatened	San Augustine, TX	Blackside darter can be found in pools within streams or rivers. Known distribution in Texas is restricted to the Red River drainage basin. While the project does not occur within the Red River drainage basin, TPWD identified the Sabine and Neches river basins as having potential habitat for the species. Implementation of the BMPs (best management practices) outlined within the FERC Procedures for waterbody crossings would minimize potential impacts on this fish species.	No significant impact
Blue sucker	*Cycleptus elongatus*	Threatened	Sabine, TX	Blue suckers inhabit large, deep rivers of the Mississippi Basin. Preferred habitat includes cobble and/or bedrock substrates within main channels and rivers. Though the project crosses some perennial streams, the substrate consists of silt and clay. Therefore, there is no suitable habitat within the project area for the blue sucker.	No Impact

Appendix E Table State Listed Threatened and Endangered Species Potentially Occurring within the Project Area					
Common Name	**Scientific Name**	**Status**	**County, State**	**Species Habitat Assessment**	**Potential Impact**
Creek chubsucker	*Erimyzon oblongus*	Threatened	San Augustine and Sabine, TX	Creek chubsuckers prefers small streams and rivers with various substrates and sufficient vegetation. The project crosses numerous waterbodies in San Augustine and Sabine Counties in which suitable habitat is present. The closest known occurrence of the creek chubsucker is over 23 miles from the project area. Additionally, implementation of the BMPs outlined within the FERC Procedures for waterbody crossings would minimize potential impacts to fish species.	No significant impact
Paddlefish	*Polyodon spathula*	Threatened	San Augustine and Sabine, TX	Paddlefish prefer slow-moving waters of large rivers and reservoirs with depths greater than four feet. The project crosses small perennial streams with water depths ranging from less than a foot to approximately four feet. Suitable habitat is not present within the project area.	No Impact
Reptiles					
Alligator snapping turtle	*Macrochelys temminckii*	Threatened	San Augustine and Sabine, TX	Alligator snapping turtle inhabits large rivers, lakes, reservoirs, and canals, preferring slow moving highly turbid waters. Smaller stream habitat exists within project area, however, the utilization of HDDs to cross larger waterbodies as well as the implementation of the BMPs outlined within the FERC Procedures for various waterbody crossing methods would minimize potential impacts to this species.	No significant impact
Northern scarlet snake	*Cemophora coccinea copei*	Threatened	San Augustine and Sabine, TX	Northern scarlet snake habitat consists of sandy or loamy soils beneath forested or open areas such as agricultural fields. Suitable habitat is present within the project area. The closest known occurrence is over 21 miles away in Jasper County. If the species is encountered during construction, Gulf South will notify TWPD to seek guidance on relocation efforts.	No significant impact

Appendix E Table State Listed Threatened and Endangered Species Potentially Occurring within the Project Area					
Common Name	**Scientific Name**	**Status**	**County, State**	**Species Habitat Assessment**	**Potential Impact**
Texas horned lizard	*Phrynosoma cornutum*	Threatened	San Augustine and Sabine, TX	Texas horned lizard habitat consists of open areas with little vegetation in sandy, arid regions. The project area falls within the historic range of the species; however, the current range of the Texas horned lizard is restricted to the western portion of Texas.	No impact
Timber rattlesnake	*Crotalus horridus*	Threatened	San Augustine and Sabine, TX	Timber rattlesnakes prefer habitat consisting of contiguous deciduous forest containing thick understory vegetation and large, coarse, woody debris. Bottomland hardwood forest dominated by oak, hickory, and sweetgum are most preferred in Texas. Suitable habitat is present within the project area; however, there are no known occurrences near the project area.	No significant impact
Mollusks					
Louisiana pigtoe	*Pleurobema riddellii*	Threatened	San Augustine and Sabine, TX	Louisiana pigtoe has been found in the San Jacinto, Trinity, Neches-Angelina, Sabine, Big Cypress, and Sulphur River basins in Texas. Preferred habitat consists of streams and moderate-size rivers on substrates of mud, sand, and gravel, with low to moderate flow. The project crosses numerous waterbodies where suitable habitat is present; however, utilization of the HDD crossing method and implementation of the BMPs outlined within the FERC Procedures for waterbody crossings would minimize potential impacts to this species.	No significant impact
Sandbank pocketbook	*Lampsilis satura*	Threatened	San Augustine and Sabine, TX	Sandbank pocketbook has been found in southern portions of the Mississippi interior basin west to Texas. This species prefers large creeks and rivers with moderate flows on gravel, gravel-sand, and sand substrates. The project crosses large creeks where suitable habitat is present; however, utilization of the HDD crossing method and implementation of the BMPs outlined within the FERC Procedures for waterbody crossings would minimize potential impacts to this species.	No significant impact

Appendix E Table State Listed Threatened and Endangered Species Potentially Occurring within the Project Area					
Common Name	**Scientific Name**	**Status**	**County, State**	**Species Habitat Assessment**	**Potential Impact**
Southern hickorynut	*Obovaria jacksoniana*	Threatened	San Augustine and Sabine, TX	Southern hickorynut prefers large rivers with medium- sized gravel with a low to moderate current. The project does not cross any large rivers; therefore, no suitable habitat exists within the project area.	No impact
Texas heelsplitter	*Potamilus amphichaenu*	Threatened	San Augustine and Sabine, TX	Texas heelsplitter is endemic to the Neches, Sabine, and Trinity River basins in Texas. This species prefers habitats consisting of streams or rivers with low to moderate flow on mud, sand, and fine gravel substrates and may tolerate impoundments. The project crosses numerous waterbodies where suitable habitat is present; however, implementation of the HDD method for some of the larger waterbody crossings would minimize potential impacts. Additionally, the BMPs outlined within the FERC Procedures for waterbody crossings would minimize potential impacts to this species.	No significant impact
Texas pigtoe	*Fusconaia askewi*	Threatened	San Augustine and Sabine, TX	Texas pigtoe is found within Texas and Louisiana, including the Trinity River above Lake Livingston, a tributary of the West Branch San Jacinto River, and the Sabine River above Toledo Bend Reservoir. Suitable habitat is not present within the project area.	No impact
Triangle pigtoe	*Fusconaia lananensis*	Threatened	San Augustine and Sabine, TX	Triangle pigtoe is an endemic species restricted to the Angelina River, Attoyac Bayou, and Village Creek drainages of the Neches River basin. The species prefers small rivers with medium flow and mixed mud, sand, and fine gravel substrates. All project activities occur outside of the drainages listed above.	No impact