

DRAFT

MIDWESTERN GAS TRANSMISSION COMPANY

EASTERN EXTENSION PROJECT

RESOURCE REPORT NO. 1

General Project Description

April 11, 2005

TABLE OF CONTENTS

1.0	GENERAL PROJECT DESCRIPTION	1-1
1.1	INTRODUCTION	1-1
1.2	PROJECT DESCRIPTION	1-1
1.2.1	Purpose and Need	1-1
1.2.2	Location and Description of Facilities	1-3
1.2.3	Mapping and Aerial Photography	1-5
1.3	NON-JURISDICTIONAL FACILITIES	1-5
1.4	PUBLIC REVIEW AND COMMENT	1-5
1.5	LAND REQUIREMENTS	1-6
1.5.1	Pipeline Facilities	1-7
1.5.2	Aboveground Facilities	1-10
1.6	CONSTRUCTION AND RESTORATION METHODS	1-10
1.6.1	Standard Construction Methods	1-10
1.6.2	Specialized Construction Methods	1-12
1.6.2.1	Rugged Terrain	1-13
1.6.2.2	Karst Terrain	1-13
1.6.2.3	Residential Areas	1-14
1.6.2.4	Agricultural lands	1-15
1.6.2.5	Road Crossings	1-15
1.6.2.6	Blasting	1-16
1.6.2.7	Waterbody and Wetland Crossings	1-17
1.7	IMPLEMENTATION	1-18
1.8	OPERATION AND MAINTENANCE	1-18
1.9	FUTURE PLANS AND ABANDONMENT	1-19
1.10	PERMITS AND APPROVALS	1-19
1.11	LANDOWNERS AND OFFICIALS	1-20

LIST TABLES

TABLE 1.2-1	Proposed Pipeline Facilities	1-3
TABLE 1.2-2	Proposed Aboveground Facilities	1-4
TABLE 1.4-1	Issues Identified During the FERC NEPA Pre-Filing Process	1-6
TABLE 1.5-1	Land Requirements for Pipeline Facilities	1-7
TABLE 1.5-2	Proposed Contractor and Pipe Yards	1-10
TABLE 1.5-3	Land Requirements for Aboveground Facilities	1-10
TABLE 1.6-1	Locations Requiring Specialized Construction Techniques	1-13
TABLE 1.6-2	Roadways Crossed By Pipeline Facilities	1-16
TABLE-1.10-1	Environmental Permits, Approvals, and Consultations	1-19

FIGURES

Figure 1.1-1	General Location Map	1-2
Figure 1.5-1	Typical Right-of-way Cross Section	1-9

APPENDICES

Appendix 2A	Pre-Filing Agency Consultations
Appendix 2B	Additional Temporary Workspaces
Appendix 2C	FERC Upland Erosion Control, Revegetation, and Maintenance Plan
Appendix 2D	FERC Wetland and Waterbody Construction and Mitigation Procedures
Appendix 2E	Spill Prevention, Containment, and Countermeasure Plan
Appendix 2F	Unanticipated Discoveries Plan
Appendix 2G	Typical Waterbody Crossing Techniques
Appendix 2H	Pre-Filing Public Outreach

**RESOURCE REPORT 1
EASTERN EXTENSION PROJECT DESCRIPTION**

INFORMATION	SECTION
Minimum Requirements to Avoid Rejection	
<input type="checkbox"/> 1. Provide a detailed description and location map of the Eastern Extension Project facilities (§ 380.12(c)(1)). <ul style="list-style-type: none"> • Include all pipeline and aboveground facilities. • Include support areas for construction or operation. • Identify facilities to be abandoned. 	<p style="text-align: right;">1.2</p> <p style="text-align: right;">1.2.2</p> <p style="text-align: right;">1.5.1</p> <p style="text-align: right;">1.9</p>
<input type="checkbox"/> 2. Describe any nonjurisdictional facilities that would be built in association with the Eastern Extension Project (§ 380.12(c)(2)). <ul style="list-style-type: none"> • Include auxiliary facilities (see § 2.55(a)). • Describe the relationship to the jurisdictional facilities. • Include ownership, land requirements, gas consumption, megawatt size, construction status, and an update of the latest status of Federal, state, and local permits/approvals. • Include the length and diameter of any interconnecting pipeline (see § 380.12(c)(2)(i)(A)). • Apply the four-factor test to each facility (see § 380.12(c)(2)(ii)). 	<p style="text-align: right;">1.3</p>
<input type="checkbox"/> 3. Provide current original U.S. Geological Survey (USGS) 7.5-minute-series topographic maps with mileposts showing the Eastern Extension Project facilities (§ 380.12(c)(3)). <ul style="list-style-type: none"> • Maps of equivalent detail are acceptable if legible (check with staff) • Show locations of all linear project elements, and label them. • Show locations of all significant aboveground facilities, and label them. 	<p style="text-align: right;">Volume III Sheets 3B</p>
<input type="checkbox"/> 4. Provide aerial images or photographs or alignment sheets based on these sources with mileposts showing the Eastern Extension Project facilities ((§ 380.12(c)(3)). <ul style="list-style-type: none"> • No more than 1-year old • Scale no smaller than 1:6,000 	<p style="text-align: right;">Volume III Sheets 3A</p>
<input type="checkbox"/> 5. Provide plot/site plans of compressor stations showing the location of the nearest noise sensitive areas (NSA) within 1 mile (§ 380.12(c)(3,4)). <ul style="list-style-type: none"> • Scale no smaller than 1:3,600 • Show reference to topographic maps and aerial alignments provided above. 	<p style="text-align: right;">Not Applicable</p>
<input type="checkbox"/> 6. Describe construction and restoration methods (§ 380.12(c)(6)). <ul style="list-style-type: none"> • Include this information by milepost • Make sure this is provided for offshore construction as well. For offshore, this information is needed on a mile-by-mile basis and will require completion of geophysical and other surveys before filing. 	<p style="text-align: right;">1.6</p>
<input type="checkbox"/> 7. Identify the permits required for construction across surface waters (§ 380.12(c)(9)). <ul style="list-style-type: none"> • Include the status of all permits. • For construction in the Federal offshore area, be sure to include consultation with the MMS. • File with the MMS for rights-of-way grants at the same time or before you file with the FERC. 	<p style="text-align: right;">1.10</p>
<input type="checkbox"/> 8. Provide the names and address of all affected landowners and certify that all affected landowners will be notified as required in § 157.6(d); (§ 380.12(c)(10)). <ul style="list-style-type: none"> • Affected landowners are defined in § 157.6(d) • Provide an electronic copy directly to the environmental staff. 	<p style="text-align: right;">1.11 Volume IV</p>
Additional Information Often Missing and Resulting in Data Requests	
<input type="checkbox"/> Describe all authorizations required to complete the proposed action and the status of applications for such authorizations.	<p style="text-align: right;">1.10</p>
<input type="checkbox"/> Provide plot/site plans of all other aboveground facilities that are not completely within the right-of-way.	<p style="text-align: right;">Volume V Sheets 5A</p>

RESOURCE REPORT 1 EASTERN EXTENSION PROJECT DESCRIPTION	
INFORMATION	SECTION
<input type="checkbox"/> Provide detailed typical construction right-of-way cross-section diagrams showing information such as widths and relative locations of existing rights-of-way, new permanent rights-of-way, and temporary construction rights-of-way. See Resource Report 8.	Figure 1.5-1
<input type="checkbox"/> Summarize the total acreage of land affected by construction and operation of the Project.	1.5
<input type="checkbox"/> If Resource Report 5, Socioeconomics is not provided, provide the start and end dates of construction, the number of pipeline spreads that would be used, and the workforce per spread.	RR 5
<input type="checkbox"/> Send two (2) additional copies of topographic maps and aerial images/photographs directly to the environmental staff of the Office of Energy Projects (OEP).	

1.0 GENERAL PROJECT DESCRIPTION

1.1 INTRODUCTION

Midwestern Gas Transmission Company (MGT) is proposing to extend its existing pipeline facilities by constructing and operating 30.9 miles of 16-inch-diameter natural gas pipeline in Sumner and Trousdale Counties, Tennessee (TN). This new pipeline will transport an incremental 120,000 dekatherms per day (Dth/day) of natural gas from the existing MGT Compressor Station No. 2101 located near Portland, TN (Portland Compressor Station) to new interconnects with existing pipelines operated by the Columbia Gulf Transmission Company (Columbia Gulf) and East Tennessee Natural Gas, LLC (East Tennessee) near Hartsville, TN and shall be referred to as the Eastern Extension Project (Figure 1.1-1).

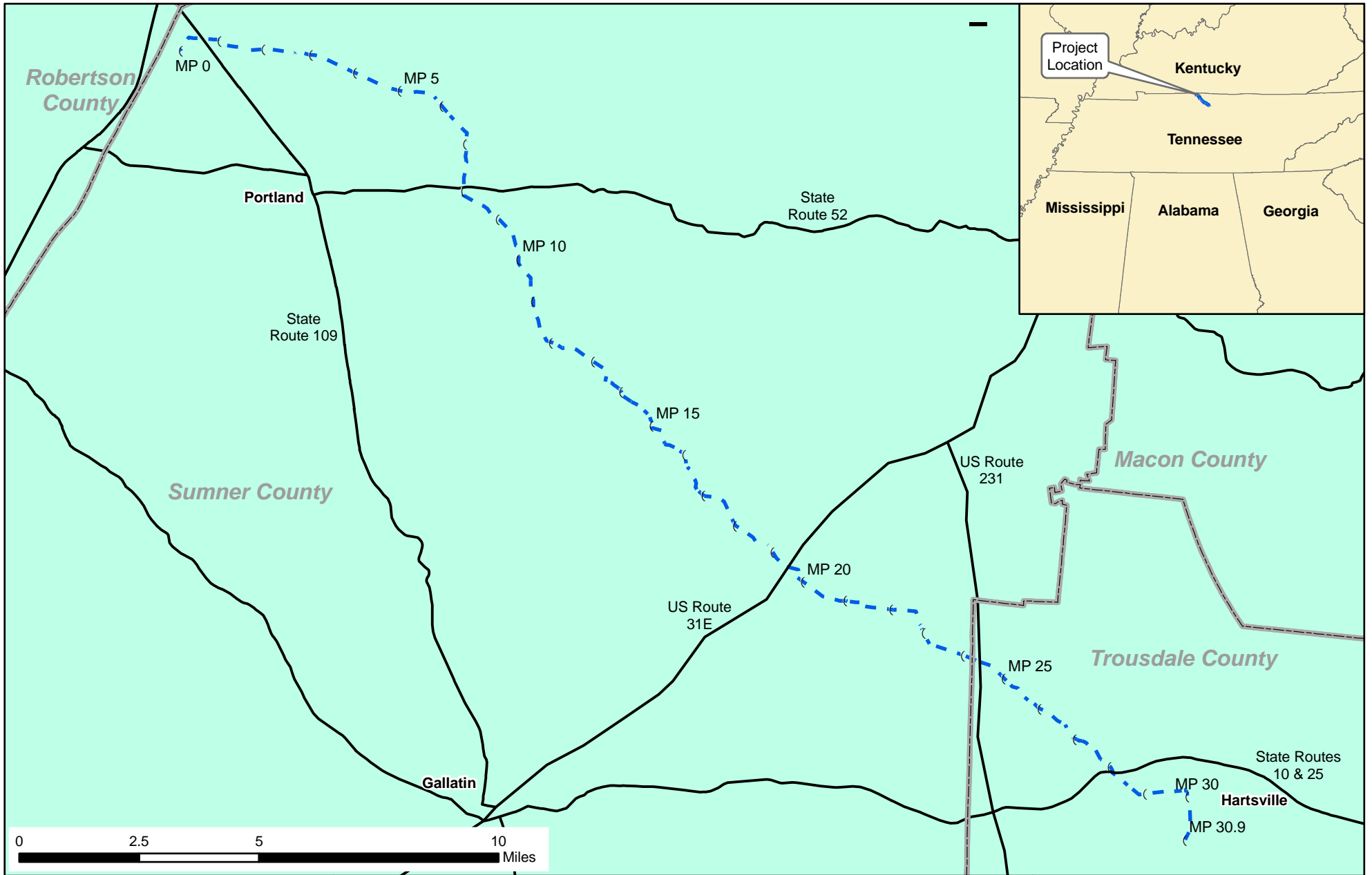
This Resource Report describes the Eastern Extension Project facilities, construction and operation procedures in specific areas, environmental permits that must be obtained prior to construction, and the public scoping process utilized to identify important resource issues along the pipeline corridor. The remainder of this Environmental Report (ER) describes the environmental resources affected by the Eastern Extension Project, and the mitigation measures proposed by MGT to minimize potential impacts.

1.2 PROJECT DESCRIPTION

1.2.1 Purpose and Need

Piedmont Natural Gas Company (Piedmont) contacted MGT in March 2004 and requested that MGT prepare a proposal to provide a minimum of 120,000 Dth/d of natural gas volumes at interconnects with Columbia Gulf and East Tennessee near Hartsville via an extension of the MGT pipeline system. Piedmont advised that this incremental capacity was required to be delivered near Hartsville to meet its demand growth projections on the eastern side of its distribution system in the Nashville area and in North and South Carolina. Following an open season and negotiations, Piedmont entered into a precedent agreement with MGT for the transportation of 120,000 Dth/d of natural gas for a term of 15-years. MGT will deliver 100,000 Dth/d of this natural gas into the Columbia Gulf pipeline system near Hartsville. Piedmont plans to provide this natural gas to its subsidiary, Nashville Gas Company (Nashville Gas), which serves residential, commercial and industrial customers in Cheatham, Davidson, Dickson, Robertson, Rutherford, Sumner, Trousdale, Williamson and Wilson Counties. The remaining 20,000 Dth/d will be delivered into the East Tennessee pipeline system for delivery to Piedmont's distribution systems in North and South Carolina. The interconnect with East Tennessee is proposed to be located east of the Texas Eastern Transmission, LP (Texas Eastern) interconnect with East Tennessee because of the lack of long term firm capacity availability on East Tennessee between its interconnects with Tennessee Gas Pipeline Company (Tennessee Gas) at Ridgetop and Texas Eastern near Hartsville.

Figure 1.1-1 General Location Map



MGT Eastern Extension Project
General Location Map

Figure 1.1-1
Sumner and Trousdale Counties, TN

- (Mileposts
- - - Proposed Route
- Highways
- ▭ County Boundaries

The primary objectives of the Eastern Extension Project are: 1) to provide incremental natural gas volumes to meet the projected demand growth requirements of Piedmont in North and South Carolina and on the eastern side of Nashville Gas' distribution system; 2) to provide price competition resulting from natural gas sourced from the Chicago Hub, i.e. Canadian, Rocky Mountain, Mid-Continent, Permian, and in the future, Alaskan and the MacKenzie Delta natural gas supply regions; 3) to provide increased reliability and flexibility in the natural gas transportation grid resulting from an additional transportation alternative and associated interconnects; and 4) to provide increased natural gas supply reliability resulting from natural gas supplies sourced from the Chicago Hub. As discussed more fully in Resource Report No. 10, no other alternative satisfies the listed objectives, including those alternatives proposed by William Wade in his report entitled "Alternatives to MGT's East Extension Project" (the "Wade Report") and filed in Docket No. PF05-2.

1.2.2 Location and Description of Facilities

Pipeline Facilities

The Eastern Extension Project will consist of approximately 30.9 miles of 16-inch-diameter natural gas pipeline. The pipeline will travel in a generally southeasterly direction, originating at the Portland Compressor Station at MP 0.0 and terminating at MP 30.9 near Hartsville (Table 1.2-1). Two pipeline block valves will be installed along the pipeline near MP 10.1 and MP 21.1. The Eastern Extension Project will include construction of two (2) new interconnects, one with Columbia Gulf and one with East Tennessee at MP 26.6 and MP 30.9, respectively. The route described herein represents MGT's current proposal and may be refined further based on input from landowners, agencies, and other stakeholders. Due to the lack of access to specific parcels along the route, MGT has not completed the civil and environmental surveys of the entire route.

The Eastern Extension Project will originate at the existing MGT Portland Compressor Station located about four miles northwest of Portland. The pipeline will exit the Portland Compressor Station property and head to the northeast for about 2,000 feet before turning to the east and continuing for about four miles where the pipeline will turn to the southeast and begin to follow West Fork Drakes Creek. At about MP 7.9, the pipeline will cross State Route 52 and continue to the southeast paralleling Dry Fork Creek. The pipeline will continue in a southeasterly direction crossing Dobbins Pike at MP 12.1 and U.S. Route 31E at MP 19.5, about 1.9 miles southwest of Bethpage, TN. Continuing to the southeast, the Eastern Extension Project will cross Bledsoe Creek (MP 20.5) and the East Fork Bledsoe Creek (MP 22.8) before entering Trousdale County and crossing U.S. Route 231 at about MP 24.4. The route will continue to the southeast, crossing State Route 10/25 at MP 28.1 and reaching the terminus at the interconnect with East Tennessee at MP 30.9 at a location about 1.5 miles southwest of Hartsville.

County, State	Pipeline Diameter (in)	Length (miles)	Mileposts ^{a/}
Sumner, Tennessee	16	24.1	0.0 – 24.1
Trousdale, Tennessee	16	6.8	24.1 – 30.9
Total Eastern Extension Project		30.9	

^{a/} Mileposts are used for reference and may not reflect actual surveyed distances.

MGT will construct the pipeline facilities within a typical 75-foot-wide construction right-of-way. Temporary extra workspace areas will generally be required at road, railroad, and waterbody crossings, and side slope areas. Following construction, MGT will require a 50-foot-wide permanent easement for operation and maintenance of the facilities. Pipeline markers and cathodic test stations will be installed per DOT requirements. The Maximum Allowable Operating Pressure (MAOP) of the Eastern Extension Project will be 936 pounds per square inch gauge (PSIG).

Aboveground Facilities

No new major aboveground facilities are proposed as part of the Eastern Extension Project. However, MGT will perform minor modifications to piping and launcher/receiver additions at the Portland Compressor Station, install two new pipeline block valves, and construct two new interconnects. Aboveground facilities are listed in Table 1.2-2.

Portland Compressor Station

MGT proposes to modify the existing station piping to accommodate the tie-in of the proposed pipeline facilities and to install flow control valves for compressor units #1 and #2. These modifications will control flows and facilitate transportation of the contracted volumes through the new pipeline facilities. MGT also proposes to install a pipeline block valve and a launcher at the Portland Compressor Station to facilitate inline inspections of the proposed pipeline system.

TABLE 1.2-2		
Proposed Aboveground Facilities		
Facility	MP ^{a/}	County, State
Portland Compressor Station	0.0	Sumner, TN
<ul style="list-style-type: none"> · Station Tie-in Piping · Flow Control Equipment · Launcher · Block Valve 		
Pipeline Block Valve No. 1	10.1	Sumner, TN
Pipeline Block Valve No. 2	21.1	Sumner, TN
Columbia Gulf Interconnect	26.6	Trousdale, TN
<ul style="list-style-type: none"> · Meter Building <ul style="list-style-type: none"> · Measurement Equipment · Flow Control Valve · DAC Building 		
East Tennessee Interconnect	30.9	Trousdale, TN
<ul style="list-style-type: none"> · Meter Building <ul style="list-style-type: none"> · Measurement Equipment · Flow Control Valve · DAC Building · Receiver · Block Valve 		
<hr style="width: 25%; margin-left: 0;"/> ^{a/} Mileposts are used for reference and may not reflect actual surveyed distance.		

Pipeline Block Valves

Pipeline block valves will be installed at the beginning of the line at the Portland Compressor Station and at the terminus of the line at the East Tennessee interconnect. Two intermediate pipeline block valves will be installed at MPs 10.1 and 21.1, which will allow MGT to sectionalize the pipeline system in accordance with DOT requirements.

Interconnect Locations

MGT will construct two new interconnects to provide service to Columbia Gas and East Tennessee. Each interconnect will include a small data acquisition control (DAC) building and a meter building that includes measurement equipment and a flow control valve. The East Tennessee interconnect site, at the terminus of the pipeline, will also contain a receiver and a pipeline block valve assembly.

1.2.3 Mapping and Aerial Photography

Detailed mapping and photo-based alignment sheets identifying the pipeline route, construction workspace configuration, and USGS topographic mapping (with national wetland inventory overlay) are provided in Volume III, Eastern Extension Project Mapping and Drawings.

1.3 NON-JURISDICTIONAL FACILITIES

There are no nonjurisdictional facilities associated with the proposed Eastern Extension Project.

1.4 PUBLIC REVIEW AND COMMENT

MGT completed a comprehensive pre-filing public outreach process, in accordance with the FERC's recently instituted NEPA Pre-Filing Process. Initial contacts were made with Federal, state, and local environmental and cultural resource agencies and other stakeholders having an interest in the Eastern Extension Project. A listing of the initial pre-filing agency contacts made by MGT is included in Appendix 2A. These initial contacts included a brief description of the Eastern Extension Project and a request for information regarding the applicable permitting or other regulatory review authority. Follow-up correspondence and pre-filing meetings were conducted as requested by the agency representatives. In addition, FERC staff conducted a Scoping Meeting on February 24, 2005, in Gallatin, TN, near the Eastern Extension Project area.

Environmental issues, comments, and concerns raised during the FERC NEPA Pre-Filing Process are listed in Table 1.4-1, below.

TABLE 1.4-1	
Issues Identified During the FERC NEPA Pre-Filing Process	
Issue	Resource Report Where Comment Is Addressed
Purpose and Need	RR 1
Surface Water	RR 2
Groundwater	RR 2
Threatened, Endangered, and Special-Status Species	RR 3
Cultural Resources	RR 4
Karst Geology	RR 6
Soils	RR 7
Surface Damage	RR 2
Land Use and Recreation	RR 8
Eminent Domain	RR 5
Insurance	RR 5
Agriculture	RR 8
Property Values	RR 5
Alternatives	RR 10
Safety	RR 11

On January 21, 2005, the FERC issued a *Notice of Intent to Prepare an Environmental Assessment for the Proposed MGT Eastern Extension Project, Request for Comments on Environmental Issues* (NOI). The NOI was sent to individuals and organizations having a potential interest in the Eastern Extension Project, including: Federal, state, and local officials and agencies; Native American tribal representatives; conservation organizations; local libraries and newspapers; and property owners along the proposed pipeline corridor. Written comments were requested on specific concerns about the Eastern Extension Project or issues that should be considered during the review process.

The Commission received numerous comment letters in response to the NOI. Issues raised in these letters are included in Table 1.4-1. MGT has addressed all of the concerns raised during the NEPA Pre-Filing process in the Resource Reports that constitute the ER for the Eastern Extension Project.

1.5 LAND REQUIREMENTS

Table 1.5-1 summarizes the land requirements for the Eastern Extension Project. Land requirements for the pipeline include the construction right-of-way, additional temporary workspace areas, and access roads. Contractor/pipeyards are listed below in Table 1.5-2. Resource Report 8 presents additional information on Eastern Extension Project land requirements and detailed land use information.

Facility	Length (miles)	Construction Right-of-Way Width (feet)	New Permanent Right-of-Way Width (feet)	Land Affected By Construction (acres)	Land Affected by Operation (acres) ^{a/}
Pipeline Right-of-way	30.9	75	50	280.9	187.3
Additional Temporary Workspace Areas ^{b/}	NA	NA	NA	5.7	0.0
Access Roads (total length)	5.4	NA	NA	16.4	2.0
Total		--	--	303.0	189.3

^{a/} Lands within the permanent pipeline right-of-way.
^{b/} Typical additional temporary workspace areas are 25' by 100' attached to construction right-of-way (see Appendix 2B).

1.5.1 Pipeline Facilities

Construction Right-of-Way

Installation of the new pipeline will typically require the use of a 75-foot-wide construction corridor to provide a safe work site. Excavated soils will be placed on the designated spoil side of the construction corridor to allow for proper storage of excavated soils without increasing the environmental impacts on adjacent lands. All construction activities will occur within the certificated right-of-way. Figure 1.5-1 shows the typical right-of-way cross section for the proposed pipeline facilities.

Additional Temporary Workspace Areas

Additional temporary workspaces will typically be required at all public road, railroad, and waterbody crossings. Additional temporary workspaces may also be required at wetlands, steep side slope areas, truck turnarounds, crossover locations, and tie-in locations. Additional temporary workspaces currently identified are shown on the Aerial Alignment Maps in Volume III, and listed in a separate table as Appendix 2B. Any further necessary additional temporary workspace locations will be identified as additional survey permission is obtained.

Access Roads

MGT proposes to use 27 access roads for pipeline construction activities. Where possible, MGT intends to utilize existing public and private roads and the pipeline right-of-way for access by equipment and materials during construction. MGT will use four of these roads following construction to provide permanent access to the two pipeline block valves and two interconnect sites. All of the proposed access roads that will be used during construction are shown on the mapping contained in Volume III, Eastern Extension Project Mapping and Drawings. Additional information regarding the road surface and whether the road use will be temporary or permanent is included in Table 8.2-4.

Pipe Storage Yards and Contractor Yards

Development of the Eastern Extension Project will require the use of pipe storage and contractor yards for storing materials and equipment required for construction. The proposed locations of these yards, where currently identified, are shown on the topographic maps in Volume III and listed in Table 1.5-2.

Figure 1.5-1 - Typical Right-of-way Cross Section

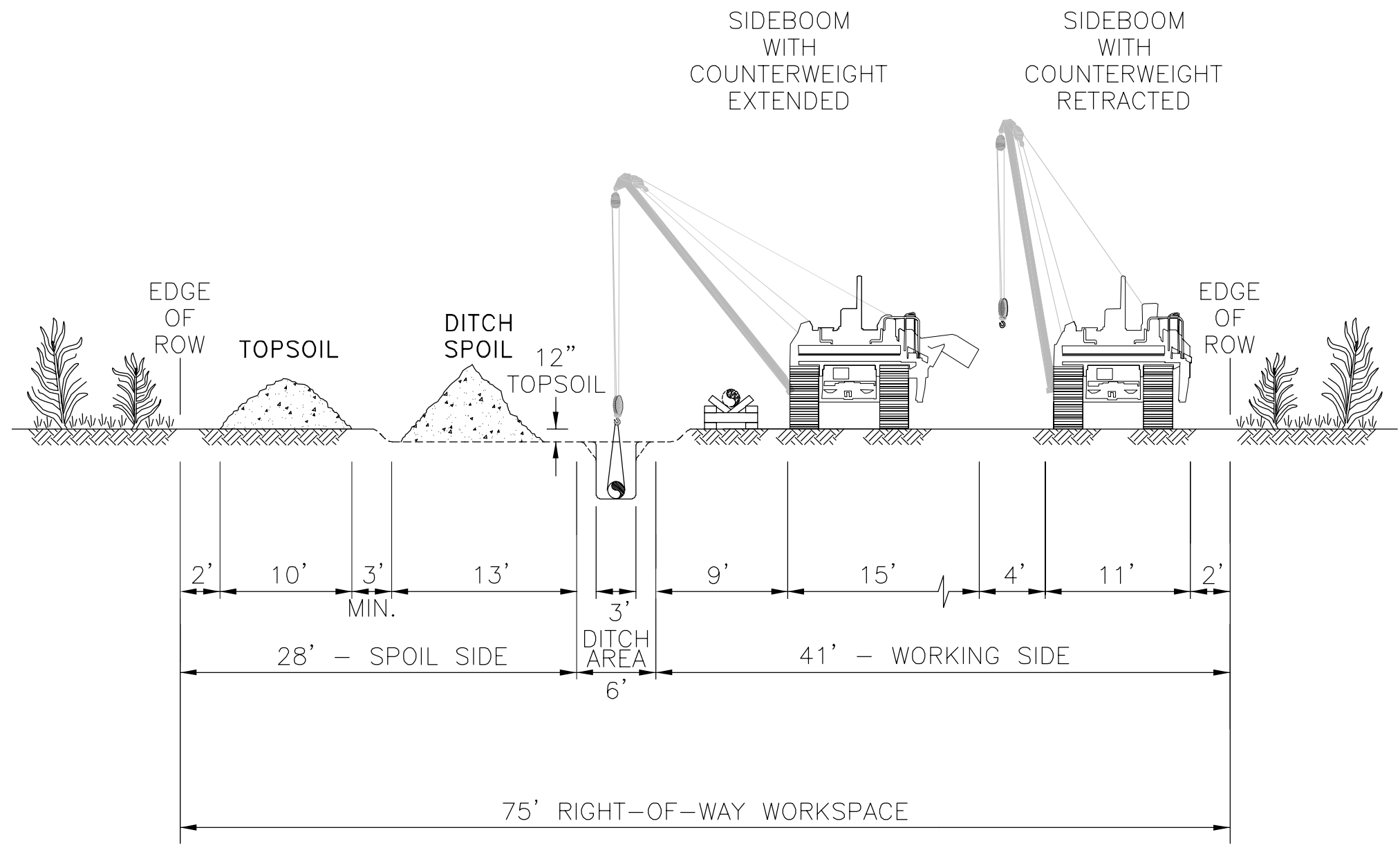


FIGURE 1.5-1

 Midwestern Gas
Transmission Company

MGT EASTERN EXTENSION PROJECT
TYPICAL CROSS SECTION OF
CONSTRUCTION ROW WIDTH
16" PIPE DIAMETER
Sumner and Trousdale Counties, Tennessee


 **GULF INTERSTATE
ENGINEERING**
HOUSTON, TEXAS

TABLE 1.5-2			
Proposed Contractor and Pipe Yards			
Use	Location	Land Affected By Construction (acres)	Land Permanently Affected by Operation (acres)
Pipe Storage	Portland Compressor Station	5.0	0.0
Contractor Staging	Portland Compressor Station	2.0	0.0
Pipe Storage	Pending – Additional location under review near end of line.	5.0	0.00
Total		12.0	0.0

1.5.2 Aboveground Facilities

MGT proposes to locate all new aboveground facilities, except the two proposed interconnect facilities, within the new pipeline easement and to make the required modifications at the Portland Compressor Station within the existing property boundary. The two proposed interconnect facilities will each require a one-half acre site on which to construct the measurement and flow control equipment, data acquisition buildings, and receiver facilities. Following construction, MGT will retain 0.25 acre at each site for operation. Table 1.5-3 describes the land requirements for aboveground facilities.

TABLE 1.5-3			
Land Requirements for Aboveground Facilities			
Facility	Property Size (acres)	Land Affected By Construction (acres)	New Land Permanently Affected by Operation (acres)
Portland Compressor Station	0.5	0.5	0.0 ^{a/}
Pipeline Block Valve No. 1	0.02	0.02	0.0 ^{a/}
Pipeline Block Valve No. 2	0.02	0.02	0.0 ^{a/}
Columbia Gulf Interconnect	0.5	0.5	0.25
East Tennessee Interconnect	0.5	0.5	0.25
^{a/} Facilities will be located with compressor station property or permanent pipeline easement. No additional lands will be required for operation of these facilities.			

1.6 CONSTRUCTION AND RESTORATION METHODS

1.6.1 Standard Construction Methods

All facilities described in this Environmental Report will be designed, constructed, tested, operated, and maintained to conform with or exceed the requirements of Title 49 CFR, Part 192, Transportation of Natural and Other Gas by Pipeline: Minimum Safety Standards; 18 CFR, 380.15, Siting and Maintenance Requirements; and other applicable Federal, state, and local regulations (see Section 1.10 – Permits and Approvals).

MGT will adopt the techniques and mitigation measures contained in the Commission's Upland Erosion Control, Revegetation, and Maintenance Plan ("Plan," 1/17/03 version)(see Appendix 2C) and Wetland and Waterbody Construction and Mitigation Procedures ("Procedures," 1/17/03 version)(see Appendix 2D) to minimize impacts during construction.

Installation of the pipeline will typically proceed from west to east in the following sequence: survey and flag the right-of-way; clearing and grading; trenching; stringing and bending; welding; lowering-in; backfilling; hydrostatic testing; cleanup and restoration; and post-construction monitoring. During construction, the construction spread (crew and equipment) will proceed along the pipeline right-of-way in one continuous operation. The entire process will be coordinated in such a manner as to minimize the total time a tract of land is disturbed.

Clearing and Grading

Following completion of survey activities, the right-of-way will be cleared. Large obstacles, such as trees, rocks, brush, and logs, will be moved from work areas to allow safe passage of construction equipment. Standing timber will only be removed when absolutely necessary to allow for safe construction. MGT will work with landowners to preserve large, mature trees and landscaping, where possible. Timber and other vegetative debris may be chipped for use as erosion-control mulch, burned, cut and stacked along the right-of-way, or otherwise disposed of in accordance with applicable regulations and landowner preference. Temporary gates will be installed where necessary to control livestock and limit public access. The right-of-way will then be graded where necessary to create a reasonably level working surface to allow safe passage of construction equipment. Temporary erosion and sediment controls will be installed in accordance with the FERC's Plan and Procedures and applicable stormwater permits. Topsoil will be stripped and segregated from subsoil piles in accordance with the FERC's Plan and Procedure or landowner agreements. Conserved topsoil will be stockpiled separately from subsoil along one side of the right-of-way, allowing the other side to be used for access, material transport, and pipe assembly.

Trenching

Excavated soils will typically be stored on the opposite side of the trench from the construction equipment working side. In all agricultural areas, topsoil will be stockpiled separately from subsoil. The trench will be excavated to a sufficient depth to allow a minimum of four (4) feet of soil cover between the top of the pipe and the final land surface after backfilling. Where excavations occur in bedrock areas, the pipeline will be installed with a minimum of two feet of topcover over the pipe.

Pipe Preparation

Stringing and Welding

In preparation for installation, the pipe segments will be temporarily placed, or "strung", alongside the trench, where they are bent as necessary, welded together, inspected, and the joints coated prior to lowering segments of pipe into the trench.

Pipe Lowering

Once a segment of pipeline has been constructed, the completed section will be lifted off the temporary supports and lowered into the trench by side-boom tractors. Prior to lowering the pipe, the trench will be inspected to ensure that it is free of rocks and other debris that could damage the pipe or the coating.

Padding and Backfilling

After the pipe is lowered into the trench, the trench will be backfilled with the excavated soil. Previously excavated materials will be pushed back into the trench using bladed equipment or backhoes. In areas where topsoil segregation was performed during trenching, the subsoil will be replaced in the trench first, followed by placement of the topsoil. Where the previously excavated material contains large rocks or other materials that could damage the pipe or coating, clean fill or protective coating will be placed around the pipe prior to backfilling. In order to maintain soil porosity in agricultural areas, no soil tamping will be performed as part of the backfilling process. As a result, a small crown of material will be left to account for any future soil settling that might occur.

Hydrostatic Test and Final Tie In

Following backfill of the trench, the pipeline will be hydrostatically tested to ensure its integrity. Test segments of the pipeline will be capped and filled with clean water. The water in the pipe will be pressurized and monitored per DOT requirements. Upon completion of the test, the water will be pumped to the next segment for testing, or discharged. All test water will be discharged to the ground surface with the use of energy dissipating devices to limit soil erosion. MGT anticipates obtaining hydrostatic testwater from the Portland municipal water supply through an existing connection at the Portland Compressor Station (see Table 2.1-3). Test water will contact only new pipe, and no chemicals will be added to the test water. Once a segment of pipe has been successfully tested and dried, the test cap and manifold will be removed, and the test section will be connected to the remainder of the pipeline.

Cleanup and Restoration

After the pipeline has been installed, backfilled, and successfully tested, the right-of-way, temporary extra work areas, and other disturbed areas will be finish-graded and any remaining construction debris will be disposed of properly. Original land contours will be restored to conform to adjacent areas as near as practicable. In upland agricultural areas, subsoil will be decompacted in accordance with FERC's Plan, and the segregated topsoil will be returned to its original horizon. Otherwise, the topsoil will be decompacted as required. Permanent erosion and sediment control measures, including diversion terraces and revegetation, will be installed at this time. In all wetland areas and stream crossings, the disturbed areas will be restored and revegetated. Additionally, each stream and wetland crossing will be inspected and monitored after the restoration activities have occurred to ensure that natural flow patterns and revegetation have successfully occurred. Private and public property, such as fences, gates, driveways, and roads disturbed by pipeline construction will be restored to original or better condition.

1.6.2 Specialized Construction Methods

Specialized construction procedures will be used for construction activities in rugged terrain, residential areas, agricultural areas, and at road, railroad, waterbody, and wetland crossings as summarized below and as further described in the FERC's Plan and Procedures. Table 1.6-1 identifies the locations, by MP, where MGT anticipates utilizing specialized construction techniques.

TABLE 1.6-1 Locations Requiring Specialized Construction Techniques		
Milepost	Existing Site Conditions	Construction Method (open cut/bore)
2.1 – 3.4	Steep Slopes	Open Cut
4.6 – 4.7	Steep Slopes	Open Cut
7.3 – 7.4	Limited Work Area	Dry Creek Crossing
9.7 – 10.1	Steep Slopes	Open Cut
11.1 – 11.2	Limited Work Area	Open Cut
14.7 – 16.9	Steep Slopes	Open Cut
17.1 – 17.7	Steep Slopes	Open Cut
20.3 – 20.4	Limited Work Areas	Dry Creek Crossing
26.3 – 26.6	Steep Slopes	Open Cut
28.0 – 28.1	Steep Slopes	Dry Creek Crossing

1.6.2.1 Rugged Terrain

Portions of the Eastern Extension Project will be constructed in areas of rugged topography. Several construction techniques might be used in these areas depending on the terrain encountered. However, due to the lack of access, civil and environmental surveys have not yet been conducted and a determination of construction methodology has not been made.

When severe side slopes are encountered two construction techniques would typically be used. Using the cut-and-fill technique, the upslope side of the construction right-of-way would be cut during grading. The material removed from the cut would then be used to fill the downslope edge of the right-of-way in order to provide a safe and level surface from which to operate the heavy equipment. Alternatively, side hill construction may use “two-toning” to provide two levels of work area. With this technique, two benches are cut in the side slope; the lower bench would be used for the trench and spoil storage while the upper bench would be used for work area. Side hill areas may require additional temporary workspace downslope in order to effectively use these techniques. During grade restoration, the spoil will be placed back in the cut to restore approximate original contours.

Areas of steep slopes may require the use of winching techniques. In such circumstances, construction will require the use of winch tractors to hold each piece of equipment while working on the slopes to address safety concerns. The use of winch tractors in such areas would be necessary both during construction and restoration phases. The slopes would be restored to approximate original contours and frequent trench and slope breakers used to reduce runoff and direct flow to vegetated areas off the right-of-way.

1.6.2.2 Karst Terrain

Based on comments provided during the Pre-Filing Process and through preliminary geotechnical engineering review of the proposed route, MGT has identified the potential for construction activities to occur in karst areas. MGT will conduct a site-specific review of the pipeline alignment and surrounding areas to characterize project area, and determine the sensitivity of the areas that would be excavated. Once the sensitivity of areas along the route is established, MGT would determine the appropriate Best

Management Practices (BMPs) to be utilized to preserve the integrity of the karstic system. BMPs may include:

- Flagging karst features within the working area.
- Avoiding excavation activities during storm events or periods of sustained heavy rainfall to reduce the potential for soil erosion and sediment transport into the subsurface.
- Maintaining natural surface drainage pattern as much as possible to avoid disrupting natural subsurface flow.
- Avoid blasting near karst features. If blasting is unavoidable, use minimum or delayed charge, blasting mats, or other mitigation techniques to prevent rock fragments from damaging or landing in karst surface features, or blocking streams flowing into surface karst features.
- Where practical, substitute rock drilling/hammering for blasting on well developed karst. Where blasting is used, consult with a qualified professional for assistance to minimize impacts to karst terrain.
- After completion of pipeline installation, the ditch should be backfilled with original soil. Avoid use of tree stumps, logging debris, or other organic debris for the filling materials. Where necessary, apply seed to re-vegetate.

Additional information on geologic resources affected by the Eastern Extension Project is contained in Resource Report 6.

1.6.2.3 Residential Areas

MGT has identified only five residences that will be located within 50 feet of the construction work area. More detailed information concerning the locations of these structures is provided in Table 8.4-1, which contains a listing by MP of the residential structures within 50 feet of the construction work area.

MGT will make every effort to ensure that construction techniques minimize impacts to residences and residential areas, and that cleanup is effective and timely. Homeowners will be notified in advance of construction activities and any scheduled disruption of household utilities. Disruptions will be minimized to the extent possible. Should any Project-related work activity in a residential area disrupt landowner ingress/egress to the affected residence, MGT will offer to temporarily relocate the landowner to a hotel and provide a meal allowance during the short period of disruption. In addition, MGT will attempt to leave mature trees and landscaping intact within the construction right-of-way unless the trees and landscaping interfere with the installation techniques or present unsafe working conditions. During restoration activities, fences, mailboxes, and other structures that have been removed will be restored. Sidewalks, driveways, and roads will be restored as soon as practical. After cleanup, an MGT representative will contact landowners to ensure that conditions of all agreements have been met.

Specialized construction methods to be utilized for the above mentioned residences are also provided in the FERC's Plan.

1.6.2.4 Agricultural lands

Portions of the Eastern Extension Project will involve construction through agricultural areas located along the pipeline route. These areas consist of active and fallow croplands used to raise tobacco, corn, and soybeans. Additional lands are used for livestock grazing and pasture land. Additional information regarding agricultural land uses is presented in Resource Report 8. MGT will utilize the following general construction methods in agricultural areas, consistent with the requirements of the FERC's Plan.

- During easement negotiations and prior to construction, landowners will be contacted to locate existing drainage structures, irrigation facilities, and livestock watering systems.
- Water flow will be maintained in supply systems unless shutoff is coordinated with the affected parties.
- Existing fences will be cut and braced along the right-of-way, and temporary gates will be installed to control livestock and limit public access.
- On all actively cultivated agricultural lands, which include fallow or rotated cropland, hayfields, or improved pastures, topsoil stripping shall be conducted in accordance with the FERC's Plan.
- On all actively cultivated lands, the trench would be excavated to sufficient depth to allow a minimum of 4 feet of soil cover between the top of the pipe and the final land surface after backfilling.
- Restoration and revegetation practices would follow those outlined in the FERC's Plan.
- MGT will mark and restore drain tiles affected by construction activities.

1.6.2.5 Road Crossings

The Eastern Extension Project will cross a total of 33 roadways. Table 1.6-2 provides the name, type, location by milepost, and anticipated crossing method for each of these roadways.

Boring will be used for crossing under all roadways, where feasible. Boring entails drilling a hole below the roadway through which the pipe will pass. First, a bore pit is dug on one side of the road and a receiving pit dug on the other. The bore pit is excavated to a depth equal to the depth of the ditch and is graded such that the bore will follow the grade of the pipe. A boring machine is lowered to the bottom of the bore pit and placed on supports. The machine cuts a shaft under the roadbed using a cutting head mounted on an auger. The auger rotates in a casing, both of which are pushed forward as the hole is cut. The pipeline is then pushed through the casing. The casing is removed and the area between the pipeline and the shaft is grouted, as required by permits.

If boring is not feasible due to topography or other construction constraints, the pipeline will be installed using the open-cut construction method. At least one lane of traffic will be kept open when constructing on or across lightly traveled residential streets. During the brief period when a road is completely cut, steel plates will be available on-site to cover the open area to permit travel by emergency vehicles. Traffic lanes and home access will be maintained except for the temporary periods essential for laying pipeline.

TABLE 1.6-2 Roadways Crossed By Pipeline Facilities				
Milepost	Roadway Name	Roadway Type (paved/unpaved)	Jurisdiction (City, State, etc.)	Construction Method (open cut/bore)
0.2	TGT Road	Paved	Sumner County	Bore
0.7	Highway 109	Paved	Sumner County	Bore
1.5	Woods Road	Paved	Sumner County	Bore
1.7	Private Road	Unpaved	Sumner County	Open Cut
1.9	L&N Railroad	N/A	Sumner County	Bore
2.1	Blue Door Road	Paved	Sumner County	Bore
2.8	Briley Lane	Paved	Sumner County	Bore
3.9	North Russell Street	Paved	Sumner County	Bore
5.3	Denning Ford Road	Paved	Sumner County	Bore
7.0	South Leath Road	Unpaved	Sumner County	Bore
7.9	Highway 52	Paved	Sumner County	Bore
8.5	South Leath Road	Paved	Sumner County	Bore
9.1	Butler Bridge Road	Paved	Sumner County	Bore
10.1	Private Road	Unpaved	Sumner County	Bore
11.1	Fowler Ford Road	Paved	Sumner County	Bore
12.2	Highway 174 (Dobbins Pike)	Paved	Sumner County	Bore
13.6	Womack Road	Paved	Sumner County	Bore
14.0	Gene Hill Road	Paved	Sumner County	Bore
14.3	Gill Hodges Road	Paved	Sumner County	Bore
14.7	Buttermilk Hollow Road	Paved	Sumner County	Bore
17.0	Rock Bridge Road	Paved	Sumner County	Bore
19.5	Highway 31E	Paved	Sumner County	Bore
19.8	Alexander Lane	Paved	Sumner County	Bore
21.0	Rock Springs Road	Paved	Sumner County	Bore
22.8	Old Hopewell Road	Paved	Sumner County	Bore
24.0	Homer Scott Road	Paved	Sumner County	Bore
24.4	Highway 231	Paved	Trousdale County	Bore
25.7	Templow Road	Paved	Trousdale County	Bore
26.9	Walnut Grove Road	Paved	Trousdale County	Bore
28.1	Highway 25	Paved	Trousdale County	Bore
29.7	Sulphur College Road	Paved	Trousdale County	Bore
30.2	Old Highway 25	Paved	Trousdale County	Bore
30.6	Private Road	Unpaved	Trousdale County	Open Cut

1.6.2.6 *Blasting*

MGT has determined that blasting will likely be required for the Eastern Extension Project due to the presence of shallow bedrock at several locations along the route (see Resource Report 6). Where bedrock is encountered, MGT construction crews will first attempt to fracture the rock with available heavy equipment and pneumatic jackhammers. If these measures prove unsuccessful, blasting techniques will be utilized. Blasting will be performed in compliance with all Federal and state regulations regarding the transportation, storage, and use of explosive materials.

Waterbody Crossings

There are several different construction methods that are used to install pipelines at waterbody crossings. The pipeline installation method used typically depends on the size and sensitivity of the waterbody. Construction and installation of the pipeline using any of the following procedures will greatly minimize or avoid potential impacts to surface waters and aquatic wildlife. This section provides a general description of the waterbody crossing methods proposed for the Eastern Extension Project.

Dry Crossing Methods

Dry crossing methods will be utilized at all waterbody crossings unless it is determined at the time of construction that utilization of the dry crossing techniques is not feasible. The dry crossing method consists of a standard dam and pump or dry flumed crossing. With both methods, stream flow is conveyed around the disturbed work area via a system of sand bag dams and pumps or sand bag dams and a flume pipe to create a “dry” work site and to maintain uninterrupted downstream flow of water. A plan view and additional information regarding the both the dry flumed and dam and pump waterbody crossing process including pump set up, dam installation, dewatering, and stream channel and bank restoration is included in Appendix 2G.

Open Cut Crossing Method

An open-cut crossing will involve trenching and installing the pipeline without isolating the construction work area from stream flow. This method would be utilized only if evaluation of the crossing characteristics at the time of construction determined that dry crossing would not be feasible. The objective of this method is to complete the crossing as quickly as practical to minimize the duration of impacts on aquatic resources.

The trench will be dug with a dragline bucket or large backhoe working from one or both banks. Except for the bucket, no other equipment will be allowed to work in the water. The excavated material will be placed in holding areas outside the riparian area on both sides of the river with filtering media used to prevent silt-laden water from returning to the stream. Preconstructed segments of pipe will then be pulled into the prepared trench by equipment on shore and the trench backfilled with the excavated material. If the mainline pipe has not already been installed, the ends will be left with plugs installed approximately 20-ft away from the river bank to prevent water from entering the pipe. This will allow the trench to be backfilled so the pipe crossing the stream can be tied into the mainline pipe at a later time.

Wetland Crossings

Construction across wetlands (any area that satisfies the requirements of the federal methodology for identifying and delineating wetlands) will typically be accomplished by conventional pipeline construction techniques and the additional procedures outlined in the FERC’s Procedures. These techniques include maintaining a 50-foot setback from the wetland for any additional temporary work space, leaving existing root systems intact where possible, installing erosion control devices to minimize sediment flow into adjacent wetland areas, using special seed mixes (i.e., ryegrass or recommended wetland seed mix) during restoration, and limiting the width of the permanent right-of-way that is ultimately maintained.

1.7 IMPLEMENTATION

To ensure that construction of the proposed facilities will comply with mitigation measures identified in these Resource Reports, the Commission's analysis of this Project, and other Federal and state permits, MGT will include implementation details in its construction drawings and specifications. In order to solicit accurate bids for construction activities, MGT will provide specifications and advance versions of the Construction Drawing Package to prospective contractors. MGT's selected contractors will receive copies of specifications and a Construction Drawing Package that includes pipeline, plant, and equipment drawings designated as being approved for construction and copies of environmental permits, certificates and/or clearances associated with the Eastern Extension Project.

To protect surface and groundwater resources in construction and support areas from inadvertent releases of fuel and other mechanical fluids, MGT has prepared a Project-specific Spill Prevention, Containment, and Countermeasure (SPCC) Plan. MGT will conduct training for its field construction personnel and construction contractor's personnel prior to and during all proposed activities. While this training will focus on implementation of the FERC's Plan and Procedures, it will also include instruction on the implementation of the SPCC Plan and other mitigation measures, as appropriate.

To ensure compliance with regulatory requirements, MGT will be represented on the Project by its Chief Environmental Inspector. The Chief Environmental Inspector will be assisted by one or more Environmental Inspectors on the individual pipeline spreads. The Environmental Inspector's duties will include ensuring compliance with environmental conditions attached to the FERC Certificate, MGT's environmental designs and specifications, and environmental conditions attached to other permits or authorizations. A sufficient number of copies of the Construction Drawing Package and environmental documents will be distributed to MGT's Inspectors and to each Contractor's supervisory personnel.

1.8 OPERATION AND MAINTENANCE

MGT will operate and maintain the pipeline facilities in compliance with United States Department of Transportation (USDOT) regulations specified at 49 CFR 192 and maintenance provisions of the FERC's Plan and Procedures. MGT does not anticipate a need to hire any additional personnel to operate the facilities constructed by the Eastern Extension Project.

Operational activity on the pipeline will be limited primarily to maintenance of the right-of-way and inspection, repair, and cleaning of the pipeline itself. Periodic aerial and ground inspections by pipeline personnel will identify soil erosion that may expose the pipe, stressed or dead vegetation that may indicate a leak in the line, conditions of the vegetative cover and erosion control measures, unauthorized encroachment on the right-of-way, such as building and other substantial structures, and other conditions that could present a safety hazard or require preventative maintenance or repairs. In addition, the pipeline's cathodic protection system will be monitored and inspected periodically to ensure proper and adequate corrosion protection. Timely and appropriate responses to conditions observed during the inspections will be taken as necessary.

Vegetation on the permanent right-of-way will be maintained by mowing, cutting, and trimming as necessary. Potential herbicide use will be limited to the control of potential nuisance plants on the right-of-way in accordance with agency application requirements. After installation, the right-of-way will be allowed to naturally revegetate; however, large trees will be periodically removed from within the new easement because the root systems of trees or deep-rooted shrubs could damage the pipeline's protective coating, obscure periodic surveillance, or interfere with potential repairs to the pipeline. As such, large trees and shrubs will not be allowed to grow within 25 feet of the pipeline in upland areas. The frequency

of the vegetation maintenance activities will depend upon the type of vegetation and the growth rate. Vegetation maintenance is not normally required in active agricultural or grazing areas.

The pipeline facilities will be clearly marked at line-of-sight intervals and at crossings of roadways, railroads, and other key points. The markers will clearly indicate the presence of the pipeline and provide a telephone number and address where a company representative could be reached in the event of an emergency or prior to any excavation in the area of the pipeline by a third party. MGT participates in all One-Call systems, including the Tennessee One Call Program.

1.9 FUTURE PLANS AND ABANDONMENT

MGT has no foreseeable plans for future expansion or abandonment of the facilities described in these Resource Reports.

1.10 PERMITS AND APPROVALS

MGT has identified the permits, clearances, and licenses that will be required for the Eastern Extension Project from a variety of Federal, state, and local agencies. These are identified in Table 1.10-1.

Permit applications will be submitted in a timely manner, so as to provide sufficient review and processing times for their respective jurisdictional agencies.

TABLE-1.10-1		
Environmental Permits, Approvals, and Consultations		
Agency	Permit/Approval/Consultations	Status
FEDERAL		
Federal Energy Regulatory Commission	Certificate of Public Convenience and Necessity under Section 7 of the Natural Gas Act.	Ongoing
Advisory Council on Historic Preservation	Comment on the Eastern Extension Project and its effect on historic properties under Section 106 of the National Historic Preservation Act	Ongoing
U.S. Army Corps of Engineers	Permit under Section 404 of the Clean Water Act (CWA)	Ongoing
U.S. Fish and Wildlife Service	Consultations under Section 7 of the Endangered Species Act, the Migratory Bird Treaty Act, and the Fish and Wildlife Coordination Act	Ongoing
U.S. Environmental Protection Agency Region 4	Storm Water Construction Permit and permit for discharge of hydrostatic test water under Section 402, CWA, National Pollutant Discharge Elimination System	Pending
Bureau of Alcohol, Tobacco, and Firearms	Explosives User's Permit	Pending
STATE		
Tennessee Department of Environment and Conservation	Water Quality Certification under Section 401 of the CWA Aquatic Resources Alteration Permit	Pending
Tennessee Division of Water Pollution Control	Hydrostatic Test Water Discharge Permit under National Pollutant Discharge Elimination System	Pending
Tennessee Fish and Game Department/Natural Heritage Program	Consultations for State-listed threatened and endangered species under Endangered Species Act or State Law	Ongoing

TABLE-1.10-1		
Environmental Permits, Approvals, and Consultations		
Agency	Permit/Approval/Consultations	Status
Tennessee Division of Archaeology	Consultations for cultural resources under Section 106 of the National Historic Preservation Act or State Law	Ongoing
Tennessee State Historical Division	Consultations for cultural resources under Section 106 of the National Historic Preservation Act or State Law	Ongoing

1.11 LANDOWNERS AND OFFICIALS

The names and addresses of all affected landowners are included in Volume IV, filed pursuant to Section 380.12(c)(10) of the Commission’s regulations. Separate lists, also included in Volume IV, contain the names and addresses of relevant public officials.