

2.0 PROPOSED ACTION

Gulf South proposes to construct, own, operate, and maintain an interstate natural gas pipeline and associated ancillary facilities in Texas, Louisiana, and Mississippi as described below and depicted in Figure 2.1-1.

2.1 PROPOSED FACILITIES

Gulf South proposes to construct and operate a 42-inch-diameter natural gas pipeline that would extend from existing Gulf South pipeline facilities in DeSoto Parish, Louisiana approximately 240.3 miles east to existing Gulf South pipeline facilities in Simpson County, Mississippi. This 42-inch-diameter natural gas pipeline would interconnect with natural gas pipelines operated by Texas Gas Transmission, LLC (Texas Gas), Columbia Gulf Transmission Corporation (Columbia Gulf), and Texas Eastern Transmission, LLC (Texas Eastern). The proposed pipeline would have a maximum allowable operating pressure (MAOP) of 1,200 pounds per square inch gauge (psig) from the beginning of the proposed Project to the Tallulah Compressor Station and 1,300 pounds per square inch gauge psig from the Tallulah Compressor Station to the Project terminus. The proposed Project would be capable of receiving, transporting, and delivering up to 1.7 billion cubic feet per day (Bcf/d) of natural gas.

The proposed Project would include the construction and operation of 3.3 miles of 36-inch-diameter natural gas pipeline extending northward from Gulf South's existing Carthage Junction Compressor Station in Panola County, Texas to interconnects with Enterprise Products Partners (Enterprise) and Enbridge Energy Partners (Enbridge) also in Panola County, Texas.

Throughout this EIS, the locations of specific features along the proposed pipeline, such as project facilities and environmental resources are identified by milepost (MP). Table 2.1-1 provides the location, MP, and length of pipeline facilities associated with the proposed Project. Milepost identifications for several areas affected by route modifications adopted after the filing of the Application have been adjusted using MP equations for those particular areas only. The MPs for the remainder of the proposed route, constituting approximately 85 percent of the total length, have not been modified from the information included in the Application filing.

In addition to the proposed pipelines, Gulf South would add compression to its existing Carthage Junction Compressor Station, construct and operate two new compressor stations: the Vixen and Tallulah Compressor Stations, modify facilities at its existing Hall Summit and McComb Compressor Stations, and add new M/R stations, mainline valves (MLVs), and pig¹ launcher/receiver facilities. Table 2.1-2 identifies and describes the aboveground facilities associated with the proposed Project, and provides the location and other information for these facilities.

Specifically, Gulf South would install an additional 40,302 horse power (hp) of compression provided by two Solar Mars 100-15000S compressor units and one Solar Taurus 70-10302S compressor unit at its existing Carthage Junction Compressor Station. The new Vixen Compressor Station would contain two Solar Mars 100-15000S compressor units that would provide 30,000 hp of compression. The new Tallulah Compressor Station would contain two Solar Mars 100-15000S compressor units and one Solar Taurus 70-10302S compressor unit that would provide 40,302 hp of compression.

¹ A pig is a mechanical tool used to clean and inspect the interior of a pipeline.

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FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE
PROPOSED EAST TEXAS TO MISSISSIPPI EXPANSION PROJECT
Docket No. CP06-446-000

Page 2-2
Figure 2.1-1
General Location Map

Public access for the above information is available only
through the Public Reference Room, or by e-mail at
public.referenceroom@ferc.gov.

**TABLE 2.1-1
Pipeline Facilities for the Proposed East Texas to Mississippi Expansion Project**

County/Parish	Milepost		Length (miles)
	Begin	End	
Texas			
Panola County	H0.0	H3.3	3.3
Louisiana			
DeSoto Parish	0.0	22.2	22.2
Red River Parish	22.2	36.1	13.9
Bienville Parish	36.1	68.8	32.7
Jackson Parish	68.8	97.4	28.7
Ouachita Parish	97.4	115.5	18.0
Richland Parish	115.5	149.4	35.0
Madison Parish	149.4	183.7	34.7
Mississippi			
Warren County	183.7	196.8	13.5
Hinds County	196.8	229.5	32.9
Copiah County	229.5	232.4	2.5
Simpson County	232.4	238.6	6.2
Total			243.6

At each compressor station site, the new compressor units and associated equipment would be housed in new buildings. Each new compressor station would also include an emergency generator to provide back-up electrical power. Gulf South would also construct a new office/control building at each compressor station site where new compressor units would be installed. Additional facilities at the new or expanded compressor stations would include filter-separators, a fuel gas heater, and two station blow-down silencers. Most natural gas pipes at the facilities would be installed below grade, and the perimeter of the compressor stations would be fenced. Portions of these sites may be paved, covered with gravel, or landscaped, depending on facility operations and maintenance requirements.

Metering and flow control for natural gas delivered to the Carthage Junction Compressor Station through the new 3.3-mile 36-inch-diameter pipeline would be accomplished via M/R facilities at the Enterprise and Enbridge M/R Stations. Similarly, facilities at the proposed M/R stations located at the interconnects with the Texas Gas, Columbia Gulf, Texas Eastern, and the existing Gulf South pipeline facilities would be used to meter the flow and adjust the pressure of natural gas delivered to those systems. Each M/R station would include separate buildings for metering and regulator equipment, flow/pressure control, and a customer facility housed within a fenced perimeter.

**TABLE 2.1-2
Aboveground Facilities for the Proposed East Texas to Mississippi Expansion Project**

Facility	County/ Parish	Milepost	Description
Compressor Stations			
Carthage Junction Compressor Station	Panola, TX	N/A	Expand existing station with an additional 40,302 hp of gas-turbine-driven compression
Hall Summit Compressor Station	Bienville, LA	38.4	Install pig launcher/receiver adjacent to the yard of Gulf South's existing Hall Summit Compressor Station
Vixen Compressor Station	Ouachita, LA	99.4	Construct new station with 30,000 hp of gas-turbine-driven compression
Tallulah Compressor Station	Madison, LA	167.6	Construct new station with 40,302 hp of gas-turbine-driven compression
McComb Compressor Station	Walthall, MS	N/A	Install 350 feet of aboveground 26-inch-diameter pipe within the yard of Gulf South's existing McComb Compressor Station
Meter/Regulator (M/R) Stations			
Texas Gas M/R Station	Ouachita, LA	112.4	Install M/R facilities and tie-in to Texas Gas
Columbia Gulf M/R Station	Richland, LA	149.4	Install M/R facilities and tie-in to Columbia Gulf
Texas Eastern M/R Station	Hinds, MS	219.7	Install M/R facilities and tie-in to Texas Eastern
Gulf South Index 130 M/R Station	Simpson, MS	238.6	Install M/R facilities and tie-in to Gulf South
Enbridge M/R Station ^a	Panola, TX	H2.7	Install M/R facilities and tie-in to Enbridge
Enterprise M/R Station ^a	Panola, TX	H3.3	Install M/R facilities and tie-in to Enterprise
Mainline Valves (MLVs)			
MLV #1	DeSoto, LA	19.5	Install MLV within the permanent pipeline right-of-way
MLV #2	Bienville, LA	56.4	Install MLV within the permanent pipeline right-of-way
MLV #3	Jackson, LA	70.0	Install MLV within the permanent pipeline right-of-way
MLV #4	Jackson, LA	84.6	Install MLV within the permanent pipeline right-of-way
MLV #5	Ouachita, LA	112.4	Install MLV within the permanent pipeline right-of-way
MLV #6	Richland, LA	129.8	Install MLV within the permanent pipeline right-of-way
MLV #7	Richland, LA	149.4	Install MLV within the permanent pipeline right-of-way
MLV #8	Madison, LA	182.1	Install MLV within the permanent pipeline right-of-way
MLV #9	Warren, MS	191.6	Install MLV within the permanent pipeline right-of-way

TABLE 2.1-2 (continued)
Aboveground Facilities for the Proposed East Texas to Mississippi Expansion Project

Facility	County/ Parish	Milepost	Description
MLV #10	Hinds, MS	207.1	Install MLV within the permanent pipeline right-of-way
MLV #11	Hinds, MS	225.3	Install MLV within the permanent pipeline right-of-way
Pig Launchers/Receivers			
Hall Summit Pig Launcher/Receiver	Bienville, LA	38.4	Install launcher/receiver adjacent to Gulf South's existing Hall Summit Compressor Station
Vixen Pig Launcher/Receiver	Ouachita, LA	99.4	Install launcher/receiver within the yard of Gulf South's proposed Vixen Compressor Station
Tallulah Pig Launcher/Receiver	Madison, LA	167.6	Install launcher/receiver within the yard of Gulf South's proposed Tallulah Compressor Station
Carthage Junction Pig Receiver ^a	Panola, TX	H0.0	Install receiver within Gulf South's existing Carthage Junction Compressor Station
Enterprise M/R Station Pig Launcher ^a	Panola, TX	H3.3	Install launcher within the yard of Gulf South's proposed Enterprise M/R Station
Side Valves			
Texas Gas Side Valve	Ouachita, LA	112.4	Install a side valve for the interconnect with Texas Gas
ANR Side Valve	Richland, LA	141.4	Install a side valve for a possible future connection with ANR
Columbia Gulf Side Valve	Richland, LA	149.4	Install a side valve for the interconnect with Columbia Gulf
Tennessee Gas Pipeline Side Valve	Madison, LA	150.4	Install a side valve for a possible future interconnection with TGP
Baxter Wilson Power Plant Side Valve	Warren, MS	185.5	Install a side valve for a possible future connection to the Baxter Wilson Power Plant lateral
Gulf South Side Valve	Warren, MS	193.6	Install a side valve for a possible future connection to Gulf South pipeline
Gulf South Learned Field Line Side Valve	Hinds, MS	207.1	Install a side valve for a possible future interconnection with Gulf South Learned Field Pipeline
Texas Eastern Side Valve	Hinds, MS	219.7	Install a side valve for the interconnect with Texas Eastern
Gulf South Side Valve	Hinds, MS	227.9	Install a side valve for a possible future connection to Gulf South pipeline
Notes:			
LA = Louisiana			
MS = Mississippi			
TX = Texas			
^a Indicates that facility is associated with the 36-inch-diameter pipeline supply lateral in Panola County, Texas.			

Additionally, two of Gulf South's existing compressor stations would be modified in association with the proposed Project, but new or additional compression would not be installed. A pig launcher/receiver and approximately 350 feet of aboveground 26-inch-diameter station and yard piping would be added to the Hall Summit and McComb Compressor Stations, respectively.

Eleven MLVs (block valves) would be installed along the proposed pipeline to enable portions of the pipeline to be shut down or isolated, if necessary. These MLVs would be installed in areas that are easily accessible to operating personnel and at intervals specified in U.S. Department of Transportation (DOT) safety standards for natural gas pipelines. Each MLV assembly would consist of a 42-inch below-ground valve and a 12-inch-diameter pipe extending aboveground for blowdowns and bypass. These sites would typically be enclosed with security fencing and a lockable gate around the aboveground piping and valves. The existing Hall Summit Compressor Station and proposed Vixen and Tallulah Compressor Stations would include new pig launcher and receiver facilities. Along the proposed 36-inch-diameter pipeline, a pig launcher facility would be built at the pipeline terminus (MP H3.3), and a pig receiver facility would be installed at the pipeline origin (MP H0.0). An existing pig launcher at the Carthage Junction Compressor Station would serve as the upstream facility for the pig receiver proposed for the Hall Summit Compressor Station.

Gulf South would also install nine side valves, three of which would be for immediate interconnects with Texas Gas, Columbia Gulf, and Texas Eastern and six for possible future interconnects near the crossings of the ANR pipeline, Tennessee Gas pipeline, Baxter Wilson Power Plant, and three existing Gulf South pipelines.

2.2 LAND REQUIREMENTS

The amount of land required for construction and operation of the proposed Project, including the proposed pipeline and associated ancillary facilities, the proposed aboveground facilities, and other work areas, is summarized in Table 2.2-1. Approximately 3,763.4 acres of land would be required for use during construction of the proposed Project and approximately 1,564.3 acres of land would be required for use during operation of the proposed Project. Following construction, approximately 2,199.1 acres of land would be restored to its preconstruction condition or allowed to revert to its former use.

2.2.1 Pipeline Facilities

In upland areas, Gulf South proposes to use a nominal 100-foot-wide construction right-of-way to install the proposed pipeline. In wetland areas, Gulf South proposes to use a 75-foot wide construction right-of-way to install the proposed pipeline. These construction rights-of-way widths include a proposed 60-foot-wide permanent right-of-way positioned over the proposed pipeline and additional 40- and 15-foot-wide temporary construction work area in upland and wetland areas, respectively. The 100-foot-wide nominal construction right-of-way may also be expanded by an additional 50 to 75 feet to account for activity in certain areas such as rugged terrain as discussed in Section 2.3.2. The typical proposed pipeline construction right-of-way requirements in upland and wetland areas are illustrated in Figure 2.2.1-1 (typical right-of-way parallel to existing Gulf South pipelines), Figure 2.2.1-2 (typical right-of-way parallel to the proposed CenterPoint pipeline), and Figure 2.2.1-3 (typical right-of-way in greenfield areas).

**TABLE 2.2-1
Locations and Land Requirements for the Proposed
East Texas to Mississippi Expansion Project**

Facility	Location – Parish/County	Land Affected during Construction (acres)	Land Affected during Operation (acres)
Pipeline Facilities^a			
	DeSoto, LA	216.6	116.1
	Red River, LA	113.8	57.8
	Bienville, LA	339.5	188.1
	Jackson, LA	316.5	193.0
	Ouachita, LA	210.8	119.3
	Richland, LA	394.4	226.2
	Madison, LA	388.5	225.9
	Warren, MS	157.5	89.1
	Hinds, MS	383.3	226.1
	Copiah, MS	32.7	17.4
	Simpson, MS	74.8	43.4
	Panola, TX ^b	36.9	19.6
	Subtotal Pipeline Facilities	2,665.2	1,521.9
Aboveground Facilities			
Compressor Stations			
Carthage Junction Compressor Station	Panola, TX	0.0	0.0
Vixen Compressor Station	Ouachita, LA	8.0	6.0
Tallulah Compressor Station	Madison, LA	10.0	10.0
McComb Compressor Station	Walthall, MS	0.0	0.0
Meter/Regulator (M/R) Stations			
Texas Gas M/R Station	Ouachita, LA	4.0	3.3
Columbia Gulf M/R Station	Richland, LA	4.5	4.5
Texas Eastern M/R Station	Copiah, MS	1.5	1.0
Gulf South M/R Station	Simpson, MS	3.7	0.9
Enbridge M/R Station ^b	Panola, TX	1.5	0.6
Enterprise M/R Station ^b	Panola, TX	2.0	1.2
Mainline Valves^c	Various	0.0	0.0
Side Valves^c	Various	0.0	0.0
Pig Launcher/Receiver^d	Various	0.8	0.8
	Subtotal Aboveground Facilities	36.0	28.3

**TABLE 2.2-1 (continued)
Locations and Land Requirements for the Proposed
East Texas to Mississippi Expansion Project**

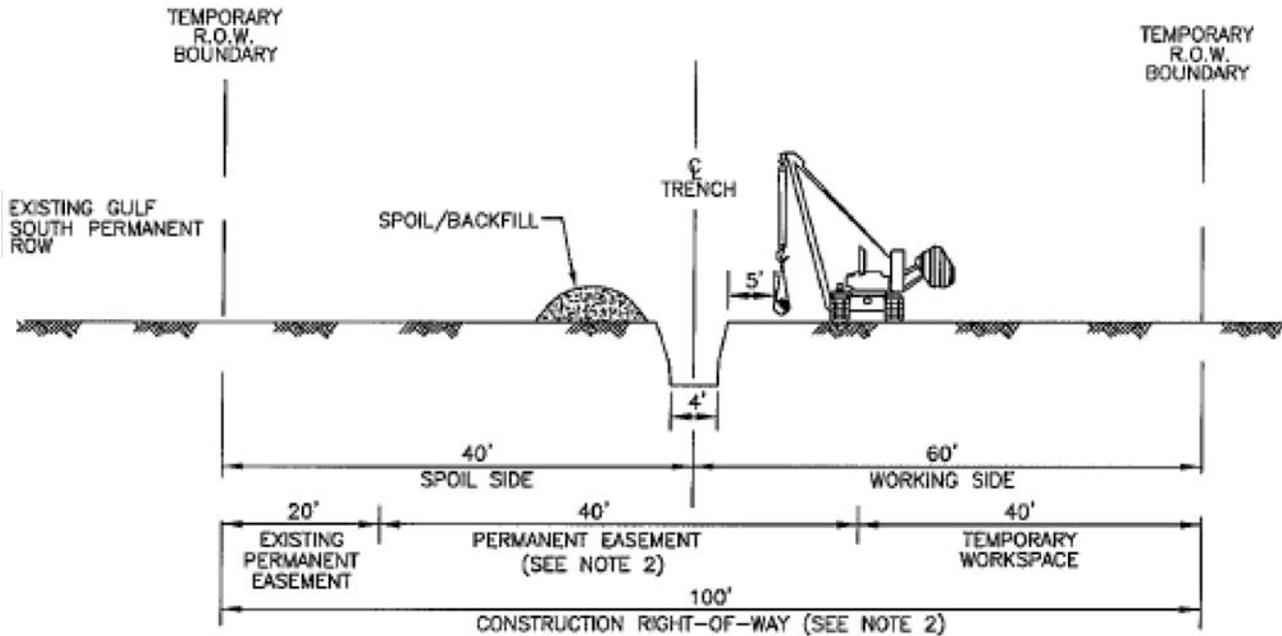
Facility	Location – Parish/County	Land Affected during Construction (acres)	Land Affected during Operation (acres)
Extra Work Areas			
Extra Workspace	Various	728.3	0.0
Access Roads	Various	103.8	14.1
Contractor/staging yards	Various	230.0	0.0
Subtotal Extra Work Areas		1,061.5	14.1
Total		3,763.4	1,564.3
Notes:			
LA = Louisiana			
MS=Mississippi			
TX = Texas			
a	Acreages reflect a nominal 100-foot-wide construction right-of-way in uplands, a 75-foot-wide construction right-of-way in wetlands, and a 60-foot-wide permanent easement that would be maintained along the entire pipeline following construction. (Note: we are recommending that Gulf South's permanent right-of-way be limited to a width of 50 feet when federal eminent domain would be exercised)		
b	Indicates that facility is associated with the 36-inch-diameter pipeline supply lateral in Panola County, Texas.		
c	Minor land requirements associated with these facilities would be contained entirely within compressor station sites or the construction and/or permanent pipeline rights-of-way and are thus already included in the acreage estimates for those facilities.		
d	All pig launcher/receiver facilities would be contained within the Project's pipeline right-of-way or within existing above ground facility yards, except for a new pig launcher/ receiver facility that is proposed for the existing Hall Summit Compressor Station, which would affect land outside of the pipeline and existing facility easements .		

Some segments of the proposed pipeline would be installed using horizontal directional drill (HDD) or bored crossings (see Section 2.3.2). Generally, these segments would only require the use of the permanent 60-foot-wide right-of-way; however, additional temporary work spaces would most likely be required near these segments because of the need for additional space to accommodate these construction techniques.

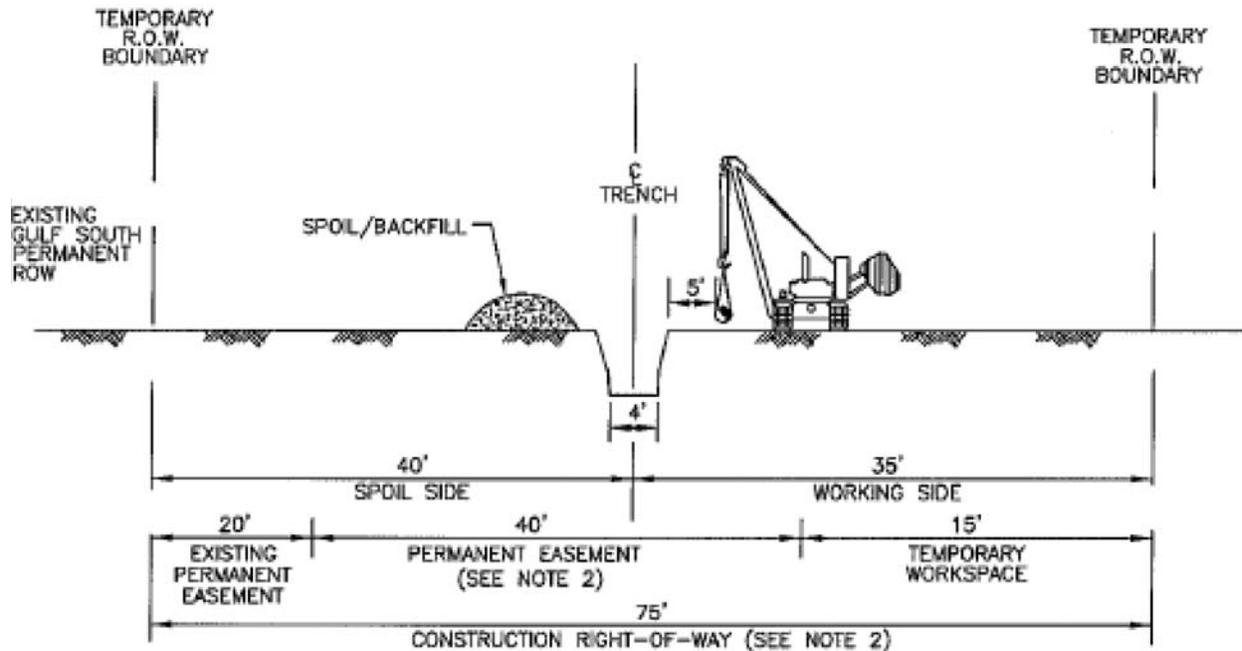
Land requirements for the pipeline construction right-of-way would total approximately 2,665.2 acres (see Table 2.2-1). As indicated previously, following installation of the proposed pipeline and restoration of the construction right-of-way, Gulf South proposes to maintain a 60-foot-wide permanent right-of-way over the proposed pipeline. Maintenance of this permanent pipeline right-of-way would require the use of approximately 1,521.9 acres of land.

Right-of-Way Considerations

Gulf South proposes to maintain a 60-foot-wide permanent right-of-way. However, we believe that the permanent maintenance of a 60-foot-wide right-of-way is not necessary for operation of the proposed pipeline. Based on our experience and review of similar projects, as well as our understanding of pipeline operations, maintenance procedures and equipment requirements; we believe that a permanently maintained 50-foot-wide right-of-way is sufficient to safely and efficiently operate a 42-inch-diameter pipeline. Additionally, we have received numerous requests and comments from



TYPICAL UPLAND RIGHT-OF-WAY



TYPICAL WETLAND RIGHT-OF-WAY

Not to Scale

Notes:

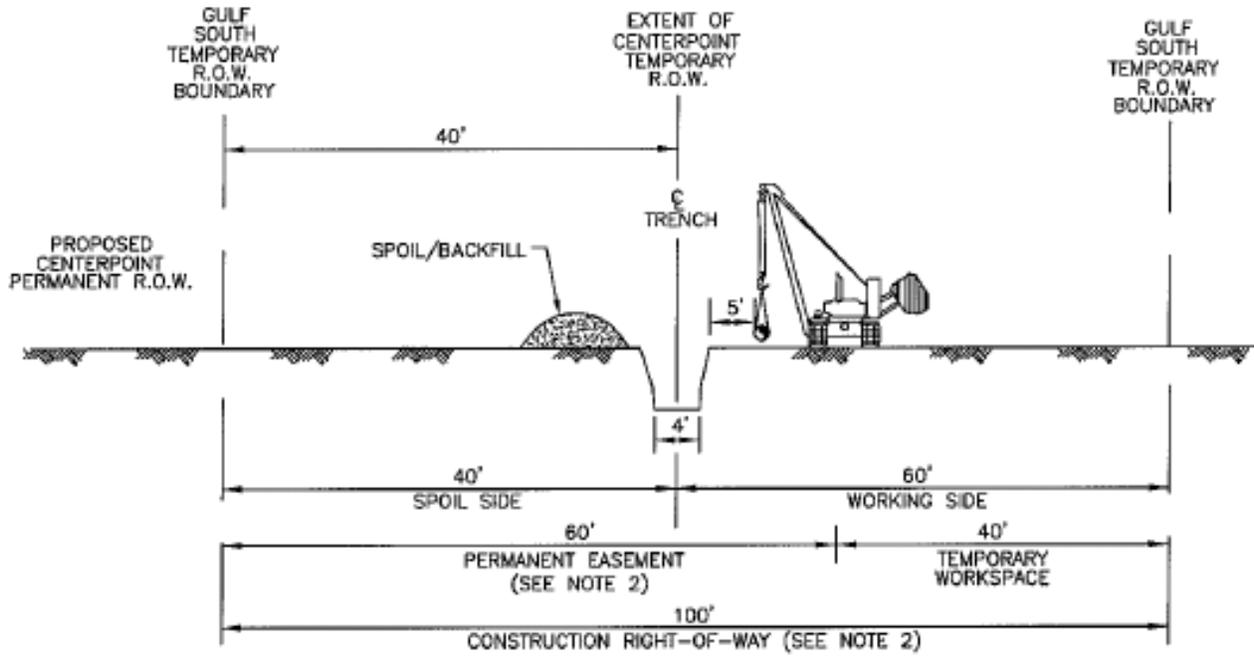
1. ROW CONFIGURATION UTILIZED WHEN PARALLELING EXISTING CENTERPOINT PIPELINE RIGHT-OF-WAS WHERE IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
2. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 100 FEET WIDE CONSISTING OF 60 FEET PERMANENT EASEMENT, AND 40 FEET OF TEMPORARY WORKSPACE. EXTRA TEMPORARY WORK SPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL, AND RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.

EAST TEXAS TO MISSISSIPPI EXPANSION PROJECT

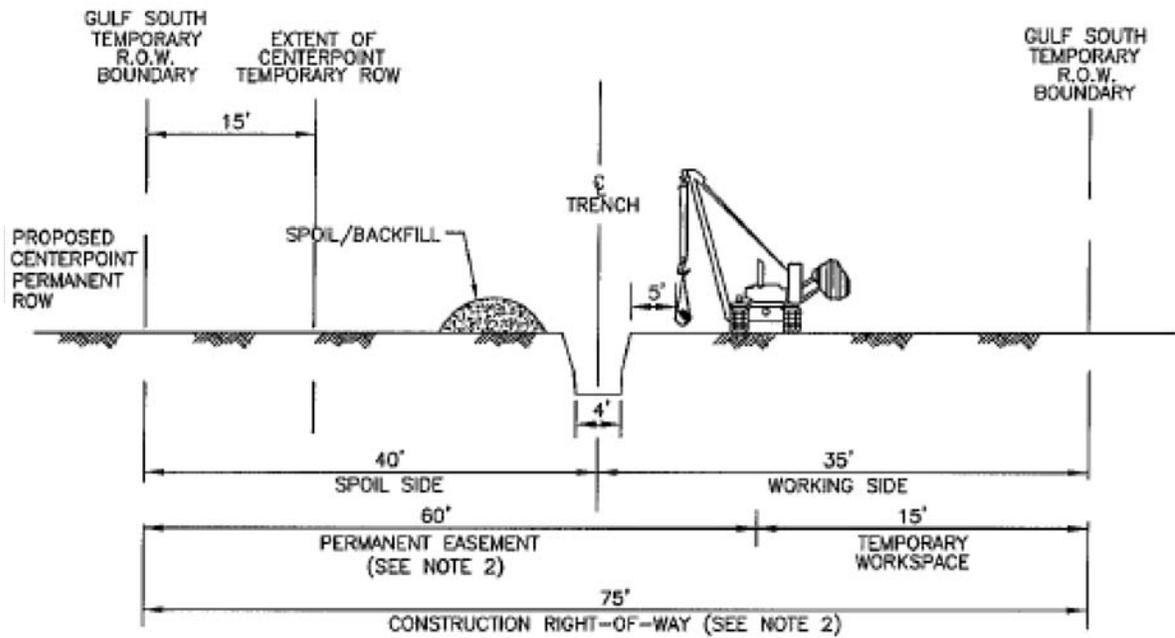
Typical Right-of-Way Cross Sections
Parallel to the Existing Gulf South Pipelines

DATE: April, 2007

FIGURE: 2.2.1-1



TYPICAL UPLAND RIGHT-OF-WAY



TYPICAL WETLAND RIGHT-OF-WAY

Not to Scale

Notes:

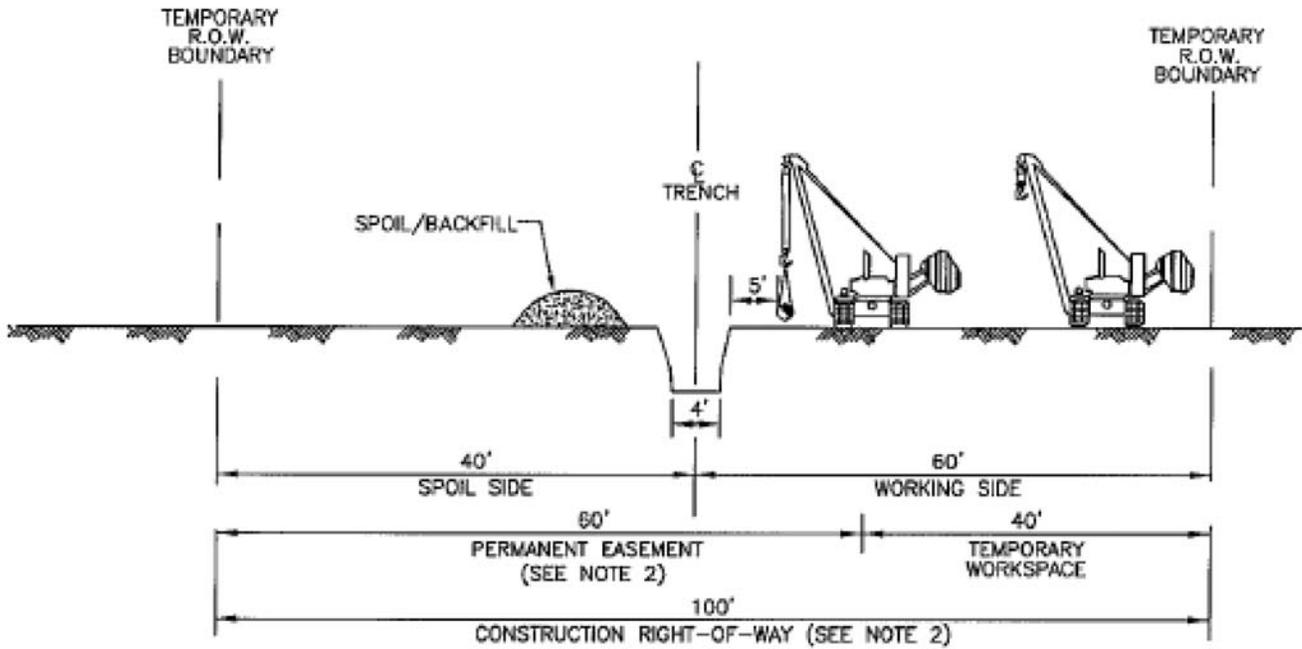
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EAST TEXAS TO MISSISSIPPI EXPANSION PROJECT

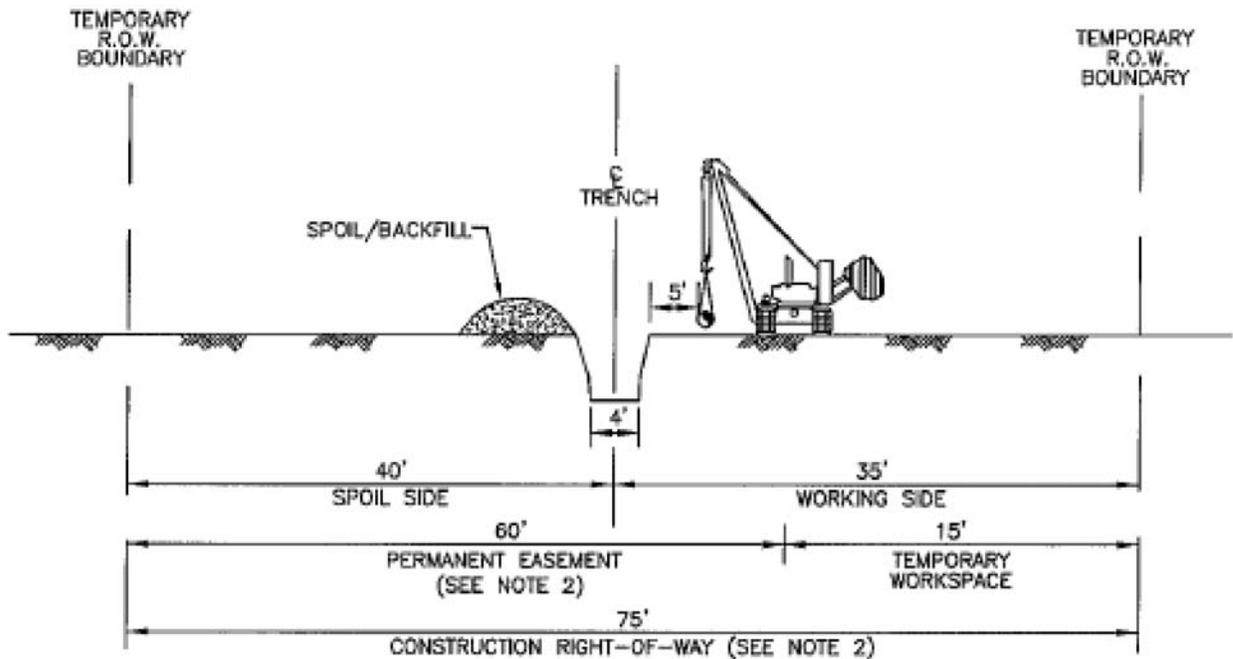
Typical Right-of-Way Cross Sections
Parallel to the Proposed CenterPoint Pipeline

DATE: April, 2007

FIGURE: 2.2.1-2



TYPICAL UPLAND RIGHT-OF-WAY



TYPICAL WETLAND RIGHT-OF-WAY

Not to Scale

Notes:

1. ROW CONFIGURATION UTILIZED WHEN PARALLELING EXISTING CENTERPOINT PIPELINE RIGHT-OF-WAS WHERE IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
2. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 100 FEET WIDE CONSISTING OF 60 FEET PERMANENT EASEMENT, AND 40 FEET OF TEMPORARY WORKSPACE. EXTRA TEMPORARY WORK SPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL, AND RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.

EAST TEXAS TO MISSISSIPPI EXPANSION PROJECT

Typical Right-of-Way Cross Sections
in Greenfield Areas

DATE: April, 2007

FIGURE: 2.2.1-3

property owners, and federal and state agencies expressing an interest in minimizing permanent impacts associated with the operation of the proposed pipeline, particularly in the instances where multiple rights-of-way may occur within a common corridor. Therefore, based on our experience and understanding of pipeline operations, and in order to minimize permanent impacts associated with the operation of the proposed pipeline; **we recommend that:**

- **Gulf South should not exercise eminent domain authority granted under Section 7(h) of the NGA to acquire a permanent right-of-way greater than 50 feet in width.**

Limiting the permanent right-of-way to 50 feet in width would allow Gulf South to acquire through the condemnation process, if necessary, sufficient land to operate its proposed pipeline, and would minimize permanent impacts to adjacent resources and land uses. Although Gulf South's use of federal authority to condemn lands, should the proposed Project be Certificated, would be limited to a permanent right-of-way 50 feet in width; Gulf South would be able to negotiate with a willing landowner for the use of additional lands for operation of the proposed Project.

In general, the installation of new pipeline on lands adjacent to existing, cleared rights-of-way (e.g., pipeline, power line, road, or railroad) may be environmentally preferable to the installation of new pipeline on lands without adjacent existing cleared rights-of-way. Gulf South would parallel a significant portion of its construction right-of-way with existing utility rights-of-way. Approximately 181.0 miles (i.e., approximately 74 percent) of the proposed 42-inch-diameter pipeline and all 3.3 miles of the proposed 36-inch-diameter supply lateral would be collocated with existing utility corridors. Existing utility corridors that would be paralleled by the proposed Project are listed in Table 2.2-2.

As illustrated above, Gulf South proposes to use a portion of its existing permanent right-of-way as part of the construction right-of-way for the proposed Project. We believe that Gulf South may also be able to use a portion of other existing permanent rights-of-way paralleled by the proposed pipeline; therefore, to further minimize environmental impacts, **we recommend that:**

- **Prior to construction, Gulf South should file with the Secretary, for review and written approval by the Director of OEP, revised alignment sheets, plans, and associated agreements indicating the use of at least 10 feet of adjacent pipeline rights-of-way as part of its 100 foot-wide nominal construction right-of-way and for any additional temporary workspaces that are needed. Where this is not possible, Gulf South should identify the locations by milepost and provide site-specific justification explaining why the adjacent right-of-way cannot be used.**

Aboveground Facilities

In addition to land already required for use during construction of the proposed pipeline, construction of the proposed aboveground facilities would require the use of approximately 36.0 acres of land. Operation of the proposed aboveground facilities would require the use of approximately 28.3 acres of land not previously required for use during the operation of the proposed pipeline. The land required for construction and operation of the MLVs and side valves would be contained within the area needed for operation of the proposed pipeline, thus these facilities would not require additional lands beyond those already accounted for by the proposed pipeline. Those aboveground facilities that would be located outside of or only partially contained within the permanent pipeline right-of-way or existing aboveground facilities would affect additional lands.

**TABLE 2.2-2
Existing Utility Rights-of-Way That Would Parallel the Proposed East Texas to Mississippi
Expansion Project**

MP Begin	MP End	Type of Right-of-Way	Easement Owner	Width of Existing Right-of- Way (feet)	Width Used for Permanent Right-of-Way (feet)
Proposed 42-Inch-Diameter Mainline Pipeline					
0	49.2	Natural Gas Pipeline	Gulf South	75	20
49.2	70.1	Natural Gas Pipeline	CenterPoint	60	0
73.1	77.6	Natural Gas Pipeline	CenterPoint	60	0
77.6	78.5	Electrical Transmission Line	Entergy	100	0
78.5	84.9	Natural Gas Pipeline	CenterPoint	60	0
84.9	86.6	Natural Gas Pipeline	Gulf South	50	20
86.6	87.3	Natural Gas Pipeline	CenterPoint	60	0
88.0	148.6	Natural Gas Pipeline	CenterPoint	60	0
161.8	181.9	Electrical Transmission Line and Natural Gas Pipeline	Entergy/Columbia Gulf Transmission	200	0
186.3	196.2	Electrical Transmission Line	Entergy	200	0
197.2	198.0	Electrical Transmission Line	Entergy	200	0
199.1	204.1	Electrical Transmission Line	Entergy	200	0
Proposed 36-Inch-Diameter Supply Lateral Pipeline					
H0.0	H3.3	Natural Gas Pipelines	Multiple owners	100	0
Note: These areas include occasional minor deviations from collocation due to reroutes adopted to avoid specific resources as described in Section 4.4.					

The proposed expansion of Gulf South’s existing Carthage Junction Compressor Station, as well as installation of aboveground piping at the McComb Compressor Station, would occur on maintained lands within the stations’ fenced boundaries. Construction and operation of a new pig launcher/receiver at the Hall Summit Compressor Station would be partially contained within the existing facility bounds, but would require an additional 0.8 acres for construction and operation. Gulf South would purchase 20 acres of land at the proposed Vixen Compressor Station site; however only 8 acres of land would be required for construction of the proposed station and only 6 acres would be required for operation of the proposed station. Similarly, Gulf South would purchase approximately 25 acres of land at the proposed Tallulah Compressor Station site; however, only 10 acres would be required for construction and operation of the proposed station. Construction and operational land requirements of the six M/R stations are listed in Table 2.2-1.

2.2.2 Other Work Areas

In addition to the proposed land requirements associated with the aforementioned pipeline and aboveground facilities, land would be required during construction and operation of the proposed Project

for additional temporary work spaces, contractor/staging yards, and access roads. These requirements are described below. Should these requirements change prior to or during construction, Gulf South would be required to file a variance request with the Secretary of the Commission (Secretary) for review and approval prior to using or impacting new areas.

2.2.2.1 Additional Temporary Work Spaces

Additional temporary work spaces would be required for construction at road crossings, railroad crossings, crossings of existing pipelines and utilities, stringing truck turnaround areas, wetland crossings, HDD entrance and exit pits, open-cut waterbody crossings, and areas requiring side-slope construction. These additional temporary work spaces would be located adjacent to the construction right-of-way and could be used for spoil storage, staging, equipment movement, material stockpiles, and pull string assembly associated with HDD installation. Construction of the proposed Project would require approximately 1,501 additional temporary work spaces, ranging in size from 0.06 to 24.1 acres of land and totaling approximately 728.3 acres. Additional temporary work spaces would be returned to their preconstruction condition and former usage following completion of construction activities. Additional information on additional temporary work space areas is provided in Section 3.8.

2.2.2.2 Pipe Storage and Contractor Yards

The use of 11 offsite contractor/storage yards ranging in size from 10.0 to 60.0 acres and totaling approximately 230.0 acres would be required during construction of the proposed Project. Upon completion of construction activities, the proposed contractor/staging yards would be returned to their preconstruction condition and former usage.

2.2.2.3 Access Roads

Gulf South would use existing roads to the extent possible to facilitate equipment and material access along the proposed Project route. Gulf South has indicated that construction of the proposed pipeline and aboveground facilities would require the use of 179 access roads of varying lengths and construction. Gulf South reports that 74 of these access roads would be new roads or existing roads that would require upgrades to support construction-related traffic. Upgrades that could be required include grading, placement of gravel for stability, replacing or installing culverts, and clearing of overhead vegetation. Minor widening could also be required at sharp turns to facilitate passage by pipe trucks. Gulf South has not completed the detailed design plans for these access roads but reports that construction of new roads or improvement of existing access roads could require widening to as much as 25 feet in some locations. Gulf South estimated that construction of new access roads and modification of existing access roads would affect approximately 103.8 acres. Following construction, 22 access roads would be maintained and used to provide long-term access to aboveground facilities, affecting approximately 14.1 acres. The remainder of the lands affected by disturbance at new or upgraded access roads would revert to preconstruction uses following construction. Additional information on access roads is provided in Section 3.8, and the facility location maps provided as Appendix B of this EIS depict the general locations of these roads.

2.3 CONSTRUCTION PROCEDURES

The proposed pipeline would be designed, constructed, operated, and maintained in accordance with DOT regulations under 49 CFR Part 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*, and other applicable federal and state regulations. Collectively, these regulations specify pipeline material selection; minimum design requirements; protection from internal, external, and atmospheric corrosion; and qualification procedures for welders and operations personnel.

Gulf South would also comply with the siting and maintenance requirements in 18 CFR 380.15 and other applicable federal and state regulations.

Upland construction of the proposed pipeline would be conducted using conventional open-cut methods as described below. The construction of the proposed pipeline through waterbodies and wetlands, as well as other specialized construction procedures, is described in Section 2.3.2.

2.3.1 General Pipeline Construction Procedures

Conventional open-cut pipeline construction has been characterized as a moving assembly line with a construction spread (crew and equipment) proceeding along the construction right-of-way in a continuous operation, as depicted in Figure 2.3.1-1. Gulf South proposes to use four individual construction spreads to complete installation of the proposed pipeline.

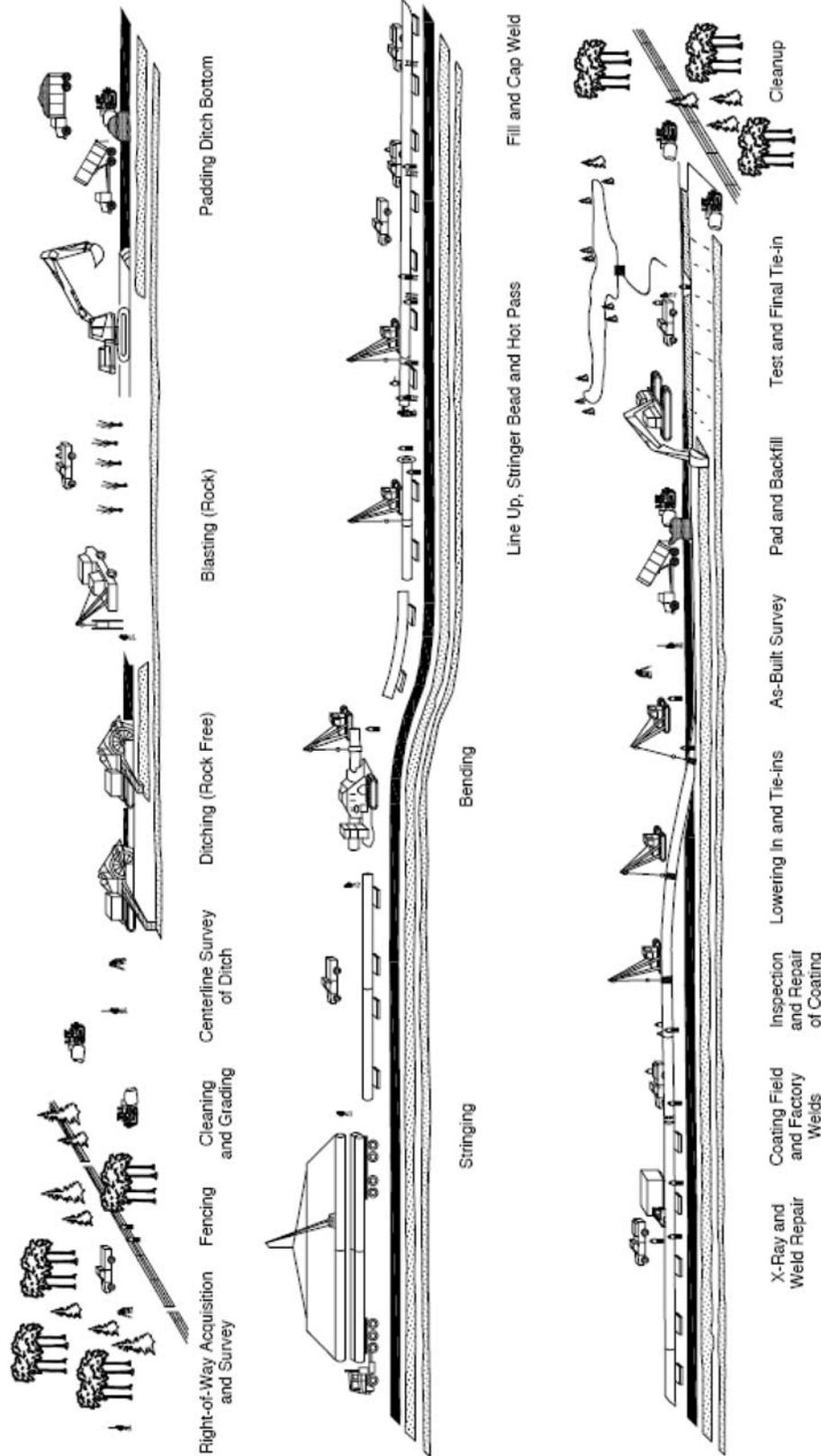
Right-of-way Survey and Fence Crossings

After right-of-way easements have been obtained, the pipeline centerline, construction right-of-way, and additional temporary work spaces would be surveyed and staked. Gulf South would contact the appropriate state One-Call system so that existing underground utilities could be located, identified, and flagged to prevent accidental damage during pipeline construction. Other sensitive resources such as wetland boundaries, cultural resources, and any areas of protected species habitat would also be marked.

Where fences are encountered along the construction right-of-way, a fence crew would install temporary fences to confine livestock to existing areas off the right-of-way and to prohibit or otherwise control public access across the right-of-way. This work would include installing new posts to brace the areas on either side of the proposed cut to avoid damage to the existing fence or wall. Temporary gates would be installed, as necessary.

Clearing and Grading

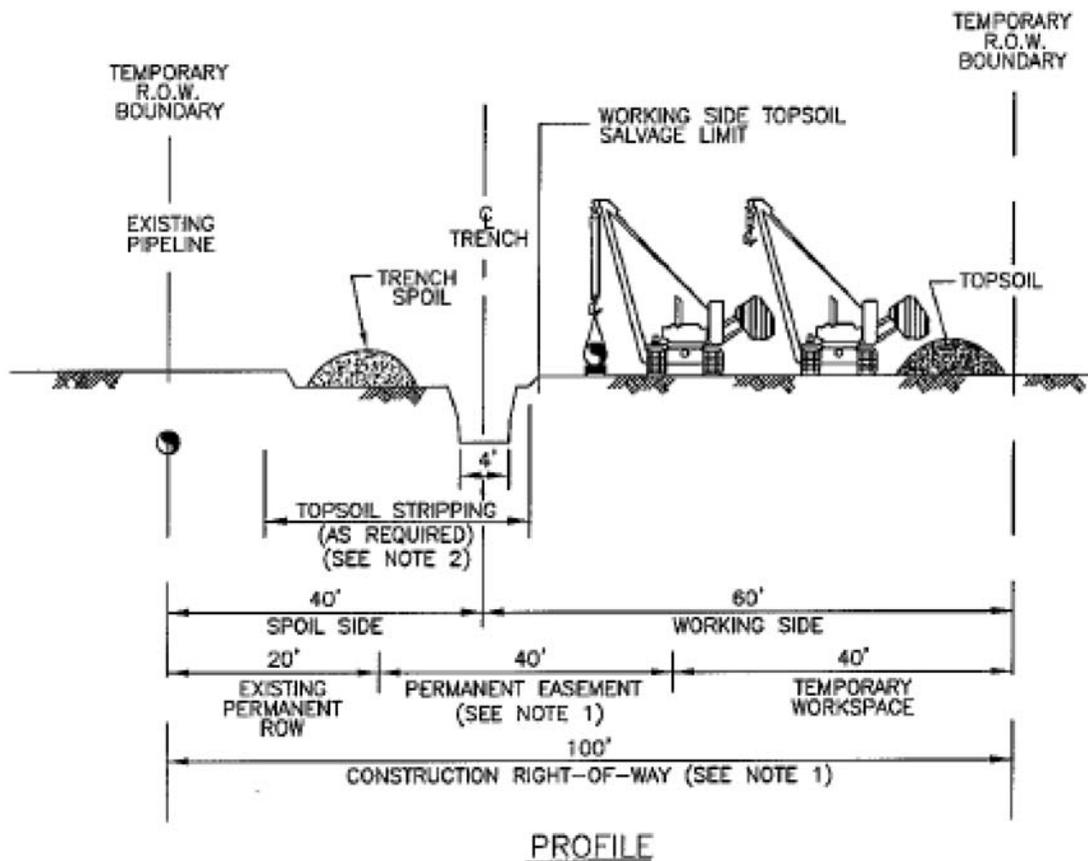
The construction right-of-way and additional temporary work spaces would be cleared and graded, where necessary, to provide a relatively level surface for trench-excavating equipment and the movement of other construction equipment. Brush, trees, roots, and other obstructions such as large rocks would be cleared from all construction work areas. Where appropriate, stumps would be cut flush with the ground and left in place. Gulf South indicates that marketable timber could be cut and stacked at the edge of the right-of-way for landowner use or recovery of timber value. Tree stumps would be removed from within the permanent right-of-way. Cleared woody debris would be burned (in accordance with state and local burning requirements), chipped (except in wetlands), and distributed over the disturbed area as mulch or transported offsite to an appropriate disposal facility. As necessary, topsoil would be stripped and segregated in residential areas, actively cultivated or rotated croplands, pastures, hayfields, and other areas where requested by a land management agency or landowner. Topsoil would be removed to its actual depth, up to a maximum depth of 12 inches, and stockpiled separately from the subsoil excavated from the pipeline trench. Typically, topsoil would be stripped from directly over the pipeline ditch and the adjacent subsoil spoil storage area (Figure 2.3.1-2), but landowners would be provided with the option of topsoil segregation across the full construction work area. Additional information on topsoil segregation is provided in Section 3.2.



Not to Scale

EAST TEXAS TO MISSISSIPPI EXPANSION PROJECT

Typical Pipeline Construction Sequence
 DATE: April, 2007
 FIGURE: 2.3.1-1



NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 100 FEET WIDE CONSISTING OF 40 TO 60 FEET OF PERMANENT EASEMENT AND 40 FEET OF TEMPORARY WORKSPACE. EXTRA TEMPORARY WORK SPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL AND RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.
2. THIS DRAWING REFLECTS "TRENCH AND SPOIL SIDE" TOPSOIL STRIPPING PROCEDURE. SALVAGE TOPSOIL OVER TRENCH AND UNDER THE SPOIL PILE AT LOCATIONS IDENTIFIED ON THE CONSTRUCTION ALIGNMENT SHEETS, OR AS DIRECTED BY THE COMPANY'S INSPECTOR. DEPTH OF TOPSOIL STRIPPING IS NOT TO EXCEED 12 INCHES. MINIMUM WIDTH OF TOPSOIL STRIPPING ON THE WORKING SIDE OF TRENCH IS 12 INCHES.
3. STOCKPILE TOPSOIL AS SHOWN OR IN ANY CONFIGURATION APPROVED BY THE COMPANY'S INSPECTOR. KEEP TOPSOIL CLEAN OF ALL CONSTRUCTION DEBRIS. MAINTAIN A MINIMUM 12 INCHES OF SEPARATION BETWEEN TOPSOIL AND SUBSOIL PILES.
4. LEAVE GAPS IN TOPSOIL AND SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH TOPSOIL INTO CREEKS OR WETLANDS. DO NOT USE TOPSOIL FOR PADDING. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING TOPSOIL PILE.
5. TEMPORARILY SUSPEND TOPSOIL HANDLING OPERATIONS DURING INORDINATELY WINDY CONDITIONS UNTIL MITIGATIVE MEASURES TO MINIMIZE WIND EROSION CAN BE IMPLEMENTED.

Not to Scale

EAST TEXAS TO MISSISSIPPI EXPANSION PROJECT
 Typical Trench and Spoil Area
 Topsoil Stripping

DATE: April, 2007

FIGURE: 2.3.1-2

To contain disturbed soils during clearing and grading in upland areas and to minimize erosion and sedimentation of wetlands and waterbodies, temporary erosion controls would be installed immediately after initial disturbance of soils and would be maintained throughout construction.

Trenching

Before beginning excavation, Gulf South would contact the appropriate state One-Call system so that existing underground utilities could be located, identified, and flagged. A trench then would be excavated, using a trenching machine or backhoe-type equipment. Excavated materials would typically be stored on the non-working side of the trench (Figure 2.3.1-2).

Temporary trench plugs (or barriers) would be used to create segments within the open trench to reduce erosion and allow access across the trench. Trench plugs typically would consist of either compacted subsoil or sandbags placed across the ditch (soft plugs) or short, unexcavated portions of trench (hard plugs). Trench dewatering also may be required along portions of the route.

The trench would be excavated to a depth that would allow space for the pipeline, pipeline bedding, and the minimum amount of top cover required by DOT specifications. The trench typically would be excavated to a depth of 7 feet to enable the proposed pipeline to be installed at a minimum depth of 3 feet (measured from the top of the pipeline) below the ground surface. The depth of the pipeline would vary and would range from these minimum depth requirements to that depth required for safe crossing of a feature such as a road, highway, railroad, or waterbody. At crossings of utilities or foreign pipelines, the proposed pipeline would also generally be installed at a greater depth, to provide for a minimum clearance of 12 inches, or the depth that may be required by state or local regulations, whichever provides greater protection.

Areas of bedrock that might be encountered along the proposed Project route should be easily workable with standard construction equipment and techniques, and Gulf South does not anticipate the need for blasting associated with trench excavation.

Pipe Stringing, Bending, and Welding

Sections of pipe up to 80 feet long would be delivered to the job site and temporarily placed or “strung” along the excavated pipeline trench, where they would be bent as necessary to follow the natural grade and direction changes of the right-of-way. Following stringing and bending, the ends of the pipeline would be carefully aligned and welded together. The welds would be visually and radiographically (i.e., x-ray) inspected to ensure structural integrity. Those welds that do not meet established specifications would be repaired or replaced.

An external coating would cover and protect the delivered pipeline sections. Following welding, the previously uncoated ends of the pipe at all joints would be coated with material compatible with a factory-applied coating, as applicable, in preparation for installation. The coating on the remainder of the completed pipe section would be inspected for defects, and repairs would be made to any damaged areas prior to lowering the pipe into the trench. At some locations, it may be necessary to provide negative buoyancy in the form of concrete weights, a concrete coating, pipe sacks, and/or soil anchors.

Lowering-in and Backfilling

Prior to lowering the pipeline, the trench would be cleaned of debris and foreign material and would be dewatered as necessary. Trench dewatering, which would entail pumping accumulated groundwater or rainwater from the trench to stable upland areas, would be performed in accordance with

applicable local, state, and federal permitting requirements. In areas of rock, the bottom of the trench may be padded with sand, gravel, screened soils, sandbags, or support pillows to protect the pipe coating. However, topsoil would not be used as padding material. The pipeline then would be lowered into the trench by appropriately spaced sideboom tractors working in unison to avoid buckling of the pipe. Trench breakers would be installed at regular intervals where appropriate to prevent subsurface erosion and flow of water between the trench and crossed waterbodies, wetlands, and near-surface groundwater.

After the pipeline is lowered into the trench and adequately protected, previously excavated materials would be used to backfill the trench. Any excess excavated materials or materials deemed unsuitable for backfill would be evenly spread over the right-of-way, or disposed of in accordance with applicable regulations and landowner requirements. Backfilling over the trenchline would occur to approximately 6 inches above the original elevation to accommodate future soil settlement.

Hydrostatic Testing

Once installation and backfilling are completed and before the Project begins operation, the pipeline would be hydrostatically pressure tested in accordance with DOT safety standards (49 CFR Part 192), to verify its integrity and to ensure its ability to withstand the MAOP. Hydrostatic testing consists of installing a hydrostatic test cap and manifold, filling the pipeline with water, pressurizing the pipeline to its MAOP, and maintaining that test pressure for a specified period of time. Any leaks detected during the test would be repaired, and the pipeline would be re-tested.

Water used for hydrostatic testing would be obtained from surface water sources and municipal supplies, and no biocides or other hydrostatic test water additives would be added to the test water. After hydrostatic testing is completed, the test water either would be pumped to the next segment of pipeline to be tested or would be discharged. Additional information on hydrostatic testing is provided in Section 3.3.

Once a segment of pipe has been successfully tested, it would be cleaned and dried using mechanical tools (pigs) moved through the pipeline with pressurized, dry air. The hydrostatic test cap and manifold then would be removed, and the pipe would be connected to the remainder of the pipeline, using the welding and inspection procedures describe above.

Cleanup and Restoration

Within 20 days (or as soon as possible) of completing the backfilling of the trench, all remaining trash, debris, surplus materials, and temporary structures would be removed from the right-of-way and disposed of in accordance with applicable federal, state, and local regulations. All disturbed areas would be finish-graded and restored as closely as possible to preconstruction contours. Permanent erosion control measures also would be installed. Topsoil previously segregated from the trench material in all agricultural and residential areas would be spread uniformly across the construction right-of-way, and the topsoil and subsoil in these areas would be tested for compaction along the disturbed corridor.

Vegetation restoration would begin within 6 days of final grading. After the soil is readied for planting or seeding in areas where Gulf South and landowners have negotiated agreements, Gulf South would reseed or replant according to those agreements. To provide permanent erosion control along the right-of-way, all other upland areas disturbed by construction would be fertilized, limed, and seeded in accordance with the prescribed dates and seed mixes specified by the local soil conservation authorities or land management agencies. Wetland areas would not be fertilized, limed, or mulched unless Gulf South is directed to do so by state or local regulatory agencies.

Disturbed pavement and other road surfaces along access roads would be restored to preconstruction or better conditions, unless otherwise specified by the property owner and approved by applicable regulatory agencies. Likewise, any private or public property damaged during construction, such as fences, gates, and driveways, would also be restored to original or better condition, consistent with individual landowner agreements.

Pipeline markers and/or warning signs would be installed along the pipeline centerline at specified intervals to identify the pipeline location, specify Gulf South as the operator of the pipeline, and provide telephone numbers for emergencies and inquiries.

Minimization Measures

To minimize construction-related effects, Gulf South proposes to implement an Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures) as described in Section 3.4. With the exception of a few alternative measures, Gulf South's proposed Plan and Procedures are consistent with our guidance documents of the same name. The intent of Gulf South's Plan is to outline baseline mitigation measures that minimize erosion and enhance revegetation in upland areas. The major components of this Plan are described in Section 3.2. The intent of Gulf South's Procedures is to outline baseline mitigation measures that minimize the extent and duration of construction-related disturbances to wetlands and waterbodies. The major components of these Procedures are described in Sections 3.3 and 3.4.

Gulf South has also developed several Project-specific plans to avoid or minimize environmental impacts during construction. Gulf South has prepared a Spill Prevention, Containment, and Countermeasure (SPCC) Plan, which describes the management of hazardous materials, such as fuels, lubricants, and coolants during construction and in the event they should be inadvertently released into the environment. Gulf South also has developed a Plan for the Containment of Inadvertent Release of Drilling Mud during Horizontal Directional Drilled Wetland and Waterbody Crossings, that describes the procedures that would be implemented to monitor for, contain, and clean up any inadvertent releases of drilling fluid during HDD operations; Noise Mitigation and Compliance Plan for HDD Operations; a Plan for the Unanticipated Discovery of Historic Properties, Human Remains, or Potential Paleontological Evidence during Construction (Plan for Historic and Paleontological Resources and Human Remains); a Plan for the Unanticipated Discovery of Contaminated Environmental Media (Contaminated Media Plan); and Plan for Avoidance of Impacts to the Historic Natchez Trace Parkway by Boring the Pipeline (Natchez Trace Parkway Plan). Gulf South is also developing a Stormwater Pollution Prevention Plan (SWPPP), but this plan is not yet complete. These plans can be viewed on the internet using our eLibrary, which is found at www.ferc.gov.

2.3.2 Specialized Pipeline Construction Procedures

2.3.2.1 Waterbody Crossings

A total of 885 waterbodies would be crossed by the proposed Project's pipeline. Gulf South proposes to use either open-cut or HDD techniques for all of these proposed crossings as described below. Construction of the proposed pipeline across these waterbodies would be accomplished in accordance with Gulf South's Procedures and all applicable permits.

Open-cut Crossing

An open-cut waterbody crossing would be conducted using methods similar to conventional open-cut trenching. The open-cut construction method would involve excavation of the pipeline trench

across the waterbody, installation of a prefabricated segment of pipeline, and backfilling of the trench with native material. Excavation and backfilling of the trench would be accomplished using backhoes or other excavation equipment operating from one or both banks of the waterbody. The use of equipment operating in the waterbody would be limited to that needed for construction of the crossing. All other construction equipment would cross the waterbody using equipment bridges.

During construction, Gulf South would implement mitigation measures to minimize impacts to the aquatic environment, as described in its Procedures. Construction would be scheduled so that the trench would be excavated immediately prior to pipelaying activities. The duration of construction across minor waterbodies would be limited to 24 hours for minor waterbodies (10 feet wide or less) and 48 hours for intermediate waterbodies (greater than 10-feet-wide but less than or equal to 100 feet in width). In accordance with Gulf South's Procedures, excavated spoil would be stockpiled in the construction right-of-way at least 10 feet from the stream bank or in approved additional work areas and would be surrounded by sediment control devices to prevent sediment from returning to the waterbody. The waterbody banks would be returned to as near preconstruction conditions as possible within 24 hours of completing all open-cut crossings.

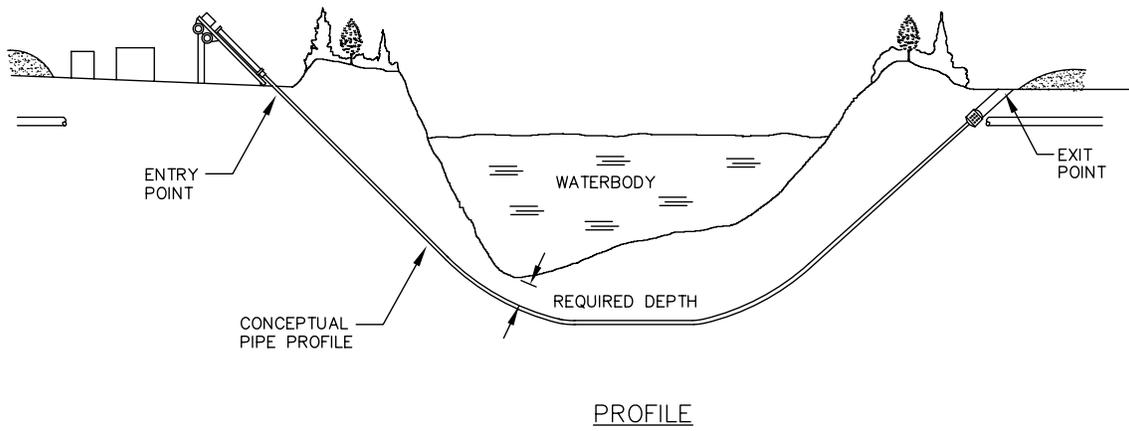
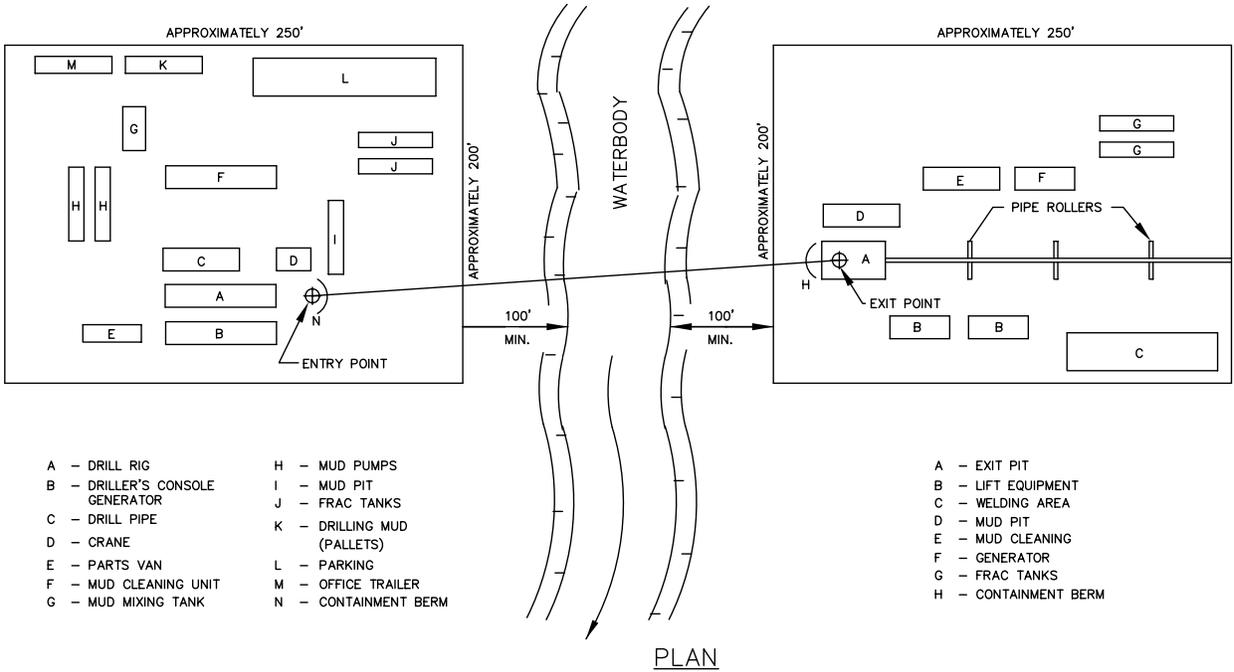
Horizontal Directional Drill

An HDD is a trenchless crossing method that may be used to avoid direct impacts to sensitive resources (such as waterbodies and wetlands) or infrastructure (such as roads and railways) by directionally drilling beneath them. HDD installation on the proposed Project would result in a pipeline that is installed beneath the ground surface by pulling the pipeline through a pre-drilled bore hole. HDD installation typically is carried out in three stages: (1) directional drilling of a small-diameter pilot hole; (2) enlarging the pilot hole to a sufficient diameter to accommodate the pipeline; and (3) pulling the prefabricated pipeline, or pull string, into the enlarged bore hole. Figure 2.3.2-1 illustrates a typical HDD installation process.

The pilot hole would be approximately 12 inches in diameter, depending on drill head and soil characteristics, and would be drilled along a predetermined HDD bore. The drill head for the pilot hole would have a down-hole, hydraulic motor-powered drill bit attached to the drill string (pipe connecting the drill rig to the drill head). The hydraulic motor would convert hydraulic energy from drilling fluid, or drilling mud, pumped from the surface to mechanical energy at the drill head, allowing for bit rotation without drill string rotation. Drill string would be added as the pilot hole progressed.

Gulf South proposes to use hand-laid electric-grid guide wires to assist guidance of the drill bit along the proposed route. A small pathway approximately 2- to 3-feet-wide may be cut, using hand tools in heavily vegetated areas such as wetlands in order to position these guide wires, resulting in minimal ground disturbance. No large trees would be cut as part of this process. The path of the drill head would be controlled using an electromagnetic steering tool positioned on the tip of the drill bit and would follow the electromagnetic field created by the guide wires. Additionally, drill bit positioning sensors may help guide the path of the drill.

After completion of the pilot hole, the HDD bore would be progressively reamed to a diameter about 12 inches larger than the pipeline diameter. Drilling fluid would be pumped through the reaming tools to aid in cutting, support the bore hole, transport spoil back to the surface, and lubricate the trailing pipe. Upon completion of drilling and reaming, the drill string would extend from the entrance pit to the exit pit. Concurrent with reaming the bore, the pull string to be inserted in the HDD bore would be fabricated and laid out within the construction right-of-way or extra workspace areas extending from the



NOT TO SCALE

EAST TEXAS TO MISSISSIPPI EXPANSION PROJECT

Typical HDD Pipeline Installation

DATE: APRIL, 2007

FIGURE: 2.3.2-1

HDD exit pit. The pull string would be connected to the drill string and pulled back through the bore. The pipeline would be neutrally buoyant in the drilling fluid, allowing it to be pulled through the HDD bore hole.

Drilling fluid circulated through the bore during the pilot hole drilling and reaming process would be collected at the surface and processed to remove spoils, allowing the fluid to be reused. Excess spoils and drilling fluid would be treated for disposal and disposed of at an approved location in accordance with regulatory requirements, agreements, and permit conditions. The proposed HDD drilling fluid would consist of water and bentonite. Bentonite is a mixture of non-toxic clays and rock particles consisting of about 85 percent montmorillonite clay; 10 percent quartz and feldspars; and 5 percent accessory materials, such as calcite and gypsum.

A successful HDD would result in little or no impact to the waterbody being crossed. HDD is not without risk, however, as inadvertent drilling fluid releases could result if the fluid escapes containment at pits that would be excavated at the HDD entrance and exit points or if a “frac-out” occurs. A frac-out occurs when drilling fluids escape the drill bore hole and are forced through the subsurface substrate to the ground surface. Frac-outs occur most often in highly permeable soils during the entrance and exit phases of the pilot hole drill, as this is when the greatest pressures are exerted on the bore walls in shallow soils. Drilling fluid pressures in the bore hole and drilling fluid pumping and return flow rates would be monitored to detect the potential occurrence of a frac-out. If a frac-out does occur, Gulf South would immediately suspend drilling operations. These corrective measures would include determination and modification of the drilling technique to minimize or prevent further releases. Any surfaced drilling fluids would be contained, clean-up procedures would commence, and the appropriate agencies would be notified. A discussion of the potential impacts of HDD on waterbodies and wetlands is provided in Sections 3.3 and 3.4.

Gulf South proposes to use 34 separate HDD crossings to accomplish pipeline installation across 65 waterbodies, including 16 major waterbodies (greater than 100 feet in width), two Louisiana Natural and Scenic Rivers (Black Lake Bayou and Saline Bayou), and two streams listed in the Nationwide Rivers Inventory (NRI) (Big Black River and the Pearl River) (Table 2.3.2-1). Section 3.3 and Appendix D identify and describe the waterbodies that would be crossed using HDD techniques. In addition to waterbodies, Gulf South proposes to cross 14 wetlands, 8 roadways, a railroad line, and the Ouachita Wildlife Management Area (WMA) via HDD methods.

The crossing of the Mississippi River would be the longest HDD associated with the proposed Project, extending to over 4,500 feet in length. Gulf South would install the pipeline over the levee on the west side of the Mississippi River due to restrictions regarding levee disturbance. The proposed crossing point at the levee is adjacent to an existing Columbia Gulf pipeline easement. Inside of the levee, the pipeline would be installed using open-cut methods until reaching the proposed HDD exit point just west of the Mississippi River. The HDD entry point would be located on the east side of the Mississippi River approximately 150 feet south of an existing Entergy Corporation (Entergy) electrical transmission power line crossing. The HDD exit point would be located on the west side of the Mississippi River approximately 150 feet south of the existing Entergy electrical transmission power line. The pipeline pull string and associated extra workspace would be located on the west side of the River, parallel to the existing electrical transmission power line easement in a wetland area. Gulf South has not indicated that there are any special construction constraints or risks associated with the length of this HDD and considers drill failure unlikely. However, if the first HDD crossing did fail, Gulf South has proposed to acquire enough pipe for a second HDD crossing attempt, if needed.

**TABLE 2.3.2-1
Proposed Horizontal Directional Drill Locations for the Proposed
East Texas to Mississippi Expansion Project**

Features Crossed	Begin MP	End MP	Length (feet)
Interstate 49 and one waterbody	14.5	14.8	1,664
Bayou Pierre and three other waterbodies	22.0	22.4	1,854
Prairie River and Cowpen Bayou	23.0	23.5	3,000
Ash Bayou and two other waterbodies	24.0	24.4	1,676
Powell Bayou and two other waterbodies	24.9	25.2	1,706
Red River	27.0	27.3	1,815
Loggy Bayou	29.6	29.9	1,855
Black Lake Bayou and two wetlands	42.3	42.7	2,048
Black Lake Bayou	42.9	43.4	2,692
Saline Bayou and three wetlands	57.0	57.5	2,853
Dugdemona River and three other waterbodies	71.5	72.2	3,390
U.S. Highway 167	73.0	73.3	1,600
Castor Creek, four other waterbodies, three wetlands, and Louisiana Highway 34	89.7	90.4	3,750
Cutoff Bayou	108.9	109.2	1,631
Ouachita River	110.6	111.0	2,157
Bayou Lafourche, three other waterbodies, and the Ouachita Wildlife Management Area	115.3	115.7	1,745
Steep Bayou	120.8	121.1	1,600
Boeuf River and one wetland	122.1	122.4	1,631
Bee Bayou and two wetlands	130.8	131.1	1,691
Siphon Creek and one other waterbody	140.0	140.3	1,600
Big Creek and one other waterbody	140.7	141.1	1,900
Macon Bayou and one other waterbody	150.1	150.4	1,598
Tensas River and two other waterbodies	159.9	160.2	1,650
Despair Lake and one other waterbody	161.1	161.4	1,600
Mothiglam Bayou and two other waterbodies	163.6	163.9	1,610
Madison Parish Canal, one other waterbody, and one wetland	167.1	167.4	1,596
Walnut Bayou and Louisiana Highway 602	172.8	173.1	1,600
Walnut Bayou and Louisiana Highway 602	177.4	177.7	1,600
Mississippi River	183.8	184.6	4,500
U.S. Highway 61, three waterbodies, and one wetland	185.9	186.3	2,542
Big Black River and one wetland	196.7	197.4	3,769
Baker's Creek	203.7	204.0	1,600
Interstate Highway 55, Mississippi Highway 51, and railroad	227.0	227.3	1,604
Pearl River and four other waterbodies	232.2	232.6	1,690

2.3.2.2 Wetland Crossings

Construction of the proposed Project pipeline across wetlands would be conducted in accordance with applicable permits and Gulf South's Procedures. Overall, the wetland crossing methods and mitigation measures identified in its Procedures are designed to minimize the extent and duration of construction-related disturbance within wetlands. Construction methods in wetlands would consist of the conventional lay method, push-float method, or HDD. Other than planned HDDs, the site-specific crossing procedures used to install the pipeline across wetlands would be determined based on conditions at the time of construction and would vary dependent on the level of soil stability and saturation encountered during construction.

During the crossing of unsaturated wetlands (those wetlands without standing water or saturated soils), conventional lay method construction would be similar to the upland construction procedures described in Section 2.3.1, although timber mats may be used, passage through the wetland by equipment would be minimized, and the measures in Gulf South's Procedures would be implemented. In conditions where the trench is inundated or saturated to the extent that soils cannot support heavy equipment, especially in large wetlands, a prefabricated floating pipeline segment may be pushed or pulled into position from outside the wetland, using the push-float method. The floats then would be removed and the pipeline segment would sink into the trench. Wetlands may also be crossed using HDD, which was described in detail above. Regardless of the installation technique used, implementation of Gulf South's Procedures would reduce the potential for pipeline construction to affect wetland hydrology and soil structure.

The construction right-of-way width through wetland areas would be reduced to 75 feet. Within the right-of-way, woody vegetation would be removed or cut off at ground level and would be removed from the wetlands, leaving the root systems intact. Pulling of tree stumps and grading activities would be limited to that area directly over the trenchline, unless it was determined that safety-related construction constraints required grading or removal of tree stumps from under the working side of the construction right-of-way. Temporary erosion control devices would be installed as necessary immediately after initial disturbance of wetlands or adjacent upland areas to prevent sediment flow into wetlands, and would be maintained until revegetation is complete. Trench plugs would be installed as necessary to maintain wetland hydrology.

The construction equipment operating in wetland areas would be limited to that needed to clear the construction right-of-way, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the construction right-of-way. If standing water or saturated soil conditions were present, or if construction equipment caused ruts or mixing of the topsoil and subsoil, construction equipment operating in wetland areas would be further limited to the use of low-ground-pressure equipment or normal equipment operating from timber riprap or prefabricated equipment mats.

Topsoil would be stripped from the area directly over the trench line to a maximum depth of 12 inches in unsaturated soils and would be stockpiled separately from the subsoil where practicable. The segregated topsoil would be restored to its original location immediately following installation of the pipe and backfill of the trench. Materials such as timber mats placed in wetlands during construction would be removed during final cleanup, and the preconstruction contours of the wetland would be restored. Any required permanent erosion control measures would then be installed, and disturbed areas within the wetland would be temporarily stabilized with appropriate vegetation to protect the wetland soils from erosion.

The wetlands that would be affected by construction of the proposed Project are described in Section 3.4. That section also provides further discussion of the wetland restoration and mitigation procedures that would be implemented by Gulf South.

2.3.2.3 Road, Highway, and Railroad Crossings

The proposed pipeline would cross numerous paved and unpaved roads, highways, and railroads along the proposed Project route. Construction across these features would be accomplished in accordance with Gulf South's Plan and the requirements of all applicable crossing permits and approvals. During roadway construction, Gulf South would incorporate any safety precautions required by state and local transportation agencies.

All railroads and approximately 190 major highways and paved roads would be crossed using HDD or subsurface boring techniques. The HDD crossing method is described in detail in Section 2.3.2.1 and would be used at Interstates 49 and 55, U.S. Highways 167 and 61, Louisiana Highways 34 and 602 (two crossings via HDD), and Mississippi Highway 51. Bores beneath these roads and railways would entail excavating pits on both sides of the feature and boring a horizontal hole equal to the diameter of the pipe (or casing, if required) at the depth of the pipeline installation. The pipeline section and/or casing then would be pushed through the bore. If additional pipeline sections were required, they would be welded to the first section of the pipeline in the bore pit before being pushed through the bore. There would likely be little disruption of traffic on roads and railways that are bored. Section 3.8 provides additional information on the proposed major road crossing locations.

Pipeline crossings of lightly traveled and unimproved rural dirt roads typically would be crossed via open-cut installation. Such crossings would require the temporary closure of these roads and implementation of detours, where feasible. In the absence of a reasonable detour, construction across the roadway would be staged to allow at least one lane of traffic to remain open except for the limited periods required for installing the pipeline. Efforts would be made to schedule lane closures outside of peak traffic periods. Attempts would also be made to avoid peak-traffic periods on all road construction. All construction operations at these crossings, including repair and surface restoration, would typically be completed within 1 day.

2.3.2.4 Agricultural Areas

Agricultural areas along the proposed Project route include pasture areas used for livestock grazing, hayfields, fallow fields, and rotated croplands such as cotton and corn. In these areas, Gulf South would implement special procedures to minimize impacts on current agricultural uses. Unless the landowner or land management agency specifically approves otherwise, topsoil would be removed to its actual depth, up to a maximum of 12 inches, and would be stockpiled separately from the subsoil excavated from the pipeline trench. Typically, topsoil would be stripped from directly over the pipeline ditch and the adjacent subsoil spoil storage area (Figure 2.3.1-2), but landowners would be provided with the option of topsoil segregation across the full construction work area. During construction, the natural flow patterns of all fields would be maintained by providing breaks in topsoil and subsoil stockpiles.

During cleanup and restoration, all disturbed areas would be finish-graded and restored as closely as possible to preconstruction contours. Topsoil previously segregated from the trench material in all agricultural and residential areas would be spread uniformly across the construction right-of-way, and any stones or excess rock would be removed from at least the top 12 inches of soil. The topsoil and subsoil in all agricultural areas also would be tested for compaction at regular intervals, using penetrometers or other appropriate devices to conduct tests. Any severely compacted areas would be plowed with a

paraplow or other deep tillage device. In areas where the topsoil was segregated, the subsoil also would be plowed before replacing the segregated topsoil.

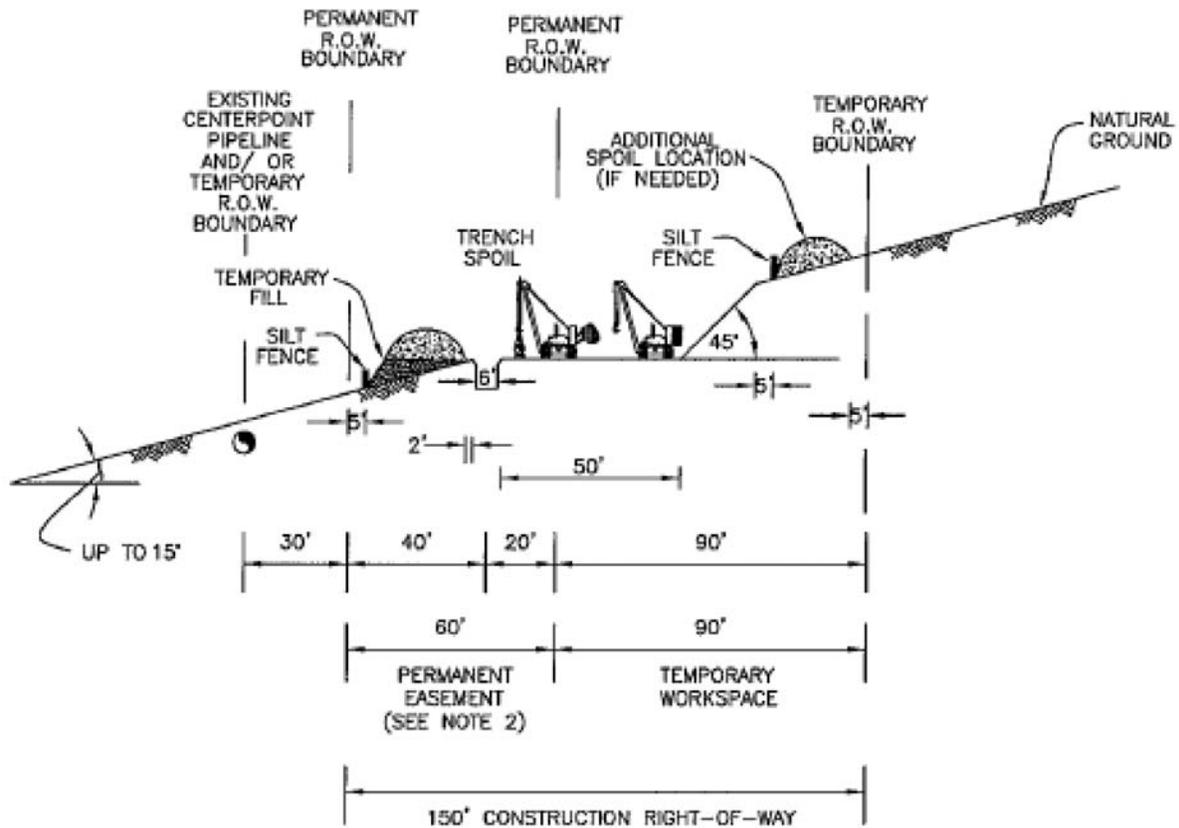
Gulf South stated that the proposed Project would not cross any known drainage structures or irrigation facilities, but plans to contact landowners again to confirm this finding. Gulf South’s Plan requires working with property owners to identify locations of existing drainage structures and irrigation facilities that could be damaged during construction. Should any damage occur to these facilities, Gulf South would repair these systems with the input of the property owners. Gulf South also would work with landowners during easement negotiations to establish compensation agreements for crop damages and for loss of growing time, as applicable. Additional information on special procedures used in agricultural areas is presented in Sections 3.2 and 3.8.

2.3.2.5 Rugged Topography

Some portions of the proposed Project route traverse areas of side slopes and rolling terrain that would require specialized “two-tone” construction techniques to provide safe working conditions. The two-tone construction technique requires the uphill side of the construction right-of-way to be cut during grading. The material removed from the uphill side cut would be used to fill the downhill side of the construction right-of-way to provide a safe and level surface from which to operate heavy equipment. The pipeline trench would then be excavated along the newly graded right-of-way. Figure 2.3.2-2 provides a typical cross section of the two-tone construction technique. The areas along the proposed Project that likely would be affected by two-tone construction techniques are listed in Table 2.3.2-2.

TABLE 2.3.2-2 Areas That Would Be Affected by Two-Tone Construction Techniques for the Proposed East Texas to Mississippi Expansion Project		
Milepost	Length Affected (feet)	Additional Workspace Requirement
97.1 – 106.3	48,572	50-foot-wide additional temporary work space
186.3 – 191.6	27,571	100-foot-wide additional temporary work space
193.6 – 195.3	9,028	50-foot-wide additional temporary work space
198.1 – 198.5	2,101	50-foot-wide additional temporary work space
221.3 – 222.2	4,595	50-foot-wide additional temporary work space
233.9 – 234.3	2,378	50-foot-wide additional temporary work space
234.6 – 238.6	21,093	50-foot-wide additional temporary work space
Total	115,338	

The two-tone construction technique would require extra workspace areas to accommodate the additional volumes of cut and fill material generated as described above and in Section 3.8. Following



NOTES:

1. SIDE HILL CONSTRUCTION CUT AND FILL SHALL BE ALLOWED WHENEVER, IN THE OPINION OF THE CONTRACTOR, STEEP SIDE HILL CONSTRUCTION IS WARRANTED FOR PERSONNEL AND/OR EQUIPMENT SAFETY CONSIDERATIONS.
2. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 150 FEET WIDE CONSISTING OF 60 FEET OF PERMANENT EASEMENT AND 90 FEET OF TEMPORARY WORKSPACE. EXTRA TEMPORARY WORK SPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL AND RIVER CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES, AS REQUIRED. CERTAIN SITUATIONS MAY REQUIRE A NARROWER WIDTH.
3. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH SPOIL INTO CREEKS OR WETLANDS.
4. SEE DETAILS 508 AND 509 FOR SEDIMENT BARRIER DETAIL DURING CONSTRUCTION.
5. FOR STORM WATER RUNOFF CONTROL ON HILL/SLOPE CONSTRUCTION, SEE TEMPORARY EROSION AND SEDIMENTATION CONTROL PROCEDURES IN SECTION 3.0 OF THE ENVIRONMENTAL CONSTRUCTION PLAN AND PROCEDURES.

Not to Scale

EAST TEXAS TO MISSISSIPPI EXPANSION PROJECT
 Typical Two-Tone Construction Right-of-Way Cross Section

DATE: April, 2007

FIGURE: 2.3.2-2

pipeline installation and backfill of the trench, excavated material would be placed back in the cut and compacted to restore the approximate original contours. All disturbed areas would then be stabilized in accordance with Gulf South's Plan.

Gulf South proposes to use a 200-foot-wide construction right-of-way between MPs 186.3 and 191.6. Based on our experience and the degree of rugged topography in this area, we believe that a 200-foot-wide construction right-of-way is not needed. Therefore, to reduce impacts in this area **we recommend that:**

- **Gulf South should limit the width of its construction right-of-way to 175 feet between MP 186.3 and 191.6.**

2.3.2.6 Residential Areas

Gulf South proposes to complete construction activities near residences as quickly as possible to minimize construction-related disturbances. Open access to residences would be maintained to the extent possible and coordination with landowners and would be conducted to minimize inconvenience regarding possible temporary loss of utility service or to address special landscaping issues. Safety fencing would also be used to prevent pedestrian access to the construction site. Additionally, Gulf South has developed site-specific construction plans for residences located with 50 feet of the construction right-of-way as discussed in more detail in Section 3.8.3.

Section 3.11 provides additional information on noise abatement and emission control technology.

2.3.3 Aboveground Facilities Construction Procedures

The aboveground facilities would be constructed concurrent with pipeline installation, but construction would be conducted by special fabrication crews generally working separately from the pipeline construction spreads. Construction of the compressor stations would involve clearing, grading, and compacting the sites to the surveyed elevations, where necessary, for placement of concrete foundations for buildings and to support skid-mounted equipment. Prefabricated segments of pipe, valves, fittings, and flanges would be shop- or site-welded and assembled at the compressor station site. The compressor units and other large equipment would be mounted on their respective foundations, and the compressor enclosures would be erected around them. As necessary, electrical, domestic water and septic systems, and communications utilities would be installed. Noise abatement equipment (including sound-attenuating enclosures around the turbines, exhaust stack silencers, and air inlet silencers) and emission control technology would be installed as needed to meet applicable federal, state, and local standards. Section 3.11 provides additional information on noise abatement and emission control technology.

Facility piping, both aboveground and below ground, would be installed and hydrostatically tested before being placed in service. Controls and safety devices, such as the emergency shutdown system, relief valves, gas and fire detection facilities, and other protection and safety devices, also would be checked and tested. Upon completion of construction, all disturbed areas associated with the aboveground facilities would be finish-graded and seeded or covered with gravel, as appropriate. All roads and parking areas would be graveled. Additionally, the compressor station sites would be fenced for security and protection.

Construction of M/R stations, MLVs, side valves, and pig launcher/receiver facilities not collocated with the compressor stations generally would be similar to that described above for compressor

station sites and would entail site clearing and grading, installation and erection of facilities, hydrostatic pressure testing, cleanup and stabilization, and installation of security fencing around the facilities.

2.4 CONSTRUCTION SCHEDULE

Gulf South proposes to commence construction of the East Texas to Mississippi Expansion Project on May 1, 2007, pending Commission approval. The facilities, including installation of the proposed pipeline, compressor stations, and associated ancillary facilities, then would be completed in approximately 4 months and would be in-service by September 1, 2007. The actual start date of construction, if the proposed Project is certificated, would depend on the Commission's environmental review process.

2.5 ENVIRONMENTAL TRAINING AND MONITORING

Gulf South has indicated that it would conduct environmental training for all company and construction contractor personnel prior to and during construction activities. Such training would focus on implementation of Gulf South's Plan and Procedures, but also would address Project-specific permit requirements, company policy and commitments, any protection procedures and restrictions associated with cultural resources or sensitive species/habitats, and any other pertinent job-related information.

During Project construction, Environmental Inspectors (EIs) would be responsible for monitoring and ensuring compliance with all environmental mitigation measures required by the FERC Certificate, if granted, and Gulf South's Plan and Procedures as described in this EIS (see Section 3.4). The EIs would have the authority to stop activities that violate the environmental conditions of these authorizations, state and federal environmental permit conditions, or landowner requirements and to order appropriate corrective actions if needed. Gulf South would be represented by at least one EI per construction spread, consistent with its Plan. If the proposed Project is authorized, Gulf South would be required to develop and submit an Implementation Plan for our approval prior to construction. The Implementation Plan would be the specific guide to construction activities ensuring that the impact avoidance, minimization, and mitigation measures discussed in this EIS, as well as all other applicable regulations and permit conditions, would be adequately followed. During our review of the Implementation Plan, we would consider the absolute number and qualifications of the EI personnel proposed by Gulf South.

In addition to the EI personnel specified above, we believe that Gulf South's implementation of the third-party independent Environmental Compliance Monitoring and Reporting (ECMR) Program would provide a number of benefits, both to us and to Gulf South, if the proposed Project is certificated. The overall objective of an ECMR Program would be twofold: to assess environmental compliance during construction in order to achieve a high level of environmental compliance throughout the Project, and to assist us in screening and processing variance requests during construction. Gulf South has requested that the FERC develop an agreement for third-party compliance monitoring for the proposed Project. Gulf South would fund the third-party EIs and support the ECMR Program in accordance with the FERC developed third-party agreement.

The third-party compliance monitors also would be responsible for preparing and submitting status reports that would be filed with the FERC on a continuous basis until all construction-related activities, including restoration and initial permanent seeding, are complete. Due to the compressed construction schedule proposed by Gulf South, we consider that the additional level of environmental compliance screening provided by the ECMR Program, as well as the assistance to the FERC staff in processing of the variance requests that may arise, warrants the use of third-party compliance monitors.

To further ensure that environmental concerns are addressed during construction, Gulf South has established an Internet website (www.gulfsouthpl.com), toll-free telephone number (1-877-972-8533), and email address (easttexasexpansionproject@gulfsouthpl.com) to provide affected landowners and stakeholders with a venue for providing comments or requesting additional information about the proposed Project.

2.6 OPERATION, MAINTENANCE, AND SAFETY CONTROLS

As described previously, the proposed pipeline and aboveground facilities would be designed, constructed, operated, and maintained to meet or exceed all safety standards as set forth in the DOT's *Transportation of Natural and Other Gas By Pipeline: Minimum Federal Safety Standards* (49 CFR Part 192).

The pipeline would be constructed of welded carbon steel that meets or exceeds industry standards and would be covered with a protective coating to minimize rust and corrosion. To protect against damage from external forces, the proposed pipeline would be buried at a minimum depth of 3 feet below ground. All welds joining each section of pipe would be visually inspected and x-rayed to ensure the integrity of the welds. Prior to being placed in service, the pipeline would be hydrostatically tested to verify its integrity and to ensure its ability to withstand the designed MAOP. A cathodic protection system would be installed to protect all underground pipeline facilities constructed of metallic materials from external, internal, and atmospheric corrosion. Additional information regarding safety standards is presented in Section 3.12.

During operations, Gulf South would conduct regular patrols of the pipeline right-of-way in accordance with the requirements of 49 CFR Part 192. The patrol program would include periodic aerial, vehicle, and/or pedestrian patrols of the pipeline facilities. These patrols would be conducted to survey surface conditions on and adjacent to the pipeline right-of-way for evidence of leaks, unauthorized excavation activities, erosion and wash-out areas, areas of sparse vegetation, damage to permanent erosion control devices, exposed pipe, and other conditions that might affect the safety or operation of the pipeline. The cathodic protection system would also be inspected periodically to ensure that it is functioning properly. In addition, intelligent pigs would regularly be sent through the pipeline to check for corrosion and irregularities in the pipe. Gulf South would keep detailed records of all inspections and supplement the corrosion protection system as necessary to meet the requirements of 49 CFR Part 192.

Routine operation and maintenance would also be performed at all aboveground facilities by qualified personnel. Safety equipment, such as pressure relief devices, fire detection and suppression systems, and gas detection systems would be maintained throughout the life of each facility. Mainline valves also would be inspected, serviced, and tested to ensure proper functioning.

Gulf South would establish and maintain a liaison with the appropriate fire, police, and public officials. This program would identify the available resources and responsibilities of each organization that may respond to a natural gas pipeline emergency and assist in developing coordination responsibilities.

Pipeline markers would be placed and maintained along the right-of-way at roadway crossings, railroad crossings, and other highly visible places to alert those contemplating working in the vicinity of the location of the buried pipeline. The markers would identify Gulf South as the operator and display telephone numbers to call if any abnormal conditions are detected.

Gulf South would also participate in the One-Call program. This program provides telephone numbers for excavation contractors to call prior to commencing any excavation activities. The One-Call

operator would notify excavation contractors of the existence of any underground utilities in the area and would notify Gulf South of any planned excavation in the vicinity of the pipeline so that Gulf South could flag the location of the pipeline and assign staff to monitor activities if required.

Vegetation management procedures during operation would be performed in accordance with Gulf South's proposed Plan and Procedures and would include regular mowing, cutting, and trimming along most of the proposed 60-foot-wide permanent pipeline right-of-way. In Section 2.2.1, we are recommending that Gulf South should limit the width of its permanent right-of-way to 50 feet. Routine vegetative maintenance clearing would not be performed more frequently than every 3 years, unless requested or approved by appropriate state and local agencies. However, a corridor not exceeding 10 feet in width centered on the pipeline could be maintained annually in an herbaceous state, as required to facilitate periodic corrosion and leak detection surveys. Vegetation management is discussed further in Section 3.5.

2.7 FUTURE PLANS AND ABANDONMENT

Gulf South currently has no plans for the expansion of the proposed facilities. If additional demand for natural gas supplies requires future expansion, Gulf South would seek the appropriate authorizations from the Commission. When and if an application is filed, the environmental impact of the new proposal would be examined at that time.

Abandonment of the pipeline facilities would be subject to approval of the Commission under Section 7(b) of the NGA and would comply with DOT regulations and specific agreements or stipulations made for the pipeline rights-of-way. An environmental review of any proposed abandonment would be conducted when the application is filed with the FERC.

2.8 NONJURISDICTIONAL FACILITIES

Under Section 7 of the NGA, the FERC is required to consider, as part of a decision to certificate jurisdictional facilities, all facilities including nonjurisdictional facilities that are directly related to the proposed Project where there is sufficient federal control and responsibility to warrant environmental analysis as part of this proceeding. The jurisdictional facilities for the proposed Project are described in detail in Section 2.1 and are addressed throughout this EIS. Nonjurisdictional facilities are those facilities that would be constructed upstream or downstream of the jurisdictional facilities for the purpose of delivering, receiving, or using the proposed gas volumes. Nonjurisdictional facilities typically include major power facilities, such as cogeneration plants, as well as less significant facilities, such as lateral pipeline connections.

Electrical power lines would be constructed to provide electrical service to the two new compressor stations. These facilities would be constructed and operated by Entergy and have been identified as nonjurisdictional facilities.

We use a "four-factor test" to determine whether there is sufficient federal control and responsibility over a project as a whole to warrant environmental analysis of project-related nonjurisdictional facilities. These factors are:

- whether the regulated activity comprises "merely a link" in a corridor-type project (e.g., a transportation or utility transmission project);
- whether there are aspects of the nonjurisdictional facility in the immediate vicinity of the regulated activity that affect the location and configuration of the regulated activity;

- the extent to which the entire Project would be within the Commission's jurisdiction; and
- the extent of cumulative federal control and responsibility.

With regard to the first factor, the jurisdictional facilities, the proposed Project, is clearly a link in a natural gas project. The proposed Project would serve as a new pipeline transportation system between the producers and consumers of natural gas. As a common carrier, Gulf South serves only to transport natural gas for its customers and does not sell gas to consumers. Therefore, this factor supports examining the nonjurisdictional facilities.

With regard to the second factor, the proposed Project would receive electricity from nonjurisdictional facilities, but the design and route of the proposed Project has not been uniquely influenced by the location or configuration of the nonjurisdictional facilities. The locations of the nonjurisdictional facilities have not been established, thus these facilities have had no effect on the location of the Expansion Project facility configuration. Thus, the second factor does not support examining the nonjurisdictional facilities.

The third factor weighs the extent to which the entire Project would be within the FERC's jurisdiction. Electrical facilities are regulated by state and local permitting agencies. The FERC has no authority over the permitting, licensing, funding, construction, or operation of these nonjurisdictional facilities. Because the FERC has no authority over the nonjurisdictional facilities, this factor also weighs against extending the scope of the environmental review.

Finally, the last factor weighs the extent of cumulative federal control and responsibility over the nonjurisdictional facilities. Federal control is determined by the amount of federal financing, assistance, direction, regulation, or approval inherent in a project. The nonjurisdictional facilities are private construction projects under state and local jurisdiction. The federal government has no financial involvement, and no federal lands are involved. Based on the available information, federal agencies are expected to have either very limited or no involvement in the approval of the nonjurisdictional facilities. Therefore, cumulative federal control is minimal, and this factor does not warrant extending the FERC's environmental review.

We have applied the four factor test to the proposed East Texas to Mississippi Expansion Project and have determined that only one factor favors examining the identified nonjurisdictional facilities. Therefore, insufficient justification exists to warrant extension of the FERC's environmental review to include the proposed electrical power lines.