BEFORE THE

FEDERAL ENERGY REGULATORY COMMISSION

Enable Gas Transmission, LLC

DOCKET NO. PF13-10-000

Volume I of I

PUBLIC

P.O. Box 21734
Shreveport, LA 71151-1734
T 318 429-2700

August 2, 2013

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N. E.
Washington, D.C. 20426

Re: Enable Gas Transmission, LLC
Docket No. PF13-10-000
Central Arkansas Pipeline Enhancement Project

Dear Ms. Bose:

On March 18, 2013, Enable Gas Transmission, LLC (EGT)[1] submitted a request to use the Federal Energy Regulatory Commission's (Commission) pre-filing review process for its planned Central Arkansas Pipeline Enhancement Project (Project). The Commission subsequently approved EGT's request on March 28, 2013.

Pursuant to the pre-filing procedures and review process established in section 157.21 of the Natural Gas Act, 18 CFR §157.205, EGT hereby submits drafts of Resource Reports 2, 3, 8, and 9.[2] Additionally, EGT submits a supplement to the Agency Correspondence Appendix (Appendix 1D) from the previously submitted draft of Resource Report 1.

The items being filed herein are organized as follows:

Volume I: Public

Draft Resource Report 2 – Water Use and Quality
Draft Resource Report 3 – Vegetation and Wildlife
Draft Resource Report 8 – Land Use, Recreation, and Aesthetics
Draft Resource Report 9 – Air Quality and Noise
Supplement to Appendix 1D of Draft Resource Report 1

[1] Effective July 30, 2013, CenterPoint Energy Gas Transmission Company, LLC changed its name to Enable Gas Transmission, LLC.

[2] The Resource Reports attached hereto were drafted largely before the name change to Enable Gas Transmission, LLC became effective; therefore, the previous company name of CenterPoint Energy Gas Transmission Company, LLC is stated in the reports. Future submittals of the Resource Reports will be modified to reflect the new company name.

Respectfully submitted,

Enable Gas Transmission, LLC

B. Michelle Willis

B. Michelle Willis
Manager-Regulatory & Compliance

CENTERPOINT ENERGY GAS TRANSMISSION COMPANY, LLC

CENTRAL ARKANSAS PIPELINE ENHANCEMENT PROJECT
FERC DOCKET NO. PF13-10-000

DRAFT RESOURCE REPORT NO. 2

WATER USE AND QUALITY

PUBLIC

Prepared for:
CenterPoint Energy Gas Transmission Company, LLC
P.O. Box 21734
Shreveport, LA
71151

Prepared by:
AK Environmental, LLC
850 Bear Tavern Road, Suite 106
West Trenton, NJ
08628

August 2013

CENTRAL ARKANSAS PIPELINE ENHANCEMENT PROJECT
FERC DOCKET NO. PF13-10-000

RESOURCE REPORT NO. 2 – WATER USE AND QUALITY **SUMMARY OF COMMISSION FILING INFORMATION**	
INFORMATION	**FOUND IN**
1. Identify all perennial surface waterbodies crossed by the proposed project and their water quality classification. (§ 380.12 (d) (1))	Section 2.1.1, Table 2.1-1
2. Identify all waterbody crossings that may have contaminated waters or sediments. (§ 380.12 (d) (1))	Sections 2.1.2, 2.1.6
3. Identify watershed areas, designated surface water protection areas, and sensitive waterbodies crossed by the proposed project. (§ 380.12 (d) (1))	Sections 2.1.3, 2.1.4, 2.1.5
4. Provide a table (based on NWI maps if delineations have not been done) identifying all wetlands, by milepost and length, crossed by the project (including abandoned pipeline), and the total acreage and acreage of each wetland type that will be affected by construction. (§ 380.12 (d) (1 & 4))	Section 2.2.1, Table 2.2-1
5. Discuss construction and restoration methods proposed for crossing wetlands, and compare them to staff's Wetland and Waterbody Construction and Mitigation Procedures. (§ 380.12 (d) (2)).	Sections 2.2.2, 2.2.3
6. Describe the proposed waterbody construction, impact mitigation, and restoration methods to be used to cross surface waters and compare to the staff's Wetland and Waterbody Construction and Mitigation Procedures. (§ 380.12 (d) (2))	Sections 2.1.7, 2.1.8
7. Provide original National Wetlands Inventory (NWI) maps or the appropriate state wetland maps, if NWI are not available, that show all proposed facilities and include milepost location for proposed pipeline routes. (§ 380.12 (d) (4))	Appendix 2.A
8. Identify all U.S. Environmental Protection Agency (EPA) – or state-designated aquifers crossed. (§ 380.12 (d) (9))	Section 2.3.1
Additional Information Often Missing and Resulting in Data Requests	**Section Reference**
1. Identify proposed mitigation for impacts on groundwater resources.	Section 2.3.4
2. Discuss the potential for blasting to affect water wells, springs, and wetlands, and associated mitigation.	Section 2.3..4.8 and Table 2.3-2
3. Identify all sources of hydrostatic test water, the quantity of water required, methods for withdrawal, and treatment of discharge, and any waste products generated.	Section 2.1.8.7, 2.1.8.8, Table 2.1-4
4. If underground storage of natural gas is proposed, identify how water	N/A

RESOURCE REPORT NO. 2 – WATER USE AND QUALITY SUMMARY OF COMMISSION FILING INFORMATION	
INFORMATION	**FOUND IN**
produced from the storage field will be disposed.	
5. If salt caverns are proposed for storage of natural gas, identify the source locations, the quantity required, the method and rate of water withdrawal, and disposal methods.	N/A
6. For each waterbody greater than 100 feet wide, provide site-specific construction mitigation and restoration plans.	Section 2.1.1 and Resource Report 1, Appendix 1.A
7. Indicate mitigation measures to be undertaken to ensure that public or private water supplies are returned to their former capacity in the event of damage resulting from construction.	Section 2.3.4
8. Describe typical staging area requirements at waterbody and wetland crossings.	Sections 2.1.1.2 and table 2.1-2, Section 2.2.3.5 and table 2.2-3
9. If wetlands would be filled or permanently lost, describe proposed measures to compensate for permanent wetland losses.	Section 2.2.3
10. If forested wetlands would be affected, describe proposed measures to restore forested wetlands following construction.	Section 2.2.3
11. Describe techniques to be used to minimize turbidity and sedimentation impacts associated with offshore trenching, if any.	N/A

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ACRONYMS AND ABBREVIATIONS

ADH	Arkansas Department of Health
ARVE	Arkansas River Valley Ecoregion
APCEC	Arkansas Pollution Control and Ecological Commission
AWWCC	Arkansas Water Well Construction Commission
BMP	Best Management Practices
CEGT	CenterPoint Energy Gas Transmission Company, LLC
CFS	Cubic feet per second
CFR	Code of Federal Regulations
Commission	Federal Energy Regulatory Commission
CWA	Clean Water Act
DDCP	Directional Drilling Contingency Plan
DOT	Department of Transportation
EPA	U.S. Environmental Protection Agency
ETWS	Extra Temporary Workspace
FERC	Federal Energy Regulatory Commission
GIS	geographic information systems
GPM	Gallons per minute
HUC	Hydrologic Unit Code
HDD	Horizontal Directional Drill
Mi^2	square miles
MP	Milepost
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NWI	National Wetland Inventory
PEM	Palustrine emergent
PFO	Palustrine forested
Plan	FERC Upland Erosion Control, Revegetation, and Maintenance Plan
Procedures	FERC Wetland and Waterbody Construction and Mitigation Procedures
Project	Central Arkansas Pipeline Enhancement Project
PSS	Palustrine scrub-shrub
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan
ROW	Right-of-way
TMDL	Total Maximum Daily Load
UNT	unnamed tributary
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey

2.0 INTRODUCTION

CenterPoint Energy Gas Transmission Company, LLC ("CEGT"), in cooperation with its affiliated natural gas distribution business, CenterPoint Energy Resources Corporation d/b/a Arkansas Gas ("CERC"), is filing an application for a certificate of public convenience and necessity with the Federal Energy Regulatory Commission ("FERC" or "Commission") for the Central Arkansas Pipeline Enhancement Project ("Project"). The Project will provide for the continued safe, reliable, and efficient transportation of natural gas to the central Arkansas cities and towns of Conway, Mayflower, Maumelle, North Little Rock, and Little Rock. As part of the Project, CEGT is proposing the installation of approximately 28.5 miles of 12-inch-diameter natural gas pipeline and ancillary facilities in Pulaski and Faulkner Counties, Arkansas. The proposed pipeline, to be named Line BT-39, will be constructed primarily on new alignment, and will provide replacement transmission service for a portion of two existing CEGT natural gas pipelines (Lines B and BT-14). CEGT will also construct metering and appurtenances at seven new or modified locations along the Line BT-39 pipeline route and tie-in points to the existing Line BT-14 pipeline, as well as two 4-inch-diameter laterals (Lines BT-40 and BT-41) to provide natural gas deliveries to its distribution affiliate. As currently proposed, ownership of an approximately 12.4-mile-long segment of the existing Line BT-14 pipeline through the City of Conway would be transferred to CEGT's distribution affiliate, and an approximately 21.7-mile-long segment of the existing Line B pipeline, extending from Conway to North Little Rock, would be retired from service. Other minor ancillary facilities and small diameter pipelines (Line BM-1, Line BT-19, and a portion of Line BM-21) within the City of Conway would also be retired in association with the proposed Project. Refer to the Project locations maps (Figure 1.1-1) for a depiction of existing, proposed, and retirement pipeline facilities associated with the Project.

This Resource Report describes surface waterbodies, water supplies, watersheds, wetlands, and groundwater resources in the areas potentially affected by construction and operation of the proposed Project. It provides information to determine the expected impact of the proposed Project on water quality and use, as well as the effectiveness of the proposed mitigation measures.

2.1 SURFACE WATER RESOURCES

This section describes the surface water resources that are crossed by the proposed Project, regulations that apply to those resources, and measures proposed by CEGT to mitigate impacts to those resources.

2.1.1 Waterbody Crossings

The Commission defines waterbodies as "any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes." Perennial waterbodies are expected to contain water for most of the year and have flow. Intermittent streams include those that flow only seasonally or following rainfall events. Ephemeral waterbodies include those that only carry stormwater in direct response to precipitation, with water flowing only during and shortly after large precipitation events. Waterbodies were identified based on field surveys conducted in October 2012 and February 2013, aerial photography, and U.S. Geological Survey ("USGS") topographic maps. FERC-defined waterbodies along the proposed pipeline route are depicted on aerial alignment sheets provided as Appendix 1.A of Resource Report 1.

In accordance with the FERC's *Wetland and Waterbody Construction and Mitigation Procedures* ("Procedures"), waterbody crossings are defined as either minor, intermediate, or major crossings. Minor crossings are of waterbodies less than or equal to 10 feet wide at the water's edge. Intermediate crossings are of waterbodies greater than 10 feet wide but less than or equal to 100 feet wide. Lastly, major crossings are of waterbodies that are greater than 100 feet wide at the water's edge. This resource report discusses only those features that met FERC's definition of a waterbody at the time of survey, or are likely to meet FERC's definition at the time of construction.

2.1.1.1 Proposed Pipeline Facilities

The proposed pipeline facilities traverse a portion of the Arkansas River Valley Ecoregion ("ARVE") (APCEC, 2011) and will require 46 waterbody crossings, all associated with the proposed Line BT-39. They include 33 intermittent stream crossings, 12 perennial stream crossings, and one open water crossing. Three waterbodies will be crossed more than once by the proposed pipeline at different locations. Based on field surveys the proposed Line BT-39 pipeline will cross one major, 14 intermediate, and 31 minor waterbodies. The major waterbody is a water-filled borrow pit adjacent to, and presumably used in the construction of, Interstate 40. The proposed Line BT-40 and Line BT-41 routes do not cross any FERC-defined waterbodies. Table 2.1-1 provides detailed information on the waterbodies impacted by the proposed pipeline facilities.

The pipeline route passes near but avoids both Lake Carol-Dan reservoir and Davis Lake. Lake Carol-Dan is a public access lake located approximately 5.1 miles west of Conway. Davis Lake is an open waterbody impoundment of Tupelo Bayou, located in the Round Mountain region south of Conway, and used for recreation. One major waterbody crossing is proposed, associated with a water-filled borrow pit (W90PU) in Pulaski County. This borrow pit is located at approximately MP 18.5 and lies just west of Highway64/Interstate 40. This waterbody will be crossed by horizontal directional drill ("HDD") and therefore there will be no impacts to this resource.

CEGT plans to cross six FERC-defined waterbodies with HDD methods, including Tucker Creek (S73FA), an unnamed tributary ("UNT") to Tucker Creek (S72FA), UNT to Beaverdam Creek (S300FA), Palarm Creek (S61PU), and two tributaries to Palarm Creek (S58FA and S63PU). The remaining waterbodies crossed by the Project will be crossed using the open-cut technique. Waterbody crossing methods are described in detail in Section 1.4.2.2 of Resource Report 1 and summarized in Section 2.1.7 below.

TABLE 2.1-1

Waterbodies Crossed by the Project

Feature ID	Milepost (MP)	Waterbody Name[1]	Waterbody Type [2]	Crossing Width (feet)	State Water Quality Certification [3]	Proposed Crossing Method[4]
Proposed Line BT-39						
S100FA	2.18	UNT Lake Carol-Dan	Intermittent	8	E, G, H, I	Open cut
S102FA	2.35	UNT Lake Carol-Dan	Intermittent	15*	E, G, H, I	Open cut
S104FA	3.15	UNT Arkansas River	Intermittent	6	E, G, H, I	Open cut
S105FA	3.29	UNT Arkansas R.	Intermittent	15*	E, G, H, I	Open cut
S105FA-2nd crossing	3.42	UNT Arkansas R.	Intermittent	15*	E, G, H, I	Open cut
S105DFA	3.42	UNT Arkansas R.	Intermittent	8	E, G, H, I	Open cut
S108AFA	3.67	UNT Arkansas R.	Intermittent	8	E, G, H, I	Open cut
S79FA	5.24	UNT Tucker Creek	Intermittent	8	E, G, H, I	Open cut
S82FA	5.56	UNT Tucker Creek	Intermittent	10	E, G, H, I	Open cut
S73FA	6.17	Tucker Creek	Perennial	50*	E, G, H, I	HDD
S72FA	6.44	UNT Tucker Creek	Intermittent	6	E, G, H, I	HDD
S70FA	7.27	UNT Tupelo Bayou	Perennial	10	E, G, H, I	Open cut
S19BFA	8.82	UNT Tupelo Bay.	Intermittent	8	E, G, H, I	Open cut

TABLE 2.1-1

Waterbodies Crossed by the Project

Feature ID	Milepost (MP)	Waterbody Name[1]	Waterbody Type [2]	Crossing Width (feet)	State Water Quality Certification [3]	Proposed Crossing Method[4]
S24AFA	9.34	Tupelo Bayou	Perennial	12*	E, G, H, I	Open cut
S25AFA	9.51	UNT Tupelo Bay.	Intermittent	10	E, G, H, I	Open cut
S26AFA	9.77	Tupelo Bayou	Perennial	10	E, G, H, I	Open cut
S26BFA	9.80	UNT Tupelo Bayou	Intermittent	12*	E, G, H, I	Open cut
S29FA	10.29	UNT Tupelo Bayou	Intermittent	10	E, G, H, I	Open cut
S31FA	10.52	UNT Tupelo Bayou	Intermittent	8	E, G, H, I	Open cut
S1FA	11.20	Tupelo Bayou	Perennial	4	E, G, H, I	Open cut
S6AFA	12.01	Tupelo Bayou	Perennial	4	E, G, H, I	Open cut
S6BFA	12.02	UNT Tupelo Bayou	Perennial	4	E, G, H, I	Open cut
S89AFA	13.94	UNT Beaverdam Creek	Perennial	8	E, G, H, I	Open cut
S38FA	14.47	UNT Beaverdam Creek	Intermittent	10	E, G, H, I	Open cut
S39FA	14.80	Beaverdam Creek	Perennial	12*	E, G, H, I	Open cut
S300FA	15.02	UNT Beaverdam Creek	Intermittent	3	E, G, H, I	HDD
S403FA	15.55	UNT Beaver Creek	Intermittent	8	E, G, H, I	Open cut
S403FA- 2nd crossing	15.60	UNT Beaver Creek	Intermittent	8	E, G, H, I	Open cut
S58FA	17.45	UNT Palarm Creek	Intermittent	4	E, G, H, I	HDD
S61PU	17.95	Palarm Creek	Perennial	40*	E, G, H, I	HDD
W90PU	18.50	Unnamed Borrow Pit	NA	575**	NA	HDD
S63PU	18.67	UNT Palarm Creek	Perennial	15*	E, G, H, I	HDD
S42APU	19.31	UNT Palarm Creek	Intermittent	5	E, G, H, I	Open cut
S42BPU	19.32	UNT Palarm Creek	Intermittent	5	E, G, H, I	Open cut
S43PU	19.60	UNT Palarm Creek	Intermittent	10	E, G, H, I	Open cut
S40PU	20.31	UNT Palarm Creek	Intermittent	6	E, G, H, I	Open cut
S40PU- 2nd crossing	20.40	UNT Palarm Creek	Intermittent	6	E, G, H, I	Open cut
S41APU	20.32	UNT Palarm Creek	Intermittent	6	E, G, H, I	Open cut
S173PU	22.20	UNT Palarm Creek	Intermittent	4	E, G, H, I	Open cut
S179PU	24.04	UNT Pond	Intermittent	10	E, G, H, I	Open cut
S183PU	24.72	UNT White Oak Bayou	Intermittent	12*	E, G, H, I	Open cut

TABLE 2.1-1

Waterbodies Crossed by the Project

Feature ID	Milepost (MP)	Waterbody Name[1]	Waterbody Type [2]	Crossing Width (feet)	State Water Quality Certification [3]	Proposed Crossing Method[4]
S140PU	25.77	White Oak Bayou	Intermittent	20*	E, G, H, I	Open cut
S128BPU	27.43	Winifree Creek	Intermittent	12*	E, G, H, I	Open cut
S128PU	27.45	UNT Winifree Creek	Intermittent	25*	E, G, H, I	Open cut
S126CPU	28.24	UNT Newton Creek	Perennial	8	E, G, H, I	Open cut
S126PU	28.33	Newton Creek	Intermittent	30*	E, G, H, I	Open cut
Proposed Line BT-40						
None crossed						
Proposed Line BT-41						
None crossed						

Note: Rows above indicate stream crossings. There are 3 streams crossed by the pipeline more than one time, and those crossings are indicated by the same feature number.

1 UNT= Unnamed Tributary to Named Waterbody

2 Perennial stream: has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year.

Intermittent stream: has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water.

3 E Secondary Contact Recreation: This beneficial use designates waters where secondary activities like boating, fishing, or wading are involved. All waters within the Arkansas River Valley Ecoregion are designated for these uses.

G, H, I Domestic, Industrial and Agricultural Water: This use includes surface waters designated as domestic, industrial, and agricultural. All waters within the Arkansas River Valley Ecoregion are designated for these uses.

4 HDD = Horizontal Directional Drill:.

* Crossing width classifies the waterbody as an intermediate waterbody.

** Crossing width classifies the waterbody as a major waterbody,

2.1.1.2 Extra Temporary Workspace

CEGT has identified locations along the construction right-of-way ("ROW") where ETWS, including staging areas, will be required (see Resource Report 8, as well as the Project alignment sheets provided in Volume II of CEGT's application). The ETWS located adjacent to the construction ROW could be used for spoil storage, staging, equipment movement, material stockpiles, and pull string assembly associated with HDD installation. At waterbody crossings there is generally ETWS on both sides of the crossing. All ETWS will be returned to their preconstruction condition and former usage following completion of construction activities. In accordance with the setback requirements specified in Section V.B.2 of the FERC Procedures, ETWS will generally be located at least 50 feet away from the waterbody's edge, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. Exceptions to Section V.B.2 of the FERC Procedures are hereby requested where necessary for site-specific construction reasons. Table 2.1-2 below lists all ETWS areas within 50 feet of a waterbody, identifies which of these ETWS areas require a site-specific justification pursuant to Section V.B.2.b of the FERC Procedures, and provides justification for their location. As shown in the table, no ETWS is located within a waterbody; however, four are located within 50 feet of waterbodies and one requires a site-specific justification in accordance with the FERC Procedures.

TABLE 2.1-2

Extra Temporary Workspaces in or Within 50 Feet of Waterbody

ETWS ID	Approx. MP	Waterbody ID	Actively cultivated, rotated cropland, or other disturbed land?	Within Waterbody?	Within 50 Feet of Waterbody?	Site-Specific Justification Required?	Justification
116	12.02	S9AFA	Yes-ROW	No	Yes	No	Not applicable
165	15.55	S403FA	No	No	Yes	Yes	Workspace is needed due to bend in pipeline and need to accommodate 2 crossings of the stream. ETWS is on inside of bend.
203	20.31	S40PU	Yes-Ag	No	Yes	No	Not applicable
284	28.24	S126CPU	Yes-ROW	No	Yes	No	Not applicable

2.1.1.3 Pipe/Contractor Yards

CEGT has preliminarily identified the following three pipe storage/contractor yards that may be utilized during construction of the Project:

Contractor yard #1 (MP 14.82) – This contractor yard is located adjacent to the proposed BT-39 corridor, at the intersection of the replacement pipeline route and Luker Lane. It has been sited on 5.50 acres of pasture/hay field. There were no waterbodies identified on this site.

Contractor yard #2 (MP 5.75) – This contractor yard is located on the northern end of the proposed BT-39 line. It has been sited on approximately 2.07 acres of fallow/hay field to the west of Conway, approximately 0.4 mile north of MP 5.75. There were no waterbodies identified on this site.

Contractor yard #3 (MP 16.40) – This contractor yard is located approximately 0.8 mile southwest of MP 16.40. It has been sited on approximately 2.07 acres of hay field near Faulkner Meadow Road and an existing rail line. There are no waterbodies at this location.

2.1.1.4 Aboveground Facilities

In addition to the proposed and retirement pipelines, CEGT will install or modify six aboveground facility sites along the new Line BT-39, BT-40, and BT-41 pipelines, and will modify an existing aboveground facility site along CEGT's existing Line BT-14. The aboveground facilities are all Town Border Stations ("TBS"), and are described in more detail in Section 1.2.4 of Resource Report 1. Environmental surveys indicate that there are no waterbodies at these locations, and therefore no impacts to waterbodies are anticipated as a result of this work.

2.1.1.5 Access Roads

Section 1.2.5 of Resource Report 1 and Appendix 8.A and 8.B of Resource Report 8 describe the access roads associated with the Project. CEGT proposes to use 65 existing roads, totaling 42.1 acres, to provide access to the proposed pipeline ROWs and aboveground facilities during construction. Of these, 63 roads are temporary access roads to obtain access to the construction ROWs; one (1) is a new, permanent road constructed to provide permanent access to the Bryant Road TBS; and one (1) is an existing, permanent road that provides access to the existing Oak Grove TBS. Associated with the Line B retirement activities, CEGT proposes to use 37 existing access roads to provide temporary access to the proposed retirement work areas during construction. There are 11

waterbodies within 50 feet of the proposed Line BT-39 access roads. Three of these streams have existing culvert crossings. There are two waterbodies within 50 feet of the retirement pipeline access roads; one of them has an existing culvert crossing and the other has an existing wooden bridge crossing.

TABLE 2.1-3

Waterbodies within 50 Feet of Access Roads

Feature ID	Access Road Number	Waterbody Name	Waterbody Type [1]	Waterbody Width (feet)	Type of Access Road [2]
Line BT-39 Access Roads					
S1FA[4]	Line BT-39 AR-11.18	Tupelo Bayou	Perennial	3	Temporary
S6AFA[4]	Line BT-39 AR-11.5	Tupelo Bayou	Perennial	2	Temporary
S9AFA[5]	Line BT-39 AR-11.5	Tupelo Bayou	Intermittent	2	Temporary
S89AFA[4]	Line BT-39 AR-13.42	UNT to Beaverdam Creek	Perennial	0	Temporary
S59FA[3]	Line BT-39 AR-17.72	UNT to Palarm Creek	Intermittent	2	Temporary
S42APU[5]	Line BT-39 AR-19.33	UNT to Palarm Creek	Intermittent	2	Temporary
S42BPU[5]	Line BT-39 AR-19.33	UNT to Palarm Creek	Intermittent	2	Temporary
S40PU[3]	Line BT-39 AR-19.20	UNT to Palarm Creek	Intermittent	2	Temporary
S41APU[5]	Line BT-39 AR-19.20	UNT to Palarm Creek	Intermittent	2	Temporary
S41PU[5]	Line BT-39 AR-20.33	UNT to Palarm Creek	Intermittent	2	Temporary
S128PU[3]	Line BT-39 AR-27.48	Winifree Creek	Intermittent	0	Temporary
Retirement Line B Access Roads					
S125FA[3]	Line B AR-21	UNT to Gold Creek	Perennial	18	Temporary
S202FA[3]	Line B AR-26	UNT to Lake Conway	Perennial	1	Temporary

[1] Perennial stream: has flowing water year-round during a typical year water table is located above the stream bed for most of the year.

Intermittent stream: has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water.

Ephemeral waterbodies: those that only carry stormwater in direct response to precipitation, with water only flowing during and shortly after large precipitation events.

[2] The type of access road may be temporary or permanent, based on whether it will remain following construction.

[3] Access road stream crossing has an existing culvert or bridge.

[4] Stream has an existing low water crossing, no culvert or bridge.

[5] Stream within 50 feet but is not crossed by access road.

2.1.1.6 Retirement Work Areas

As described in Section 1.2.6 of Resource Report 1, CEGT proposes to retire some existing pipeline assets (Lines BM-1, BT-19, and portions of Line B and BM-21), and will transfer ownership of a segment of Line BT-14 to its distribution affiliate. The retired pipelines will be cut, capped, and grouted at improved road and railway crossings. In addition, existing aboveground facilities and other ancillary facilities such as rectifiers and pipeline markers along the pipeline segments to be retired will be removed. In general, retirement of the existing pipeline facilities and removal of the existing aboveground and ancillary facilities will require minimal ground disturbance, and all such ground disturbing activities will be confined to CEGT's existing and maintained pipeline ROWs or facility sites. There are no waterbodies present at the proposed retirement work areas.

2.1.2 Water Quality

Under the Clean Water Act ("CWA"), Section 303(c), the U.S. Environmental Protection Agency ("EPA") requires states to review, establish, and revise water quality standards for all surface waters within the state. To comply with this requirement, Arkansas has developed a classification system to describe the highest designated use(s) and associated minimum water quality requirements of identified surface waterbodies within the state. State and federal water quality standards are described in the following sections.

2.1.2.1 State Water Quality

The Arkansas Pollution Control and Ecology Commission ("APCEC") has established regulations that dictate water quality standards for surface waters within the state of Arkansas (APCEC, 2011). The APCEC recognizes 10 designated uses including:

(A) Extraordinary Resource Waters – a combination of the chemical, physical, and biological characteristics of a waterbody and its watershed, which is characterized by scenic beauty, aesthetics, scientific values, broad scope recreation potential, and intangible social values. There is one Extraordinary Resource Water ("ERW") in the vicinity of the Project, Cadron Creek.The creek is located approximately 2,000 feet west of the northern terminus of the proposed Line BT-39. Line B retirement activities come within closer proximity to Cadron Creek. These activities include the closing of a valve located 130 feet northwest of the creek, the removal of a river header located 110 feet southeast of the creek, and the grouting of the existing pipeline located under the creek. To protect water quality, CEGT will implement best management practices outlined in the FERC *Upland Erosion Control, Revegetation, and Maintenance Plan* ("Plan") and the FERC Procedures (Resource Report 1, Appendices 1.B and 1.C, respectively) during construction, post-construction restoration, and operation.

(B) Ecologically Sensitive Waterbody – a waterbody known to provide habitat within the existing range of threatened, endangered, or endemic species of aquatic or semi-aquatic life forms. There are no Ecologically Sensitive Waterbodies within the Project area.

(C) Natural and Scenic Waterways – a waterbody that has been legislatively adopted into a state or federal system. There are no Natural and Scenic Waterways within the Project area.

(D) Primary Contact Recreation – waters where full body contact is involved. Any streams with watersheds of greater than 10 square miles ("mi^2") are designated for full body contact. All streams with watersheds less than 10 mi^2 may be designated for primary contact recreation after site verification. There are no primary contact waters crossed by the Project.

(E) Secondary Contact Recreation – waters where secondary activities like boating, fishing, or wading are involved. All waters within the Project area qualify.

(F) Fisheries – waters which provide for the protection and propagation of fish, shellfish, and other forms of aquatic life. There are no trout waters within the Project area.

(G) Domestic Water Supply – water that will be protected for use in public and private water supplies. Conditioning or treatment may be necessary prior to use. All waters within the Project area qualify.

(H) Industrial Water Supply – water that will be protected for use as process or cooling water. Quality criteria may vary with the specific type of process involved, and the water supply may require prior treatment or conditioning. All waters within the Project area qualify.

(I) Agricultural Water Supply – waters that will be protected for irrigation crops and/or consumption by livestock. All waters within the Project area qualify.

(J) Other Uses – uses not dependent on water quality, such as hydroelectric power generation and navigation. None of the waters within the Project area are designated for Other Uses.

2.1.2.2 Federal Water Quality

Biennially, each state is required, under Section 305(b), to submit a report to the EPA describing the status of surface waters in the state. Waterbodies are assessed to determine if their designated use is "fully supported," "fully

supported but threatened," "partially supported," or "not supported" in accordance with its water quality standards. A use is said to be "impaired" when it is only partially supported or not supported at all. A list of waters that are impaired is required by Section 303(d) and included in the 305(b) Water Quality Inventory Reports.

EPA regulations at 40 Code of Federal Regulations ("CFR") 130.7 require that each 303(d) list be prioritized and identify waters targeted for Total Maximum Daily Load ("TMDL") development in the next two years. The list must be submitted every even-numbered year on the first of April. The *Arkansas 2012 Draft List of Impaired Waterbodies* was reviewed to determine the water quality status of the surface water crossed by the proposed Project. No impaired waterbodies are crossed by the proposed Project route or associated facilities.

Although no impaired waterbodies are crossed by the Project, one impaired waterbody, Stone Dam Creek, was identified approximately ½-mile east of the existing Line BT-14 pipeline route, ownership of which will be transferred to CEGT's distribution affiliate, CERC. Stone Dam Creek is listed in Category 4a, which are impaired or threatened waterbodies (streams) for one or more designated uses, but which do not require development of a TMDL because it has already been completed and approved by the EPA. Due to the ownership transfer of Line BT-14, no construction activities are proposed in this location, therefore no impacts to this stream are anticipated.

To protect water quality, CEGT will implement best management practices outlined in the FERC Plan and Procedures (Resource Report 1, Appendices 1.B and 1.C, respectively) during construction, post-construction restoration, and operation.

2.1.3 Public Watershed Areas

The proposed Project area is located within three watersheds: Lake Conway-Point Remove Watershed (8-digit Hydrologic Unit Code ["HUC"] 11110203), Cadron Creek Watershed (HUC 11110205), and Lower Arkansas-Maumelle Watershed (HUC 11110207).

All but the northernmost and southernmost portions of the new pipeline route fall within the Lake Conway-Point Remove Watershed. This watershed is approximately 1,144 square miles of which approximately 51 percent is forest cover. The watershed lies within the Arkansas River Basin and hosts a population of approximately 115,000 Arkansans, according to the 2000 Census (Arkansaswater.org, 2013). Within the Lake Conway-Point Remove Watershed, portions of the new pipeline route fall within either the Rocky Cypress Creek – Arkansas River (10-digit HUC 1111020305) or the Palarm Creek (10-digit HUC 1111020304) sub-watersheds.

The northernmost portion of the new pipeline falls within the Cadron Creek Watershed, which roughly follows the outline of the northern border of Conway and includes an area just south of Interstate 40, encompassing approximately 775 square miles. Within the Cadron Watershed, the northwest portion of the pipeline lies within the Lower Cadron Creek (10-digit HUC 1111020502) sub-watershed. The Cadron Creek Watershed has approximately 48% percent forest cover, and hosts a population of approximately 36,000 Arkansans (Arkansaswater.org, 2013).

The southernmost portion of the proposed pipeline route falls within the Lower Arkansas-Maumelle Watershed. This watershed lies within the Arkansas River Basin and is home to the City of Little Rock and approximately 340,000 Arkansans. Like the Cadron and Lake Conway-Point Remove Watersheds, land use in this area is comprised of just over 50 percent forest cover (Arkansaswater.org, 2013).

2.1.4 Sensitive Surface Waters

The proposed Line BT-39 route will not cross any state-designated Extraordinary Resource Waters ("ERW"), Ecologically Sensitive Waterbodies, or Natural and Scenic Waterways (APCEC, 2011). According to the National Park Service (NPS, 2013a and 2013b), no National Wild or Scenic Rivers are crossed by the proposed pipeline. However, Line B retirement activities are proposed near Cadron Creek, a state-designated ERW and a Nationwide Rivers Inventory-listed stream. These activities include closing a valve on Line B that is located 130 feet northwest of Cadron Creek, removing a river header that is located 110 feet southeast of Cadron Creek, and grouting the existing pipeline located under the creek.

No waters supporting state-designated trout fisheries will be crossed by the proposed Project; however, all lakes and reservoirs and streams are designated fisheries (APCEC, 2011). A stream's Arkansas River Valley fishery designation is based upon size. Seasonal fisheries are within streams where the watershed is less than 10 mi^2. Streams with watersheds greater than 10 mi^2, or which have discharges equal to or exceeding 1 cubic foot per second ("cfs"), are designated as having a Perennial Arkansas River Valley fishery (APCEC, 2011). Per discussions with the ADEQ (2011), since the proposed Project is located in the Arkansas River Valley Ecoregion and in close geographic proximity to the Arkansas River, general assumptions about seasonal and perennial fisheries can be made. As a general rule, ground water-influenced streams (*e.g.*, perennial) that carry water year round can be considered perennial fisheries. Alternatively, if there are periods of no flow in the streams, then these streams can be considered seasonal (*e.g.*, ephemeral and intermittent). Of the 46 streams crossed by the proposed pipeline Project and the 8 proposed access road crossings, 37 are considered Seasonal Fisheries and the remaining 17 are considered Perennial Fisheries. As discussed in Section 3.1.2 of Resource Report 3, the proposed pipeline route will not cross any waterbodies supporting fisheries of special concern. It is anticipated that all waterbody crossings will be completed within the June 1 to November 30 construction time window specified by the FERC Procedures for warmwater fisheries. If necessary, CEGT will obtain authorization from appropriate agencies to complete any in-stream activities outside the identified time windows.

2.1.5 Surface Water Intakes, Surface Water Protection Areas, Wellhead Protection Areas

CEGT consulted with the Arkansas Department of Health ("ADH") (ADH, 2013) concerning the proximity of any source water protection areas, surface water intakes, wellhead protection areas, or public water supply wells to the proposed Project. No surface water intakes or public water supply wells were identified that will be crossed by the Project. The ADH provided geographic information system ("GIS") shapefiles identifying that the northernmost portion of the Line BT-39 pipeline route (MP 0.00 to 0.06), as well as the Highway 64 TBS and two access roads, extend through the Conway Water System - Cadron Creek public water supply watershed and wellhead protection area. Additionally, ADH filed a letter with the FERC dated June 12, 2013 that noted a staff review had been made of Project information and ADH had no comment on the submittal. Cadron Creek is the public drinking water source for the Conway Water System, which serves the City of Conway. CEGT will ensure that proper Best Management Practices (BMPs) are followed during pipeline construction to avoid and minimize any impacts to the Conway Water System. Copies of relevant agency correspondence are included in Appendix 1.D of Resource Report 1.

2.1.6 Contaminated Sediments

The *Arkansas 2012 Draft List of Impaired Waterbodies* was reviewed to determine the water quality status of the surface water crossed by the proposed Project. The Section 303(d) report does not identify contaminated sediments in any of the waterbodies crossed by the proposed Project. Additional information on hazardous waste sites and contaminated sediments crossed by the Project is provided in Section 8.5.3 of Resource Report 8. As noted in that section, the ExxonMobil Pegasus pipeline ruptured on March 29, 2013 in the vicinity of the Northwoods subdivision in Mayflower, AR, approximately 200 feet west of the existing Line B retirement pipeline (MP 14.75). This site is currently under remediation; there are no known contaminated sediments within the Project work area.

2.1.7 Waterbody Crossing Methods

Construction methods will comply with the FERC Procedures, which are designed to minimize the extent and duration of construction-related disturbance within waterbody features. Waterbodies along the proposed pipeline route will be crossed using either the open-cut or HDD method. Dry open-cut crossing methods (*i.e.*, flume, dam-and-pump) are not proposed for this Project, although they may be considered if warranted by site-specific conditions at the time of construction. Table 2.1-1 identifies the proposed crossing method for each waterbody. Site-specific crossing plans for HDDs are provided in Volume II of CEGT's application.

CEGT plans to cross six FERC-defined waterbodies with HDD methods, including Tucker Creek (S73FA), a UNT to Tucker Creek (S72FA), UNT to Beaverdam Creek (S300FA), Palarm Creek (S61PU), and two tributaries to Palarm Creek (S58FA and S63PU). The remaining waterbodies crossed by the Project will be crossed using open-cut

construction methods. Waterbody crossing methods are described in detail in Section 1.4.2.2 of Resource Report 1 and summarized below.

Horizontal Directional Drill Method

The HDD method allows for trenchless construction across a waterbody by drilling a bore hole below the depth of the conventional pipeline lay and pulling the pipeline through the pre-drilled hole. The HDD method greatly reduces the risk of direct impacts on waterbodies, because it allows for pipe to be installed underneath the ground surface without disturbance of the stream bed or banks.

Installation of a pipeline by HDD is generally accomplished in three stages. The first stage consists of directionally drilling a small diameter pilot hole along the designed directional path. The second stage involves enlarging the pilot hole to a diameter suitable for installation of the pipeline. The third stage consists of pulling the pipeline back through the enlarged hole.

For most HDD crossings, electric-grid guide wires are hand-laid along the pipeline ROW to help guide the drill bit along the predetermined HDD route. The directional drilling rig will be set up in an approved workspace, and a small-diameter pilot hole will be drilled along a prescribed profile. Pilot hole directional control is achieved by using a non-rotating drill string with an asymmetrical leading edge. The asymmetry of the leading edge creates a steering bias, while the non-rotating aspect of the drill string allows the steering bias to be held in a specific position while drilling. If a change in direction is required, the drill string is rolled so that the direction of bias is the same as the desired change in direction. The actual path of the pilot hole is monitored during drilling by taking periodic readings of the inclination and azimuth of the leading edge.

Enlarging the pilot hole is accomplished by pre-reaming passes prior to pipeline installation. For a pre-reaming pass, reamers attached to the drill string at the exit point are rotated and drawn to the drilling rig, thus enlarging the pilot hole. Drill pipe is added behind the reamers as they progress toward the drill rig. This procedure insures that a string of pipe is always maintained in the drilled hole. During this process, bentonite clay drilling mud will be pumped into the hole continuously to provide lubrication, remove cuttings and maintain the integrity of the hole.

Pipe installation is accomplished by attaching the prefabricated pipeline pull section behind a reaming assembly at the exit point and pulling the reaming assembly and pull section back to the drilling rig. A swivel is utilized to connect the pull section to the leading reaming assembly to minimize torsion transmitted to the pipe. The pull section is supported using a combination of roller stands and pipe handling equipment.

Although the HDD method typically avoids impacts on water quality by precluding disturbance of the waterbody bed and banks, an inadvertent release of drilling fluid (sometimes referred to as a “frac-out”) could occur if 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. To minimize potential impacts of inadvertent releases of drilling fluid, CEGT has prepared a Directional Drilling Contingency Plan (“DDCP”), which will be provided in Resource Report 1, Appendix 1.B. The DDCP describes the procedures that will be used to monitor, contain, and clean up any potential releases of drilling fluid. Implementation of the procedures described in the DDCP will minimize the impacts of any potential inadvertent release of drilling fluid.

Open Cut Method

The open-cut method of construction will involve excavation of the pipeline trench across the waterbody, installation of a pre-fabricated segment of pipeline, and backfilling of the trench with native material. No effort is made to isolate flow from construction activities. Excavation and backfilling of the trench will be accomplished using backhoes or other excavation equipment operating from one or both banks of the waterbody. The following additional best management practices will apply to open-cut stream crossings:

- Equipment operating in the waterbody will be limited to that needed to construct the crossing;

- Excavated material will be stockpiled in the construction ROW at least 10 feet from the water's edge or in ETWS located at least 50 feet from the water's edge;
- Sediment barriers, such as silt fencing, staked straw bales, or trench plugs, will be installed to prevent spoil and sediment-laden water from entering the waterbody from adjacent upland areas;
- Stream crossings will be as close to perpendicular to the streams as possible to reduce the length of the crossing;
- A prefabricated segment of pipeline will be laid in the pipe trench across the waterbody bed;
- The pipeline may be weighted with concrete weights, screw anchors, and/or concrete coating to provide sufficient negative buoyancy to the pipe;
- All adjacent pipelines will be protected, as necessary;
- Excavated material from the trench generally will be used as backfill, unless federal or state permits specify otherwise;
- Waterbody banks will be restored to the original grade, and foreign objects will be removed from the waterbody; and
- The stream bottom will be returned to its original contour.

2.1.8 Waterbody Crossing Impacts and Mitigation

2.1.8.1 Proposed Pipeline Facilities

Pipeline Construction

Crossing of waterbodies using the open-cut method may result in minor, short-term impacts as a result of in-stream construction activities or construction on slopes adjacent to stream channels. The clearing and grading of stream banks, in-stream trenching, trench dewatering, and backfilling of the in-stream trench could affect water quality and in-stream habitat by increasing turbidity, sedimentation, and water temperature, as well as modifying aquatic habitat and decreasing dissolved oxygen levels. The use of heavy equipment or other vehicles in and near surface waterbodies without proper containment could introduce chemical contaminants, such as fuels and lubricants, into surface waters or could result in accidental spills during construction. These impacts will be localized and limited to the period of in-stream construction activities, including trenching, pipe installation, backfill, and restoration of the stream bed contours to pre-construction conditions. All of the minor waterbodies proposed to be open cut for the Project will be subject to the 24-hour limit for in-stream construction activities, and all of the intermediate waterbodies proposed to be open cut for the Project will be subject to the 48-hour limit for in-stream construction activities, as specified in the FERC Procedures. Only one major waterbody is crossed by the Project, using HDD methods.

The extent of the potential impacts resulting from increased sedimentation and turbidity will depend on the amount of material disturbed, the sediment grain size, stream velocity, and channel stability. These factors will determine the amount of suspended sediment and the downstream distance that the suspended sediment is transported. In general, where the streambed consists of fine materials, such as sand and silt, as is likely along the proposed pipeline route, the increase in turbidity and suspended sediments will be relatively greater when compared to locations where the streambed consists of coarser materials, such as gravel and cobble. However, stream gradients tend to be relatively low in the area of the proposed pipeline; thus, suspended sediments within these streams typically will be transported over short distances.

Increased turbidity can reduce light penetration into the water and thereby reduce photosynthetic activity and levels of DO in the water column. Organic materials suspended in the water can further reduce DO by increasing the

biochemical oxygen demand. Resuspension of sediments also can introduce contaminants, such as metals and nutrients bound to the sediments, into the water column. Use of the HDD method will avoid these impacts at six FERC-defined waterbodies with HDD methods, including Tucker Creek (S73FA), a UNT to Tucker Creek (S72FA), UNT to Beaverdam Creek (S300FA), Palarm Creek (S61PU), and two tributaries to Palarm Creek (S58FA and S63PU). The HDD method allows for the pipe to be installed underneath the ground surface without disturbance of the stream bed or banks; therefore, adverse impacts resulting from resuspension of sediments will be avoided at these waterbody crossings.

Removal of vegetation from riparian areas could cause an increase in surface runoff and erosion from the pipeline corridor. However, the use of temporary and permanent sediment controls (*e.g.*, silt fence and slope breakers) will minimize this impact by directing surface runoff to well vegetated areas along the sides of the construction ROW. Removal of riparian vegetation and the loss of associated shading at waterbody crossings could result in elevated water temperatures, but potential impacts are not expected to be significant because of the limited amount of stream bank canopy that will be cleared. Following construction, trees and shrubs within waterbody riparian areas will be allowed to reestablish themselves, except for a 10-foot-wide corridor centered over the pipeline, which may be annually maintained in an herbaceous state to facilitate periodic pipeline inspections.

When possible, pipeline construction at stream crossings will be conducted during low-flow periods, which will minimize sedimentation and turbidity and stream bank and bed disturbances and reduce the time it takes to complete in-stream construction. Disruption to water flow will be will be minimized, as will the suspension and deposition of sediments downstream of the crossing location. Adequate flow rates will be maintained in streams to limit the potential effects on aquatic life.

To minimize adverse impacts at stream crossings, CEGT will adopt and implement the FERC Plan and Procedures during construction, post-construction restoration, and operation of the proposed Project. Copies of the FERC Plan and Procedures are provided in Appendix 1.B and 1.C, respectively, of Resource Report 1. Measures outlined in these plans and procedures include, but are not limited to:

- Obtain all necessary permits from the United States Army Corps of Engineers (“USACE”) and state agencies prior to construction, and notify applicable state agencies at least 48 hours before commencing in-stream trenching;
- Use Environmental Inspectors during construction (*see Resource Report 1, Section 1.5*);
- Route the proposed pipeline as close to perpendicular to the axis of the waterbody channel as engineering and routing conditions permit, and minimize the number of individual crossings where waterbodies meander or have multiple channels;
- Limit the use of equipment within the waterbody to that necessary to construct the crossing, and utilize equipment bridges for passage of other construction equipment;
- Place spoil at least 10 feet away from the water’s edge, with installation of sediment barriers to prevent the flow of spoil or silt-laden water to the waterbody;
- Limit the duration of construction (including stabilization and re-contouring of banks, but not including rock-breaking activities) to 24 hours across minor waterbodies (10 feet wide or less) and 48 hours across intermediate waterbodies (between 10 feet and 100 feet wide), unless site-specific conditions make completion within the applicable period infeasible;
- Use temporary erosion and sediment control measures, such as sediment barriers and trench plugs; and
- Conduct restoration activities, including restoration of preconstruction bank contours, installation of slope breakers, and revegetation of disturbed riparian areas.

Construction activities at stream and river crossings also will be conducted in accordance with other applicable federal, state, and local regulations and permit requirements.

Following installation and backfilling of the pipeline, suspended sediments and turbidity levels will decline. Stream bed and bank contours will be restored to pre-construction conditions, and waterbody banks will be stabilized as soon as possible after construction activities have been completed to prevent sloughing. Permanent erosion control structures will be installed in accordance with the FERC Plan and Procedures, and temporary erosion control measures will be maintained to minimize erosion potential. Stabilization, restoration, and revegetation of the pipeline ROW and ETWS areas will be completed in accordance with the FERC Plan and Procedures. Following construction, waterbody crossings will be inspected to verify that temporary erosion controls are functioning properly and that revegetation is progressing appropriately.

Spills

Spills, leaks, or other releases of hazardous materials during construction of waterbody crossings could adversely impact water quality. To protect surface and groundwater resources from inadvertent releases of fuels, lubricants, and other petroleum products, CEGT will implement its Spill Prevention, Control, and Countermeasure Plan ("SPCC Plan"), which is provided as Appendix 1.C to Resource Report 1. The SPCC Plan describes measures to be implemented by CEGT personnel to prevent and, if necessary, control any inadvertent spills of these materials, which could affect water quality.

As noted above, use of the HDD method will reduce the risk of impacts to six waterbodies. The HDD method allows for the pipe to be installed underneath the ground surface without disturbance of the stream bed or banks. However, a temporary, localized increase in turbidity could occur in the event of an inadvertent release of drilling fluid (frac out). Drilling fluid to be used on this Project generally will be composed of fresh water with high-yield bentonite added to achieve the properties necessary to facilitate HDD operations. The EPA does not list bentonite as a hazardous substance, and no long-term adverse environmental impacts would be expected should a frac-out occur.

Due to the possibility of drilling fluid loss during HDD operations, CEGT has developed a DDCP, which will be included as Appendix 1.B of Resource Report 1. The DDCP will describe measures to prevent, detect, and respond to frac-outs, including, but not limited to, monitoring during drilling operations, availability of equipment and materials to contain and clean up drilling mud, containment and mitigation measures, notification requirements, and guidelines for abandoning the directional drill, if necessary.

In the event that a complete loss of circulation of drilling mud occurs during operation of the HDD, the contractor will immediately suspend drilling operations. The Environmental Inspector will be notified, as well as construction management personnel. A determination will be made as to the best way to mitigate the released fluid and, if possible, to seal the fracture. Drilling fluid that has surfaced will be contained in accordance with the DDCP. Depending on the location of the release, portable pumps, hand tools, sand, hay bales, silt fencing, earthen dam, or other structures may be used to prevent downgradient migration of the fluids. Once the fluids have been contained, they will be cleaned up and disposed of in accordance with proper waste disposal procedures.

If a release occurs without the complete loss of circulation, the contractor will reduce the volume of drill fluid and increase the yield point of the fluid. This procedure often will return the flow rate and allow drilling operations to continue.

Pipeline Operations

Operation of the new pipeline and aboveground facilities is not expected to result in any impacts on surface water use or quality, unless maintenance activities involving pipe excavation and/or repair are required in proximity to streams. In such a case, the impacts and mitigation will be similar to those previously described for pipeline construction activities.

2.1.8.2 Extra Temporary Workspaces

In accordance with the FERC Procedures, CEGT has attempted to locate ETWS and staging areas at least 50 feet away from the stream banks. In the setback areas, vegetation will not be cleared between the ETWS and the waterbody. The work area will be limited in size to the minimum area necessary to construct the waterbody crossing safely, accommodate any stockpile of excavated material from the trench, and accommodate the prefabricated pipeline crossing section. However, in some instances, the setbacks will not be able to be maintained due to site-specific construction limitations. In those cases, CEGT is providing site-specific justification pursuant to item V.B.2.b of the FERC Procedures. Table 2.1-2 specifically identifies the locations and justifications where ETWS setback exceptions are required.

2.1.8.3 Aboveground Facilities

There are no waterbodies present at the proposed aboveground facility sites; therefore, construction at these sites will have no impacts on surface water.

2.1.8.4 Access Roads

As identified in Table 2.1-3 above, there are 11 waterbodies within 50 feet of the proposed Line BT-39. Of the 11 waterbodies, three have low water crossings, three have existing culverts, and the remaining five are within 50 feet but not directly crossed by an access road. The retirement Line B access roads include only two waterbody crossings, one of which has an existing culvert and one of which has a wooden bridge crossing. No long-term impacts are expected from the use of these access roads.

2.1.8.5 Pipe/Contractor Yards

There are no FERC-defined waterbodies present at the proposed contractor yard sites; therefore, use of these areas will have no impacts on surface water.

2.1.8.6 Retirement Work Areas

There are no waterbodies present at the proposed retirement work areas; therefore, construction at these sites will have no impacts on surface water.

2.1.8.7 Hydrostatic Test Water Withdrawal and Discharge

In compliance with the United States Department of Transportation (“DOT”) requirements per 49 CFR Part 192 and Section VII of the FERC Procedures, CEGT will test the pipeline and aboveground facility piping hydrostatically prior to putting it in service. Hydrostatic testing will occur following backfilling, and each pipeline segment to be installed by HDD also will be pre-tested prior to installation. Withdrawal and discharge of hydrostatic test water will be completed in accordance with the FERC Procedures and other applicable permits. CEGT will obtain coverage under the appropriate National Pollutant Discharge Elimination System (“NPDES”) permit prior to conducting hydrostatic testing.

Upon completion of each test, it is anticipated that hydrostatic test water will be discharged overland along the edges of the construction right-of-way using energy dissipation devices to minimize erosion and sedimentation. Test water will contact only new pipe, and currently there are no plans to add chemicals to the water. The water will be sampled prior to discharge and tested to determine suitability for discharge, as required by the applicable NPDES permit. If treatment of hydrostatic test water is found to be required, treatment procedures will be implemented prior to discharge. After completion of hydrostatic testing, the new pipeline will be cleaned and dried using pipeline pigs that are propelled through the pipeline with compressed air. Once cleaned and purged of air, the pipeline will be packed with natural gas.

The anticipated sources, discharge locations, discharge rates, and volumes of hydrostatic test water, are provided in Table 2.1-4.

TABLE 2.1-4

Anticipated Hydrostatic Test Water Source and Discharge Information

Facility	Source	Approximate Discharge Location (MP)	Approximate Discharge Rate (gal/min)	Approximate Volume (gal)
Pipeline				
BT-39	Municipal Conway	MP 18	500	283,284
BT-40	Municipal Mayflower	MP 27.5	200	140
BT-41	Municipal Mayflower	MP 23.5	200	975
HDD Test Sections				
UCPR Railroad and Highway 64	Municipal Conway	MP 0.4	200	4,087
Tucker Creek	Municipal Conway	MP 6	200	14,640
Luker Lane and UNT to Beaverdam Creek	Municipal Conway	MP 15	200	6,368
Center Street and Railroad	Municipal Mayflower	MP 16	200	2,848
Tributary to Palarm Creek	Municipal Mayflower	MP 18	200	9,760
Palarm Creek	Municipal Mayflower	MP 18	200	9,150
Borrow Pit	Municipal Mayflower	MP 18	200	8,540
Interstate 40	Municipal Mayflower	MP 20	200	9,740
Aboveground Facilities/Fabrications				
BT-39 Hwy 64	Municipal Conway	MP 0	200	800
BT-14 Shoemaker Circle	Municipal Conway	MP 110.5	200	400
BT-39 Bryant Road	Municipal Conway	MP 7.5	200	400
BT-39 Mayflower Hwy 365	Municipal Mayflower	MP 17	200	500
BT-41 Morgan	Municipal Mayflower	MP 0.25	200	300
BT-40 James Road	Municipal Mayflower	MP 0.04	200	300
BT-39 Oak Grove	Municipal Mayflower	MP 28.5	200	600

2.1.8.8 Dewatering

Pipeline installation may require localized pipeline trench, road bore, and HDD site dewatering. The volumes and rates of these dewatering operations will not be extensive enough to affect the underlying aquifers. The amount of dewatering required will be reduced by isolating sections of the trench so that it can be dewatered in an efficient manner. CEGT proposes to discharge water from dewatering activities into well-vegetated upland areas. If vegetation is insufficient, or if water must be discharged such that it will run into waterbodies, CEGT will use hay bale/silt fence filtering structures, as described in FERC's Plan and Procedures). The hay bale structure will capture a significant volume of solids during discharge, as well as decrease the impacts from erosion. Implementation of these procedures and use of dewatering structures at stream crossings will minimize turbidity and erosion and reduce the risk of groundwater impacts during dewatering operations.

2.2 WETLANDS

According to Section 404 of the CWA, jurisdictional waters of the U.S., including wetlands, are provided certain protections. The term "waters of the United States" refers to open waters or watercourses that are non-vegetated. Wetland is the collective term for swamps, marshes, bogs, wet meadows, and similar areas that are transitional communities situated between upland and aquatic communities, where the vegetation and soil substrate are influenced by intermittent to permanent saturation or flooding. Wetlands are valuable resources that help to improve

water quality, reduce flood and storm damage, provide important fish and wildlife habitat, and support outdoor recreational activities, such as hunting and fishing. Impacts resulting from construction activities in wetlands often differ from those in uplands.

The CWA authorizes the Secretary of the Army, acting through the USACE, to regulate the filling of waters of the U.S. and disturbance of wetlands. The Environmental Laboratory of the USACE developed the *USACE Wetlands Delineation Manual* (USACE, 1987) to set technical guidelines and methods to identify and delineate wetlands using a multi-parameter approach. In accordance with this methodology, the following three parameters are diagnostic of wetlands: (1) the vegetation consists predominately of hydrophytes; (2) the substrate is predominately undrained, hydric soils; and (3) the substrate is saturated with water or covered by shallow water for a prolonged period during the growing season. It is required that, under normal circumstances, all three of these conditions be met for an area to be defined as a wetland.

Wetlands and waters of the U.S. considered jurisdictional by the USACE include waters that may impact interstate commerce, according to the application of 33 CFR Part 328 and the *USACE Wetlands Delineation Manual* under the authority of the CWA (USACE, 1987). Storm water management swales, ponds, and outlet areas, as well as construction-related ponding, may or may not be considered jurisdictional waters of the U.S., according to specific conditions and professional interpretation of the *USACE Wetlands Delineation Manual*.

2.2.1 Wetland Resources

In accordance with the methodology set out in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region: Version 2* (USACE, April 2012), CEGT identified wetland areas along the proposed route by field delineation surveys conducted in October 2012 and February 2013. Table 2.2-1 presents the location, classification, crossing length, and area affected by construction and operation of the pipeline for each wetland crossed. Delineated wetlands along the proposed pipeline route are depicted on aerial alignment sheets provided as Appendix 1.A of Resource Report 1. The field delineation report and mapping are included as Appendix 2.A of this report. Designations for each type of wetland follow the classifications developed by the U.S. Fish and Wildlife Service (Cowardin *et al.*, 1979).

Three broad classes (Cowardin *et al.*, 1979) of palustrine (freshwater) wetland systems are present in the Project area, including forested ("PFO"), scrub-shrub ("PSS"), emergent ("PEM"), and open water ("POW"). Descriptions of wetland cover types are provided below, and habitat descriptions are presented in Resource Report 3. Within the proposed Line BT-39 portion of the Project, there are 22 PFO wetlands, 1 PSS wetland, 14 PEM wetlands, 2 POW wetlands, 2 PFO/PSS/PEM wetlands, and 2 PFO/PEM wetlands. Three PEM wetlands are impacted by the Line B retirement work areas.

Palustrine Forested Wetlands

Forested ("PFO") wetlands are dominated by woody vegetation that is at least 6 meters tall (Cowardin *et. al.*, 1979). Based on the field survey data, construction of the proposed Project will affect a total of approximately 2.04 acres of PFO wetlands (see Table 2.2-1). During operation, a portion of the permanent ROW will be maintained clear of trees and woody shrubs to allow for ongoing pipeline inspection and maintenance, a requirement of 49 CFR 192. Specifically, a corridor centered on the pipeline and up to 10 feet wide will be maintained in an herbaceous state. In addition, trees that are located within 15 feet of the pipeline with roots that could compromise the integrity of the pipeline coating may be selectively cut and removed from the permanent ROW. Therefore, operation of the new pipeline will result in a permanent conversion of 0.79 acre of PFO wetlands to either PSS or PEM wetlands within the maintained portion of the permanent easement. Dominant vegetation in the PFO wetlands along the proposed route generally includes red maple (*Acer rubrum*), willow oak (*Quercus phellos*), green ash (*Fraxinus pennsylvanica*), and persimmon (*Diospyros virginiana*).

TABLE 2.2-1

Wetlands Impacted by the Project

Wetland ID	Approx. MP	Wetland Classification[1]	Crossing Length (ft)[2]	Construction Impacts (ac)[3]	Operation Impacts (ac)[4]
Proposed Line BT- 39					
W101FA	0.01	PEM	246.62	0.33	0.00
W102FA	0.07	PEM	242.34	0.33	0.00
W104FA[5]	0.32	PFO	62.56	0.00	0.00
W71FA	4.80	PFO	35.68	0.04	0.03
W80FA	5.27	PFO	37.40	0.16	0.04
W81FA**	5.32	POW	0.00	<0.01	0.00
W70FA[5]	6.29	PFO**	0.00	0.00	0.00
		PSS	779.50	0.00	0.00
		PEM	287.50	0.00	0.00
W69FA**	6.67	PEM	0.00	0.01	0.00
W68FA	7.37	PEM	204.23	0.33	0.00
W13FA	8.28	PFO	14.20	0.02	0.01
W18FA	8.79	PFO	48.05	0.04	0.03
W19FA	8.83	PEM	25.00	0.02	0.00
W24FA	9.34	PFO	0.06	0.02	<0.01
W38FA	14.32	PEM	0.00	0.08	0.00
		PSS	219.00	0.28	0.05
		PFO	119.41	0.19	0.08
W39FA	14.54	PFO	218.70	0.36	0.14
W53FA[5]	15.03	PEM	92.50	0.00	0.00
		PFO	168.82	0.00	0.00
W408FA	15.25	PFO	240.84	0.41	0.17
W407FA**	15.53	PEM	0.00	0.03	0.00
W405FA	16.01	PFO	24.00	0.05	0.02
W301FA	16.02	PFO	169.71	0.09	0.07
W404FA	16.07	PFO	17.10	0.06	0.02
W403FA	16.19	PFO	35.44	0.07	0.02
W402FA[5]	16.29	PFO	21.84	0.00	0.00
W400FA	16.39	PFO	52.31	0.26	0.05
W58FA**	16.84	PFO	0.00	0.01	0.01
W59FA	17.24	PEM	15.03	0.26	0.00
W60FA	17.33	PFO	62.65	0.05	0.04
W61FA[5]	17.50	PFO	620.00	0.00	0.00
		PEM	1,390.70	1.28	0.00
W66PU	18.13	PEM	612.08	0.89	0.00

TABLE 2.2-1

Wetlands Impacted by the Project

Wetland ID	Approx. MP	Wetland Classification[1]	Crossing Length (ft)[2]	Construction Impacts (ac)[3]	Operation Impacts (ac)[4]
W64PU	18.48	PFO	30.50	0.02	0.02
W90PU[5]	18.50	POW	590.00	0.00	0.00
W45PU[5]	20.76	PEM	44.00	0.00	0.00
W46PU[5]	20.78	PFO	116.21	0.00	0.00
W48PU	20.95	PFO	0.00	0.06	0.00
W411PU**	24.82	PFO	0.00	0.03	0.00
W120PU	24.38	PSS	18.54	0.02	<0.01
W121PU	24.45	PFO	62.86	0.10	0.04
W113PU	25.45	PEM	0.00	<0.01	0.00
W410PU	28.25	PEM	77.20	0.04	0.00
W109PU**	28.39	PEM	9.40	0.05	0.00
			Proposed Line BT-39 Subtotal	**5.99**	**0.84**
Proposed Line BT-40					
None crossed					
Proposed Line BT-41					
None crossed					
Extra Temporary Workspaces					
W61FA	17.50	PEM	N/A	0.85	0.00
			ETWS Subtotal	**0.85**	**0.00**
Retirement Line B Pipeline					
W200PU	7.44	PSS	30	0.02	0.00
W108FA	24.64	PEM	9.23	0.02	0.00
W104FA	26.47	PFO	2.4	<0.01	0.00
			Retirement Line B Subtotal	**0.04**	**0.00**
			Totals by Wetland Classification:		
			POW	**<0.01**	**0.00**
			PEM	**4.51**	**0.00**
			PSS	**0.32**	**0.05**
			PFO	**2.04**	**0.79**
			PROJECT TOTAL	**6.88**	**0.84**

[1] Classification Definitions: PEM-Palustrine Emergent; PSS-Palustrine Scrub-Shrub; PFO-Palustrine Forested. Some wetlands are within Mixed Communities and may have more than one Classification assigned to the

TABLE 2.2-1

Wetlands Impacted by the Project

Wetland ID	Approx. MP	Wetland Classification[1]	Crossing Length (ft)[2]	Construction Impacts (ac)[3]	Operation Impacts (ac)[4]

feature, therefor will have impact calculation associated with each class.

[2] In order to maintain consistency, the crossing length provided represents the total wetland crossing length along the centerline. Subdivisions of the crossing length for each classification type of the wetland are not provided, because not all the divisions or classification types of the wetland are crossed by the centerline.

[3] Construction impacts on wetlands along the proposed pipeline ROW are based on a 65 to 75-foot-wide construction ROW, except in areas encompassed by horizontal directional drill (HDD) crossings, which will not require construction right-of-way between the HDD entrances and exits.

[4] Impacts in this column represent a permanent conversion of PFO wetlands to PEM or PSS wetlands and PSS wetlands to PEM wetlands within the permanent ROW for the proposed Project. There will be no operation impacts on PEM wetlands as these wetlands will revert back to the same type following construction. Operation impacts on PSS wetlands reflect the permanent conversion of PSS wetlands to PEM wetlands within the 10-foot-wide corridor over the pipeline that will be maintained in an herbaceous state. Conversion impacts on PFO wetlands are based on a 30-foot-wide corridor, due to the potential for selective thinning of trees within 15 feet of the pipeline with roots that could compromise the integrity of the pipeline coating.

[5] These features are crossed by HDD.

**Feature not crossed by centerline.

PalustrineScrub-Shrub Wetlands

Construction of the proposed Project will affect 0.32 acre of PSS wetlands temporarily. During operation, the permanent ROW will be maintained clear of trees and woody shrubs to allow for ongoing pipeline inspection and maintenance, a requirement of 49 CFR 192. Specifically, a corridor centered on the pipeline and up to 10 feet wide will be maintained in an herbaceous state within PSS wetlands. Therefore, operation of the new pipeline will result in a permanent conversion of approximately 0.05 acre of PSS wetlands to PEM wetlands. Vegetation in the PSS wetlands observed along the Project corridor includes sweetgum saplings (*Liquidambar styraciflua*), *Acer rubrum* saplings, black willow (*Salix nigra*), and buttonbush (*Cephalantus occidentalis*).

Palustrine Emergent Wetlands

Construction of the proposed Project will affect 4.51 acres of PEM wetlands temporarily. However, there will be no permanent impact on PEM wetlands along the pipeline ROW, as these areas will revert back to the same type following construction. Herbaceous species found in these wetlands include variable softrush (*Juncus effusus*), sedges (*Carex* spp.), woolgrass (*Scirpus cyperinus*), beggarticks (*Bidens* spp.), asters (*Boltania* spp.), and sphagnum moss.

Palustrine Open Water Wetlands

Construction of the proposed Project will affect less than 0.01 acre of POW. There will be no permanent impact on POW wetlands, as these areas will revert back to the same type following construction. POW wetlands, also known as unconsolidated bottom wetlands, occur where vegetation is absent over the majority (70%) of the wetland. The substrate consists of mud, sand, cobble, gravel, or organic matter. Water depths are less than 6.6 feet deep. Small ponds are grouped into this category.

2.2.2 Wetland Crossing Methods

CEGT will construct wetland crossings in accordance with the FERC Procedures and other applicable federal and state permit requirements. Wetland crossing techniques are described in Section 1.4.2.1 of Resource Report 1. Wetland conditions along the construction corridor likely will dictate the use of either conventional open ditch lay or

open ditch push/float lay. Selection of the most appropriate method will depend on site-specific weather conditions, inundation, soil saturation, and soil stability at the time of construction. The conventional open ditch lay method will be the most frequently used technique for installation of the pipeline in wetlands. The push/float lay method will be used in inundated or saturated wetland areas that can support this technique. Selection of the push/float method will be decided during construction by the construction supervisor and the Environmental Inspector, depending on the conditions encountered at the time of construction.

2.2.3 Wetland Impacts and Mitigation

As shown in Table 2.2-1, construction of the proposed Project will affect a total of 6.88 acres of wetlands, of which approximately 2.04 acres are PFO, 4.51 acres are PEM, and 0.32 acre is PSS. Of the 6.88 acres of wetlands impacted during construction, only a total of 0.84 acre will be permanently impacted by operations. The 0.84 acre of permanent impact is entirely associated with the conversion of PFO and PSS wetlands as a result of ROW maintenance for the proposed Line BT-39. CEGT anticipates that permanent impacts to forested and scrub shrub wetlands will be mitigated by purchasing credits from an approved mitigation bank.

This section further describes the construction and operational impacts and mitigation to wetlands by Project component.

2.2.3.1 Proposed Pipeline Facilities

The USACE requires that all appropriate and practicable actions be taken to avoid or minimize wetland impacts, pursuant to its Section 404(b) (1) guidelines, which restrict discharges of dredged or fill material where a less environmentally damaging and practicable alternative exists. All wetland crossings will be subject to review by the USACE to ensure that wetland impacts are fully identified and that appropriate wetland restoration and mitigation measures are identified. CEGT also will comply with all conditions of the Section 404 permit authorizations that may be issued by the USACE. In order to minimize wetland disturbance, operation of construction equipment will be limited to that needed to clear the ROW, dig the trench, fabricate the pipe, install the pipe, backfill the trench, and restore the ROW. A detailed description of the construction and mitigation measures for wetlands and waterbodies also is provided in the FERC Procedures.

Pipeline construction will result in both short- and long-term alterations of the vegetative cover in wetlands along the proposed ROW. A summary of temporary and permanent wetland impacts by wetland type is provided in Table 2.2-1. In the short term, construction activities will diminish the recreational and aesthetic value of wetlands through clearing, trenching, spoil placement, vehicle traffic, and related construction disturbances. Wetland functions, such as erosion control, buffering and flood flow attenuation, and sediment and nutrient retention also will be affected by construction. These effects typically will be greatest during and immediately following construction.

Other types of impacts associated with construction of the pipeline could include temporary changes to wetland hydrology and water quality. Excavation of the pipeline trench during the conventional open ditch construction, installation of the pipe, and backfill of the trench could affect the rate and direction of water movement within wetlands. In addition, excavation activities could alter perched water tables by disturbing impermeable soil layers. These disturbances could adversely affect wetland hydrology and revegetation by creating soil conditions that might not support wetland communities and hydric vegetation at preconstruction levels. Temporary stockpiling of soil and the movement of heavy machinery across wetlands also could lead to inadvertent compaction and furrowing of soils, which could alter natural hydrologic patterns, inhibit seed germination, and increase seedling mortality. Altered surface drainage patterns, storm water runoff, runoff from the trench, accidental spills, and discharge of hydrostatic test water also could negatively affect water quality by increasing the potential for siltation and turbidity resulting from construction activities.

During clearing, temporary erosion control measures will be installed between upland construction areas and wetlands to prevent sedimentation of wetlands. To avoid excessive disturbance to wetland soils and the native rootstock, stump removal, grading, and excavation within wetland areas will be limited to the area immediately over the trench line unless grading or stump removal is required to provide safe working conditions. Trench plugs will be

installed in upland slopes adjacent to wetlands to prevent trench erosion. Trench plugs also will be installed at the edges of wetlands where the potential to drain the wetlands exists. Any confining layers that were breached during construction will be restored during backfilling. Special construction techniques will be used in saturated wetlands, including use of low ground pressure equipment and timber construction mats and/or timber riprap. Concrete coated pipe or weights will be used during construction to ensure that the pipe does not float in saturated conditions. As previously discussed, CEGT will implement its SPCC Plan during construction to minimize the potential for spills, and any impacts from such spills.

To preserve wetland rootstock in unsaturated wetlands, up to 12 inches of topsoil will be removed from the trench line and stored separately from subsoil. This topsoil material will function as a seed bank for the germination of wetland plants. Failure to properly segregate soils during construction could result in mixed soil layers, which could alter biological components of the wetland and affect the reestablishment of native wetland vegetation. Topsoil will not be stripped in saturated wetlands, in wetlands where no topsoil layer is evident, or in wetlands where the topsoil depth exceeds the depth of the trench.

CEGT will minimize impacts by using the construction techniques described in Section 1.4.2 of Resource Report 1, implementing the measures in the FERC Procedures, and complying with the conditions of applicable permits. CEGT will use the minimum construction equipment necessary within wetlands for clearing, trench excavation, pipe fabrication and installation, trench backfilling, and restoration activities. If standing water or saturated soil conditions are present, or if construction equipment causes ruts or mixing of the topsoil and subsoil, construction equipment operating in wetland areas will be limited further to the use of low-ground-pressure equipment or normal equipment operating from timber riprap or prefabricated equipment mats.

As mentioned previously, CEGT also will minimize impacts on wetlands by implementing the measures identified in FERC's Procedures. These measures include, but are not limited to:

- Marking wetland boundaries and buffers in the field until construction is complete;
- Limiting tree stump removal and grading to the area directly over the pipeline trench, unless it is determined that safety-related construction constraints require grading or removal of tree stumps from under the working side of the construction ROW;
- Stripping topsoil from the area directly over the trench line to a maximum depth of 12 inches in unsaturated soils;
- Minimizing the amount of time that topsoil is segregated and the trench is open;
- Using sediment barriers to prevent sediment flow into a wetland;
- Dewatering trenches in a way that does not cause sedimentation in a wetland;
- Using trench breakers to ensure maintenance of the original wetland hydrology;
- Prohibiting the storage of hazardous materials and re-fueling within 100 feet of a wetland; and
- Restoring preconstruction contours and vegetation.

Following construction, timber mats and/or timber riprap will be removed, and the contours will be returned as close to pre-existing condition as possible. Permanent erosion controls, including terraces, interceptor diversion devices, rock riprap, and vegetative cover, may be utilized on adjacent upland areas to minimize long-term sedimentation of the wetlands. Permanent erosion controls, which may alter hydrology, will not be installed within wetland boundaries. Energy dissipation devices may be installed at the down-slope end of surface water diversion devices to prevent sediment from leaving the ROW and entering wetlands.

CEGT will revegetate wetlands in accordance with the FERC Procedures and will consult with the USACE as part of the Section 404 CWA permitting process regarding mitigation for wetland impacts associated with the proposed Project. Impacts on PSS wetlands will be mostly short term with regeneration likely to occur within two to four years. PEM wetlands, which can regenerate more rapidly, typically will be affected only temporarily and may become reestablished in one or two growing seasons. Due to the relatively long period required for PFO wetlands to regenerate, up to 15 years or more, impacts on these wetland types will be long term.

CEGT will monitor the success of wetland revegetation annually for the first three years after construction or until wetland revegetation is considered successful. Revegetation will be considered successful if the cover of herbaceous and/or woody species is at least 80 percent of the type, density, and distribution of the vegetation in adjacent wetland areas that were not disturbed by construction. If revegetation is not successful at the end of three years, a remedial revegetation plan will be developed and implemented in consultation with a professional wetland ecologist. The remedial revegetation plan will serve as a guide to actively revegetate the wetland with native wetland herbaceous and woody plant species. Revegetation efforts will be continued until revegetation is successful. Vegetation management in wetlands during operation also will be performed in accordance with the FERC Procedures, which means that vegetation maintenance will not be conducted over the full width of the permanent easement in wetlands. Vegetation maintenance within PFO wetlands will be limited to a 30-foot-wide corridor due to the potential for selective thinning of trees within 15 feet of the pipeline with roots that could compromise the integrity of the pipeline coating.

2.2.3.2 Extra Temporary Workspaces

In accordance with Section VI.B.1 of the FERC's Procedures, CEGT has attempted to locate ETWS at least 50 feet away from wetlands, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land. In the setback areas, vegetation will not be cleared between the ETWS area and the wetland. However, in some instances, the setbacks will not be able to be maintained due to construction limitations. In those cases, CEGT is requesting a variance from the FERC Procedures. Table 2.2-2 specifically identifies the locations where ETWS setback variances are required for wetlands. As shown in Table 2.2-2, in only one case (ETWS No. 181-186) will a wetland be impacted by an ETWS; this 0.85-acre of impact is necessary for an HDD pullback that will reduce overall wetland impacts compared to conventional pipeline crossing techniques.

TABLE 2.2-2

Extra Temporary Workspaces (ETWS) in or within 50 Feet of Wetlands

ETWS ID	Approx. MP	Adjacent to actively cultivated, rotated cropland, other disturbed land?	Feature ID	Within Wetland?	Within 50 Feet of Wetland?	Acres of Wetland Impacted	Site-Specific Justification Required	Justification
1	0.01	No-Fallow field	W101FA	No	Yes	0.00	Yes	Workspace associated with aboveground facility. Facility is sited outside wetland, but location is constrained by intersection of existing pipelines.
2	0.07	No-Fallow field	W102FA	No	Yes	0	Yes	Workspace is located adjacent to a road and between two wetlands. It is needed for crossing of road.
6	0.26	No-Forested	W105FA	No	Yes	0	Yes	Workspace is located adjacent to railroad. It is needed for bore activities.
90	9.18	Yes-ROW	W21FA	No	Yes	0	No	Not applicable
181-186	17.50	Yes-Ag	W61FA	Yes	Yes	0.85	No	Not applicable

TABLE 2.2-2

Extra Temporary Workspaces (ETWS) in or within 50 Feet of Wetlands

ETWS ID	Approx. MP	Adjacent to actively cultivated, rotated cropland, other disturbed land?	Feature ID	Within Wetland?	Within 50 Feet of Wetland?	Acres of Wetland Impacted	Site-Specific Justification Required	Justification
187-188	18.04	No-Forested	W67FA	No	Yes	0	Yes	Workspace located where access road meets ROW and is needed for equipment turnouts, parking, and off-loading.
192	18.23	No-Forested	W65PU	No	Yes	0	Yes	Workspace is at edge of ag field and woods. It is needed for access road.
193-194	18.48	No-Forested	W64PU	No	Yes	0	Yes	Workspace is at edge of ag field and woods. It is needed for placement of HDD equipment.
251	24.45	No-Forested	W121PU	No	Yes	0	Yes	Workspace is needed for construction activity near W121PU; however, placement is limited due to presence of residence in vicinity.
250	24.38	No-Forested	W120PU	No	Yes	0	Yes	Workspace is needed to support road crossing and bend in pipe. W120PU is proposed to be impacted by ROW construction.
254	24.79	Yes- ROW	W411PU	No	Yes	0	Yes	Not applicable
277	27.47	Yes- ROW	W110PU	No	Yes	0	No	Not applicable
284	28.25	Yes-ROW	W410PU	No	Yes	0	No	Not applicable

2.2.3.3 Pipe/Contractor Yards

There is one PEM wetland (W52FA) located within Yard #3. The use of this contractor yard will be designed such that it will avoid disturbing this wetland during construction. No wetlands were identified within any other proposed contractor yards associated with the Project.

2.2.3.4 Aboveground Facilities

No permanent impacts to wetlands are expected as a result of the proposed aboveground facilities.

2.2.3.5 Access Roads

Of the 24 wetlands located within 50 feet of access roads, five will be crossed by the Line BT-39 access roads and four will be crossed by access roads for the retirement of Line B. No modifications or improvements are anticipated at the access road crossings of wetlands. The use of two proposed permanent access roads (AR-MP-118.635 and AR-MP-127.649) will not affect any wetlands, and therefore no permanent wetland impacts are proposed as a result of Project access roads.

2.3 GROUNDWATER RESOURCES

This section describes the geology, hydrology, quality, and use of the principal aquifers within the Project area, the potential for Project-related impacts on those aquifers, and proposed measures to mitigate these impacts.

2.3.1 Regional Aquifers

Much of Arkansas' groundwater comes from Quaternary deposits of sand and gravel in the Mississippi River Embayment. Irrigation wells, with depths ranging from 100 to 200 feet, commonly produce 1,000 to 2,000 gallons per minute ("gpm"). Although usable for irrigation and some domestic uses, the high iron content of Quaternary aquifers makes the water generally unsuitable for human consumption in many areas (AGS, 2013). The Project area is located in an area designated by the USGS as "Other Rocks." This category includes large-to-small areas that are designated "minor aquifer," "not a principal aquifer," or "confining unit" (National Atlas, 2013). Such areas are underlain by low-permeability deposits and rocks, unsaturated materials, or aquifers that supply little water, because they are of local extent, poorly permeable, or both.

The proposed Project area is located along the border of two minor aquifers, the southern edge of the Western Interior Plains confining system and the eastern edge of the Ouachita Mountains aquifer (Renken, 1998).

2.3.1.1 Western Interior Plains Aquifer

The Western Interior Plains confining system is part of a widespread, thick, geologically complex, poorly permeable, sedimentary sequence that extends eastward from the Rocky Mountains to western Missouri and northern Arkansas. The Western Interior Plains confining system consists of a sequence of shale, sandstone, and limestone of Mississippian to Pennsylvanian age that thickens to more than 8,000 feet as it extends southwestward. On a regional scale, the rocks that compose the confining system are poorly permeable and function as a confining unit. Locally, however, individual geologic units or parts of units within the confining system yield as much as 19 gallons per minute to wells. The confining system is, therefore, considered to be a minor aquifer (Renken, 1998).

The groundwater flow system within the Western Interior Plains confining system can be separated into two zones: an upper zone within soil and highly weathered bedrock and a lower zone within moderately weathered to unweathered bedrock. Water levels within the Western Interior Plains confining system can fluctuate as much as 10 feet per year in response to seasonal variations in rainfall and evapotranspiration. Wells completed in the weathered zone of the Western Interior Plains confining system generally yield only small volumes of water (Renken, 1998).

TABLE 2.2-3

Wetlands within 50 Feet of Access Roads

Feature ID[1]	Access Road Number	Wetland Classification [2]	Type of Access Road [3]
Proposed Line BT-39 Access Roads			
W101FA	Line BT-39 AR-0.0	PEM	Temporary
W102FA	Line BT-39 AR-0.0	PEM	Temporary
W105FA	Line BT-39 AR-0.25	PFO	Temporary
W304FA	Line BT-39 AR-11.5	PEM	Temporary
W303FA	Line BT-39 AR-11.5	POW	Temporary
W63FA	Line BT-39 AR-17.72	PSS	Temporary
W62FA	Line BT-39 AR-17.72	PSS	Temporary
W61FA	Line BT-39 AR-17.68	PFO	Temporary
W62PU	Line BT-39 AR-18.08	PEM	Temporary
W67FA	Line BT-39 AR-18.09	PFO	Temporary
W65PU	Line BT-39 AR-18.08	PFO	Temporary
W64PU	Line BT-39 AR-18.38	PFO	Temporary
W90PU	Line BT-39 AR-18.38	POW	Temporary

TABLE 2.2-3

Wetlands within 50 Feet of Access Roads

Feature ID[1]	Access Road Number	Wetland Classification [2]	Type of Access Road [3]
W46PU	Line BT-39 AR-20.59	PFO	Temporary
W113PU	Line BT-39 AR-25.43	PEM	Temporary
W110PU	Line BT-39 AR-27.48	PEM	Temporary
W112PU	Line BT-39 AR-27.49	POW	Temporary
W111PU	Line BT-39 AR-27.49	POW	Temporary
Retirement Line B Access Roads			
W106FA	Line B AR-1	PEM	Temporary
W107FA	Line B AR-1	PEM	Temporary
W122PU	Line B AR-31	PEM	Temporary
W123PU	Line B AR-31	PEM	Temporary
W124PU	Line B AR-31	PEM	Temporary
W200PU	Line B AR-33	PSS	Temporary

1 Feature IDs in **bold** will be crossed by the access road.

2 Classification Definitions: PFO-Palustrine Forested, PSS-Palustrine Scrub Shrub, PEM-Palustrine Emergent

3 The type of access road may be temporary or permanent, based on whether it will be retained for use following construction.

2.3.1.2 Ouachita Mountains Aquifer

The Ouachita Mountains aquifer has a north-to-south width of approximately 80 miles along the Arkansas-Oklahoma State line, but progressively narrows eastward. The Ouachita Mountains aquifer consists mostly of shale, sandstone, and chert beds of Cambrian to Pennsylvanian age, all of which were deposited in deep-marine water conditions. Only limited quantities of water for domestic and non-irrigation farm uses can be obtained from wells completed in this aquifer. Most wells completed in the aquifer yield less than 50 gallons per minute; "large-yield" wells generally are viewed as those capable of yielding more than 10 gallons per minute. Water levels in the aquifer can fluctuate by as much as 10 feet per year as rainfall and evapotranspiration rates change seasonally (Renken, 1998).

Fault zones within the Ouachita Mountains aquifer function as local conduits for groundwater flow. However, the fault zones may conduct little water if they are filled with fault gouge or cemented breccia. In Hot Springs, approximately 50 miles southwest of the Project area, faults are the principal conduit for deep-seated, thermal groundwater discharge. Most joints and fractures in the Ouachita Mountains aquifer, however, are within 300 feet of land surface. Joints and other fractures tend to close or decrease in width with depth owing to lithostatic pressure, which is the vertical pressure caused by the weight of overlying rock and soil (Renken, 1998).

2.3.1.3 Groundwater Quality

Water from the Western Interior Plains confining system is used mostly for domestic purposes due to well yield and water quality. The quality of groundwater in the Western Interior Plains confining system is highly variable, but meets most secondary drinking-water standards and is considered to be suitable for livestock uses. However, the quality of the water generally is not considered to be adequate for municipal supply. Principal constituents in the water are sodium and bicarbonate ions (Renken, 1998).

2.3.1.4 Sole Source Aquifers

A Sole Source Aquifer ("SSA") is an aquifer designated by the EPA as the "sole or principal source" of drinking water for a given service area. By definition, a SSA is an aquifer which is needed to supply 50 percent or more of the drinking water for the area and for which there are no reasonably available alternative sources should the aquifer become contaminated. There are no SSAs present in Arkansas (EPA, 2013).

2.3.2 Public and Private Water Wells, Wellhead Protection Areas

CEGT consulted with the ADH concerning the proximity of any source water protection areas, surface water intakes, wellhead protection areas, or public water supply wells to the proposed Project. GIS shapefiles provided by ADH identified that the northernmost portion of the Line BT-39 pipeline route, as well the Highway 64 TBS and two access roads, extend through the Conway Water System - Cadron Creek wellhead protection area (ADH, 2013). The Wellhead Protection program was authorized by the 1986 Amendments to the Safe Drinking Water Act. The program is designed to protect the ground-water resource tapped by public water-supply wells from contaminants that are injurious to the public health. The ADH has been designated to be the lead state agency in carrying out the Wellhead Protection Program (ADH, 1995). ADH filed a letter with the FERC dated June 12, 2013 that noted a staff review had been made of Project information and ADH had no comment on the submittal. Copies of relevant agency correspondence are included in Appendix 1.D of Resource Report 1.

CEGT has identified 9 groundwater wells within 150 feet of the proposed Project, but each of these wells will be located outside of excavation areas and will be avoided during construction. A list of the identified wells is provided in Table 2.3-1. If additional groundwater wells are identified in proximity to the proposed Project, CEGT will provide the FERC with the locations of those wells.

TABLE 2.3-1

Groundwater Wells within 150 Feet of the Project

Well ID	Milepost	Approximate Distance from Construction Workspace (Feet)	Direction from Construction Workspace	Comment
1	3.74	35	West	Residential well
2	3.80	52	West	Residential well
3	3.82	74	West	Residential well
4	3.87	58	West	Residential well
5	3.88	123	West	Residential well
6	4.00	44	West	Residential well
7	4.01	59	West	Residential well
8	4.10	115	West	Residential well
9	19.5	6	West	Agricultural well

2.3.3 Groundwater Hazards

CEGT consulted with the Arkansas Natural Resources Commission ("ANRC") and verified in May 2013 that the Project is not within a Critical Groundwater Areas are designated by the Arkansas Natural Resources Commission ("ANRC") pursuant to Act 154 of 1991. Critical Groundwater Areas are defined as having significant groundwater declines and/or water quality degradation. There is no regulation of water associated with critical area designation; designation makes an area priority for state and federal programs, including conservation and educational efforts. A portion of Pulaski County, located southeast of the Project area, is a designated Critical Groundwater Area, but

CEGT verified through consultations with ANRC that the Project would not be located within or affect any Critical Groundwater Area; therefore no impacts to these areas are anticipated as a result of the Project (AWWCC, 2013).

CEGT consulted with Arkansas Department of Environmental Quality ("ADEQ") to determine whether any areas with contaminated groundwater are near the proposed project. Verification of one landfill, the Conway City Landfill, was received on May 9, 2013, in the immediate Project area. A second site, the recent Exxon-Mobil petroleum pipeline oil spill near Mayflower, Arkansas, is located approximately 200 feet west of the existing Line B pipeline at MP 12.25 and near a proposed Line BT-39 access road at MP 0.25. Section 8.5.3 and Table 8.5-2 of Resource Report 8 discuss these findings. Construction and retirement activities should not impact groundwater in these areas; however, BMPs identified in the Project SPCC Plan will be implemented in the event that hazardous materials are encountered during Project construction.

2.3.4 Construction Impacts and Mitigation

In general, the potential for temporary and permanent impacts on groundwater resulting from construction and operation of the proposed Project depends upon whether the proposed facilities will cause localized changes to existing groundwater flow paths. Most aquifers underlying the proposed pipeline area will not be impacted due to their depth and the generally shallow nature of trenching and disturbance. No groundwater withdrawals are proposed in association with construction and operation of the proposed Project and the Project generally will not cause changes in the overall quantity of groundwater.

2.3.4.1 Proposed Pipeline Facilities

Construction of the proposed pipeline facilities generally will require a trench excavation of 4 to 6 feet (or deeper at crossings of utilities and foreign pipelines). This depth is much shallower than any underlying aquifers and will not create a potential for interfering with flow in aquifers.

The proposed Project generally will not cause changes in the overall quantity of groundwater, which is determined by the quantity of recharge to the aquifer, except to the extent that clearing of vegetation reduces evapotranspiration (movement of water from soil to air through vegetation), and pipeline trenching increases the potential for infiltration of rainfall in specific locations. However, such effects are unlikely for this Project, given the relatively small area of the pipeline trench, construction ROW, and aboveground facility structures relative to the total potential recharge area. In porous soils, an open trench could provide a more direct pathway for infiltration compared to undisturbed land. Increased infiltration and reduced evapotranspiration could result in increased recharge to groundwater, thus increasing groundwater storage. However, given the localized nature of the pipeline trench relative to the surrounding area, such increased recharge likely will not be significant and may even be offset given the increased potential for runoff from cleared areas. Soil compaction also could increase runoff and affect groundwater recharge.

Backfill placed within the pipeline trench typically will be somewhat more permeable than the surrounding soil and rock units. As a result, the trench could act as a preferential pathway for groundwater flow in areas where it intersects the water table and potentially alter the existing groundwater flow patterns within shallow saturated zones. However, most wells receive water from deeper formations, where flow paths will not be affected by the trench. Additionally, CEGT will install trench breakers at specified intervals in accordance with the FERC Plan and Procedures to reduce the potential for the trench to act as a preferential groundwater flow path. Conversely, if soils along the proposed Project become compacted due to construction and operation of heavy machinery, infiltration and recharge of groundwater along the trench or ROW could be adversely impacted. However, CEGT will implement the measures identified in the FERC Plan, which includes testing and mitigation for compacted soils, as applicable.

Construction and operation of the Project is not expected to affect groundwater wells in the Project vicinity. In the unlikely event that a well is identified within construction work areas and must be taken out of service, CEGT will provide an alternate water source or negotiate a mitigation plan with the landowner to offset any adverse impacts. In the unlikely event that construction activities temporarily impair well water, CEGT will provide alternative sources of

water or otherwise compensate the owner. If permanent well damage is substantiated, CEGT will either compensate the owner for damages or arrange for a new well to be installed.

CEGT will comply with the FERC Plan and Procedures and implement its SPCC Plan to protect the Cadron Creek wellhead protection area. Since wells typically are screened considerably deeper (at least 100 feet, with many being much deeper) than the shallow underground intrusion by the pipeline (generally less than 10 feet), impacts on wells resulting from the proposed construction activity will be unlikely.

Dewatering of the pipeline trench will be necessary if shallow groundwater is encountered within the excavation zone. The water pumped from the excavation will be discharged in accordance with the FERC Procedures, and the potential impact of dewatering will be minimized by discharging the pumped water to well vegetated areas or properly constructed temporary retention structures that will promote infiltration and minimize or eliminate runoff. Because trenching typically proceeds at a relatively rapid rate, any depression of the local water table around the trench is expected to recover rapidly once the trench is backfilled. Therefore, dewatering could affect flow patterns in nearby shallow wells temporarily, but such impacts likely will be minor and of a brief duration.

2.3.4.2 Extra Temporary Workspaces

The temporary use of ETWS areas during construction are not expected to affect groundwater quality. Groundwater impact and mitigation procedures are similar to those described for the pipeline facilities above.

2.3.4.3 Pipe/Contractor Yards

Approximately 13.8 acres of hay fields will be used for temporary pipe storage. Use of these areas is temporary, and any gravel or other materials placed will be removed and the area will be restored post-construction. A Project-specific SPCC Plan will be implemented during construction to protect groundwater quality. Therefore, no impacts to groundwater are anticipated as a result of the temporary use of these yards.

2.3.4.4 Aboveground Facilities

Construction and operation of the proposed aboveground facilities is not expected to affect groundwater quality. Permanent impacts on groundwater recharge could occur from development of impervious surfaces and structures at the proposed aboveground facility sites. However, these impacts likely will be minor, considering the relatively small area of the aboveground facility structures relative to the total potential recharge area. Groundwater impact and mitigation procedures are similar to those described for the pipeline above.

2.3.4.5 Access Roads

The use of temporary access roads during construction is not expected to affect groundwater quality. The two permanent access roads proposed will be graveled; therefore, no impervious surfaces are proposed that may affect groundwater recharge. Groundwater impact and mitigation procedures during construction will be as described for the pipeline facilities above.

2.3.4.6 Retirement Work Areas

Construction at the proposed retirement work areas is not expected to affect groundwater quality due the minimal disturbance and temporary nature of the work to be completed at these sites.

2.3.4.7 Hydrostatic Testing

Hydrostatic test water is not anticipated to be a potential source of groundwater contamination. Test-water will be obtained from municipal water sources. Hydrostatic test water will be sampled and tested for contaminants in accordance with the appropriate state NPDES permit requirements prior to discharge of water. No chemicals will be added to the water prior to, during, or after the hydrostatic testing process; therefore, source water and discharge water quality are anticipated to be equivalent.

2.3.4.8 Accidental Spills and Leaks

Accidental spills and leaks of hazardous materials could cause impacts to groundwater resources through introduction of contaminants, especially in highly permeable areas near wells. CEGT will implement the spill prevention and control measures identified in its SPCC Plan and in the FERC Procedures during construction.

In the event that hazardous materials are discovered during construction of the proposed Project, CEGT will stop work, notify the appropriate state and federal agencies, and proceed in accordance with local, state, and federal regulations. Known hazardous waste areas in the vicinity of the Project area are discussed in Section 8.5.3 of Resource Report 8 and include the City of Conway Landfill and the ExxonMobil Pegasus pipeline rupture. CEGT is in the process of coordinating with the City of Conway regarding best management practices or monitoring that may be required during construction in the vicinity of the City of Conway's landfill. The ExxonMobil Pegasus pipeline ruptured on March 29, 2013 in the vicinity of the Northwoods subdivision in Mayflower, AR, approximately 200 feet west of the existing Line B retirement pipeline (MP 14.75). This site is currently under remediation; there are no known contaminated sediments within the Project work area. Should any contaminated soils be found during construction activities, CEGT will coordinate with ExxonMobil and the ADEQ to remediate those contaminants properly

2.3.4.9 Blasting

No blasting activities are anticipated during construction of the proposed Project (see Resource Report 6); therefore, no adverse effects due to blasting on water wells, springs, or wetlands are expected. In the unlikely event that any blasting is conducted within 150 feet of any identified water wells, then CEGT will conduct pre- and post-construction monitoring of potable wells to assess potential impacts.

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APPENDIX 2.A

WETLAND & WATERBODY DELINEATION REPORT

(to be filed with the Commission at a later date)

CENTERPOINT ENERGY GAS TRANSMISSION COMPANY, LLC

CENTRAL ARKANSAS PIPELINE ENHANCEMENT PROJECT
FERC DOCKET NO. PF13-10-000

DRAFT RESOURCE REPORT NO. 3

VEGETATION AND WILDLIFE

PUBLIC

Prepared for:
CenterPoint Energy Gas Transmission Company, LLC
P.O. Box 21734
Shreveport, LA
71151

Prepared by:
AK Environmental
850 Bear Tavern Road, Suite 106
West Trenton, NJ
08628

August 2013

CENTRAL ARKANSAS PIPELINE ENHANCEMENT PROJECT
FERC DOCKET NO. PF13-10-000

RESOURCE REPORT NO. 3 – VEGETATION AND WILDLIFE	
SUMMARY OF COMMISSION FILING INFORMATION	
INFORMATION	**FOUND IN**
1. Classify the fishery type of each surface waterbody that would be crossed, including fisheries of special concern. (§ 380.12 (e) (1))	Sections 3.1.1 and 3.1.2
2. Describe terrestrial and wetland wildlife and habitats that would be affected by the project. (§ 380.12 (e) (2))	Section 3.3.1
3. Describe the major vegetative cover types that would be crossed, and provide the acreage of each vegetative cover type that would be affected by construction. (§ 380.12 (e) (3))	Section 3.2
4. Describe the effects of construction and operation procedures on the fishery resources and proposed mitigation measures. (§ 380.12 (e) (4))	Section 3.1.3
5. Evaluate the potential for short-term, long-term, and permanent impact on the wildlife resources and state-listed endangered or threatened species caused by construction and operation of the project and proposed mitigation measures. (§ 380.12(e)(4))	Sections 3.3.4 and 3.4
6. Identify all federally listed or proposed endangered or threatened species that potentially occur in the vicinity of the project and discuss the results of consultations with other agencies. (§ 380.12 (e) (5))	Section 3.4
7. Identify all federally listed essential fish habitat (EFH) that potentially occurs in the vicinity of the project and the results of abbreviated consultations with NMFS, and any resulting EFH assessments. (§ 380.12(e)(4 & 7))	Not applicable; see Section 3.1.1
8. Describe any significant biological resources that would be affected. Describe impact and any mitigation proposed to avoid or minimize that impact. (§ 380.12 (e) (4 & 7))	Sections 3.1.2, 3.1.3, 3.2.2, 3.2.4, 3.3.2, 3.3.4, and 3.4

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ACRONYMS AND ABBREVIATIONS

AGFC	Arkansas Game and Fish Commission
APCEC	Arkansas Pollution Control and Ecological Commission
CEGT	CenterPoint Energy Gas Transmission Company, LLC
Commission	Federal Energy Regulatory Commission
DDCP	Directional Drill Contingency Plan
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ETWS	Extra Temporary Workspaces
FERC	Federal Energy Regulatory Commission
GIS	Geographic Information System
HDD	Horizontal Directional Drill
MP	Milepost
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
PEM	Palustrine Emergent
PFO	Palustrine Forested
Plan	FERC Upland Erosion Control, Revegetation, and Maintenance Plan
Procedures	FERC Wetland and Waterbody Construction and Mitigation Procedures
Project	Central Arkansas Pipeline Enhancement Project
PSS	Palustrine Scrub/Shrub
ROW	Right-of-Way
USGS	U.S. Geological Survey
SPCC Plan	Spill Prevention, Control and Countermeasure Plan
USC	United States Code
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

3.0 INTRODUCTION

CenterPoint Energy Gas Transmission Company, LLC ("CEGT"), in cooperation with its affiliated natural gas distribution business, CenterPoint Energy Resources Corporation d/b/a Arkansas Gas ("CERC"), is filing an application for a certificate of public convenience and necessity with the Federal Energy Regulatory Commission ("FERC" or "Commission") for the Central Arkansas Pipeline Enhancement Project ("Project"). The Project will provide for the continued safe, reliable, and efficient transportation of natural gas to the central Arkansas cities and towns of Conway, Mayflower, Maumelle, North Little Rock, and Little Rock. As part of the Project, CEGT is proposing the installation of approximately 28.5 miles of 12-inch-diameter natural gas pipeline and ancillary facilities in Pulaski and Faulkner Counties, Arkansas. The proposed pipeline, to be named Line BT-39, will be constructed primarily on new alignment, and will provide replacement transmission service for a portion of two existing CEGT natural gas pipelines (Lines B and BT-14). CEGT will also construct metering and appurtenances at seven new or modified locations along the Line BT-39 pipeline route and tie-in points to the existing Line BT-14 pipeline, as well as two 4-inch-diameter laterals (Lines BT-40 and BT-41) to provide natural gas deliveries to its distribution affiliate. As currently proposed, ownership of an approximately 12.4-mile-long segment of the existing Line BT-14 pipeline through the City of Conway would be transferred to CEGT's distribution affiliate, and an approximately 21.7-mile-long segment of the existing Line B pipeline, extending from Conway to North Little Rock, would be retired from service. Other minor ancillary facilities and small diameter pipelines (Line BM-1, Line BT-19, and a portion of Line BM-21) within the City of Conway would also be retired in association with the proposed Project. Refer to the Project locations maps (Figure 1.1-1) for a depiction of existing, proposed, and retirement pipeline facilities associated with the Project.

This Resource Report contains information on fishery resources, vegetation, wildlife, and threatened and endangered species that will be affected by the construction and operation of the proposed Project. Copies of correspondence with state and federal natural resources agencies are provided in Appendix 1.D of Resource Report 1.

3.1 FISHERY RESOURCES

Game and non-game fish species in Arkansas are regulated and protected by the United States Fish and Wildlife Service ("USFWS"), National Marine Fisheries Service (National Oceanic and Atmospheric Administration ["NOAA"] Fisheries), the Arkansas Game and Fish Commission ("AGFC"), and the Arkansas Pollution Control and Ecological Commission ("APCEC"), in accordance with the United States Fish and Wildlife Conservation Act of 1980 (16 United States Code ["USC"] 2901-2911), the Magnuson-Stevens Fisheries Conservation and Management Act, as amended through 1996, the Endangered Species Act, and the United States Fish and Wildlife Coordination Act of 1958. Arkansas fisheries are regulated using the Arkansas Game and Fish Commission Code Book and are regulated by the Arkansas Game and Fish Commission under authority of Amendment 35 to the Constitution of the State of Arkansas.

3.1.1 Existing Fisheries Resources

The name, location, crossing distance, flow regime (*i.e.*, perennial, intermittent, ephemeral) and fishery classification of each waterbody in the Project area are provided in Table 2.1-1 of Resource Report 2. Physical data on each water feature have been collected during the biological field surveys. United States Geological Survey ("USGS") 7.5-minute series topographic maps and publicly available Geographic Information System ("GIS") data layers from state and federal agencies were used to identify waterbody names and tributaries, and to confirm flow regimes. Waterbodies delineated during field surveys are depicted in mapping provided in Appendix 2.A.

The proposed pipelines will require 46 waterbody crossings, including 12 perennial 33 intermittent stream crossings, and one open water/impoundment crossing. Three streams will be crossed more than once by the pipelines at separate locations. Based on field surveys the proposed Line BT-39 pipeline will cross one major (unnamed impoundment), 14 intermediate, and 31 minor waterbodies.

Based on field surveys, there are no waterbodies present at the proposed retirement work areas. Therefore, removal of the retirement facilities will have no impacts on waterbodies.

Multiple streams will be crossed by or adjacent to the proposed Project access roads. Improvements to these access roads may be required to enable safe construction access; however, the access roads located in the vicinity of waterbodies will all be temporary; therefore, use of these access roads for Project purposes will not permanently affect fisheries resources. Short-term, construction-related impacts will be minimized by the use of best management practices and adherence to the FERC's *Wetland and Waterbody Construction and Mitigation Procedures* ("Procedures").

All waterbodies in the Project area are warmwater and are not listed as capable of sustaining coldwater fish species (AGFC, 2013a; AGFC 2013b). Warmwater fisheries are waters that contain warmwater fish species and are not able to support breeding populations of coldwater species. Warmwater species often found in the Arkansas River Valley region include several species of catfish (*Ictalurus* spp.), several bass species (*Micropterus* spp. and *Morone* spp.), bluegill (*Lepomis macrochirus*), black crappie (*Pomoxis nigromaculatus)*, several sunfish species (*Lepomis* spp.), bowfin (*Amia calva*), chain pickerel (*Esox niger*), longnose gar (*Lepisosteus osseus*), and several species of carp (*Cyprinus* spp*.* and *Ctenopharyngodon* spp.) (AGFC, 2013c).

None of the waterbodies affected by the Project contain or have the potential to contain species managed by NOAA Fisheries, nor do they support essential fish habitat ("EFH"), as defined under the Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265 as amended through January 12, 2007). Therefore, no EFH will be affected by the Project (NOAA, 2013).

3.1.2 Fisheries of Special Concern

No waterbodies crossed by the Project are identified as containing fisheries of special concern. No EFH or listed fishery species and/or their habitats occur within or near the proposed Project area (see Section 3.4). The AGFC (AGFC, 2013b) indicated that there were no construction timing restrictions for stream crossings in the Project area; therefore, CEGT would not be limited to the June 1 to November 30 construction time window specified by the FERC Procedures for warmwater fisheries. Copies of relevant agency correspondence are included in Appendix 1.D of Resource Report 1.

The proposed Project pipeline route will not cross any Arkansas Extraordinary Resource Waters, Ecologically Sensitive Waterbodies, Natural and Scenic Waterways, or Nationwide Rivers Inventory-listed streams. There is one Extraordinary Resource Water, Cadron Creek, located adjacent to the northern end of the Project. However, no impacts are proposed to Cadron Creek as only Line B retirement activities are proposed in this location as described in Resource Report 2, Section 2.1.2. There are no other Ecologically Sensitive Waterbodies within the vicinity of the Project (Arkansaswater.org, 2012).

Lake Conway, Lake Carol-Dan, the Arkansas River, Davis Lake, and Clear/Grassy Lake (all less than 1 mile away) and Beaver Fork Lake (approximately 3.2 miles to the northeast) are located in the general vicinity of the Project. The Project will cross Tucker Creek, Tupelo Bayou, Beaverdam Creek, Palarm Creek, White Oak Bayou, Winifree Creek, and Newton Creek, as well as, tributaries to Lake Carol-Dan, the Arkansas River, Tucker Creek, Tupelo Bayou, Beaverdam Creek, Palarm Creek, White Oak Bayou, and Winifree Creek. None of these waterbodies are identified as containing fisheries of special concern.

3.1.3 Construction and Operation Impacts and Proposed Mitigation

Construction and operation impacts to fisheries resources consider both direct impacts and indirect impacts to fish habitat and food resources. Short-term impacts on fisheries associated with construction activities may be caused by increased sedimentation and turbidity, temperature changes due to removal of vegetation cover over streams, introduction of water pollutants, or entrainment of fish. However, no long-term effects on water temperature, dissolved oxygen, pH, benthic invertebrates, or fish communities are expected to occur due to the construction or operation of the pipeline or aboveground facilities, or the removal of existing pipeline facilities.

3.1.3.1 Proposed Pipeline Facilities

Pipeline Construction

As described in Section 1.4.2.2 of Resource Report 1, the majority of the waterbodies will be crossed using the open-cut crossing method, which will be accomplished through open trench excavation with equipment operating from the banks. Construction of the proposed pipeline across perennial streams will have minor, short-term impacts on aquatic resources. The biota that may be influenced by construction activities include phytoplankton, rooted aquatic vegetation, invertebrates (zooplankton and benthos), amphibians, and fishes. Disturbance of aquatic habitats may include siltation of streams and destruction of riparian or stream bed vegetation.

The greatest potential impact on surface waters may result from suspension of sediments caused by in-stream construction or by erosion of cleared stream banks and adjacent right-of-way ("ROW"). A short-term increase in water column turbidity also may occur as a result of runoff associated with pipeline construction activities in upland areas, including backfilling of the pipeline trench. The extent of any impacts will depend on sediment loads, flow, velocity, turbulence, stream bank and stream bed composition, sediment particle size, the duration and types of disturbances, and runoff volume and duration.

Increased suspended sediment levels during construction could reduce phytoplankton production, increase invertebrate drift, and reduce fish feeding for brief periods. Increased sedimentation and turbidity within the stream may temporarily impact aquatic fauna downstream from construction activities by reducing oxygen uptake through gills. Increased organic material also can result in an increase in biological and chemical oxygen uptake, resulting in decreased dissolved oxygen levels. In addition, increased sedimentation may affect nesting sites, where eggs and young fry concentrate, and reduce access to some food sources. In the immediate construction area, fish reproductive activities may be affected due to temporary disturbance of spawning areas, disturbances to fish, or reduced egg survival from increased sedimentation. However, the impacts on spawning areas will be temporary and construction will be completed within the timeframes set forth in the FERC Procedures. Furthermore, the warmwater species generally found in the affected streams are common and somewhat resilient to stressful conditions.

In addition to sedimentation and turbidity, some in-stream and stream bank cover may be altered or lost at the proposed stream crossings. Stream bank vegetation, in-stream logs and rocks, and undercut banks provide important cover for fish. Fish that normally reside in these areas may be displaced. Construction activities also could disrupt benthic communities residing in these areas. However, effects on fish and macroinvertebrates from loss of habitat will be minor because of the small area affected in each stream and the short duration of the disturbance.

Construction may cause temporary emigration of fish populations from the immediate area, and fish movements upstream or downstream may be disrupted temporarily by construction activities. However, it is unlikely that relocation or disrupted movements will affect fish populations significantly, because construction activities will be short-term.

Overall, the impact of construction on benthic macroinvertebrates and fish will be short-term, because in-stream conditions and suspended sediment concentrations will return to background condition levels soon after in-stream construction has been completed. The streams to be crossed normally carry heavy silt loads during rainy seasons. Thus, impacts resulting from short-term siltation and/or sedimentation caused by construction activity within the stream bed or from erosion of stream banks should have a minimal adverse effect on aquatic organisms, due to the ability of the wildlife to recover from short-term turbidity increases.

Although stream crossing construction activities increase in-stream turbidity for a short-time and for a short distance downstream, this effect may be minimized by scheduling stream crossing activities during low-flow conditions. Therefore, if practicable, construction of stream crossings will be scheduled during low flow and will be completed as quickly as possible. Furthermore, significant in-stream turbidity will only be expected during the actual installation of the pipe and will be temporary. Construction and mitigation for Project stream crossings will follow measures

outlined in the FERC Procedures. These methods will be used to minimize erosion of adjacent areas during and after construction and will be implemented to minimize turbidity, siltation, sedimentation, and other impacts that may temporarily affect stream vegetation and wildlife. With the implementation of these construction and mitigation measures, impacts on fisheries and other aquatic life are expected to be minor, localized, and limited to the construction period. CEGT does not anticipate any long-term or population-level impacts on fisheries or aquatic life.

Spills

Spills, leaks, or other releases of hazardous materials during construction of waterbody crossings could adversely impact water quality and affect fisheries. To protect fisheries from inadvertent releases of fuels, lubricants, and other petroleum products, CEGT will implement its Spill Prevention, Control, and Countermeasure Plan ("SPCC Plan"), which will be provided as Appendix 1.C to Resource Report 1. The SPCC Plan describes measures to be implemented by CEGT personnel to prevent and, if necessary, control any inadvertent spills of these materials, which could affect water quality.

Use of the horizontal directional drill ("HDD") method will reduce the risk of impacts to six FERC-defined waterbodies. The HDD method allows for the pipe to be installed underneath the ground surface without disturbance of the stream bed or banks. However, a temporary, localized increase in turbidity could occur in the event of an inadvertent release of drilling fluid (frac out). Drilling fluid to be used on this Project generally will be composed of fresh water with high-yield bentonite added to achieve the properties necessary to facilitate HDD operations. The EPA does not list bentonite as a hazardous substance, and no long-term adverse environmental impacts to fisheries resources would be expected should a frac-out occur.

Due to the possibility of drilling fluid loss during HDD operations, CEGT has developed a Directional Drill Contingency Plan ("DDCP"), which will be included as Appendix 1.B of Resource Report 1. The DDCP will describe measures to prevent, detect, and respond to frac-outs, including, but not limited to, monitoring during drilling operations, availability of equipment and materials to contain and clean up drilling mud, containment and mitigation measures, notification requirements, and guidelines for abandoning the directional drill, if necessary.

In the event that a complete loss of circulation of drilling mud occurs during operation of the HDD, the contractor will immediately suspend drilling operations. The Environmental Inspector will be notified, as well as construction management personnel. A determination will be made as to the best way to mitigate the released fluid and, if possible, to seal the fracture. Drilling fluid that has surfaced will be contained in accordance with the DDCP. Depending on the location of the release, portable pumps, hand tools, sand, hay bales, silt fencing, earthen dam, or other structures may be used to prevent downgradient migration of the fluids. Once the fluids have been contained, they will be cleaned up and disposed of in accordance with proper waste disposal procedures. If a release occurs without the complete loss of circulation, the contractor will reduce the volume of drill fluid and increase the yield point of the fluid. This procedure often will return the flow rate and allow drilling operations to continue.

Implementation of these best management practices ("BMP"s) is expected to minimize the likelihood of a spill occurring and mitigate for a spill in the event that one occurs. As a result, no impacts to fisheries resources are anticipated as a result of a spill.

Pipeline Operation

Maintenance mowing and manual removal of woody vegetation will have minimal impact on fishery resources in the vicinity of the proposed pipeline ROW during operation of the Project. Vegetation control in the vicinity of waterbodies will be conducted using mechanical means. Herbicides will not be used within 100 feet of waterbodies unless approved by appropriate land management or state agencies, consistent with the FERC Procedures.

3.1.3.2 Extra Temporary Workspaces

In accordance with the FERC Procedures, CEGT has attempted to locate most of the ETWS areas at least 50 feet away from the stream banks. In the setback areas, vegetation will not be cleared between the ETWS and the waterbody. The work area will be limited in size to the minimum area necessary to construct the waterbody crossing

safely, accommodate any stockpile of excavated material from the trench, and accommodate the prefabricated pipeline crossing section. However, in some instances, the setbacks will not be able to be maintained due to construction limitations, as identified in Sections 2.1.1.2 of Resource Report 2. Impacts to fisheries resources from the use of ETWS will be minimized by the implementation of these setbacks; the use of appropriate BMPs, as outlined in the FERC Procedures, during construction; and the restoration of these areas post-construction.

3.1.3.3 Pipe Storage/Contractor Yards

No waterbodies will be impacted by the temporary use of the pipe storage/contractor yards; therefore, there will be no impacts on fisheries at these sites.

3.1.3.4 Aboveground Facilities

No waterbodies will be impacted by the proposed aboveground facilities; therefore, construction at these sites will have no impact on surface water or fisheries resources.

3.1.3.5 Access Roads

As identified in Table 2.1-3 of Resource Report 2, a total of eleven waterbodies were identified within 50 feet of the proposed Line BT-39 access roads and two waterbodies were identified within 50 feet of the access roads to be used for Line B retirement activities. Of these, eight will be crossed by the proposed access roads. All access roads within 50 feet of a waterbody will be temporary in nature. Impacts to fisheries resources from the use of these temporary access roads will be minimized by the use of appropriate BMPs, as outlined in the FERC Procedures, during construction and the restoration of these streams post-construction.

3.1.3.6 Retirement Work Areas

No waterbodies will be impacted by the removal of the retirement pipeline and aboveground facilities; therefore, there will be no impacts on fisheries at these sites.

3.1.3.7 Hydrostatic Test Water Withdrawal and Discharge

Hydrostatic test water will be withdrawn from municipal sources, as identified in Table 2.1-4 of Resource Report 2. No surface waterbodies will be used for withdrawal of water for hydrostatic testing activities. Upon completion of each test, it is anticipated that hydrostatic test water will be discharged in upland areas in accordance with the FERC Procedures and applicable discharge permit requirements. The water will be discharged within or along the edges of the construction ROW using energy dissipation devices to minimize erosion and sedimentation. Test water will contact only new pipe, and currently there are no plans to add any chemicals to the water. The water will be sampled prior to discharge in accordance with permit requirements and tested to determine suitability for discharge. If treatment of hydrostatic test water is found to be required, treatment procedures will be implemented prior to discharge.

3.2 VEGETATION

Vegetative habitats are classified by the presence of the dominant vegetation species. Defining habitats is necessary in order to assess the potential presence of wildlife, threatened and endangered species and communities, and other ecologically sensitive areas. In turn, these evaluations make it possible to identify areas that require preservation (protection) or conservation (management) plans.

3.2.1 Existing Vegetation Resources

The U.S. Environmental Protection Agency (“EPA”) has developed a set of “ecoregions” in North America denoting areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. A Roman numeral hierarchical scheme distinguishes the different levels of these ecological regions, with level I as the coarsest level and level IV as the finest subdivision of ecoregions. In Arkansas, there are seven level III ecoregions and 32 level IV ecoregions (EPA, 2012). The northern half of the proposed Project lies within the Arkansas Valley

level III ecoregion. This region comprises plains, hills, floodplains, high ridges, and scattered mountains and is bounded by the Boston Mountains to the north, Mississippi Alluvial Plain to the east, and the Ouachita Mountains to the south.

Within the Arkansas Valley level III ecoregion, the extreme northern section of the Project is within the Scattered High Ridges and Mountains level IV ecoregion, which is characterized by savannas, open woodlands, or forests dominated or co-dominated by upland oaks, hickory, and shortleaf pine. The central portion of the Project is located within the Arkansas River Floodplain and Arkansas Valley Plains level IV ecoregions. The Arkansas Valley Plain ecoregion is currently dominated by pastureland and hay land, with scattered prairie remnants and woodlands. The Arkansas River Floodplain is dominated by bottomland adjacent to the Arkansas River. It includes levees, meanders scars, oxbow lakes, point bars, swales, and backswamps with bottomland vegetation, such as bur oak. The southern half of the Project is located within the Ouachita Mountains level III ecoregion, and Fourche Mountains level IV ecoregion. This ecoregion is dominated by oak-hickory-pine forests, with pastureland and hayland restricted to a few broad valleys (Anderson, 2006).

The northern and central portions of the pipeline route are predominantly a mix of residential subdivisions, commercial retail, and smaller woodlots, while the southern portion of the pipeline route is dominated by rolling mature forest land associated with Camp Robinson. CEGT identified vegetative cover types and wetland areas along the proposed route through a review of National Wetland Inventory maps and field surveys conducted in October 2012 and February 2013. Six primary vegetative cover types are crossed by the proposed pipeline route: upland forest, open land, residential land, industrial/commercial land, agricultural land, and wetlands (forested wetlands, scrub/shrub wetlands, and emergent wetlands). The predominant vegetative cover types crossed by the proposed pipeline route are further described below, and representative species are listed for each type. Please note that the community types described in this resource report differ slightly from those presented in Resource Report 8, which uses the land use classifications outlined in the FERC *Guidance Manual for Environmental Report Preparation*. Due to their unique vegetation and wildlife habitat, this report considers wetland communities separately from upland communities.

Upland Forest/Woodland

Upland forested areas consist of woody plant communities dominated by trees greater than 3 inches in diameter at breast height and greater than 20 feet in height. The upland forest community is common throughout the proposed Project area. Dominant species include various oak species (*Quercus* spp.), sweet gum (*Liquidambar styraciflua*), hickories (*Carya* spp.), red maple (*Acer rubrum*), greenbrier (*Smilax rotundifolia*), loblolly pine (*Pinus taeda*), long-leaf pine (*Pinus palustris*), and eastern red cedar (*Juniperus virginiana*).

Open Land

Open land includes those non-forested vegetated areas that are not in agricultural production or landscaped, such as pasture, grasslands, successional old fields, shrublands, and maintained utility ROWs. Species observed included remnant pasture grasses or early successional species, such as bahiagrass (*Paspalum notatum*), tall fescue (*Schedonorus phoenix*), bermudagrass (*Cynodon dactylon*), broomsedge bluestem (*Andropogon virginicus*), ragweed (*Ambrosia artemisiifolia*), and goldenrod (*Solidago canadensis*). Early successional shrubs also were present, such as thickets of blackberry (*Rubus sp*.) and Japanese honeysuckle (*Lonicera japonica)*, as well as scattered pine and hardwood seedlings and saplings.

Residential Land

Residential land consists of yards, residential subdivisions, and planned new residential developments. Residential land is dominated mainly by mowed lawns, landscaped areas, and impervious surfaces. Lawn grass species common to this area include tall fescue, bermudagrass, bahiagrass, and centipedegrass (*Eremochloa ophiuroides*).

Industrial/Commercial Land

Industrial/commercial land consists of electric power or gas utility stations, manufacturing or industrial plants, landfills, mines, quarries, and commercial or retail facilities. Species observed in maintained commercial/industrial land included common lawn grasses, such as tall fescue, bermudagrass , bahiagrass, and centipedegrass, as well as planted hardwoods and pines. Species observed in unmaintained commercial/industrial areas consisted mainly of various species of brambles (*Rubus spp.).*

Agricultural Land

Agricultural land consists of actively farmed cropland, orchards, vineyards, or hayfields. Within the Project area, agricultural lands consist primarily of soybean fields and rice farms. Other typical row crops include wheat, hay, corn, sorghum, and cotton. No orchards or vineyards were observed along the pipeline right-of-way during field surveys.

Forested Wetlands

Forested wetlands ("PFO") are dominated by woody vegetation at least 20 feet (6 meters) tall (Cowardin *et al.*, 1979). Representative forested wetland vegetation in the Project area generally includes red maple, sweet gum, willow oak (*Quercus phellos*), green ash (*Fraxinus pennsylvanica*), and persimmon (*Diospyros virginiana*).

Scrub/shrub Wetlands

Scrub/shrub wetlands ("PSS") are dominated by woody vegetation less than 20 feet (6 meters) tall and may include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions (Cowardin *et al.*, 1979). Representative scrub/shrub wetland vegetation in the Project area includes sweetgum and red maple saplings, black willow (*Salix nigra*), and buttonbush (*Cephalantus occidentalis*).

Emergent Wetlands

Emergent wetlands ("PEM") are dominated by herbaceous species, typically with no shrub component present. Representative emergent wetland vegetation in the Project area generally includes variable softrush (*Juncus effusus*), sedges (*Carex* spp.), woolgrass (*Scirpus cyperinus*), beggarticks (*Bidens* spp.), asters (*Boltania* spp.), and sphagnum moss.

3.2.2 Vegetation Communities of Special Concern

The ANHC identified two species of state conservation concern, Bush's poppy-mallow (*Callirhoe bushii*) and Nuttall's pleat-leaf (*Nemastylis nuttallii*), at one location (S3T3NR13W) within Camp Robinson. These species have been identified in the vicinity of an existing access road to be used for the Project; however, no impacts to these species are anticipated because no improvements to the access road are proposed and its use will be limited to construction traffic. At the recommendation of the ANHC, CEGT contacted Mr. Brian Mitchell, Camp Robinson Water Resource Specialist regarding the species' locations and recommended protective measures. Mr. Mitchell indicated that no special protective measures were required, and that use of access road for construction traffic would not impact the species. Copies of relevant agency correspondence are included in Appendix 1.D of Resource Report 1.

3.2.3 Exotic or Invasive Vegetative Species

Subsequent to ground disturbance from construction, vegetation communities may be susceptible to infestations of noxious species. These species are usually most prevalent in areas of prior surface disturbance, such as agricultural areas, roadsides, existing utility ROWs, and wildlife concentration areas. Arkansas has 35 state-listed noxious weeds, identified in Table 3.2-1 (Arkansas State Plant Board, 2011).

TABLE 3.2-1

ARKANSAS STATE-LISTED NOXIOUS WEEDS

Common Name	Scientific Name
Field Bindweed	*Convolvulus arvenis*
Nut grass	*Cyperus rotundus*
Wild onion and/or wild garlic	*Allium* spp.
Johnson grass	*Shorghum halapense*
Dodder	*Cuscuta spp.*
Bermudagrass	*Cynodon dactylon*
Cheat or Chess	*Bromus secalinus* and/or *Bromus commutatus*
Darnel	*Lolium temulentum*
Corncockle	*Agrostemma githago*
Horsenettle	*Solanum carolinense*
Purple nightshade	*Dolanum elaeagnifolium*
Buckthorn plantain	*Plantago lanceolata*
Bracted plantain	*Plantago aristata*
Dock	*Rumex* spp.
Blueweed	*Helianthus ciliaris*
Morning glory	*Ipomea* spp.
Hedge bindweed	*Calystegia sepium*
Red rice	*Oryza sativa* var.
Curly indigo	*Aeschynomene indica*
Tall indigo or coffee bean	*Sesbania exaltata*
Giant foxtail	*Setaria faberi*
Witchweed	*Striga* spp.
Crotalaria	*Crotalaria* spp.
Cocklebur	*Xanthium* spp.
Moonflower	*Calonyction muricatum*
Alligatorweed	*Alternanthera* spp.
Balloonvine	*Cardiospermum halicacabum*
Itchgrass	*Rottboellia exaltata*
Thistle	*Cardus, Cirsium, Onopordum, Silybum, Scolymus, Salsola,* and other genera
Serrated tussock	*Nasella trichotoma*
Purple loosestrife	*Lythrum salicaria*
Barnyardgrass	*Echinochloa crusgalli*
Water hyacinth	*Eichornia crissipes, E. azurea*
Japanese blood grass	*Imperata cylindrical*
Tropical soda apple	*Solanum viarum*

Source: Arkansas State Plant Board, 2011.

CEGT will implement the measures in the FERC *Upland Erosion Control Revegetation and Maintenance Plan* ("Plan") and the FERC Procedures to minimize the potential to introduce or spread noxious or invasive species during construction and operation of the Project. CEGT also has contacted the local Natural Resources Conservation Service ("NRCS") offices to identify noxious weeds that may occur along the proposed pipeline route. Responses from the county NRCS offices are pending. Copies of agency correspondence are provided in Appendix 1.D of Resource Report 1.

3.2.4 Construction and Operation Impacts and Proposed Mitigation

Table 3.2-2 quantifies the amount of each cover type that will be affected by construction and operation of the proposed Project. The sections below quantify and describe the construction and operation impacts of the proposed Project on vegetation resources and the measures that CEGT will implement to minimize and mitigate for these impacts.

TABLE 3.2-2

COVER TYPES AFFECTED BY THE PROPOSED PROJECT (ACRES)

Facility	Agricultural Land		Forest/Woodland		Residential Land		Industrial/ Commercial Land		Open Land		Open Water		Other Land		Total	
	Construction	Operation[1]	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation[1]	Construction	Operation	Construction	Operation	Construction	Operation
BT-39 Pipeline[2,3]	22.17	0	171.32	88.75	1.05	0.51	2.79	1.00	36.89	0	0	0	0	0	**234.22**	**90.26**
BT-40 Pipeline[4]	0	0	0	0	0	0	0	0	0.20	0	0	0	0	0	**0.20**	**0**
BT-41 Pipeline[4]	0	0	1.14	0.69	0	0	0.02	0	0.40	0	0	0	0	0	**1.56**	**0.69**
ETWS[5]	8.09	0	14.16	0	0.08	0	0.22	0	6.93	0	0	0	0	0	**29.48**	**0**
Pipe/Contractor Yard	0	0	0	0	0	0	0	0	9.60	0	0	0	0	0	**9.60**	**0**
Aboveground Facilities[6]	0	0	0.57	0.57	0	0	1.74	1.74	0	0	0	0	0	0	**2.31**	**2.31**
Access Roads	3.56	0.03	12.29	0	0.42	0	18.48	0	6.02	0.30	0	0	0	0	**40.77**	**0.33**
Retirement Aboveground Work Areas	0	0	0.44	0	0.59	0	2.65	0	1.21	0	0	0	0.11	0	**5**	**0**
Total	**33.82**	**0.03**	**199.92**	**90.01**	**2.14**	**0.51**	**25.90**	**2.74**	**61.25**	**0.3**	**0**	**0**	**0.11**	**0**	**323.14**	**93.59**

TABLE 3.2-2

COVER TYPES AFFECTED BY THE PROPOSED PROJECT (ACRES)

[1] Although permanent pipeline easement is proposed within agricultural and open lands, no change in vegetative cover type will result from the maintenance of the pipeline easement. Agricultural and Open Lands will be allowed to revert to pre-construction conditions, and the proposed permanent pipeline easement will not restrict current land use in these areas. Therefore, no permanent impacts will result. Permanent easement in agricultural and open lands will total 13.61 and 29.50 acres, respectively.

[2] Construction acreages reflect a nominal 65- to 75-foot-wide construction right-of-way, except in areas encompassed by horizontal directional drill (HDD) crossings, which will not require construction right-of-way between the HDD entrances and exits.

[3] Operation acreages reflect a nominal 40-foot-wide permanent easement for Line BT-39. A permanent easement will be retained in areas encompassed by HDD crossings; however, these areas generally will not require clearing or routine maintenance. Operation impacts on PSS wetlands are based on a 10-foot-wide corridor, over the pipeline that will be maintained in an herbaceous state. Operation impacts on PFO wetlands are based on a 30-foot-wide corridor, due to the potential for selective thinning of trees within 15 feet of the pipeline that exceed 15 feet in height. Refer to Resource Report 2 for detailed wetland impacts

[4] Operation acreages reflect a nominal 20-foot-wider permanent easement for Lines BT-40 and BT-41.

[5] Includes 0.04 acres of Open Land for ETWS affiliated with Line BT-41.

[6] Impacts in this row represent the permanent footprint of the facilities. Additional ETWS impact acreages associated with construction of aboveground facilities are included in the ETWS row.

3.2.4.1 Proposed Pipeline Facilities

CEGT proposes to construct the Line BT-39 pipeline using a nominal 65- to 75-foot-wide construction ROW, composed of a 40-foot-wide permanent easement and a 25- to 35-foot-wide temporary construction ROW. Lines BT-40 and BT-41 will be constructed with a 50-foot-wide total construction ROW, consisting of a 30-foot-wide permanent easement and a 20-foot-wide temporary construction ROW. Table 8.3-2 of Resource Report 8 quantifies the amount of each vegetation cover type that will be affected by the construction and operation of the proposed pipeline facilities, which includes the proposed Lines BT-39, Line BT-40, and Line BT-41.

Pipeline Construction

Construction of the pipeline facilities will include temporary and permanent impacts on the vegetation cover types previously described. The proposed pipelines have been co-located within or adjacent to existing utility ROWs to the extent possible; as discussed in Section 8.2.1.2 of Resource Report 8, approximately 17.5 miles (61%) of the Line BT-39 pipeline will be co-located with existing electric transmission line corridors or the maintained Camp Robinson fire break. Utilization of these existing corridors will minimize impacts on vegetation by reducing the amount of land needed to be cleared for pipeline installation.

The pipeline ROW and temporary workspaces will be marked in the field prior to construction. The primary impact of the construction of the proposed pipeline facilities on vegetation will be the cutting, clearing, and/or removal of existing vegetation within the construction ROW and temporary workspaces. Where the ROW will need to be cleared for construction, trees will be burned, chipped, or removed. Brush and limbs will be stockpiled, burned, chipped, or removed, depending on local restrictions, applicable permits, and landowner agreements. Secondary effects associated with disturbances to vegetation could include increased soil erosion (see Resource Report 7), increased potential for the introduction and establishment of invasive weedy species, and a local reduction in available wildlife habitat (see Section 3.3). These effects will be minimized by the implementation of the measures outlined in the FERC Plan and Procedures, including the installation of erosion control measures following initial disturbance of the soil, and post-construction restoration and revegetation of temporary workspaces.

Implementation of topsoil segregation in accordance with the FERC Plan and Procedures will facilitate post-construction revegetation success, thereby minimizing the potential for long-term erosion due to lack of vegetative cover. Following construction, the previously vegetated workspace areas used during construction will be seeded and allowed to re-vegetate. Restoration and revegetation will be conducted in accordance with the FERC Plan and Procedures. CEGT has contacted the NRCS and applicable county conservation districts regarding the most appropriate seeding practices to optimize restoration success (see agency correspondence provided in Appendix 1.D of Resource Report 1). If construction is completed during the fall and winter months, a temporary seed mix will be applied to provide temporary vegetative cover until the spring planting season. In accordance with the FERC Plan and Procedures, CEGT will monitor disturbed areas to determine the post-construction revegetative success. The revegetation monitoring also will assess whether undesirable exotic plant species are becoming established.

Pipeline Operation

Following construction, the temporary construction ROW will be allowed to revert to preconstruction conditions and uses, and the permanent easement will be maintained as new pipeline ROW. Except in wetlands, CEGT will retain a 40-foot-wide permanent maintained ROW for the replacement pipelines. Maintenance clearing of the permanent ROW in wetlands will be restricted to a 10-foot-wide herbaceous strip centered over the pipeline. Also, trees within 15 feet of the pipeline with roots that could compromise the integrity of the pipeline coating will be cut selectively and removed from the permanent ROW. The permanent ROW will be subject to ongoing vegetation maintenance during operations that will generally preclude the re-establishment of trees.

Routine maintenance of the permanent ROW will be required to allow continued access for routine pipeline patrols, access in the event of emergency repairs, and visibility for aerial patrols. CEGT will use those ROW maintenance practices, including mechanical (*e.g.*, mowing, cutting, and trimming) and chemical control (*i.e.*, herbicide

application), deemed necessary to efficiently and effectively maintain the Project pipeline ROW, to the extent those maintenance practices are consistent with the FERC Plan and Procedures, landowner stipulations, and applicable regulations and/or permits. ROW maintenance practices generally are determined by the species composition, height, and density of vegetation present within a ROW at the time of the maintenance activity. In upland areas, the permanent ROW will be mowed no more frequently than once every three years where the terrain allows or maintained by other means (*e.g.*, mechanical or hand cutting of various woody species) in steeper and rugged terrain. In order to facilitate periodic corrosion surveys, a 10-foot-wide strip centered on the pipeline may be mowed annually to maintain herbaceous growth. Vegetation control in the vicinity of wetlands and waterbodies will generally be conducted using mechanical means. Herbicides will not be used within 100 feet of wetlands or waterbodies unless approved by appropriate land management or state agencies, consistent with the FERC Procedures.

Impacts on the open land cover type from construction and operation of the pipeline facilities will be temporary and short-term. After restoration of the ROW, non-agricultural open land vegetation communities typically will regenerate quickly in both the construction and permanent ROWs. Agricultural lands also will revert to pre-construction use in both the construction and permanent ROWs. The greatest impact of the Project will be on forested areas. Forested areas cleared within the temporary construction ROW will be allowed to revert to preconstruction condition; however, impacts on these communities will be long-term because of the time required for woody vegetation to recover. Forest vegetation within the permanent ROW will undergo permanent conversion to a different cover type, because it will be subject to operational maintenance activities, and re-establishment of trees within the permanent ROW generally is precluded.

As discussed in more detail in Resource Report 2, construction of the Project will result in some permanent impacts on wetland areas. CEGT is currently in the process of consulting with the Little Rock District of the USACE and applying for the necessary wetland permits. Mitigation measures to offset Project impacts will be negotiated, as necessary, between CEGT and the USACE. A Wetland Delineation Report has been developed for the Project and is included in Appendix 2.A of Resource Report 2.

3.2.4.2 Extra Temporary Workspaces

In addition to the construction ROW, ETWS typically will be required to facilitate construction at public road crossings; at wetland and waterbody crossings; in areas with steep side slopes; for storage of segregated topsoil; at hydrostatic test water withdrawal pump locations; at crossovers and tie-ins; and for staging and fabrication of pipeline sections. ETWS also may be required when special construction techniques will be utilized. For the proposed Project, ETWS are largely necessary for the proposed horizontal directional drills (“HDDs”), and to provide additional space for construction in hilly terrain.

ETWS areas will be cleared and restored in the same manner as the temporary construction ROW described above. All ETWS will be allowed to return to pre-construction conditions. Vegetation impacts therefore will be short-term, except in forested areas, which may take additional time to re-establish and could change the composition and structure of the forest area in the immediate vicinity of the clearing as a result of canopy removal.

3.2.4.3 Pipe/Contractor Yards

CEGT has preliminarily identified three pipe storage/contractor yards, comprising a total of 9.64 acres that may be utilized during construction of the Project. Pipe storage/contractor yard #1 is located adjacent to the proposed BT-39 corridor at approximately MP 14.82, at the intersection of the replacement pipeline route and Luker Lane. It has been sited on 5.50 acres of pasture/hay field. Pipe storage/contractor yard #2 is located on the northern end of the proposed BT-39 route. It has been sited on approximately 2.07 acres of fallow/hay field to the west of Conway, approximately 0.4 mile north of MP 5.75. Pipe storage/contractor yard #3 is located approximately 0.8 mile southwest of MP 16.40. It has been sited on approximately 2.07 acres of hay field near Faulkner Meadow Road and an existing rail line.

The pipe storage/contractor yards will be used for equipment, pipe, and material storage, as well as temporary field offices and pipe preparation/field assembly areas. The sites will require only minor modifications to the existing land use. To support equipment laydown and vehicle traffic, a portion of the yards may be graveled, and a temporary

security fence may be installed. Use of these areas will be temporary. Following construction, the graveled area will be restored to preconstruction use, or as negotiated with the landowner. Construction and restoration measures within the temporary pipe storage/contractor yards will be conducted in accordance with the FERC Plan and Procedures.

3.2.4.4 Aboveground Facilities

In addition to the proposed pipelines, CEGT will install or modify six aboveground facility sites along the new Line BT-39, BT-40, and BT-41 pipelines, as well as modification of an existing aboveground facility site along CEGT's existing Line BT-14. These aboveground facilities are all Town Border Stations ("TBS"), as described below. Plot plans depicting the layout of these seven TBS sites are provided in Volume III of CEGT's application. Table 8.2-2 of Resource Report 8 provides the current land use types and acreages affected by construction and operation of aboveground facilities.

Permanent impacts at the aboveground facilities will include the entirety of the facilities' footprints, which will be graveled and/or paved and enclosed by security fencing. Construction and restoration measures within the temporarily impacted areas during construction of the aboveground facilities (see below) will be conducted in accordance with FERC's Plan and Procedures.

Highway 64 TBS (MP 0.00) – This facility will consist of an approximately 100-foot by 100-foot area surrounded by chain link fencing at the origin of the Line BT-39 pipeline. An additional 10 to 20-foot temporary workspace will partially surround the perimeter of the proposed facility to allow for construction activities and equipment travel along the edge of the site. The facility will consist of metering facilities and appurtenances, including one 12-inch pig launcher and receiver to allow for the maintenance, cleaning, and inspection of the pipeline. The facility will also contain a 4-inch tap on Line BT-14 for Line BM-21, pressure regulation and overpressure protection for Line BM-21, and a 6-inch tap on Line BT-39 to serve the City of Conway. The meter station will be equipped with communication equipment that will be linked into CEGT's System Control. The facility will occupy approximately 0.23 acre of existing open land that will be permanently converted to an industrial/commercial use.

Bryant Road TBS (MP 7.75) – This facility will consist of an approximately 100-foot by 100-foot area surrounded by chain link fencing. The facility will include 4-inch metering facilities and appurtenances, and a new 12-inch mainline valve ("MLV") setting on Line BT-39. The meter station will be equipped with communication equipment that will be linked into CEGT's System Control. The facility will permanently occupy an approximately 0.23-acre fenced area, of which approximately 0.09 acre will overlap the proposed permanent pipeline easement. This land currently consists of forest/woodland and will be permanently converted to an industrial/commercial use.

Highway 365 TBS (MP 17.17) – This facility will consist of an approximately 100-foot by 120-foot area surrounded by chain link fencing. An additional 25-foot temporary workspace will partially surround the perimeter of the proposed facility to allow for construction activities and equipment travel along the edge of the site. The TBS will include two 2-inch metering facilities and appurtenances to serve the towns of Mayflower and Maumelle, as well as a 12-inch MLV setting on Line BT-39. The meter stations will be equipped with communication equipment that will be linked into CEGT's System Control. The facility will permanently occupy an approximately 0.28-acre fenced area, of which approximately 0.07 acre will overlap the proposed permanent pipeline easement. This land currently consists of open land and forest/woodland that will be permanently converted to an industrial/commercial use.

Morgan TBS (MP 23.62) – In addition to removal of the existing Line B metering, regulation, and appurtenant facilities, the existing Morgan TBS will be modified through the installation of 2-inch metering facilities and appurtenances. The Morgan TBS is located at the terminus of the proposed Line BT-41 pipeline. The facility will consist of a 75-foot by 75-foot (0.13 acre) area surrounded by chain link fencing area. These modifications will require an expansion of the existing facility fence line. This land currently consists of forest/woodland that will be permanently converted to an industrial/commercial use.

James Road TBS (MP 27.43) - This facility will consist of an approximately 75-foot by 75-foot (0.13 acre) area surrounded by chain link fencing. The TBS will include a 2-inch metering facility and appurtenances at the terminus

of the proposed Line BT-40 pipeline. This facility will serve to provide replacement service for the existing Crystal Hill TBS, which will be removed in association with retirement of Line B as part of the Project. The meter station will be equipped with communication equipment that will be linked into CEGT's System Control. This land currently consists of open land that will be permanently converted to an industrial/commercial use.

Oak Grove TBS (MP 28.50) – In addition to removal of the existing Line B metering, regulation and appurtenant facilities, the existing Oak Grove TBS will be modified for use on Line BT-39. This TBS is located at the terminus of the new, Line BT-39 pipeline. Modifications will include the installation of two 6-inch metering facilities, a 12-inch receiver and valving, separator, and appurtenances. This TBS occupies a 390-foot by 200-foot area (1.74 acre) area surrounded by chain link fencing. There will be no change in the existing fence line, and therefore no land use impacts, as a result of this work.

Shoemaker TBS – An existing aboveground block valve site, which is located at the terminus of the segment of Line BT-14 to be transferred to CERC, will be expanded to an 80-foot by 100-foot area surrounded by chain link fencing. The TBS will include 4-inch metering facilities and appurtenances, and a new 12-inch pig receiver. The meter station will be equipped with communication equipment that will be linked into CEGT's System Control. The facility will permanently occupy an approximately 0.18-acre fenced area. This land currently consists of open land and forest/woodland that will be permanently converted to an industrial/commercial use.

These seven aboveground facilities will occupy 2.92 acres of land. Of that, 1.74 acres have already been disturbed by the previous construction activities undertaken to construct existing improvements at one of these facilities. Additional proposed impacts to be realized as a result of new construction will equate to 1.18 acres. Of these, 0.57 acres will be permanent impacts and 0.61 acres will be temporary. The permanently impacted areas are currently comprised of forested cover, whereas the temporarily impacted areas currently comprised of herbaceous cover.

3.2.4.5 Access Roads

A detailed list of the proposed access roads and their associated impacts is provided in Resource Report 8. Where possible, CEGT intends to use existing ROWs and public and private roads for access to the construction ROW. CEGT proposes to use 65 access roads, totaling 42.06 acres, to provide access to the proposed pipeline ROWs and aboveground facilities during construction. Of these, 63 roads are temporary access roads to obtain access to the construction ROWs; one (1) is a new, permanent road constructed to provide permanent access to the Bryant Road TBS; and one (1) is an existing, permanent road that provides access to the existing Oak Grove TBS.

Associated with the Line B retirement activities, CEGT proposes to use 37 existing access roads, encompassing approximately 11.70 acres, to provide temporary access to the proposed retirement work areas during construction.

CEGT's use of existing access roads during construction will minimize impacts on vegetation. It is anticipated that light maintenance may be required on some access roads in order for them to be useable by both trucks and construction equipment. Maintenance involves activities necessary to keep a road in appropriate condition for use (trimming of overhanging and adjacent trees, fixing ruts, light grading, placement of gravel for stability, etc.). Maintenance activities for temporary access roads are expected to have only minor, short-term impacts on vegetation.

3.2.4.6 Retirement Work Areas

As part of the Project, CEGT will retire some existing pipeline assets (Lines BM-1, BT-19, and portions of Line B and BM-21), and CEGT will realign ownership of a segment of Line BT-14 to its distribution affiliate, as outlined in Section 1.1.2 of Resource Report 1. The retired pipelines will be cut, capped, and grouted at improved road and railway crossings. In general, retirement of the existing pipeline facilities will require minimal ground disturbance at each of the locations where the pipeline will be cut, capped, and grouted (estimated at an approximately 50-foot by 50-foot work area), and all such ground disturbing activities will be confined to CEGT's existing and maintained ROW.

Existing aboveground facilities, as well as other ancillary facilities such as rectifiers and pipeline markers, along the pipeline segments to be retired will be removed. In general, removal of the existing aboveground and ancillary

facilities will require minimal ground disturbance, and all such ground disturbing activities will be confined to CEGT's existing and maintained pipeline ROWs or facility sites. Approximately 8.07 acres will be temporarily disturbed for removal of these facilities. All work associated with the abandonment work areas will be located within CEGT's existing aboveground facilities and existing ROW, so no woody vegetative clearing will be required and no long term impacts on vegetation are anticipated.

3.3 WILDLIFE

Because vegetation type is an important environmental component of wildlife habitat and often determines wildlife species distribution, the vegetation community types described in Section 3.2 have been adapted to define wildlife habitat types. Three general wildlife habitat types occur along the proposed route. They include upland forest, upland open/agricultural land, and wetland and aquatic habitats. These communities crossed by the proposed route support habitats that provide cover and forage for a variety of wildlife species. Upland habitats include both forested and open/agricultural communities. Wetland and aquatic habitats are comprised of palustrine, freshwater, communities dominated by forested, scrub/shrub, and emergent vegetation, and open water.

3.3.1 General Wildlife Habitat Types and Species Found in the Project Area

3.3.1.1 Upland Forest Habitat

The upland forest habitats that occur along the proposed pipeline route provide necessary food, cover, and young-rearing habitat for a wide variety of wildlife species. The wildlife communities within forested habitats depend largely on tree species composition and successional stage. Nuts from trees such as oaks and hickories provide food for deer, turkey, mice and squirrels. Berries from understory shrubs and woody vines also may provide important wildlife foods. Secondary canopy shrubs and saplings, brush piles, and fallen logs provide cover for various small- to medium-sized mammals. Large standing dead trees (particularly with cavities and/or exfoliating bark) provide nesting or roosting sites for a variety of birds, bats, and mammal species, as well as foraging opportunities for birds. Forested areas, particularly large unfragmented tracts, provide important habitat for warblers and other migrating and nesting songbirds. Game species may spend all or most of their time in these forested habitats.

The most conspicuous mammals that utilize forested habitats within the Project area include whitetail deer (*Odocoileus virginianus*), eastern cottontail rabbit (*Sylvilagus floridanus*), gray squirrel (*Sciurus carolinensis*), cotton mouse (*Peromyscus gossypinus*), striped gray skunk (*Mephitis mephitis*), and the gray fox (*Urocyon cinereoargenteus*) (Burt and Grossenheider, 1980). These forests also provide food and breeding habitat for a number of bird species, such as the northern cardinal (*Cardinalis cardinalis*), crow (*Corvus brachyrhynchos*), bluejay (*Cyanocitta cristata*), bobwhite (*Colinus virginianus*), and the wild turkey (*Meleagris gallopava*) (Stokes 1996). Common woodpeckers include the hairy woodpecker (*Picodes villosus*) and the pileated woodpecker (*Dryocopus pileatus*).

A variety of salamanders and reptiles may inhabit the forest floor among the leaf litter and within and under fallen trees and limbs. Common species in the Project area include the timber rattlesnake (*Crotalus horridus*), black rat snake (*Pantherophis obsoletus*), western ribbon snake (*Thamnophis proximus*), and the marbled salamander (*Ambystoma opacum*) (Conant and Collins, 1998).

3.3.1.2 Upland Open/Agricultural Land

Open/agricultural lands generally provide poor to moderate quality wildlife habitat in the Project area. This habitat is important to many of the same species found in the forested habitats, because it provides "edge" habitat that is important for feeding and raising young. Edge habitats are transition zone areas where two different habitat types meet, such as forested and open land or agriculture fields. These transition zones provide distinct changes in food types available, unique nesting or breeding habitats, and travel lanes. In addition to the increased diversity of wildlife and plant communities, these areas also are used for feeding and predation. Typical species that that may be observed on this type of land cover include mammals, birds, and reptiles. Mammals may include the eastern cottontail rabbit, white tail deer, coyote (*Canis latrans*), mice (*Mus spp*.), and eastern mole (*Scalopus aquaticus*).

Birds include the mourning dove (*Zenaida macroura*), common grackle (*Quiscalus quiscula*), red-winged blackbird (*Agelaius phoeniceus*), eastern bluebird (*Sialia sialis*), and red-tailed hawk (*Buteo jamaicensis*). Reptiles and amphibians in this community include the garter snake, southern black racer, skinks, and various frogs (Behler and King, 1979).

3.3.1.3 Wetland and Aquatic Habitat

Wetlands and lakes, small ponds, and streams may support similar wildlife species to those listed above, but they also provide habitat for species that are dependent on abundant sources of water. Mammals often found in wetland and aquatic habitats include white-tailed deer, swamp rabbit (*Sylvilagus aquaticus*), raccoon (*Procyon lotor*), muskrat (*Ondatra zibethicus*), beaver (*Castor canadensis*), and fox (*Vulpes vulpes*) (Mitsch and Gosselink, 1986; Robbins, et al. 1966). Riparian and wetland species include various waterfowl, such as egrets (*Ardea alba*), great blue heron (*Ardea Herodias*), wood duck (*Aix sponsa*), mallard duck (*Anas playrhynchos*), and Canada goose (*Branta canadenis*) (Stokes, 1996). Amphibians are also more abundant near wetlands or open waterbodies, regardless of the dominant vegetation type. Many water snakes and turtles, such as the common snapping turtle (*Chelydra serpentine*), are also dependent on aquatic habitats or wetlands.

Many of the wildlife species mentioned above are important game animals and are hunted in the Project area. Game species include the white-tailed deer, gray squirrel, raccoon, cottontail, bobwhite, mourning dove, wild turkey, ducks, and geese.

3.3.2 Sensitive or Managed Wildlife Habitats

The Bell Slough Wildlife Management Area ("WMA") is located near Mayflower, AR. The WMA is managed by the AGFC for fishing, hunting and recreation. Portions of this WMA have been granted to the NRCS to be managed under their Wetland Reserve Program ("WRP"). CEGT's existing Line B pipeline traverses two WRP easements (Easement Nos. 66-7103-5-0022 and 66-7103-5-0023) in Faulkner County, Arkansas. CEGT proposes to retire/abandon the Line B pipeline in place through these WRP easements in order to avoid surface disturbance and impacts to the WRP easements.

Line BT-39, from approximate MP 17.7 to 18.2, parallels, but lies just outside the southern edge of one of the WRP easements (Easement No. 66-7103-5-0022), until it turns south and follows Interstate 40. One access road, Line BT-39 AR-17.72, runs adjacent to the western boundary of this WRP easement for a length of 2,700 ft. This proposed access road follows an existing access road from Grassy Lake Road along the western boundary of the WRP. Use of the road is required to provide construction equipment access to an isolated portion of the planned construction right-of-way. However, Line BT-39 construction activities are located outside of actively managed areas, and no Project-related concerns have been identified.

3.3.3 Migratory Birds

A variety of migratory bird species may occur seasonally along the proposed pipeline route. Table 3.3-1 identifies the migratory bird species of special concern known to occur in the Bird Conservation Region ("BCR") in which the proposed Project is located (BCR25), as well as descriptions of these species' preferred nesting habitat and an assessment of whether suitable nesting habitat is likely to be present in the proposed Project area.

TABLE 3.3-1

MIGRATORY BIRD SPECIES OF CONCERN KNOWN TO NEST IN BIRD CONSERVATION REGION 25[1]

Common Name	Scientific Name	Nesting Habitat	Nesting Habitat Present within Project Area
Least Bittern	*Ixobrychus exilis*	Freshwater and brackish marshes having freshwater aquatic or semi-aquatic vegetation interspersed with woody vegetation and open water.	Not likely
Little Blue Heron	*Egretta caerulea*	Riparian habitats, swamps, ponds, lakes, and human-made impoundments and islands.	Potentially
Swallow-Tailed Kite	*Elanoides forficatus*	Diverse vegetation communities with tall, accessible trees adjacent to open areas.	Potentially
Bald Eagle	*Haliaeetus leucocephalus*	Forested areas adjacent to large bodies of water; nests in trees.	Not likely
American Kestrel	*Falco sparverius*	Semi-open habitats, including meadows, grasslands, early oldfield successional communities, open parkland, agricultural fields, and both urban and suburban areas.	Potentially
Chuck-Will's-Widow	*Antrostomus carolinensis*	Deciduous, pine, oak-hickory, and mixed forests, oak groves, forest edges, and riparian areas.	Potentially
Red-Headed Woodpecker	*Melanerpes erythrocephalus*	Deciduous woodland and open areas with scattered trees.	Potentially
Loggerhead Shrike	*Lanius ludovicianus*	Open fields with scattered trees, open woodlands, and scrub.	Potentially
Brown-Headed Nuthatch	*Sitta pusilla*	Southeastern pine forests and residential areas with large pines.	Not likely
Bewick's Wren	*Thryomanes bewickii*	Open woodland, shrub land, farms, and suburbs.	Potentially
Wood Thrush	*Hylocichla mustelina*	Deciduous or deciduous-coniferous forest, especially near water.	Potentially
Prairie Warbler	*Setophaga discolor*	Dry brushy clearings, forest margins, and pine barrens.	Potentially
Cerulean Warbler	*Setophaga cerulea*	Mature deciduous forests.	Potentially
Prothonotary Warbler	*Protonotaria citrea*	Bottomland hardwood forests and forested wetlands.	Potentially
Worm-Eating Warbler	*Helmitheros vermivorum*	Ravines and hillsides in thick deciduous woods	Not likely
Swainson's Warbler	*Limnothlypis swainsonii*	Canebreaks, swamps, and thickets in moist lowland forests and woodlands.	Not likely
Louisiana Waterthrush	*Parkesia motacilla*	Humid forests with running water.	Not likely
Kentucky Warbler	*Geothlypis formosa*	Woodlands with dense damp undergrowth.	Not likely
Bachman's Sparrow	*Peucaea aestivalis*	Pine woodlands or open habitats with a dense ground layer of grasses and forbs and an open understory with few dense shrubs.	Not likely
Painted Bunting	*Passerina ciris*	Partly open habitats with scattered brush and trees, riparian thickets and brush, and weedy and shrubby areas.	Potentially
Orchard Oriole	*Icterus spurius*	Diverse habitats with preference for open park-like woodlands along riparian borders; road rights-of-way.	Potentially

Sources: U.S. Fish and Wildlife Service, 2008 and Ehrlich, 1988.

[1] Species that occur but do not nest in this BCR are the solitary sandpiper, yellow rail, Hudsonian godwit, buff-breasted sandpiper, Sprague's pipit, Henslow's sparrow, and Smith's longspur.

Pipeline construction could result in short-term disturbance of migratory bird habitat, causing birds present in the Project area to relocate temporarily during periods of active construction and human activity. The Project has the potential to alter or otherwise affect migratory bird foraging habitat temporarily; however, such impacts will be minimal, given the amount of similar habitats available outside of the construction ROW. The potential for construction activities to disturb nesting migratory birds has been minimized by co-locating the proposed route with existing utility and road ROW to the greatest extent possible (approximately 60 percent of the overall pipeline route), utilizing HDD at potentially sensitive habitat crossings (*e.g.,* Tucker Creek, Palarm Creek, and an unnamed open waterbody), and implementing the FERC Plan and Procedures throughout all phases of construction. The USFWS reviewed the proposed Project and commented by letter dated June 13, 2013 that the Project would not have any significantly adverse impacts on any non-listed species (provided in Appendix 1.D of Resource Report 1).

The Project is not likely to result in long-term or cumulative impacts on migratory birds. No substantial changes in habitat availability or suitability are anticipated as a result of the proposed Project or other known activities in the Project vicinity. Forest fragmentation will be avoided or minimized by co-location of the proposed Project pipeline with existing utility and road ROW to the greatest extent possible. No aboveground facilities higher than rooftops of nearby structures are proposed. In forested areas, the incremental clearing of the proposed pipeline permanent easement will result in a minor reduction in forest vegetation due to the permanent conversion of forested habitat within the permanent pipeline easement to herbaceous or shrub habitat. However, portions of this impact will occur within what is currently edge habitat (due to the presence of the existing parallel ROWs), and the effect will be to shift the edge habitat slightly, rather than causing an actual loss of edge habitat. This minor spatial shift of the existing forest edge habitat will not have a significant effect on migratory birds and is expected to have minimal or no indirect effect on adjacent habitats or species. Potential long-term impacts on migratory bird species that nest in open habitats will be minimized, because maintenance of the permanent pipeline easement during operations will be conducted in accordance with the FERC Plan and Procedures, which contain measures specifically intended to minimize impacts on migratory birds, as described further below. The use of the HDD crossing method at the two perennial streams and one open waterbody will also help preserve the habitat of the associated riparian areas, thereby minimizing potential impact on migratory birds.

In addition to ROW co-location and HDD use, CEGT has routed the pipeline to avoid sensitive resources where possible and limited the ROW to the minimum necessary. CEGT also proposes to complete the clearing of trees from the construction ROW prior to April 15 in order to avoid the migratory bird nesting season. During operation of the proposed Project, CEGT will implement the best management practices identified in the FERC Plan and Procedures. Consequently, routine vegetation maintenance will not occur between April 15 and August 1 of any year to minimize the potential for impacts on migratory bird species that may use the permanent ROW for nesting. In addition, CEGT will not conduct routine vegetation maintenance of the full pipeline ROW more frequently than once every 3 years. Vegetation maintenance practices on the ROW adjacent to waterbodies will include the maintenance of a riparian strip within 25 feet of the stream as measured from the mean high water mark, which will be allowed to revegetate permanently with native plant species across the entire ROW, except for a 10-foot corridor centered on the pipeline to be maintained as herbaceous vegetation (Refer to Section 3.2.4).

3.3.4 Construction and Operation Impacts and Proposed Mitigation

3.3.4.1 Proposed Pipeline Facilities

Pipeline Construction

The impact of the proposed Project on wildlife species and their habitats will vary depending on the requirements of each particular species and the existing habitat present along the proposed pipeline route. Construction activities, especially clearing of the ROW, will reduce feeding, nesting, and cover habitat components until vegetation has become re-established. Transient species may be disturbed or displaced temporarily from portions of their habitats, and mortality of individuals of less transient species, such as some small mammals, reptiles, or amphibians may occur. Indirect wildlife impacts associated with construction noise and increased human activity will be temporary and could include abandoned reproductive efforts, displacement, and avoidance of work areas. However, both

direct and indirect impacts on wildlife along the pipeline corridor and other work areas generally will be of short duration and limited to the period of construction activities.

In accordance with the FERC Plan and Procedures, following construction, temporary workspace outside the permanent ROW will be allowed to revert to pre-construction conditions. Effects on non-forested upland habitat disturbed by construction will be temporary, and these areas are expected to recover quickly once construction is completed. Similarly, Project-related impacts on emergent wetland habitats will be short-term. The temporary effects on these habitats should have little or no significant impact on their importance to wildlife, and no changes to wildlife populations are anticipated. Forested communities, both upland and wetland, will be affected to a greater extent, because of the long-term conversion of these wooded habitats to earlier successional stages in the temporary ROW and the permanent conversion to scrub/shrub and/or non-woody herbaceous species in the permanent, maintained ROW.

Pipeline Operation

A variety of migratory bird species may occur seasonally along the proposed pipeline route. The species most likely to be affected are those that are sensitive to forest fragmentation. Forest fragmentation has been limited to the greatest extent practicable by co-locating with existing electrical transmission powerline ROW, existing public roads, and existing utility easements for approximately 60 percent of the pipeline route. Some migratory bird species use open habitats for nesting. To minimize potential impacts on these migratory bird species, CEGT will not conduct routine vegetation maintenance of the ROW more frequently than once every 3 years. However, to facilitate periodic corrosion and leak detection surveys, a corridor not exceeding 10 feet in width centered on the pipeline may be cleared at a frequency necessary to maintain the 10-foor corridor in an herbaceous state. Further, routine vegetation maintenance will not occur between April 15 and August 1 of any year to minimize the potential for impacts on migratory bird species that may use the permanent right-of-way for nesting.

The permanent ROW may function as a travel corridor for some species and may provide food, cover, and breeding habitat for those species that use open and emergent habitats. In addition, maintained utility ROW can provide important early successional habitats for several important game species and migratory birds.

3.3.4.2 Extra Temporary Workspaces

ETWS areas will be cleared and restored in the same manner as the temporary construction ROW described above. All ETWS will be allowed to return to pre-construction conditions. Wildlife impacts therefore will be short-term, except in forested areas, which may take additional time to re-establish and could change the composition and structure of the forest area in the immediate vicinity of the clearing as a result of canopy removal and therefore change wildlife habitat use of these areas until the canopy regenerates.

3.3.4.3 Pipe Storage/Contractor Yards

As noted above, approximately 13.8 acres of hay fields will be used for temporary pipe storage. Use of these areas is temporary, and vegetation is anticipated to be restored quickly post-construction. The use of these areas as pipe/contractor yards may restrict their use by wildlife during construction. However, no long-term impacts on wildlife habitat provided by these sites are anticipated as a result of this Project.

3.3.4.4 Aboveground Facilities

Permanent impacts associated with aboveground facilities are discussed in Section 3.2.4.4. Four of these seven facilities will be located primarily in areas of open land, and as such any impacts on wildlife associated with their use are expected to be minimal. The Bryant Road and Morgan TBS will be located within areas currently occupied by upland forests; however, CEGT has designed these facilities such that they will only impact a total of 0.36 acre in order to minimize impacts on wildlife habitats.

3.3.4.5 Access Roads

CEGT's use of predominantly existing access roads during construction will minimize impacts on wildlife habitat. The minor maintenance that may be required to support construction equipment along these roads is expected to have only minor and short-term impacts on wildlife habitats. Construction of the one new permanent access road is not expected to result in significant impact on wildlife habitat because this road will be located within or adjacent to the areas cleared for the construction ROW.

3.3.4.6 Retirement Work Area

All work associated with the abandonment work areas will be short-term and located within CEGT's existing aboveground facilities and ROW. For this reason, no impacts on wildlife associated with construction activities at these sites are anticipated.

3.4 ENDANGERED AND THREATENED SPECIES

CEGT consulted with the USFWS, ANHC, and AGFC regarding the potential occurrences of federally and/or state-listed endangered and threatened species, candidate species or species proposed for such listing, species of special concern, and critical habitats in the vicinity of the proposed Project. Additionally, the ANHC databases were reviewed for records of known occurrences of any federally and/or state-listed threatened or endangered species, other species or natural communities of conservation concern, and special features in proximity to the proposed Project facilities. Table 3.4-1 lists the federally and state-listed endangered and threatened species that potentially occur in Faulkner and Pulaski Counties, Arkansas.

The USFWS has identified five federally protected species known to occur within the region. They include the red-cockaded woodpecker (*Picoides borealis*), interior least tern (*Sterna antillarum athalassos*), running buffalo clover (*Trifolium stoloniferum*), piping plover (*Charadrius melodus*), and the bald eagle (*Haliaeetus leucocephalus*).

The ANHC database also contains records of occurrence for six federally and/or state-listed endangered or threatened species within five miles of the proposed Project. They include the Federal/State endangered interior least tern, the State endangered, opaque prairie sedge (*Carex opaca*), and the State threatened open-ground whitlow-grass (*Draba aprica)*, Alabama snow-wreath (*Neviusia alabamensis*), rein orchid (*Platanthera flava*), and purple fringeless orchid (*Platanthera peramoena)*. No designated critical habitat for federally listed species was identified as occurring in the Project area.

3.4.1 Federally Listed Endangered and Threatened Species

CEGT submitted a letter to the USFWS on April 10, 2013, requesting that the USFWS review the Project details to identify potential impacts on federally listed endangered or threatened species. The USFWS responded to that correspondence on May 6, 2013, with general comments and technical guidance regarding federally listed endangered and threatened species potentially occurring in the Project area. In its comments, the USFWS identified the red-cockaded woodpecker, interior least tern, running buffalo clover, piping plover, and the bald eagle as occurring in the region. CEGT submitted additional correspondence to the USFWS on June 4, 2013, describing the results of additional field surveys that had been conducted in association with proposed route modifications for the Project. In that letter, CEGT also requested that the USFWS provide concurrence with its determination that the Project is not likely to adversely affect any federally listed species or critical habitat. On June 13, 2013, USFWS concurred with CEGT's determination that the proposed Project is not likely to adversely affect these five federally protected species. Copies of the referenced correspondence with the USFWS are provided in Appendix 1.D of Resource Report 1.

Table 3.4-1 lists the following federally listed species identified by the USFWS within the region. The preferred habitat and potential for occurrence of these species, as well as CEGT's assessment of potential Project impacts on them, are discussed below.

TABLE 3.4-1

FEDERAL AND STATE LISTED THREATENED AND ENDANGERED SPECIES POTENTIALLY OCCURING IN FAULKNER AND PULASKI COUNTIES, ARKANSAS

Common Name	Scientific Name	Status[1]	Habitat Requirement[2,3,4,5]	Suitable Habitat Present
Animals				
red-cockaded woodpecker	*Picoides borealis*	FE	Mature pine forests, specifically those with long leaves	Unlikely to occur in project area.
interior least tern	*Sterna antillarum athalassos*	FE/SE	Sand and gravel islands in the Arkansas and Mississippi Rivers.	Unlikely to occur in project area.
piping plover	*Charadrius melodus*	FT	Nests on open, sparsely vegetated sand or gravel beaches adjacent to alkali wetlands and on beaches, sand bars, and dredged material islands of major river systems.	Unlikely to occur in project area.
bald eagle	*Haliaeetus leucocephalus*	R / BGEPA	Estuaries, large lakes, reservoirs, rivers, and some seacoasts.	Unlikely to occur in project area.
Plants				
running buffalo clover	*Trifolium stoloniferum*	FE	Mesic woodlands in partial to filtered sunlight, where there is a pattern of moderate periodic disturbance for a prolonged period, such as mowing, trampling, or grazing. Limestone or calcareous substrate.	Unlikely to occur in project area.
opaque prairie sedge	*Carex opaca*	SE	Moist depressions, drainages, and swales in wet or mesic prairie; also colonizes roadside ditches and railroad rights-of-way; often in heavy, clayey soils.	Potential to occur in project area.
open ground whitlow-grass	*Draba aprica*	ST	Thin soils exposed to at least partial sun; 4-5-cm-deep soils near the edges of tree islands (Gaddy, undated) on Granite Outcrops; in other areas it may be in shallow soil over or among boulders or in excessively drained sandy or gravelly soils.	Potential to occur in project area.
Alabama snow-wreath	*Neviusia alabamensis*	ST	Forested bluffs, talus slopes, and stream banks on a variety of geologic substrates, soil types, and aspects, and under open- to completely closed-canopy conditions; most typical habitat may be within forested areas on thin soil over limestone that is moist for part of the year (seasonal streambeds, margins of sinkholes, river bluffs); usually found in large clonal clumps.	Potential to occur in project area.
rein orchid	*Platanthera flava*	ST	Sandy silt alluvium and rotting logs in bottomland (floodplain) forests, wet thickets, or hydric hammock communities; it also occurs in wet-mesic prairies and wet meadows.	Potential to occur in project area.
purple fringeless orchid	*Platanthera peramoena*	ST	Habitats include moist meadows and prairies, prairie swales, openings in floodplain woodlands, swamps, moist thickets, gravelly seeps, stream banks, poorly drained fallow fields, and ditches; this orchid benefits from disturbance that reduces overhead trees and other kinds of competing vegetation; it often is found in seasonal wetlands that are flooded during the spring, but dry out during the summer.	Potential to occur in project area.

TABLE 3.4-1

FEDERAL AND STATE LISTED THREATENED AND ENDANGERED SPECIES POTENTIALLY OCCURING IN FAULKNER AND PULASKI COUNTIES, ARKANSAS

Common Name	Scientific Name	Status[1]	Habitat Requirement[2,3, 4,5]	Suitable Habitat Present

Notes:

[1]Legal Status:

FE -Federally Endangered.

SE- State Endangered; **ST**- State threatened.

R – Recovery/Delisted

BGEPA – Bald and Golden Eagle Protection Act

[2]Source: Additional details of Habitat Requirements were obtained from NatureServe Explorer (http://www.natureserve.org/explorer/).

[3]Source: Illinois Wildflowers (http://www.illinoiswildflowers.info/index.htm).

[4]Source: Additional details of Habitat Requirements were obtained from Arkansas Oil and Gas Commission (http://www.naturalheritage.com/!userfiles/Fayetteville_shale_bmp.pdf).

[5]Source: Additional details of Habitat Requirements were obtained from USFWS Species Reports (http://ecos.fws.gov/tess_public/pub/stateListingAndOccurrenceIndividual.jsp?state=AR&s8fid=112761032792&s8fid=112762573902).

3.4.1.1 Red-cockaded woodpecker

The red-cockaded woodpecker is a small woodpecker with black wings, a black cap, a dull white breast with small black spots, and a barred, black and white back. They occur primarily in mature, long leaf, pine forests. They are rarely found in deciduous or mixed pine-hardwood forests (NatureServe, 2012). There is one location throughout the proposed and existing pipeline corridors that includes larger areas of mature, long leaf, pine forests. These areas are located in Camp Robinson, in the southern portion of the action area. As it relates to the abandonment pipeline, this pipeline corridor is devoid of mature trees and the work proposed here is simply to access valve locations for decommissioning. The proposed new pipeline corridor is located within or immediately adjacent to a routinely plowed fire break that ranges from 50 to 100 feet wide. There may be scattered individual pine trees that will be felled, but there are no large stands of long leaf pine trees that will be removed as part of the undertaking. Due to the minimized tree removal, combined with the transient nature of the red-cockaded woodpecker, the proposed Project is not likely to adversely affect the species. The USFWS concurred with this determination in their June 13, 2013 letter.

3.4.1.2 Interior Least Tern

The interior least tern is a small shore bird that is found throughout much of the United States and migrates as far south as northern South America. Nesting and foraging habitat are near larger bodies of water, such as ocean coasts, lagoons, tidal flats, estuaries, rivers and large streams and include beaches, sand dunes, and sand and gravel bars. In inland areas, the interior least tern inhabits islands, beaches, sandbars, dredge islands, sandpits, and gravel roads on top of levees (Missouri Department of Conservation, 2013). They typically migrate into the general Project area from April to mid-May and tend to nest around large rivers away from the water line in gravel or sand depressions. No large rivers or other major waterbodies will be impacted by the Project and no sand or gravel depressional areas were identified during field surveys. In addition, no interior least terns were seen or heard during field surveys, and there are no known occurrences of the species within the Project area. Although Lake Carol Dan and the Arkansas River, which are located in the general Project area, may provide suitable tern nesting habitat, the proposed Project does not directly cross, nor is located directly adjacent to these resources. For these reasons, CEGT concludes that construction and operation of the proposed Project is not likely to adversely affect the interior least tern or its preferred habitat. The USFWS concurred with this determination in their June 13, 2013 letter.

3.4.1.3 Running buffalo clover

The running buffalo clover is found in mesic woodlands in partial to filtered sun. It occurs in areas of moderate disturbance for a prolonged period, such as mowing, trampling, or grazing. The preferred habitat of the running buffalo clover may exist throughout the extreme northern, central, and extreme southern portions of the proposed project corridor. The northern portion was determined to not include any population of running buffalo clover, by the USFWS, as of February 13, 2012. In addition, the forested areas within the central portion of the new corridor are steeper, rockier, and exhibit a more xeric moisture regime. Also, according to the revised USFWS endangered species inventory dated March 5, 2013, there are currently no known individuals or populations of running buffalo clover in Faulkner County, which includes the northern and central portions of the Project corridor.

The revised inventory does indicate known individuals or populations in Pulaski County, which corresponds with the southern portions of the project corridor. According to NatureServe, running buffalo clover prefers limestone and other calcareous substrates. It should be noted, that the geology underlying this portion of the action area includes Quaternary sands, gravels, and alluvium (associated with floodplains). It is also underlain by the Upper and Lower Atoka formations and the Jackfork Sandstone formation (AGS, 2012). According to the Arkansas Geologic Survey ("AGS"), these formations are composed primarily of sandstones and shales, and rarely include calcareous beds (AGS, 2012). Furthermore, according to the United States Department of Agriculture, NRCS, the soils underlying the southern portion of the action area include members of the Leadvale, Linker, and Mountainburg series (USDA, 2012). Based upon the chemical soil properties for these soils, they are not alkali soils and have mid-to low pH's that range from 4.5 to 6. Therefore, it is believed any known occurrences of running buffalo clover in Pulaski County would likely occur in calcareous substrates located outside of the Project corridor. For these reasons, CEGT concludes that construction and operation of the proposed Project is not likely to adversely affect the running buffalo

clover or its preferred habitat. The USFWS concurred with this determination in their June 13, 2013 letter.

3.4.1.4 Piping Plover

The piping plover is a small, stocky shorebird that nests on open, sparsely vegetated sand or gravel beaches adjacent to wetlands and on beaches, sand bars, and dredged material islands of major river systems. Piping plovers are migratory birds that breed in the spring in the northern United States and Canada. They nest on shorelines of the Great Lakes, the shores of rivers and lakes in the Northern Great Plains, and along the Atlantic Coast. In the fall, plovers migrate south and winter along the coast of the Gulf of Mexico or other southern locations (USFWS, 2013). No large rivers or other major waterbodies will be impacted by the Project and no sand or gravel beaches were identified during field surveys. In addition, no piping plovers were seen or heard during field surveys, and there are no known occurrences of the species within the Project area. Although Lake Carol Dan and the Arkansas River, which are located in the general Project area, may provide suitable plover habitat, the proposed Project does not directly cross, nor is located directly adjacent to these resources. For these reasons, CEGT concludes that construction and operation of the proposed Project is not likely to adversely affect the piping plover or its preferred habitat. The USFWS concurred with this determination in their June 13, 2013 letter.

3.4.1.5 Bald Eagle

The bald eagle is a raptor of aquatic ecosystems that prefers habitat near seacoasts, rivers, large lakes and other large areas of open water. The species primarily uses old growth and mature stands of conifers or hardwoods to nest, perch and roost. Bald eagles usually select the oldest and tallest trees that provide visibility, an open structure, and are near prey. Bald Eagles generally prefer areas away from human disturbance and usually select nesting sites near lakes with an abundance of warm-water fish. No large rivers or other major waterbodies will be impacted by the Project. In addition, no bald eagles were seen or heard during field surveys, and there are no known occurrences of the species within the Project area. Although Lake Carol Dan and the Arkansas River, which are located in the general Project area, may provide suitable eagle nesting habitat, the proposed Project does not directly cross, nor is located directly adjacent to these resources. For these reasons, CEGT concludes that construction and operation of the proposed Project is not likely to adversely affect the bald eagle or its preferred habitat. The USFWS concurred with this determination in their June 13, 2013 letter.

3.4.2 State-Listed Species

Based on consultations with the ANHC, two State-listed endangered species and four State-listed threatened plant species have been identified as occurring within a 5-mile buffer of the Project area. Of these, only one (opaque prairie sedge), has been documented as occurring within one mile of the Project corridor. Opaque prairie sedge is found in moist depressions, drainages, and swales in wet or mesic prairie and also colonizes roadside ditches and railroad ROWs; often in heavy, clayey soils.

Because there were no known occurrences of any of these species within the Project corridor and no individuals were identified during biological field surveys of the Project, CEGT concludes that no impacts to State-listed species are anticipated from construction and operation of the proposed Project.

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CENTERPOINT ENERGY GAS TRANSMISSION COMPANY, LLC

CENTRAL ARKANSAS PIPELINE ENHANCEMENT PROJECT
FERC DOCKET NO. PF13-10-000

DRAFT RESOURCE REPORT NO. 8

LAND USE, RECREATION, AND AESTHETICS

PUBLIC

Prepared for:
CenterPoint Energy Gas Transmission Company, LLC
P.O. Box 21734
Shreveport, LA
71151

Prepared by:
AK Environmental, LLC
850 Bear Tavern Road, Suite 106
West Trenton, NJ
08628

August 2013

CENTRAL ARKANSAS PIPELINE ENHANCEMENT PROJECT

FERC DOCKET NO. PF13-10-000

RESOURCE REPORT NO. 8 – LAND USE, RECREATION, AND AESTHETICS SUMMARY OF COMMISSION FILING INFORMATION	
INFORMATION	**FOUND IN**
1. Classify and quantify land use affected by: (§380.12(j)(1)) a. Pipeline construction and permanent rights-of-way; b. Extra work/staging areas; c. Access roads; d. Pipe and contractor yards; and e. Aboveground facilities. For aboveground facilities, provide the acreage affected by construction and operation, acreage leased or purchased, and describe the use of the land not required for operation.	Section 8.2, Tables 8.2-2, 8.3-2, Appendix 8.A, and Appendix 8.B
2. Identify by milepost all locations where the pipeline right-of-way would at least partially coincide with existing right-of-way, where it would be adjacent to existing rights-of-way, and where it would be outside of existing right-of-way. (§380.12(j)(1))	Section 8.2.1.2, Table 8.2-1
3. 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 right-of-way, and temporary construction right-of-way. (§380.12(j)(1))	Project Alignment Sheets (Volume IV - Privileged and Confidential), Resource Report 1, Appendix 1.A
4. Summarize the total acreage of land affected by construction and operation of the project. (§380.12(j)(1))	Table 8.3-2
5. Identify by milepost all planned residential or commercial/business development and the timeframe for construction. (§380.12(j)(4))	Section 8.4.2
6. Identify by milepost special land uses (e.g., maple sugar stands, specialty crops, natural areas, national and state forests, conservation land, etc.) (§380.12(j)(4))	Sections 8.5.1, 8.5.2
7. Identify by beginning milepost and length of crossing all land administered by Federal, state, or local agencies, or private conservation organizations. (§380.12(j)(4))	Section 8.5.1
8. Identify by milepost all natural, recreational, or scenic areas, and all registered natural landmarks crossed by the project. (§ 380.12 (j) (4 & 6))	Section 8.5.2
9. Identify all facilities that would be within designated coastal zone management areas. (§ 380.12 (j) (4))	N/A
10. Identify by milepost all residences that would be within 50 feet of the construction right-of-way or extra work area. (§ 380.12 (j) (5))	Table 8.4-1
11. Identify all designated or proposed candidate National or State Wild and Scenic Rivers crossed by the project. (§ 380.12 (j) (6))	Section 8.5.2
12. Describe any measures to visually screen aboveground facilities, such as compressor stations. (§ 380.12 (j) (11))	Section 8.7

RESOURCE REPORT NO. 8 – LAND USE, RECREATION, AND AESTHETICS SUMMARY OF COMMISSION FILING INFORMATION	
INFORMATION	**FOUND IN**
13. Demonstrate that applications for rights-of-way or other proposed land use have been or soon will be filed with Federal land-managing agencies with jurisdiction over land that would be affected by the project. (§ 380.12 (j) (12))	Section 8.5.1
Additional Information Often Missing and Resulting in Data Requests	**Section Reference**
1. Identify all buildings within 50 feet of the construction right-of-way or extra work areas.	Table 8.4-1
2. Describe the management and use of all public lands that would be crossed.	Section 8.5.1
3. Provide a list of landowners by milepost or tract number that corresponds to information on alignment sheets.	Resource Report 1, Appendix 1.E (Volume IV – Privileged and Confidential)
4. Provide site-specific construction plans for residences within 50 feet of construction.	N/A

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Appendices

ACRONYMS AND ABBREVIATIONS

ADEQ	Arkansas Department of Environmental Quality
AGFC	Arkansas Game and Fish Conservation
AHTD	Arkansas State Highway and Transportation Department
AWA	Abandonment Work Area
Camp Robinson	Camp Joseph T. Robinson
CAPDD	Central Arkansas Planning and Development District, Inc.
CEGT	CenterPoint Energy Gas Transmission Company, LLC
CERC	CenterPoint Energy Resources Corporation d/b/a Arkansas Gas
CFR	Code of Federal Regulations
Commission	Federal Energy Regulatory Commission
CRP	Conservation Reserve Program
DOT	Department of Transportation
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ER	Environmental Report
ETWS	Extra Temporary Workspaces
FSA	Farm Service Agency
FERC	Federal Energy Regulatory Commission
HDD	Horizontal Directional Drill
MLV	Mainline valve
MP	Milepost
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NWSRS	National Wild and Scenic Rivers System
Plan	FERC Upland Erosion Control, Revegetation, and Maintenance Plan
Procedures	FERC Wetland and Waterbody Construction and Mitigation Procedures
Project	Central Arkansas Pipeline Enhancement Project
ROW	Right-of-way
Trail	Trail of Tears
USGS	U.S. Geological Survey
WMA	Wildlife Management Area
WRP	Wetland Reserve Program

8.0 INTRODUCTION

CenterPoint Energy Gas Transmission Company, LLC ("CEGT"), in cooperation with its affiliated natural gas distribution business, CenterPoint Energy Resources Corporation d/b/a Arkansas Gas ("CERC"), is filing an application for a certificate of public convenience and necessity with the Federal Energy Regulatory Commission ("FERC" or "Commission") for the Central Arkansas Pipeline Enhancement Project ("Project"). The Project will provide for the continued safe, reliable, and efficient transportation of natural gas to the central Arkansas cities and towns of Conway, Mayflower, Maumelle, North Little Rock, and Little Rock. As part of the Project, CEGT is proposing the installation of approximately 28.5 miles of 12-inch-diameter natural gas pipeline and ancillary facilities in Pulaski and Faulkner Counties, Arkansas. The proposed pipeline, to be named Line BT-39, will be constructed primarily on new alignment, and will provide replacement transmission service for a portion of two existing CEGT natural gas pipelines (Lines B and BT-14). CEGT will also construct metering and appurtenances at seven new or modified locations along the Line BT-39 pipeline route and tie-in points to the existing Line BT-14 pipeline, as well as two 4-inch-diameter laterals (Lines BT-40 and BT-41) to provide natural gas deliveries to its distribution affiliate. As currently proposed, ownership of an approximately 12.4-mile-long segment of the existing Line BT-14 pipeline through the City of Conway would be transferred to CEGT's distribution affiliate, and an approximately 21.7-mile-long segment of the existing Line B pipeline, extending from Conway to North Little Rock, would be retired from service. Other minor ancillary facilities and small diameter pipelines (Line BM-1, Line BT-19, and a portion of Line BM-21) within the City of Conway would also be retired in association with the proposed Project. Refer to the Project locations maps (Figure 1.1-1) for a depiction of existing, proposed, and retirement pipeline facilities associated with the Project.

This Resource Report identifies and quantifies the land uses potentially affected by the construction and operation of the proposed Project, including public and special-use lands. In addition to evaluating the proposed Project's impacts on land uses, this report also evaluates potential Project-related impacts on visual resources.

8.1 LAND USE CLASSIFICATION

Classification of land uses crossed by the proposed Project was based on information obtained through field surveys, public databases, including the U. S. Geological Survey ("USGS") Land Use/Land Cover database, and review of current aerial photography. The land use categories evaluated in this report are identified by primary vegetation cover type and/or predominant land use. Land use within the Project area was divided into six categories similar to those suggested by the FERC's *Guidance Manual for Environmental Report Preparation* (2005). These categories include:

- Agricultural Land – Active cropland such as soybean fields or hay fields;
- Forest / Woodland – Land with tree crown coverage of more than 10 percent;
- Residential Land – Yards, subdivisions, and mobile home parks;
- Industrial / Commercial Land – Power or utility stations, manufacturing or industrial plants, commercial or retail facilities, railroads, and roads;
- Open Land – Undeveloped land with no or minimal tree cover such as old fields and emergent and scrub-shrub wetlands;
- Open Water – Water crossings greater than 100 feet; and
- Other – Miscellaneous special use areas (*e.g.*, land associated with schools, parks, places of worship, cemeteries, sports facilities, campgrounds, golf courses, ballfields).

8.2 LAND USE REQUIREMENTS

Existing land uses within the Project footprint, including the land required for construction and operation of the proposed pipeline, extra temporary workspace ("ETWS"), the pipe storage/contractor yard, access roads, aboveground facilities, and the abandonment work areas, are summarized in Table 8.3-2. More detailed discussions of land uses in these Project areas are presented in Sections 8.2.1, 8.2.2, and 8.2.3.

8.2.1 Pipeline Facilities

CEGT proposes to construct the Line BT-39 pipeline using a nominal 65 to 75-foot-wide construction right-of-way ("ROW"), composed of a 40-foot-wide permanent easement and a 25- to 35-foot-wide temporary construction ROW. Lines BT-40 and BT-41 will be constructed with a 50-foot-wide total construction ROW, consisting of a 30-foot-wide permanent easement and a 20-foot-wide temporary construction ROW.

Following construction, the temporary construction ROW will be allowed to revert to preconstruction conditions and uses, and the permanent easement will be maintained as new pipeline ROW. The ROW configuration is depicted in the Project Construction Typical Drawings provided in Appendix 1.A of Resource Report 1. CEGT anticipates that the construction ROW, along with the ETWS and access roads will provide the workspace needed to construct the proposed pipeline safely and efficiently.

8.2.1.1 Construction and Permanent Rights-of-Way

CEGT is proposing a nominal construction corridor (temporary plus permanent ROW) of 65 to 75 feet in width in order to provide a safe work environment and promote effective implementation of the various natural gas pipeline construction techniques and best management practices. The permanent maintained ROW for the life of the pipeline will be a nominal 40 feet in width. In areas where the proposed pipeline will be installed by horizontal directional drill ("HDD"), there will be no construction ROW. A permanent ROW will be retained in areas encompassed by HDD crossings; however, these areas generally will not require clearing or routine maintenance. Additional details regarding the total land requirements for the construction and permanent ROWs are discussed in Resource Report 1. The general ROW configuration is depicted in the Project Construction Typical Drawings provided in Appendix 1.A of Resource Report 1.

8.2.1.2 Utilization of Existing Rights-of-Way

One of CEGT's objectives during route selection was to co-locate the route to the maximum extent practicable with existing road and utility ROWS. Approximately 17.5 miles of existing ROWs will be paralleled along the proposed pipeline route. By siting the pipeline in this manner, CEGT will minimize the amount of new disturbance associated with the installation of the pipeline. Table 8.2-1 provides information on the types of existing ROWs and lengths that are co-located with the proposed pipeline.

TABLE 8.2-1

Existing ROWs Co-Located with the Proposed Project

ROW Name	Description	Milepost		Length (miles)
		Begin	End	
Proposed Line BT-39				
Transmission Line ROW	Existing Electrical Corridor	5.82	12.25	7.03
Transmission Line ROW	Existing Electrical Corridor	12.50	15.18	2.68
Transmission Line ROW	Existing Electrical Corridor	16.14	16.50	0.61
Camp Robinson	Camp Robinson fire break	21.32	28.50	7.18
			Total	**17.50**

8.2.2 Extra Temporary Workspace

ETWS outside of the construction ROW typically are required at the following locations:

- Public road crossings;
- Wetland and waterbody crossings;
- Areas with steep side slopes;
- Areas where topsoil segregation is required;
- Truck turnarounds;
- Crossovers;
- Tie-ins;
- Pipe staging and fabrication areas;
- Foreign pipeline crossings; and
- Areas where special construction techniques will be used.

An acreage summary of land uses affected by construction in ETWS areas is provided in Appendix 8.A. Except as otherwise requested due to site-specific constraints, ETWS will be located at least 50 feet from the edges of wetlands and waterbodies, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed lands. In the setback areas, vegetation will not be cleared between the ETWS area and the wetland and/or waterbody. In some instances, the setbacks will not be able to be maintained due to construction limitations. In those cases, CEGT has provided site-specific justification in Appendix 8.A for siting the ETWS and staging areas within 50 feet of wetlands and waterways. The ETWS and/or staging area will be limited in size to the minimum area necessary to construct the wetland and/or waterbody crossing safely and accommodate any stockpile of excavated material from the trench and the prefabricated pipeline crossing section. Following construction activities, these areas will be restored in accordance with the FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* ("Plan") and *Wetland and Waterbody Construction and Mitigation Procedures* ("Procedures") and no permanent land use impacts will occur. CEGT will implement the measures contained within the FERC's Plan and Procedures to control erosion and avoid or minimize other impacts that could result from the use of the ETWS areas.

8.2.3 Pipe Storage/Contractor Yards

CEGT has preliminarily identified three pipe storage/contractor yards, comprising a total of 9.64 acres that may be utilized during construction of the Project. Pipe storage/contractor yard #1 is located adjacent to the proposed BT-39 corridor at approximately MP 14.82, at the intersection of the replacement pipeline route and Luker Lane. It has been sited on 5.50 acres of pasture/hay field. Pipe storage/contractor yard #2 is located on the northern end of the proposed BT-39 route. It has been sited on approximately 2.07 acres of fallow/hay field to the west of Conway, approximately 0.4 mile north of MP 5.75. Pipe storage/contractor

yard #3 is located approximately 0.8 mile southwest of MP 16.40. It has been sited on approximately 2.07 acres of hay field near Faulkner Meadow Road and an existing rail line.

The pipe storage/contractor yards will be used for equipment, pipe, and material storage, as well as temporary field offices and pipe preparation/field assembly areas. The sites will require only minor modifications to the existing land use. To support equipment laydown and vehicle traffic, a portion of the yards may be graveled, and a temporary security fence may be installed. Use of these areas will be temporary. Following construction, the graveled area will be restored to preconstruction use, or as negotiated with the landowner. Construction and restoration measures within the temporary pipe storage/contractor yards will be conducted in accordance with the May 2013 versions of the FERC's Plan and Procedures.

8.2.4 Aboveground Facilities

In addition to the proposed pipelines, CEGT will install or modify six aboveground facility sites along the new Line BT-39, BT-40, and BT-41 pipelines, as well as modification of an existing aboveground facility site along CEGT's existing Line BT-14. These aboveground facilities are all Town Border Stations ("TBS"), as described below. Plot plans depicting the layout of these seven TBS sites are provided in Volume III of CEGT's application. Table 8.2-2 provides the current land use types and acreages affected by construction and operation of aboveground facilities.

TABLE 8.2-2

Aboveground Facilities Proposed for the Project

Facility Name	Approx. Milepost[1]	Existing Land Use	Approx. Dimensions (feet)	Approx. Area (acres)[2]
Highway 64 TBS	0.00	Open Land	100 x 100	0.23
Bryant Road TBS	7.75	Forest/Woodland	100 x 100	0.23
Highway 365 TBS	17.17	Open Land & Forest/Woodland	100 x 120	0.28
Morgan TBS	23.60	Industrial/Commercial & Forest/Woodland	75 x 75	0.13
James Road TBS	27.42	Open Land	75 x 75	0.13
Oak Grove TBS	28.50	Industrial/Commercial	390 x 200	1.74
Shoemaker Site TBS	N/A	Industrial/Commercial & Forest/Woodland	80 x 100	0.18
			Total	**2.92**

[1] Approximate mileposts listed are associated with the proposed Line BT-39 route. The Morgan TBS is located at the terminus of Line BT-41, and the James Road TBS is located at the terminus of Line BT-40.

[2] Impacts in this column represent the permanent footprint of the facilities. Additional ETWS impact acreages associated with construction of aboveground facilities are included in Appendix 8.A.

Permanent impacts at the aboveground facilities will include the entirety of the facilities' footprints, which will be graveled and/or paved and enclosed by security fencing. Construction and restoration measures within the temporarily impacted areas during construction of the aboveground facilities (see below) will be conducted in accordance with FERC's Plan and Procedures.

Highway 64 TBS (MP 0.00) – This facility will consist of an approximately 100-foot by 100-foot area surrounded by chain link fencing at the origin of the Line BT-39 pipeline. An additional 10 to 20-foot temporary workspace will partially surround the perimeter of the proposed facility to allow for construction activities and equipment travel along the edge of the site. The facility will consist of metering facilities and appurtenances, including one 12-inch pig launcher and receiver to allow for the maintenance, cleaning, and inspection of the pipeline. The facility will also contain a 4-inch tap on Line BT-14 for Line BM-21, pressure regulation and overpressure protection for Line BM-21, and a 6-inch tap on Line BT-39 to serve the City of Conway. The meter station will be equipped with communication equipment that will be linked into CEGT's System Control. The facility will occupy approximately 0.23 acre of existing open land that will be permanently converted to an industrial/commercial use.

Bryant Road TBS (MP 7.75) – This facility will consist of an approximately 100-foot by 100-foot area surrounded by chain link fencing. The facility will include 4-inch metering facilities and appurtenances, and a new 12-inch mainline valve ("MLV") setting on Line BT-39. The meter station will be equipped with communication equipment that will be linked into CEGT's System Control. The facility will permanently occupy an approximately 0.23-acre fenced area, of which approximately 0.09 acre will overlap the proposed permanent pipeline easement. This land currently consists of forest/woodland and will be permanently converted to an industrial/commercial use.

Highway 365 TBS (MP 17.17) – This facility will consist of an approximately 100-foot by 120-foot area surrounded by chain link fencing. An additional 25-foot temporary workspace will partially surround the perimeter of the proposed facility to allow for construction activities and equipment travel along the edge of the site. The TBS will include two 2-inch metering facilities and appurtenances to serve the towns of Mayflower and Maumelle, as well as a 12-inch MLV setting on Line BT-39. The meter stations will be equipped with communication equipment that will be linked into CEGT's System Control. The facility will permanently occupy an approximately 0.28-acre fenced area, of which approximately 0.07 acre will overlap the proposed permanent pipeline easement. This land currently consists of open land and forest/woodland that will be permanently converted to an industrial/commercial use.

Morgan TBS (MP 23.62) – In addition to removal of the existing Line B metering, regulation, and appurtenant facilities, the existing Morgan TBS will be modified through the installation of 2-inch metering facilities and appurtenances. The Morgan TBS is located at the terminus of the proposed Line BT-41 pipeline. The facility will consist of a 75-foot by 75-foot (0.13 acre) area surrounded by chain link fencing area. These modifications will require an expansion of the existing facility fence line. This land currently consists of industrial/commercial and forest/woodland that will be permanently converted to an industrial/commercial use.

James Road TBS (MP 27.43) - This facility will consist of an approximately 75-foot by 75-foot (0.13 acre) area surrounded by chain link fencing. The TBS will include a 2-inch metering facility and appurtenances at the terminus of the proposed Line BT-40 pipeline. This facility will serve to provide replacement service for the existing Crystal Hill TBS, which will be removed in association with retirement of Line B as part of the Project. The meter station will be equipped with communication equipment that will be linked into CEGT's System Control. This land currently consists of open land that will be permanently converted to an industrial/commercial use.

Oak Grove TBS (MP 28.50) – In addition to removal of the existing Line B metering, regulation and appurtenant facilities, the existing Oak Grove TBS will be modified for use on Line BT-39. This TBS is located at the terminus of the new, Line BT-39 pipeline. Modifications will include the installation of two 6-inch metering facilities, a 12-inch receiver and valving, separator, and appurtenances. This TBS occupies a 390-foot by 200-foot area (1.74 acre) area surrounded by chain link fencing. There will be no change in the existing fence line, and therefore no land use impacts, as a result of this work.

Shoemaker TBS – An existing aboveground block valve site, which is located at the terminus of the segment of Line BT-14 to be transferred to CERC, will be expanded to an 80-foot by 100-foot area

surrounded by chain link fencing. The TBS will include 4-inch metering facilities and appurtenances, and a new 12-inch pig receiver. The meter station will be equipped with communication equipment that will be linked into CEGT's System Control. The facility will permanently occupy an approximately 0.18-acre fenced area. This land currently consists of industrial/commercial and forest/woodland that will be permanently converted to an industrial/commercial use.

8.2.5 Access Roads

Access to the proposed pipeline ROW, aboveground facilities, ETWS, and the pipe/contractor yard will be largely via existing public and private roads (see Appendix 8.B). Existing public highways will be used for access without modification or improvement. In addition to public roads, CEGT plans to use 65 access roads, totaling 42.06 acres, to provide access to the proposed pipeline ROWs and aboveground facilities during construction. Of these, 63 roads are temporary access roads to obtain access to the construction ROWs; one (1) is a new, permanent road constructed to provide permanent access to the Bryant Road TBS; and one (1) is an existing, permanent road that provides access to the existing Oak Grove TBS.

Associated with the Line B retirement activities, CEGT proposes to use 37 access roads, encompassing approximately 11.70 acres, to provide temporary access to the proposed retirement work areas during construction.

8.2.6 Retirement Work Areas

As part of the Project, CEGT will retire some existing pipeline assets (Lines BM-1, BT-19, and portions of Line B and BM-21), and CEGT will realign ownership of a segment of Line BT-14 to its distribution affiliate, as outlined in Section 1.1.2 of Resource Report 1. The retired pipelines will be cut, capped, and grouted at improved road and railway crossings. In general, retirement of the existing pipeline facilities will require minimal ground disturbance at each of the locations where the pipeline will be cut, capped, and grouted (estimated at an approximately 50-foot by 50-foot work area), and all such ground disturbing activities will be confined to CEGT's existing and maintained ROW.

Existing aboveground facilities, as well as other ancillary facilities such as rectifiers and pipeline markers along the pipeline segments to be retired, will be removed. In general, removal of the existing aboveground and ancillary facilities will require minimal ground disturbance, and all such ground disturbing activities will be confined to CEGT's existing and maintained pipeline ROWs or facility sites, which are characterized as open land and industrial/commercial land, respectively. Approximately 8.07 acres will be temporarily disturbed for removal of these facilities. Retirement work areas are depicted on USGS topographic quadrangle maps provided in Appendix 1.A of Resource Report 1. The Project Construction Typical Drawings provided in Appendix 1.A of Resource Report 1 depict the activities associated with the removal of any retirement work areas.

Following pipeline retirement activities, CEGT will retain rights to the permanent easement associated with the existing Lines B, BM-21, BM-1, and BT-19 along the full length of the retired pipelines. As with other pipeline easements held by CEGT, the permanent easements associated with these pipelines are a corporate asset, and CEGT intends to retain that easement following the proposed pipeline retirement activities. CEGT retains the right to use the easement in the future, subject to the specific terms of the associated easements and pursuant to the laws of the State of Arkansas. Because the existing Line BT-14 pipeline will be transferred to new ownership (CEGT's distribution affiliate), CEGT will relinquish all rights to the permanent easement associated with this pipeline, but the pipeline easement will continue to be used for transport of natural gas.

8.3 LAND USE IMPACTS AND MITIGATION

Impacts on many of the land uses crossed by the pipeline route will be temporary and short-term, because many vegetation types, such as agricultural land, open land, and emergent and scrub/shrub wetlands, will be allowed to revert to pre-construction conditions after construction is completed. The primary permanent

impact on land use will be the conversion of forested areas to permanent, cleared ROW, as discussed below.

Construction, post-construction clean-up, and restoration will be in accordance with the FERC Plan and Procedures, both of which CEGT has adopted for this Project. The proposed Project will affect agricultural, forest/woodland, residential, industrial/commercial, open land, and other land use categories. Impacts to each of these land use categories are described below and are quantified in Table 8.3-2.

8.3.1 Agricultural Land

Approximately 33.82 acres of agricultural land (active cropland such as rice farms, soybean fields or hay fields) will be affected during construction of the proposed Project. Where agricultural areas are present at the time of construction, CEGT will implement special construction procedures to minimize impacts in agricultural land in accordance with the FERC Plan. CEGT will perform topsoil segregation in actively cultivated agricultural lands, which include permanent or rotated croplands, hayfields, or improved pastures, and in other areas at the request of resource agencies or landowners. During construction, the natural flow patterns of fields will be maintained by providing breaks in topsoil and subsoil stockpiles. During cleanup and restoration, disturbed areas will be finish-graded and restored as closely as possible to preconstruction contours. The topsoil and subsoil in agricultural areas also will be tested for compaction, and any severely compacted areas will be repaired. Prior to construction, landowners will be contacted to locate existing drainage structures and irrigation facilities. Water flow in crop irrigation systems will be maintained, unless shutoff is coordinated with the affected parties. Of the total 33.82 acres of agricultural land affected during construction, approximately 0.03 acre will be permanently affected by permanent access roads, while the remaining 33.79 acres will be allowed to revert to pre-construction conditions and can continue to be farmed.

8.3.2 Forest/Woodland

Construction of the Project in forested areas will require the removal of trees to prepare the construction work areas; however, CEGT has minimized forest land impacts by locating the proposed facilities within or adjacent to existing utility and road ROWs and open land where possible. The degree of impact on forested areas generally will be greater than on other land use types. The proposed Project will affect approximately 199.92 acres of forest/woodland during construction. Of the 199.92 total acres, only 90.01 will be affected permanently.

Both short-term and long-term impacts are expected to forest/woodland as the result of the construction and operation of the proposed Project. Trees will be cleared from the construction corridor as a necessary part of construction. Following construction, the temporarily disturbed areas outside of the permanent ROW will be allowed to revert to pre-construction conditions. The disturbed areas will be re-contoured and re-vegetated following pipeline construction to control soil erosion. CEGT anticipates that forested areas will regenerate to pre-construction conditions within 20 to 40 years, depending on the woodland species and management practices.

The permanent ROW will be managed in a non-woody state by seeding with a grass mixture requested by the landowner or as recommended by appropriate land management agencies, and completed periodic vegetation maintenance activities for safety and maintenance reasons. During operation, the permanent ROW will be maintained clear of trees and woody shrubs to allow for ongoing pipeline inspection and maintenance, a requirement of 49 CFR 192. Specifically, a corridor centered on the pipeline and up to 10 feet wide will be maintained in an herbaceous state. In addition, trees in wetlands located within 15 feet of the pipeline with roots that could compromise the integrity of the pipeline coating may be cut selectively and removed from the permanent ROW. In accordance with the FERC Plan, CEGT will not clear the full width of its permanent easement more frequently than every three years, but such maintenance activities will result in a permanent conversion of land use from a forested to an open cover type (refer to Table 8.3-2).

8.3.3 Residential Land

Construction near residential areas will be conducted to ensure that construction activities minimize any adverse impacts on residences and that cleanup is quick and thorough. Where there are residences in close proximity to the construction work space, CEGT will reduce pipeline offset or construction work space areas, as practicable, to minimize inconvenience to property owners. If construction requires the removal of private property features, such as gates or fences, the landowner or tenant will be notified prior to the action. Following completion of major construction, the property will be restored as requested by the landowner, insofar as the landowner's requirements are compatible with CEGT's standards regarding ROW restoration and maintenance. Property restoration will be in accordance with any agreements between CEGT and the landowner. Construction of the proposed Project will affect approximately 2.14 acres of residential land, of which approximately 0.51 acre will be retained as a permanent easement. Additional discussion of residential land use impacts and mitigation is provided in Section 8.4 below.

8.3.4 Industrial/Commercial Land

Construction of the proposed Project will affect approximately 25.90 acres of industrial/commercial lands. The industrial/commercial land affected by the Project consists primarily of roads. Following construction, 2.74 acres of industrial/commercial land will be impacted by operation. The remaining areas will be restored to their pre-construction condition and operation.

Construction across roads, railroads, and utility corridors will be conducted in accordance with the FERC Plan and applicable crossing permits and approvals. Existing transmission line corridors and railroads will be crossed by methods agreed upon with the facility operators. The Project will cross several existing roads; the major roads crossed by the pipeline route are listed in Table 8.3-1.

Pipeline construction across major paved highways and railroads, along which traffic cannot be interrupted, will be accomplished by horizontally boring under the roadbed. Construction of the pipeline across the Union Pacific Railroad/Highway 64, Union Pacific Railroad, and Interstate 40 will be conducted by HDD.

TABLE 8.3-1

Major Road Crossings Along the Project

Road	Approximate Milepost	Crossing Method
Proposed Line BT-39		
Union Pacific Railroad	0.31	HDD
U.S. Route 64	0.39	HDD
AR Highway 60	4.64	Conventional Bore
Union Pacific Railroad	16.30	HDD
AR Highway 365	17.16	Conventional Bore
Interstate 40 / U.S. Route 65	20.60	HDD

Pipeline crossings of lightly traveled paved, unimproved rural roads and drives typically will be accomplished by conventional, open-cut installation, and then restored to preconstruction condition. If an open cut road requires extensive construction time, provisions will be made for detours and other measures to permit traffic flow during construction. In the absence of a reasonable detour, construction across the roadway will be staged to allow at least one lane of traffic to remain open, except for the limited periods required for installing the replacement pipeline. If project construction crosses roads that access private residences or businesses, and no alternate entrance exists, measures will be taken to maintain passage for landowners

during construction. Attempts will be made to avoid peak traffic time periods during construction that temporarily closes roads.

To maintain safe conditions, CEGT will keep roads free of mud and debris that may be left by crossing construction equipment. Track-driven equipment will cross paved roads on tires or equipment pads to minimize damage to the road surface. CEGT will make efforts to minimize road damage by enforcing local weight limitations and restrictions. Roadways damaged during construction will be repaired to pre-construction conditions.

Where appropriate, traffic control measures will be used to assist with the transportation of construction equipment and materials. Heavy construction equipment will be transported along major highways, and no traffic flow disruption is anticipated. Traffic associated with workers commuting to the construction areas will have a minimal impact on the existing transportation system due to the relatively small workforce (see Section 1.3 of Resource Report 1), and typical construction work hours. Construction work generally is scheduled to take advantage of daylight hours; therefore, workers typically will commute to and from the Project area during off-peak traffic hours (*e.g.*, before 7:00 a.m. and after 7:00 p.m.).

The proposed Retirement Work Areas will be located entirely within CEGT's existing meter station facilities and existing ROW, which are classified as industrial/commercial land and open land. Disturbance at these locations will be minimal and will result in only temporary impacts. Following construction, these areas will be restored to match the surrounding land use as the aboveground facilities will be permanently removed.

Operation and maintenance of the pipeline facilities will not affect traffic flow significantly. Periodic maintenance and inspection procedures will be required and will involve a low frequency of light vehicle movement on and off roadways. These occasions will be infrequent and along existing ROWs; therefore, no additional impact is expected.

8.3.5 Open Land

A large majority of open land that will be temporarily impacted by the proposed Project consists of fallow and marginally maintained fields (refer to Table 8.3-2). In general, impacts resulting from construction through open lands will be limited to the period during construction and will be minimized by CEGT's implementation of the FERC Plan. A total of 61.25 acres of open land will be impacted during construction. Following construction, open lands in temporary and permanent work areas will be allowed to return to their previous uses except for 0.3 acre associated with a permanent access road. The areas will be restored as closely as possible to their pre-construction topographical patterns and revegetated.

8.3.6 Open Water

Open water includes ponds, lakes, and rivers over 100 feet wide. The proposed Project will cross a water-filled borrow pit spanning approximately 570 feet at MP 18.5. This water-filled borrow pit will be crossed via the HDD method avoiding any surface impacts during construction and operation.

8.3.7 Other Land

Construction of the Project will affect approximately 0.11 acre of other land (including schools, parks, places of worship, cemeteries, sports facilities, campgrounds, golf courses, and ballfields). This land will be allowed to return to existing uses upon completion of construction.

While conventional construction techniques may be applied to a majority of the Project, special construction procedures may need to be implemented by the construction contractor to reduce impacts on certain properties. These procedures are described in detail in Section 1.4.2 of Resource Report 1.

8.3.8 Wetland Reserve Program (WRP) Land

The Wetlands Reserve Program ("WRP") is a voluntary program administered by the Natural Resources Conservation Service ("NRCS"). The WRP provides assistance to eligible landowners to restore, enhance, and protect wetlands located on their property. The program attempts to improve wetland function and wildlife habitat and to promote long-term conservation through technical and financial assistance (NRCS, 2013a).

CEGT's existing Line B pipeline traverses two WRP easements in Faulkner County, Arkansas. In order to avoid surface disturbance and impacts to the WRP easements, CEGT's proposal is to retire the Line B pipeline in place through the WRP easements. Thus, CEGT will not need to obtain any temporary or permanent easements, or perform any land disturbing activities within the WRP easements, in association with that planned element of the Project.

The proposed Line BT-39 has been routed to avoid the WRP easements referenced above. However, a planned construction access road does traverse one of the WRP easements, which is located on land owned by the Arkansas Game and Fish Commission ("AGFC"). This property is discussed in more detail below in section 8.5.1. The access road represents an existing, maintained road. Consultation with the NRCS has been initiated to request approval for construction access on this WRP easement. Once information is received, the Commission will be notified.

8.3.9 Conservation Reserve Program (CRP) Land

The Conservation Reserve Program ("CRP") is a voluntary program for agricultural landowners administered by the Farm Service Agency ("FSA"). The CRP allows owners of sensitive agricultural land (e.g., erodible soils) to conserve those lands through planting of native grasses, trees, filter strips, or riparian buffers with financial assistance from the federal government. Typically, croplands are retired from production for a period of 10 to 15 years (NRCS, 2013b). The FSA reviewed the proposed Project and confirmed that no lands enrolled in the CRP would be impacted (Walker & Wilson, 2013).

TABLE 8.3-2

Land Uses Affected by the Proposed Project (Acres)

Facility	Agricultural Land		Forest/Woodland		Residential Land		Industrial/ Commercial Land		Open Land		Open Water		Other Land		Total	
	Construction	Operation[1]	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation[1]	Construction	Operation	Construction	Operation	Construction	Operation
BT-39 Pipeline[2,3]	22.17	0	171.32	88.75	1.05	0.51	2.79	1.00	36.89	0	0	0	0	0	**234.22**	**90.26**
BT-40 Pipeline[4]	0	0	0	0	0	0	0	0	0.20	0	0	0	0	0	**0.20**	**0**
BT-41 Pipeline[4]	0	0	1.14	0.69	0	0	0.02	0	0.40	0	0	0	0	0	**1.56**	**0.69**
ETWS[5]	8.09	0	14.16	0	0.08	0	0.22	0	6.93	0	0	0	0	0	**29.48**	**0**
Pipe/Contractor Yard	0	0	0	0	0	0	0	0	9.60	0	0	0	0	0	**9.60**	**0**
Aboveground Facilities[6]	0	0	0.57	0.57	0	0	1.74	1.74	0	0	0	0	0	0	**2.31**	**2.31**
Access Roads	3.56	0.03	12.29	0	0.42	0	18.48	0	6.02	0.30	0	0	0	0	**40.77**	**0.33**
Retirement Aboveground Work Areas	0	0	0.44	0	0.59	0	2.65	0	1.21	0	0	0	0.11	0	**5**	**0**
Total	**33.82**	**0.03**	**199.92**	**90.01**	**2.14**	**0.51**	**25.90**	**2.74**	**61.25**	**0.3**	**0**	**0**	**0.11**	**0**	**323.14**	**93.59**

TABLE 8.3-2

Land Uses Affected by the Proposed Project (Acres)

Facility	Agricultural Land		Forest/Woodland		Residential Land		Industrial/ Commercial Land		Open Land		Open Water		Other Land		Total	
	Construction	Operation[1]	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation[1]	Construction	Operation	Construction	Operation	Construction	Operation

[1] Although permanent pipeline easement is proposed within agricultural and open lands, no change in vegetative cover type will result from the maintenance of the pipeline easement. Agricultural and Open Lands will be allowed to revert to pre-construction conditions, and the proposed permanent pipeline easement will not restrict current land use in these areas. Therefore, no permanent impacts will result. Permanent easements in agricultural and open lands will total 13.61 and 29.50 acres, respectively.

[2] Construction acreages reflect a nominal 65- to 75-foot-wide construction right-of-way, except in areas encompassed by horizontal directional drill (HDD) crossings, which will not require construction right-of-way between the HDD entrances and exits.

[3] Operation acreages reflect a nominal 40-foot-wide permanent easement for Line BT-39. A permanent easement will be retained in areas encompassed by HDD crossings; however, these areas generally will not require clearing or routine maintenance. Operation impacts on PSS wetlands are based on a 10-foot-wide corridor, over the pipeline that will be maintained in an herbaceous state. Operation impacts on PFO wetlands are based on a 30-foot-wide corridor, due to the potential for selective thinning of trees within 15 feet of the pipeline that exceed 15 feet in height. Refer to Resource Report 2 for detailed wetland impacts

[4] Operation acreages reflect a nominal 20-foot-wide permanent easement for Lines BT-40 and BT-41.

[5] Includes 0.04 acres of Open Land for ETWS affiliated with Line BT-41.

[6] Impacts in this row represent the permanent footprint of the facilities. Additional ETWS impact acreages associated with construction of aboveground facilities are included in the ETWS row.

8.4 EXISTING RESIDENCES AND PLANNED DEVELOPMENTS

8.4.1 Existing Residences

Permanent structures within 50 feet of the construction work areas associated with the proposed Project pipeline work area are listed in Table 8.4-1 below. There are some small out-buildings (*e.g.,* sheds and barns) that are located close to the Project work area; however there are no residences within 25 feet.

TABLE 8.4-1

Aboveground Structures within 50 Feet of the Project

Approx. Milepost	Description	Distance Away (feet)	
		Pipeline Permanent Easement	Temporary Workspace
Proposed Line BT-39			
0.37	Shed	6	N/A
0.82	Shed	49	14
0.83	Shed	58	23
0.87	Shed	73	39
1.88	Shed	38	N/A
3.84	Single Family Home	31	N/A
4.00	Shed	12	N/A
4.22	Single Family Home	30	N/A
14.35	Barn	57	23
14.48	Shed	63	28
15.98	Mobile Home	42	N/A
20.85	Abandoned House	26	N/A
20.93	Abandoned House	26	N/A
Proposed Line BT-40	None present		
Proposed Line BT-41			
0.03	Single Family Home	26	N/A
0.06	Shed	62	42
0.10	Mobile Home	37	N/A
0.12	Shed	40	N/A
0.15	Shed	43	N/A
0.15	Mobile Home	49	N/A
0.23	Mobile Home	43	N/A
0.25	Shed	17	N/A

8.4.2 Planned Developments

Planned developments are those that are permitted and not yet constructed, or developments for which permit applications have been filed, but not yet approved. Per the FERC guidelines, CEGT contacted local and county planning and zoning departments as well as the Arkansas State Highway and Transportation Department ("AHTD") to acquire information pertaining to future planned developments within 0.25 mile of the Project. Following consultation, the only planned construction occurring within 0.25 mile of the Project will be the widening of Interstate 40 (AHTD, 2013). CEGT also consulted with MetroPlan to obtain information on planned developments within the Project area. MetroPlan is the designated Metropolitan Planning Organization responsible for the transportation planning process in central Arkansas as well as providing aid to more than 25 local municipalities with their general planning, mapping and technical assistance (MetroPlan, 2013). Once information is received from MetroPlan, the Commission will be notified.

Local and county planning and zoning departments indicated several planned residential and two public park developments within 5 miles of the proposed Project. Three of these developments are within one mile of the proposed Project: Ferry Landing Annexation (0.39 mile), Salem Woods Subdivision (0.59 mile), and Wallace Subdivision (0.92 mile) (City of Conway, 2013; Maumelle, 2013). The Ferry Landing site is for annexation of property with no planned development at this time. The Salem Woods Subdivision is in proximity to a portion of Line B that would be retired; no construction activities are proposed. The Wallace Subdivision is for property subdivision with no construction proposed at this time. We believe the impact from any construction activities at these sites would generally be localized and would not correspond in time to impacts from the Project.

Based on a review of the AHTD webpage, several proposed transportation projects were identified within 5 miles of the proposed Project (AHTD, 2013). Proposed projects are primarily associated with the widening of Interstate 40 and associated structural rehabilitation.

8.4.2.1 Potential Construction Conflicts

The potential for construction conflicts could exist if Project construction would occur in the same location at the same time as other construction projects, or if Project construction were to occur within a 0.25 mile of any large-scale construction projects that would use the same area resources (*e.g.*, lodging and transportation infrastructure). As indicated above, CEGT's research of other construction projects is ongoing. As of the date of this resource report, no projects have been identified that would occur within the same construction footprint at the same time as the proposed Project. If CEGT becomes aware of future development plans near the Project area, appropriate measures will be taken to avoid or minimize impacts.

In March of 2013, an oil spill occurred in Mayflower, Arkansas. Equipment, supplies, and personnel were moved into the area of the spill, which is in proximity to the existing Line B proposed for retirement (~MP 14.75). Although cleanup is progressing rapidly and people are being allowed to return to their homes, it is possible that some cleanup will still be underway at the time that retirement activities commence. If this occurs, CEGT will coordinate with cleanup crews as necessary. Because retirement activities will be little more than discrete construction sites along the Line B ROW, and crew sizes are expected to be small, no significant cumulative impact is anticipated.

As mentioned above in Section 8.4.2, a highway widening construction project is planned for Interstate 40 as it travels through Faulkner and Pulaski Counties. The Project is proposed to cross Interstate 40 at approximate MP 20.60. This area will be crossed via the HDD method. It is possible that Project construction could be occurring at the same time and location as the highway widening construction; however, it is unlikely to interfere due to the method of construction. If construction does occur at the same time, CEGT will coordinate with the highway construction contractor to alleviate any potential conflicts.

8.4.3 Residential Land Use Impacts and Mitigation

CEGT is sensitive to the impacts of its proposed Project on residential areas. In fact, the primary purpose and need for the Project is to locate CEGT's facilities further from existing densely developed residential areas in Conway and North Little Rock. However, it is not possible to avoid all residential areas given the level of development along suburban portions of the Project route. CEGT attempted to minimize the impact to residential properties by locating the pipeline facilities parallel to other utilities and ROWs to the extent practicable. The level of impact on adjacent residential lands generally will be moderate and short-term and will stem primarily from construction activities, which could produce increased levels of noise and dust. Potential noise-related effects associated with these Project activities are discussed in Resource Report 9 (Air and Noise Quality).

Along portions of the proposed Project proximate to residential areas, CEGT will mitigate impacts by ensuring that construction proceeds quickly and that landowners are notified prior to the commencement of construction. Property access and traffic flow will be maintained during construction activities, particularly for emergency vehicles. Work hours will be arranged taking landowners' needs into consideration. Dust minimization techniques will be utilized onsite, and litter and debris will be removed daily from the construction site. During construction, the edge of the construction work area within 50 feet of a residence will be fenced for a distance of 100 feet on either side of the residence to ensure that construction equipment and materials, including the spoil pile, remain within the construction work area. Fencing will be maintained at a minimum throughout the open trench phases of pipe installation.

Property restoration will be in accordance with any agreements between CEGT and the landowner. The property will be restored as requested by the landowner insofar as the landowner's requirements are compatible with CEGT's standards regarding ROW restoration and maintenance. Mature trees and landscaping will be preserved to the extent possible while ensuring the safe operation of construction equipment. Immediately after backfilling the trench, cleanup operations will commence. Final grading, topsoil replacement, and installation of permanent erosion control structures will be completed within 10 days after backfilling the trench.

CEGT has sited the proposed pipeline routes with a minimum separation of 25 feet between residences and any construction work area. Therefore, site-specific plans for residences located within 25 feet of proposed construction work areas are not required as part of this Project.

Following construction, approximately 0.9 acre of residential land will be retained as permanent pipeline ROW. Pipeline ROWs must be kept free from structures and other obstructions to provide access to the pipeline for routine maintenance and in the event of an emergency. However, many uses and improvements of land occupied by ROW are routinely permitted, provided they do not interfere with the rights granted to CEGT.

8.5 PUBLIC LAND, RECREATION, AND OTHER DESIGNATED AREAS

In accordance with 18 CFR (§380.12(j) (4)), CEGT researched any federal, state, or local special land use areas within 0.25 mile of the proposed Project or any public lands crossed by the proposed Project. These lands were identified through a review of USGS topographic maps, aerial photography, internet searches, available geographic information system ("GIS") data, agency consultations, and field reconnaissance surveys. Copies of relevant agency correspondence are included in Appendix 1.D of Resource Report 1.

8.5.1 Public Land

Several areas of publicly owned lands are crossed by or located within 0.25 mile of the proposed Project. These public lands are identified in Table 8.5-1 and further discussed below.

TABLE 8.5-1

Public Lands Crossed by the Project

Approx. Milepost	Property Name	Property Owner	Crossing Distance (feet)	Distance from Project (feet)
Proposed Line BT-39				
0.0	Conway Landfill	City of Conway	1,603	0
0.4	Conway City Water Tower	City of Conway	1,562	0
1.8	Cadron Settlement Park	Faulkner County	0	1,505
4.9	Toad Suck Park	Faulkner County	0	1,407
17.7	Bell Slough Wildlife Management Area	Arkansas Game and Fish Commission	0	65
21.3	Camp Joseph T. Robinson	Arkansas National Guard	40,918	0
Proposed Line BT-40				
27.4	Camp Joseph T. Robinson	Arkansas National Guard	200	0
Proposed Line BT-41				
23.6	Camp Joseph T. Robinson	Arkansas National Guard	1,395	0
Line B Retirement Work				
10.7	Camp Joseph T. Robinson	Arkansas National Guard	4,670	0

The proposed Project crosses approximately 1,603 feet of land owned by the City of Conway between approximate MP 0.0 to 0.3. This property is used as a landfill for the city. No conflicts with landfill operations have been identified or are anticipated. The Project also crosses approximately 1,562 feet of land owned by the City of Conway between approximate MP 0.4 to 0.7. This property houses a water tower used to supply drinking water to the City of Conway. As mentioned in Section 10.7.1 of Resource Report 10, a route variation has been adopted to increase pipeline separation from the site of an existing, City of Conway water tower, where a second water tower may be constructed in the future. As the Project crosses this property to the north of the water tower, no land use conflicts have been identified.

The proposed BT-39 pipeline route passes near Cadron Settlement Park at approximate MP 1.8. This Faulkner County park lies 1,505 feet outside of the BT-39 project corridor; however, Line BT-39 AR-2.63 begins at the southeast corner of the park where AR Hwy 319 enters the Jeffrey Sand Company property. A proposed construction access road, Line BT-39 AR-2.62, also travels through the Jeffery Sand Company property to the south and terminates 275 feet north of Toad Suck Park. Toad Suck Park is located 1,407 feet to the west of the proposed BT-39 pipeline route. These two access roads are already established and temporary construction use would not pose any further impacts on the two aforementioned Faulkner County parks.

A small section of land owned and managed by the AGFC is paralleled by the proposed Project from approximate MP 17.7 to 18.2. This land is a part of the Bell Slough Wildlife Management Area ("WMA"), which is managed by the AGFC for fishing, hunting and recreation. The Project parallels just outside the southern edge of the property until it turns south and follows Interstate 40. A proposed construction access road, Line BT-39 AR-17.72, also runs adjacent to the western boundary of the Bell Slough WMA for a length of 2,700 ft. CEGT is working cooperatively with the AGFC to gain permission for access to the Project

pipeline. Consultations to date with the AGFC indicate that the portion of the property traversed by the Project is located outside of actively managed areas, and no Project-related concerns have been identified.

Camp Joseph T. Robinson ("Camp Robinson") is a very large parcel of land located at the southern end of the proposed Project. Proposed Line BT-39 crosses this Arkansas Army National Guard property for a total distance of 40,918 feet. Line BT-39 follows a maintained firebreak along the perimeter of the property for nearly the entirety of its alignment on Camp Robinson. Although the firebreak is maintained open land, some forest/woodland areas will likely be disturbed during construction. A spokesperson for Camp Robinson indicated that disturbance of wooded areas would be offset due to the fact that widening of the existing fire break will decrease the potential for forest fire to jump across the fire break, resulting in a potentially positive impact on safety (Mitchell, 2013). Line BT-41 is proposed to tie into Line BT-39 at MP 23.6. This tie-in is located along the southern boundary of Camp Robinson. Another tie-in is located at MP 27.5 where Line BT-40 joins Line BT-39 along the western boundary of Camp Robinson. A proposed construction access road, Line B AR-31, also lies within Camp Robinson for approximately 4,670 feet. This access road is being used to complete work at the Line B meter site located at MP 10.7. CEGT is working closely with Camp Robinson staff to alleviate any disturbance to their military activities, both during construction and operation.

Construction of the proposed Project is not anticipated to have adverse impacts on public lands. The majority of the public lands crossed by the proposed Project are located along the outer boundary of Camp Robinson or developed lands used by the City of Conway for various utility purposes. Undeveloped lands crossed by the Project are minimal and the Project alignment is oriented along the property boundaries to the greatest extent possible.

8.5.2 Natural, Recreational, or Scenic Areas

No areas associated with the proposed Project are included in or are within 0.25 mile of any rivers in the National Wild and Scenic Rivers System ("NWSRS") (NWSRS, 2013). No special use areas, such as old growth forests, sugar maple stands, pine plantation, timber production, or Christmas tree farms, will be affected by the Project.

The proposed Line BT-39 crosses the historic route of the Trail of Tears ("Trail") in several locations, which is part of the National Park Service's ("NPS") National Historic Trails System. A majority of the Trail is located on private land and it is the landowner's choice to participate in a certification process to allow public access to that portion of the Trail. In the certification process, the landowner retains ownership of the property (NPS, 2013). The mapped location of the Trail is on private property where the proposed Line BT-39 route crosses the Trail. The crossing of the Trail is addressed in Resource Report 4, which discusses cultural resources concerns.

8.5.3 Hazardous Waste Sites

CEGT reviewed the U.S. Environmental Protection Agency's ("EPA") EnviroFacts, as well as the Arkansas Department of Environmental Quality's ("ADEQ") databases to identify potentially hazardous facilities along or near the pipeline corridor. These databases include Brownfields, Comprehensive Environmental Response, Compensation, and Liability Information System ("CERCLIS"), and other incident sites regulated by the EPA and ADEQ. The EPA list was last updated on March 9, 2013 and the ADEQ database is current as of May 2013. Of the facilities listed, there were two identified within 0.25 mile of the proposed Project that have the potential to impact, or be encountered as part of the construction. These potentially hazardous facilities are listed in Table 8.5-2 below.

The ExxonMobil Pegasus pipeline ruptured on March 29, 2013 in the vicinity of the Northwoods subdivision in Mayflower, AR, approximately 200 feet west of the existing Line B retirement pipeline (MP 14.75). This site is currently under remediation; there are no known contaminated sediments within the Project work

area. Should any contaminated soils be found during construction activities, CEGT will coordinate with ExxonMobil and the ADEQ to remediate those contaminants properly.

If a hazardous waste site is encountered during construction of the Project, CEGT will stop work activities in the immediate vicinity of the site, notify the appropriate state and federal agencies, and proceed in accordance with local, state, and federal regulations.

TABLE 8.5-2

Hazardous Waste Sites Located within 0.25 Mile of the Project

Facility Name	Location		Facility Type	Comments
	Latitude	Longitude		
Conway City Landfill	35.111012	-92.516889	City Landfill	Located near access road at MP 0.25 of BT-39
Pipeline Incident	34.962558	-92.426643	Petroleum Oil Spill – Exxon Mobil	Located 200 ft. west of Existing Line B at MP 14.75 in Mayflower, AR

Source: EPA, 2013 and ADEQ, 2013.

8.6 LAND OWNERSHIP

The Project crosses lands held by both public and private landowners. Public lands are discussed in Section 8.4. An easement will be used to convey a ROW to CEGT for the Project. This easement gives CEGT the right to construct, operate, and maintain the pipelines and associated facilities in the ROW, and in return, CEGT agrees to compensate the landowner for their use of the land. The easement negotiations between CEGT and the landowner will include compensation values for loss of use during construction, loss of nonrenewable resources, damage done to property during construction, and use of the ROW after construction. CEGT will compensate landowners for the fair market value of any property used and pay the landowner for damages caused by construction of the pipeline.

In its efforts to inform landowners about the Project, CEGT has contacted or identified all known landowners crossed by or abutting the proposed pipeline ROW, as well as those along the existing pipeline ROWs to be retired. The names and addresses of all identified landowners whose land would be affected by the construction activities are provided in Appendix 1.E of Resource Report 1 (General Project Description), filed concurrently pursuant to Section 380.12 of the FERC's regulations.

If an easement cannot be negotiated with a private landowner, CEGT may use the right of eminent domain granted to it under Section 7(h) of the NGA and the procedure set forth under the Federal Rules of Civil Procedure (Rule 71A) to obtain the ROW. CEGT will still be required to compensate the landowner for the ROW, as well as for any damages incurred during construction, however, the level of compensation will then be determined by a court in accordance with state laws. In either case, CEGT will fairly compensate landowners for use of the land.

8.6.1 Property Values

It is not anticipated that the Project would negatively impact property values outside the proposed pipeline ROW. In 2001, Allen, Williford & Seale, Inc. prepared a study for the Interstate Natural Gas Association of America Foundation, Inc. to determine the impact of natural gas pipelines on real estate. Four separate geographically diverse areas were selected for the case study: 1) a suburban area crossed by one natural gas pipeline; 2) a suburban area crossed by multiple natural gas and products pipelines; 3) a rural area crossed by one natural gas pipeline; and 4) a rural area crossed by multiple gas pipelines and

one products pipeline. The results of the study revealed that there was no significant impact on property sales located along natural gas pipelines and that the pipeline size or the product carried did not impact the sale price. The study also revealed that there were no significant impacts on demand for properties within the geographically diverse areas and that the presence of a pipeline did not impede development of the surrounding properties. In addition, the existence of a pipeline had no significant impact on development decisions (*e.g.,* lot size) and it did not impact specific property types more or less severely than other property types (Allen, Williford & Seale, Inc. 2001).

8.7 VISUAL RESOURCES AND AESTHETICS

There are relatively few residences in the immediate vicinity of the proposed replacement pipeline route, and the route does not cross scenic highways or designated scenic rivers. The proposed Project will not result in changes to the viewshed of any recreational or scenic areas.

Most visual and aesthetic impacts associated with the Project will be limited to the period of active construction and will be associated with the presence of construction equipment, personnel, and disturbed soil. Following construction, the landscape will be re-contoured to as near pre-construction conditions as practical, revegetated in accordance with the FERC Plan and Procedures, and allowed to revert to pre-construction uses and condition (areas outside of the permanent pipeline ROW). The portions of the route crossing agricultural land, emergent wetlands, most scrub shrub wetlands, and open lands will return to pre-construction conditions within one to two growing seasons. The greatest visual impact will be on forest lands. Forest lands within temporary construction areas will eventually recover to pre-construction conditions; however, the impact will be long term. As previously described, forest areas within the permanent ROW will be permanently converted to herbaceous ground cover, which will result in a permanent visual impact.

Construction and operation of the proposed aboveground facilities will have a permanent, and typically small, impact on the visual landscape. During construction of the aboveground facilities, efforts will be made to reduce visual impacts. Naturally existing screening vegetation will be maintained, where practicable, to lessen the visual impact of construction to landowners. However, the majority of the Project will be located in rural areas where visual impacts will be negligible. Overall impacts also will be reduced where the Project is co-located with existing corridors.

8.8 REFERENCES

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APPENDIX 8.A

EXTRA TEMPORARY WORKSPACES

APPENDIX 8.A

Extra Temporary Workspaces Proposed for the Central Arkansas Pipeline Enhancement Project

ETWS ID	Milepost	Within 50 Feet of Wetland/Waterbody			Existing Land Use[2]	Area (acres)
		Distance (feet)	Feature ID	Justification[1]		
ETWS-1	0.0	7	W101FA	5	OL	0.07
ETWS-2	0.08	26	W102FA	2	OL	0.02
ETWS-3	0.14	-	-	-	OL	0.03
ETWS-4	0.27	-	-	-	FW	0.23
ETWS-5	0.25	-	-	-	FW	0.03
ETWS-6	0.27	13	W105FA	4	FW	0.34
ETWS-7	0.27	-	-	-	FW	0.03
ETWS-8	0.30	-	-	-	OL	0.02
ETWS-9	0.41	-	-	-	FW	0.12
ETWS-10	0.41	-	-	-	FW	0.30
ETWS-11	0.48	-	-	-	FW	0.07
ETWS-12	0.52	-	-	-	FW	0.11
ETWS-13	0.62	-	-	-	FW	0.06
ETWS-14	0.69	-	-	-	FW	0.03
ETWS-15	0.70	-	-	-	FW	0.07
ETWS-16	0.86	-	-	-	RE	0.08
ETWS-17	1.02	-	-	-	FW	0.06
ETWS-18	1.32	-	-	-	FW	0.03
ETWS-19	1.36	-	-	-	FW	0.03
ETWS-20	1.66	-	-	-	FW	0.13
ETWS-21	1.73	-	-	-	FW	0.03
ETWS-22	1.81	-	-	-	FW	0.04
ETWS-23	2.17	-	-	-	FW	0.03
ETWS-24	2.25	-	-	-	FW	0.03
ETWS-25	2.30	-	-	-	FW	0.03
ETWS-26	2.33	-	-	-	FW	0.03
ETWS-27	2.36	-	-	-	FW	0.03
ETWS-28	2.64	-	-	-	FW	0.03
ETWS-29	2.90	-	-	-	FW	0.03
ETWS-30	2.94	-	-	-	FW	0.03
ETWS-31	3.07	-	-	-	FW	0.03
ETWS-32	3.12	-	-	-	FW	0.03

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ETWS ID	Milepost	Within 50 Feet of Wetland/Waterbody			Existing Land Use[2]	Area (acres)
		Distance (feet)	Feature ID	Justification[1]		
ETWS-33	3.13	-	-	-	FW	0.06
ETWS-34	3.17	-	-	-	FW	0.03
ETWS-35	3.27	-	-	-	FW	0.03
ETWS-36	3.40	-	-	-	FW	0.03
ETWS-37	3.43	-	-	-	FW	0.03
ETWS-38	3.47	-	-	-	FW	0.03
ETWS-39	3.53	-	-	-	FW	0.03
ETWS-40	3.65	-	-	-	FW	0.03
ETWS-41	3.70	-	-	-	FW	0.03
ETWS-42	3.77	-	-	-	FW	0.03
ETWS-43	3.80	-	-	-	FW	0.03
ETWS-44	3.94	-	-	-	FW	0.03
ETWS-45	3.97	-	-	-	FW	0.03
ETWS-46	4.13	-	-	-	FW	0.12
ETWS-47	4.19	-	-	-	FW	0.11
ETWS-48	4.49	-	-	-	FW	0.03
ETWS-49	4.53	-	-	-	FW	0.03
ETWS-50	4.61	-	-	-	FW	0.11
ETWS-51	4.65	-	-	-	FW	0.22
ETWS-52	4.78	-	-	-	FW	0.03
ETWS-53	4.84	-	-	-	FW	0.03
ETWS-54	4.89	-	-	-	FW	0.04
ETWS-55	5.05	-	-	-	FW	0.03
ETWS-56	5.22	-	-	-	FW	0.03
ETWS-57	5.35	-	-	-	FW	0.03
ETWS-58	5.50	-	-	-	FW	0.06
ETWS-59	5.60	-	-	-	FW	0.03
ETWS-60	5.66	-	-	-	FW	0.03
ETWS-61	5.68	-	-	-	AG	0.11
ETWS-62	6.12	-	-	-	AG	0.11
ETWS-63	6.56	-	-	-	OL	0.08
ETWS-64	6.84	-	-	-	OL	0.03
ETWS-65	6.91	-	-	-	OL	0.06

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ETWS ID	Milepost	Within 50 Feet of Wetland/Waterbody			Existing Land Use[2]	Area (acres)
		Distance (feet)	Feature ID	Justification[1]		
ETWS-66	6.92	-	-	-	FW	0.06
ETWS-67	7.25	-	-	-	FW	0.06
ETWS-68	7.29	-	-	-	FW	0.06
ETWS-69	7.32	-	-	-	OL	0.11
ETWS-70	7.43	-	-	-	FW	0.11
ETWS-71	7.48	-	-	-	FW	0.03
ETWS-72	7.63	-	-	-	FW	0.03
ETWS-73	7.78	-	-	-	FW	0.03
ETWS-74	7.86	-	-	-	FW	0.03
ETWS-75	8.13	-	-	-	FW	0.03
ETWS-76	8.19	-	-	-	FW	0.03
ETWS-77	8.26	-	-	-	FW	0.03
ETWS-78	8.29	-	-	-	FW	0.07
ETWS-79	8.33	-	-	-	FW	0.23
ETWS-80	8.44	-	-	-	FW	0.09
ETWS-81	8.61	-	-	-	FW	0.03
ETWS-82	8.64	-	-	-	FW	0.03
ETWS-83	8.71	-	-	-	FW	0.03
ETWS-84	8.75	-	-	-	FW	0.03
ETWS-85	8.75	-	-	-	FW	0.12
ETWS-86	8.86	-	-	-	FW	0.11
ETWS-87	8.98	-	-	-	FW	0.03
ETWS-88	9.01	-	-	-	FW	0.03
ETWS-89	9.06	-	-	-	FW	0.34
ETWS-90	9.20	15	W21FA	N/A	FW	0.22
ETWS-91	9.34	-	-	-	FW	0.06
ETWS-91	9.34	-	-	-	FW	0.06
ETWS-92	9..48	-	-	-	FW	0.11
ETWS-93	9.52	-	-	-	FW	0.04
ETWS-94	9.67	-	-	-	OL	0.05
ETWS-95	9.70	-	-	-	OL	0.07
ETWS-96	9.75	-	-	-	OL	0.04
ETWS-97	9.81	-	-	-	FW	0.06

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ETWS ID	Milepost	Within 50 Feet of Wetland/Waterbody			Existing Land Use[2]	Area (acres)
		Distance (feet)	Feature ID	Justification[1]		
ETWS-98	10.20	-	-	-	FW	0.11
ETWS-99	10.23	-	-	-	FW	0.14
ETWS-100	10.30	-	-	-	FW	0.13
ETWS-101	10.48	-	-	-	FW	0.05
ETWS-102	10.53	-	-	-	FW	0.11
ETWS-103	10.64	-	-	-	FW	0.04
ETWS-104	10.67	-	-	-	FW	0.14
ETWS-105	11.18	-	-	-	FW	0.03
ETWS-106	11.22	-	-	-	FW	0.03
ETWS-107	11.41	-	-	-	FW	0.03
ETWS-108	11.44	-	-	-	FW	0.03
ETWS-109	11.50	-	-	-	FW	0.03
ETWS-110	11.54	-	-	-	FW	0.11
ETWS-111	11.71	-	-	-	FW	0.03
ETWS-112	11.74	-	-	-	FW	0.03
ETWS-113	11.91	-	-	-	FW	0.03
ETWS-114	11.95	-	-	-	FW	0.06
ETWS-115	12.00	-	-	-	FW	0.03
ETWS-116	12.03	23	S9AFA	N/A	FW	0.09
ETWS-116	12.03	-	-	-	FW	0.09
ETWS-117	12.10	-	-	-	FW	0.03
ETWS-118	12.16	-	-	-	FW	0.03
ETWS-119	12.18	-	-	-	FW	0.03
ETWS-120	12.38	-	-	-	FW	0.11
ETWS-121	12.42	-	-	-	FW	0.06
ETWS-122	12.43	-	-	-	FW	0.07
ETWS-123	12.48	-	-	-	FW	0.09
ETWS-124	12.58	-	-	-	FW	0.03
ETWS-125	12.61	-	-	-	FW	0.03
ETWS-126	12.65	-	-	-	FW	0.32
ETWS-127	12.77	-	-	-	FW	0.04
ETWS-128	12.90	-	-	-	FW	0.12
ETWS-129	13.00	-	-	-	FW	0.55

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ETWS ID	Milepost	Within 50 Feet of Wetland/Waterbody			Existing Land Use[2]	Area (acres)
		Distance (feet)	Feature ID	Justification[1]		
ETWS-130	13.15	-	-	-	FW	0.25
ETWS-131	13.18	-	-	-	FW	0.14
ETWS-132	13.22	-	-	-	FW	0.16
ETWS-133	13.22	-	-	-	FW	0.27
ETWS-134	13.30	-	-	-	FW	0.26
ETWS-135	13.38	-	-	-	FW	0.13
ETWS-136	13.39	-	-	-	FW	0.13
ETWS-137	13.43	-	-	-	FW	0.13
ETWS-138	13.60	-	-	-	FW	0.06
ETWS-139	13.72	-	-	-	FW	0.04
ETWS-140	13.77	-	-	-	FW	0.03
ETWS-141	13.82	-	-	-	FW	0.03
ETWS-142	13.90	-	-	-	FW	0.08
ETWS-143	13.97	-	-	-	FW	0.05
ETWS-144	14.00	-	-	-	FW	0.19
ETWS-145	14.09	-	-	-	FW	0.32
ETWS-146	14.25	-	-	-	FW	0.22
ETWS-147	14.30	-	-	-	OL	0.15
ETWS-148	14.39	-	-	-	FW	0.07
ETWS-149	14.43	-	-	-	FW	0.06
ETWS-150	14.49	-	-	-	FW	0.05
ETWS-151	14.49	-	-	-	FW	0.02
ETWS-152	14.50	-	-	-	FW	0.11
ETWS-153	14.59	-	-	-	FW	0.11
ETWS-154	14.78	-	-	-	FW	0.06
ETWS-155	14.82	-	-	-	OL	0.06
ETWS-156	14.96	-	-	-	OL	0.11
ETWS-157	15.14	-	-	-	FW	0.11
ETWS-158	15.18	-	-	-	OL	0.09
ETWS-159	15.27	-	-	-	FW	0.06
ETWS-160	15.33	-	-	-	FW	0.06
ETWS-161	15.36	-	-	-	FW	0.06
ETWS-162	15.47	-	-	-	FW	0.06

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ETWS ID	Milepost	Within 50 Feet of Wetland/Waterbody			Existing Land Use[2]	Area (acres)
		Distance (feet)	Feature ID	Justification[1]		
ETWS-163	15.53	-	-	-	FW	0.07
ETWS-164	15.57	-	-	-	FW	0.06
ETWS-165	15.60	18	S403FA	6	FW	0.06
ETWS-166	15.67	-	-	-	FW	0.10
ETWS-167	15.73	-	-	-	FW	0.10
ETWS-168	15.88	-	-	-	FW	0.10
ETWS-169	15.98	-	-	-	FW	0.10
ETWS-170	16.09	-	-	-	FW	0.10
ETWS-171	16.20	-	-	-	FW	0.18
ETWS-172	16.31	-	-	-	FW	0.07
ETWS-173	16.31	-	-	-	FW	0.42
ETWS-174	16.81	-	-	-	FW	0.03
ETWS-175	16.85	-	-	-	FW	0.05
ETWS-176	17.03	-	-	-	FW	0.07
ETWS-177	17.10	-	-	-	FW	0.04
ETWS-178	17.14	-	-	-	FW	0.11
ETWS-179	17.18	-	-	-	FW	0.12
ETWS-180	17.30	-	-	-	FW	0.07
ETWS-181	17.65	0	W61FA	N/A	AG	0.03
ETWS-182	17.66	0	W61FA	N/A	FW	0.03
ETWS-183	17.66	0	W61FA	N/A	AG	0.17
ETWS-184	17.67	0	W61FA	N/A	AG	0.83
ETWS-185	17.69	0	W61FA	N/A	AG	0.33
ETWS-186	17.79	0	W61FA	N/A	AG	0.11
ETWS-187	18.07	16	W67FA	3	OL	0.03
ETWS-188	18.08	16	W67FA	3	OL	0.02
ETWS-189	18.08	-	-	-	OL	0.11
ETWS-190	18.10	-	-	-	OL	0.07
ETWS-191	18.25	-	-	-	OL	0.57
ETWS-192	18.37	33	W65PU	3	OL	0.00
ETWS-193	18.38	28	W64PU	4	OL	0.00
ETWS-194	18.43	25	W64PU	4	OL	0.04
ETWS-195	18.45	-	-	-	OL	0.11

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ETWS ID	Milepost	Within 50 Feet of Wetland/Waterbody			Existing Land Use[2]	Area (acres)
		Distance (feet)	Feature ID	Justification[1]		
ETWS-196	18.70	-	-	-	AG	0.06
ETWS-197	18.70	-	-	-	AG	1.00
ETWS-198	19.03	-	-	-	AG	0.11
ETWS-199	19.07	-	-	-	AG	0.11
ETWS-200	19.09	-	-	-	AG	0.30
ETWS-201	19.16	-	-	-	AG	0.06
ETWS-202	19.20	-	-	-	AG	0.33
ETWS-203	19.27	38	S40PU	N/A	AG	0.17
ETWS-204	19.33	-	-	-	AG	0.12
ETWS-205	19.34	-	-	-	AG	0.06
ETWS-206	19.35	-	-	-	AG	0.75
ETWS-207	19.53	-	-	-	AG	0.21
ETWS-208	19.61	-	-	-	AG	0.09
ETWS-209	19.64	-	-	-	AG	0.16
ETWS-210	19.69	-	-	-	AG	0.11
ETWS-211	19.71	-	-	-	AG	0.11
ETWS-212	19.73	-	-	-	AG	1.69
ETWS-213	20.28	-	-	-	AG	0.11
ETWS-214	20.32	-	-	-	AG	0.68
ETWS-215	20.32	-	-	-	AG	0.11
ETWS-216	20.53	-	-	-	AG	0.06
ETWS-217	20.82	-	-	-	FW	0.02
ETWS-218	20.85	-	-	-	FW	0.11
ETWS-219	20.92	-	-	-	FW	0.11
ETWS-220	20.98	-	-	-	OL	0.11
ETWS-221	21.07	-	-	-	FW	0.11
ETWS-222	21.11	-	-	-	FW	0.11
ETWS-223	21.25	-	-	-	FW	0.07
ETWS-224	21.31	-	-	-	FW	0.06
ETWS-225	21.71	-	-	-	OL	0.03
ETWS-226	21.75	-	-	-	OL	0.03
ETWS-227	22.18	-	-	-	OL	0.11
ETWS-228	22.20	-	-	-	OL	0.11

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ETWS ID	Milepost	Within 50 Feet of Wetland/Waterbody			Existing Land Use[2]	Area (acres)
		Distance (feet)	Feature ID	Justification[1]		
ETWS-229	22.31	-	-	-	OL	0.46
ETWS-230	22.57	-	-	-	FW	0.02
ETWS-231	22.61	-	-	-	FW	0.11
ETWS-232	22.79	-	-	-	FW	0.45
ETWS-233	23.06	-	-	-	FW	0.44
ETWS-234	23.21	-	-	-	OL	0.11
ETWS-235	23.25	-	-	-	OL	0.11
ETWS-236	23.31	-	-	-	FW	0.20
ETWS-237	23.39	-	-	-	FW	0.05
ETWS-238	23.41	-	-	-	FW	0.05
ETWS-239	23.41	-	-	-	FW	0.06
ETWS-240	23.46	-	-	-	FW	0.12
ETWS-241	23.59	-	-	-	OL	0.04
ETWS-242	23.63	-	-	-	OL	0.03
ETWS-243	23.67	-	-	-	OL	0.03
ETWS-244	23.83	-	-	-	OL	0.03
ETWS-245	23.86	-	-	-	OL	0.03
ETWS-246	24.01	-	-	-	OL	0.06
ETWS-247	24.06	-	-	-	OL	0.06
ETWS-248	24.13	-	-	-	OL	0.04
ETWS-249	24.17	-	-	-	OL	0.04
ETWS-250	24.35	10	W120PU	2,6	FW	0.11
ETWS-251	24.43	27	W121PU	1	OL	0.03
ETWS-252	24.47	-	-	-	OL	0.03
ETWS-253	24.70	-	-	-	FW	0.11
ETWS-254	24.79	37	W411PU	7	OL	0.15
ETWS-255	24.84	-	-	-	FW	0.11
ETWS-256	24.77	-	-	-	OL	0.03
ETWS-257	25.33	-	-	-	FW	0.04
ETWS-258	25.36	-	-	-	FW	0.06
ETWS-259	25.37	-	-	-	FW	0.09
ETWS-260	25.59	-	-	-	OL	0.10
ETWS-261	25.64	-	-	-	OL	0.06

APPENDIX 8.A

Extra Temporary Workspaces Proposed for the Central Arkansas Pipeline Enhancement Project

ETWS ID	Milepost	Within 50 Feet of Wetland/Waterbody			Existing Land Use[2]	Area (acres)
		Distance (feet)	Feature ID	Justification[1]		
ETWS-262	25.75	-	-	-	FW	0.11
ETWS-263	25.81	-	-	-	FW	0.11
ETWS-264	26.21	-	-	-	FW	0.11
ETWS-265	26.28	-	-	-	FW	0.11
ETWS-266	26.38	-	-	-	OL	0.06
ETWS-267	26.41	-	-	-	OL	0.06
ETWS-268	26.56	-	-	-	OL	0.11
ETWS-269	26.61	-	-	-	FW	0.09
ETWS-270	26.70	-	-	-	FW	0.03
ETWS-271	26.76	-	-	-	FW	0.17
ETWS-272	26.81	-	-	-	FW	0.30
ETWS-273	26.95	-	-	-	FW	0.23
ETWS-274	27.25	-	-	-	FW	0.03
ETWS-275	27.28	-	-	-	FW	0.03
ETWS-276	27.40	-	-	-	FW	0.05
ETWS-277	27.46	25	W110PU	N/A	FW	0.06
ETWS-278	27.53	-	-	-	FW	0.06
ETWS-279	27.59	-	-	-	FW	0.09
ETWS-280	27.62	-	-	-	OL	0.47
ETWS-281	27.95	-	-	-	FW	0.06
ETWS-282	28.00	-	-	-	FW	0.06
ETWS-283	28.22	-	-	-	OL	0.03
ETWS-283	28.22	-	-	-	OL	0.03
ETWS-284	28.25	29	S126CPU	N/A	OL	0.03
ETWS-284	28.25	20	W410PU	N/A	OL	0.03
ETWS-285	28.31	-	-	-	OL	0.03
ETWS-286	28.35	-	-	-	OL	0.08
ETWS-286	28.35	-	-	-	OL	0.08
ETWS-287	28.45	-	-	-	OL	0.03
					Total	**30.89**

[1] Justifications:

1. Wetland/Waterbody Crossing—The ETWS is required to temporarily stockpile spoils associated with excavation of wetland/waterbody crossings and bell holes required to complete tie-ins, as well as staging of associated construction equipment.

APPENDIX 8.A

Extra Temporary Workspaces Proposed for the Central Arkansas Pipeline Enhancement Project

ETWS ID	Milepost	Within 50 Feet of Wetland/Waterbody			Existing Land Use[2]	Area (acres)
		Distance (feet)	Feature ID	Justification[1]		

2. Road Crossing—The ETWS is required to temporarily stockpile spoil removed for the road bore entrance/exit pits and for bell holes required to complete tie-ins, as well as staging of associated construction equipment.
3. Access Road Intersection—The ETWS is required for equipment/material unloading, staging, parking, and truck turnaround space at locations of access road intersections with the construction right-of-way.
4. HDD Entry/Exit Sites—The ETWS is required to stockpile, stage, and store additional spoils and equipment that will be employed at HDD Entry and Exit sites, as well as to excavate bell holes for tie-ins. Also included in this category are ETWS used for assembling the HDD pull string.
5. Aboveground facility Construction–The ETWS is required to provide adequate workspace for construction of aboveground facilities.
6. Point of inflection–The ETWS is required to provide adequate workspace for construction at sharp bends in the pipe.
7. Slope – The ETWS is needed due to site-specific terrain (slope) that dictates room for spoil storage.

[2] Existing land use:

OL – open land
FW – forest/woodland
AG – agricultural
RE – residential

APPENDIX 8.B

ACCESS ROADS

APPENDIX 8.B

Access Roads Proposed for the Central Arkansas Pipeline Enhancement Project

Access Road ID	Milepost	Length (miles)	Width (feet)	Existing Surface Type	Land Requirements (acres)	
					Temporary	Permanent
Line BT-39 AR-0.0	0.0	0.70	20	Partial paved commercial/ Gravel and dirt	1.70	0.00
Line BT-39 AR-0.06	0.06	0.39	20	Gravel/Dirt	0.95	0.00
Line BT-39 AR-0.25	0.25	0.24	20	Gravel/Dirt	0.58	0.00
Line BT-39 AR-0.26	0.26	0.1	20	Gravel/Dirt	0.24	0.00
Line BT-39 AR-0.33	0.33	0.03	20	Grass ROW path	0.07	0.00
Line BT-39 AR-0.41	0.41	0.01	20	Paved driveway	0.02	0.00
Line BT-39 AR-0.70	0.70	0.01	20	Paved driveway	0.02	0.00
Line BT-39 AR-0.90	0.90	0.002	20	Paved driveway	0.005	0.00
Line BT-39 AR-1.17	1.17	0.01	20	Grass roadside	0.02	0.00
Line BT-39 AR-1.55	1.55	0.01	20	Grass roadside	0.02	0.00
Line BT-39 AR-2.30	2.30	0.28	20	Paved Road	0.68	0.00
Line BT-39 AR-2.62	2.62	1.05	20	Grass path	2.55	0.00
Line BT-39 AR-2.63	2.63	0.89	20	Gravel/Dirt Road	2.16	0.00
Line BT-39 AR-3.11	3.11	0.19	20	Gravel/Dirt Road	0.46	0.00
Line BT-39 AR-4.40	4.40	0.09	20	Open field	0.22	0.00
Line BT-39 AR-4.89	4.89	0.01	20	Roadside	0.02	0.00
Line BT-39 AR-5.21	5.21	0.01	20	Wooded roadside	0.02	0.00
Line BT-39 AR-5.50	5.50	0.01	20	Wooded roadside	0.02	0.00
Line BT-39 AR-7.75	7.75	0.18	20	Grass path/ ROW	0.44	0.44
Line BT-39 AR-7.82	7.82	0.27	20	Paved road/ Gravel driveway/ ROW	0.65	0.00
Line BT-39 AR-8.10	8.10	0.07	20	Grass path/ ROW	0.17	0.00
Line BT-39 AR-8.85	8.85	0.30	20	Gravel residential drive/ Horse open pasture	0.73	0.00
Line BT-39 AR-9.28	9.28	0.21	20	Grass path	0.51	0.00
Line BT-39 AR-9.89	9.89	0.13	20	Paved residential drive/ grass path	0.32	0.00
Line BT-39 AR-10.23	10.23	0.06	20	Gravel/Dirt residential driveway	0.15	0.00
Line BT-39 AR-10.35	10.35	0.05	20	Wooded grass path	0.12	0.00

APPENDIX 8.B

Access Roads Proposed for the Central Arkansas Pipeline Enhancement Project

Access Road ID	Milepost	Length (miles)	Width (feet)	Existing Surface Type	Land Requirements (acres)	
					Temporary	Permanent
Line BT-39 AR-10.97	10.97	0.10	20	Gravel drive/ dirt trail	0.24	0.00
Line BT-39 AR-11.18	11.18	0.33	20	Non-existing wooded AR parallels ROW	0.8	0.00
Line BT-39 AR-11.5	11.5	1.45	20	Grass ROW path	3.52	0.00
Line BT-39 AR-11.62	11.62	0.01	20	Non-existing wooded	0.02	0.00
Line BT-39 AR-11.85	11.85	0.01	20	Non-existing wooded	0.02	0.00
Line BT-39 AR-11.97	11.97	0.02	20	Non-existing wooded	0.05	0.00
Line BT-39 AR-12.43	12.43	1.24	20	Gravel driveway to Davis Lake	3.01	0.00
Line BT-39 AR-12.96	12.96	0.22	20	Dirt ROW path/ Wooded no path	0.53	0.00
Line BT-39 AR-13.42	13.42	0.90	20	Dirt ROW path	2.18	0.00
Line BT-39 AR-13.54	13.54	0.02	20	Dirt ROW path	0.05	0.00
Line BT-39 AR-13.70	13.70	0.03	20	Dirt ROW path	0.07	0.00
Line BT-39 AR-13.90	13.90	0.02	20	Grass ROW	0.05	0.00
Line BT-39 AR-15.13	15.13	0.03	20	ROW/ Open field	0.07	0.00
Line BT-39 AR-16.62	16.62	0.25	20	Grass ROW	0.61	0.00
Line BT-39 AR-16.63	16.63	0.65	20	Grass ROW/ Gravel sub-station drive	1.58	0.00
Line BT-39 AR-17.50	17.50	0.13	20	Partial Paved/ Grass drive	0.32	0.32
Line BT-39 AR-17.65	17.65	0.06	20	Partial Paved/ Grass drive	0.15	0.00
Line BT-39 AR-17.68	17.68	0.04	20	Ag field path	0.10	0.00
Line BT-39 AR-17.72	17.72	0.51	20	Dirt Ag path	1.24	0.00
Line BT-39 AR-17.73	17.73	0.11	20	Dirt Ag path	0.27	0.00
Line BT-39 AR-18.08	18.08	0.41	20	Dirt Ag path	0.99	0.00
Line BT-39 AR-18.09	18.09	0.01	20	Ag field	0.02	0.00
Line BT-39 AR-18.38	18.38	0.50	20	Gravel Drive	1.21	0.00
Line BT-39 AR-19.20	19.20	1.1	20	Dirt Ag Path	2.67	0.00
Line BT-39 AR-19.33	19.33	0.02	20	Grass two-track	0.05	0.00
Line BT-39 AR-19.72	19.72	0.01	20	Dirt Ag path	0.02	0.00
Line BT-39 AR-20.33	20.33	0.30	20	Dirt Ag path	0.73	0.00

APPENDIX 8.B

Access Roads Proposed for the Central Arkansas Pipeline Enhancement Project

Access Road ID	Milepost	Length (miles)	Width (feet)	Existing Surface Type	Land Requirements (acres)	
					Temporary	Permanent
Line BT-39 AR-20.59	20.59	0.29	20	Dirt drive	0.70	0.00
Line BT-39 AR-23.56	23.56	1.68	20	Existing Wooded dirt drive	4.07	0.00
Line BT-39 AR-23.58	23.58	0.07	20	Driveway/Yard/Wooded	0.17	0.00
Line BT-39 AR-25	25	0.11	20	Dirt road	0.27	0.00
Line BT-39 AR-25.42	25.42	0.12	20	Gravel/Dirt road	0.29	0.00
Line BT-39 AR-25.43	25.43	0.01	20	Gravel/Dirt road	0.02	0.00
Line BT-39 AR-26.20	26.20	0.02	20	Wooded roadside	0.05	0.00
Line BT-39 AR-27.14	27.14	0.44	20	Wooded dirt path	1.07	0.00
Line BT-39 AR-27.48	27.48	0.10	20	Paved drive	0.24	0.00
Line BT-39 AR-27.49	27.49	0.42	20	Wooded Gravel/Dirt path	1.02	0.00
Line BT-39 AR-27.82	27.82	0.19	20	Wooded Gravel/Dirt path	0.46	0.00
Line BT-39 AR-28.50	28.50	0.12	20	Paved road/ Gravel-Dirt road	0.29	0.00
Line B AR-1	26.70	0.57	20	Gravel/Dirt	1.38	0.00
Line B AR-2	26.49	0.27	20	Gravel/Dirt	0.65	0.00
Line B AR-3	26.44	0.02	20	Grass ROW path	0.05	0.00
Line B AR-4	26.41	0.03	20	Grass ROW path	0.07	0.00
Line B AR-5	25.36	0.05	20	Wooded/Yard	0.12	0.00
Line B AR-6	24.36	0.03	20	Fallow/Hayed field	0.07	0.00
Line B AR-7	24.28	0.004	20	Fallow/Hayed field	0.01	0.00
Line B AR-8	24.25	0.003	20	Fallow/Hayed field	0.01	0.00
Line B AR-9	22.95	0.03	20	Driveway/Wooded/ Fallow field	0.07	0.00
Line B AR-10	22.82	0.07	20	Paved commercial driveway	0.17	0.00
Line B AR-11	22.23	0.05	20	Paved residential driveway	0.12	0.00
Line B AR-12	21.87	0.14	20	Wooded four wheeler path	0.34	0.00
Line B AR-13	21.14	0.01	20	Gravel driveway	0.02	0.00
Line B AR-14	21.04	0.11	20	Grass path through ROW	0.27	0.00
Line B AR-15	19.60	0.08	20	Paved/gravel driveway	0.19	0.00

APPENDIX 8.B

Access Roads Proposed for the Central Arkansas Pipeline Enhancement Project

Access Road ID	Milepost	Length (miles)	Width (feet)	Existing Surface Type	Land Requirements (acres)	
					Temporary	Permanent
Line B AR-16	19.26	0.02	20	Paved residential driveway	0.05	0.00
Line B AR-17	19.25	0.001	20	Wooded	0.002	0.00
Line B AR-18	19.15	0.09	20	Wooded/Fallow field path	0.22	0.00
Line B AR-19	19.00	0.18	20	Wooded/Fallow field path	0.44	0.00
Line B AR-20	19.00	0.13	20	Fallow field	0.32	0.00
Line B AR-21	18.19	0.34	20	Wooded/Fallow field path	0.82	0.00
Line B AR-22	17.39	0.05	20	Gravel/dirt driveway	0.12	0.00
Line B AR-23	17.20	0.02	20	Paved residential driveway	0.05	0.00
Line B AR-24	15.00	0.18	20	Wooded four wheeler path	0.44	0.00
Line B AR-25	14.99	0.11	20	Dirt path through yard	0.27	0.00
Line B AR-26	14.77	0.15	20	Paved driveway/ open field	0.36	0.00
Line B AR-27	14.67	0.08	20	Paved commercial drive/ open field	0.19	0.00
Line B AR-28	14.42	0.04	20	Paved commercial driveway	0.10	0.00
Line B AR-29	14.42	0.01	20	Paved commercial driveway	0.02	0.00
Line B AR-30	14.30	0.07	20	Paved commercial/ four wheeler path through yard	0.17	0.00
Line B AR-31	11.00	1.07	20	Path through ROW	2.59	0.00
Line B AR-32	8.30	0.10	20	Wooded path	0.24	0.00
Line B AR-33	7.19	0.38	20	Paved residential drive/ path through ROW	0.92	0.00
Line B AR-34	7.00	0.01	20	Paved residential driveway/ path through ROW	0.02	0.00
Line B AR-35	6.90	0.01	20	Residential yard/ wooded	0.02	0.00
Line B AR-36	6.80	0.01	20	Residential yard/ path through ROW	0.02	0.00
Line B AR-37	5.20	0.32	20	Path through ROW/ gravel/dirt	0.78	0.00
Total		**22.19**	**--**	**--**	**53.77**	**0.76**

CENTERPOINT ENERGY GAS TRANSMISSION COMPANY, LLC

CENTRAL ARKANSAS PIPELINE ENHANCEMENT PROJECT
FERC DOCKET NO. PF13-10-000

DRAFT RESOURCE REPORT NO. 9

AIR QUALITY AND NOISE

PUBLIC

Prepared for:
CenterPoint Energy Gas Transmission Company, LLC
P.O. Box 21734
Shreveport, LA
71151

Prepared by:
AK Environmental, LLC
850 Bear Tavern Road, Suite 106
West Trenton, NJ
08628

August 2013

CENTRAL ARKANSAS PIPELINE ENHANCEMENT PROJECT
FERC DOCKET NO. PF13-10-000

RESOURCE REPORT NO. 9 – AIR AND NOISE QUALITY SUMMARY OF COMMISSION FILING INFORMATION	
INFORMATION	**FOUND IN**
• Describe existing air quality in the vicinity of the project. (§ 380.12 (k) (1))	Section 9.1.1
• Quantify the existing noise levels (day-night sound level (L_{dn}) and other applicable noise parameters) at noise-sensitive areas and at other areas covered by relevant state and local noise ordinances. (§ 380.12 (k) (2))	Section 9.2
• Quantify existing and proposed emissions of compressor equipment, plus construction emissions, including nitrogen oxides (NO_x) and carbon monoxide (CO), and the basis for these calculations. Summarize anticipated air quality impacts for the project. (§ 380.12 (k) (3))	Not Applicable (see section 9.1.2)
• Describe the existing and proposed compressor units at each station where new, additional, or modified compression units are proposed, including the manufacturer, model number, and horsepower of the compressor units. (§ 380.12 (k) (4))	Not Applicable
• Identify any nearby noise-sensitive area by distance and direction from the proposed compressor unit building/enclosure. (§ 380.12 (k) (4))	Not Applicable (NSAs affected by HDD operations are addressed in Section 9.2.2)
• Identify any applicable state or local noise regulations. (§ 380.12 (k) (4))	Section 9.2.1
• Calculate the noise impact at noise-sensitive areas of the proposed compressor unit modifications or additions, specifying how the impact was calculated, including manufacturer's data and proposed noise control equipment. (§ 380.12 (k) (4))	Not Applicable (Calculations for NSAs affected by HDD operations are addressed in Section 9.2.2)

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ACRONYMS AND ABBREVIATIONS

CAA	Clean Air Act
CEGT	CenterPoint Energy Gas Transmission Company, LLC
CERC	CenterPoint Energy Resources Corporation
CFR	Code of Federal Regulations
CO	Carbon monoxide
Commission	Federal Energy Regulatory Commission
dB	Decibels
dBA	A-weighted decibels
E	Emission factor
EPA	U.S. Environmental Protection Agency
F	Fahrenheit
FERC	Federal Energy Regulatory Commission
ft	feet
FTP	Federal Test Procedure
g/m^2	Grams/meter squared
HAP	Hazardous air pollutant
HDD	Horizontal directional drill
H&K	Hoover & Keith, Inc.
Hz	Hertz
L_{dn}	Day-night sound level
L_{eq}	Equivalent Sound Level
LNG	Liquefied natural gas
MP	Milepost
NAAQS	National Ambient Air Quality Standards
NO_2	Nitrogen dioxide
NOx	Nitrogen oxides
NSA	noise sensitive area
O_3	Ozone
$PM_{2.5}$	particulate matter sized 2.5 microns and smaller
Pb	Lead
PM_{10}	Particulate matter sized 10 microns and smaller
Project	Central Arkansas Pipeline Enhancement Project
ROW	Right-of-way
SCC	Source Classification Code
SO_2	Sulfur dioxide
TBS	Town border stations

TPY	Tons per year
TSP	Total Suspended Particulate
Veh	Vehicle
VMT	Vehicle Miles Traveled
VOC	Volatile organic compounds
W	Average vehicle weight in tons

9.0 INTRODUCTION

CenterPoint Energy Gas Transmission Company, LLC ("CEGT"), in cooperation with its affiliated natural gas distribution business, CenterPoint Energy Resources Corporation d/b/a Arkansas Gas ("CERC"), is filing an application for a certificate of public convenience and necessity with the Federal Energy Regulatory Commission ("FERC" or "Commission") for the Central Arkansas Pipeline Enhancement Project ("Project"). The Project will provide for the continued safe, reliable, and efficient transportation of natural gas to the central Arkansas cities and towns of Conway, Mayflower, Maumelle, North Little Rock, and Little Rock. As part of the Project, CEGT is proposing the installation of approximately 28.5 miles of 12-inch-diameter natural gas pipeline and ancillary facilities in Pulaski and Faulkner Counties, Arkansas. The proposed pipeline, to be named Line BT-39, will be constructed primarily on new alignment, and will provide replacement transmission service for a portion of two existing CEGT natural gas pipelines (Lines B and BT-14). CEGT will also construct metering and appurtenances at seven new or modified locations along the Line BT-39 pipeline route and tie-in points to the existing Line BT-14 pipeline, as well as two 4-inch-diameter laterals (Lines BT-40 and BT-41) to provide natural gas deliveries to its distribution affiliate. As currently proposed, ownership of an approximately 12.4-mile-long segment of the existing Line BT-14 pipeline through the City of Conway would be transferred to CEGT's distribution affiliate, and an approximately 21.7-mile-long segment of the existing Line B pipeline, extending from Conway to North Little Rock, would be retired from service. Other minor ancillary facilities and small diameter pipelines (Line BM-1, Line BT-19, and a portion of Line BM-21) within the City of Conway would also be retired in association with the proposed Project. Refer to the Project locations maps (Figure 1.1-1) for a depiction of existing, proposed, and retirement pipeline facilities associated with the Project.

FERC's regulations at 18 Code of Federal Regulations ("CFR") Part 380.12(k)(1) state that Resource Report 9 is required for applications involving compressor facilities at new or existing stations and for new liquefied natural gas ("LNG") facilities. The proposed Project will not involve compressor facilities or LNG facilities and will not significantly affect air or noise quality during operation. However, minor short-term impacts on these resources may occur during construction, which will involve eight horizontal directional drills ("HDD"s). The potential for such short-term impacts is discussed briefly in this resource report.

9.1 AIR QUALITY

9.1.1 Existing Air Quality

The Clean Air Act ("CAA") required the U.S. Environmental Protection Agency ("EPA") to establish ambient ceilings for certain compounds based on the identifiable effects the compounds may have on public health and welfare. Subsequently, the EPA promulgated regulations that set National Ambient Air Quality Standards ("NAAQS") for seven criteria pollutants: sulfur dioxide ("SO_2"), carbon monoxide ("CO"), nitrogen dioxide ("NO_2"), inhalable particulate matter (*i.e.*, particulate matter sized 10 microns and smaller ["PM_{10}"]), fine particulate matter (*i.e.*, particulate matter sized 2.5 microns and smaller ["$PM_{2.5}$"]), lead ("Pb"), and ozone ("O_3"). Two classes of ambient air quality standards have been established: 1) primary standards defining levels of air quality that the EPA has judged as necessary to protect public health, and 2) secondary standards defining levels for protecting soils, vegetation, wildlife, and other aspects of public welfare.

The 1977 CAA Amendments in Section 107 required EPA and states to identify by category the air quality control regions meeting and not meeting the NAAQS. Areas meeting the NAAQS are termed "attainment areas," and areas not meeting the NAAQS are termed "nonattainment areas." The designation of an area is made on a pollutant-by-pollutant basis. All counties in which Project-related construction will take place currently are designated as attainment with the NAAQS for all criteria pollutants.

9.1.2 Air Quality Impacts

9.1.2.1 Construction

Air quality impacts associated with construction of the proposed Project will include emissions from fossil-fueled construction equipment, fugitive dust, and emissions generated from burning of any brush or debris generated during construction. However, such air quality impacts generally will be short-term and localized. Due to the linear nature of the Project pipeline construction activities (see Resource Report 1), construction-related emissions will be transient in nature at a given Project location and are not expected to cause or contribute to any significant degradation of air quality.

Emissions from construction equipment will depend on the duration and type of construction activity, together with the number and type of vehicles and engine-powered equipment units in use at any given time. Earth-moving equipment and other mobile sources may be powered by diesel or gasoline engines that are sources of combustion-related emissions, including nitrogen oxides ("NOx"), CO, volatile organic compounds ("VOC"), SO_2, PM_{10}, and small amounts of hazardous air pollutants. Emissions from equipment will be short-term and localized in any given area as equipment and activities move along the route. Construction equipment will be operated on an as-needed basis, mainly during daylight hours. Further, CEGT will maintain fossil-fueled construction equipment in accordance with manufacturer's recommendations to minimize construction-related emissions.

Fugitive dust emissions will result from vehicle traffic and from soil disruption associated with land clearing, grading, excavation, and backfilling. The amount of fugitive dust generated will depend on the duration and type of construction activity, moisture content and texture of the soils that will be disturbed, wind speed, the frequency of precipitation, and the number and types of vehicles traveling over the construction areas. CEGT will employ proven construction practices, such as the application of water to the construction area and spoil storage piles, to control fugitive dust emissions during construction. Additionally, areas disturbed by construction will be stabilized in accordance with the FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan*.

Due to the linear nature of the Project pipeline construction activities, construction-related emissions will be largely transient in nature and are not expected to cause or contribute to any significant degradation of air quality.

Tables 9.1-1 through 9.1-5 provide the estimated criteria pollutant emissions from the proposed Project pipeline construction activities. Only trace amounts of hazardous air pollutants ("HAP"s) will be present in the tailpipe emissions from the construction equipment. Emissions associated with surface coating will be minimal, because the fusion-bonded epoxy coating on the pipe joints will be applied at the factory prior to delivery to the Project area. Field-coating will be limited to welds and, if necessary, repairs of any damage or defects. Blasting is not expected to be used on the proposed Project, so there will be no blasting-related emissions.

TABLE 9.1-1

SUMMARY OF EMISSIONS FOR CONSTRUCTION OF THE CENTRAL ARKANSAS PIPELINE ENHANCEMENT PROJECT

	Criteria Pollutants (tpy)					
Emissions Type	**NOx**	**VOC**	**CO**	**SO_2**	**PM10**	**PM2.5**
Pipeline Non-Road Emissions [1]	22.70	2.99	88.32	3.81	2.00	1.98
On-Road Emissions [2]	0.27	0.08	0.78	0.00	0.00	0.00
Fugitive Dust [3]	0.00	0.00	0.00	0.00	4.29	4.29
Total Construction Emissions	**22.97**	**3.07**	**89.10**	**3.81**	**6.29**	**6.27**

[1] Table 9.1-2 provides detailed non-road construction emissions for the Project.

[2] Emission rates are based on the emissions associated with an estimated number of worker commuter and delivery vehicles needed to support the construction activities, as detailed in Table 9.1-3.

[3] Emission rates are based on fugitive dust emissions generated from the construction of typical pipeline spreads, as detailed in Tables 9.1-4 and 9.1-5.

Tpy = tons per year.

TABLE 9.1-2

EMISSIONS FROM NON-ROAD CONSTRUCTION EQUIPMENT FOR PIPELINE CONSTRUCTION ACTIVITIES FOR THE CENTRAL ARKANSAS PIPELINE ENHANCEMENT PROJECT

Equipment Type [1]	SCC	Fuel Type	Engine Rating (hp)	Load Factor [2]	Pipeline Placement [3]				Total Operation	Exhaust Emission Factors [4]						Project Emission Rates [5]					
					Quantity	Single Unit Operation				NOx	VOC	CO	SO2	PM10	PM2.5	NOx	VOC	CO	SO2	PM10	PM2.5
						(hr/wk)	(wks/ project)	(hr/ project)	(hr/ project)	(g/hp-hr)	(g/hp-hr)	(g/hp-hr)	(g/hp-hr)	(g/hp-hr)	(g/hp-hr)	(tons)	(tons)	(tons)	(tons)	(tons)	(tons)
1/2 Ton Trucks [6]	2265002051	Gasoline	150	0.80	10	25	32	800	8000	1.0570	0.5015	25.381	0.072	0.0300	0.0276	1.120	0.528	26.864	0.080	0.032	0.032
1 Ton Trucks	2265002081	Gasoline	250	0.80	5	25	32	800	4000	2.9013	0.2117	1.3107	0.8208	0.3168	0.3073	2.560	0.192	1.152	0.720	0.272	0.272
2 1/2 Ton Trucks [6]	2270002051	Diesel	250	0.59	1	40	25.6	1024	1024	2.9013	0.2117	1.3107	0.8208	0.3168	0.3073	0.480	0.032	0.224	0.144	0.048	0.048
Tractor Trailers [6]	2270002051	Diesel	250	0.59	2	40	32	1280	2560	2.9013	0.2117	1.3107	0.8208	0.3168	0.3073	1.200	0.096	0.544	0.336	0.128	0.128
Dump Trucks [6]	2270002078	Diesel	400	0.21	1	40	20.8	832	832	9.5199	0.8337	5.9384	0.9560	1.0293	0.9984	0.736	0.064	0.464	0.080	0.080	0.080
Hydrovac Truck	2270002051	Diesel	200	0.69	1	16	4.8	76.8	76.8	2.9013	0.2117	1.3107	0.8208	0.3168	0.3073	0.032	0.000	0.016	0.016	0.000	0.000
Concrete Trucks [6]	2270002042	Diesel	400	0.43	1	12	3.2	38.4	38.4	8.2104	0.3823	3.5353	0.8199	0.6350	0.6159	0.064	0.000	0.032	0.000	0.000	0.000
Rock Trencher	2270002030	Diesel	500	0.59	1	40	1.6	64	64	8.2104	0.3823	3.5353	0.8199	0.6350	0.6159	0.176	0.000	0.080	0.016	0.016	0.016
Truck Tractor with Stringing Trailer	2270002078	Diesel	500	0.21	2	12	9.6	115.2	230.4	9.5199	0.8337	5.9384	0.956	1.0293	0.9984	0.256	0.016	0.160	0.032	0.032	0.032
T755 Trencher	2270002030	Diesel	250	0.59	2	60	6.4	384	768	8.2104	0.3823	3.5353	0.8199	0.6350	0.6159	1.024	0.048	0.448	0.096	0.080	0.080
Fuel Trucks	2270002051	Diesel	175	0.59	1	25	25.6	640	640	4.0869	0.3675	1.4600	0.8200	0.3231	0.3134	0.304	0.032	0.112	0.064	0.016	0.016
Backhoes	2270002066	Diesel	345	0.21	6	60	25.6	1536	9216	9.5199	0.8337	5.9384	0.9560	1.0293	0.9984	7.008	0.608	4.368	0.704	0.752	0.736
Carryall	2270002051	Diesel	300	0.59	5	10	3.2	32	160	2.9013	0.2117	1.3107	0.8208	0.3168	0.3073	0.096	0.000	0.048	0.032	0.016	0.016
Front End Loaders	2270002060	Diesel	100	0.59	1	32	3.2	102.4	102.4	2.9086	0.2150	1.5197	0.9125	0.4559	0.4422	0.016	0.000	0.016	0.000	0.000	0.000
D6 Bulldozers	2270002069	Diesel	200	0.59	4	50	25.6	1280	5120	2.9013	0.2117	1.3107	0.8208	0.3168	0.3073	1.936	0.144	0.880	0.544	0.208	0.208
Sidebooms	2200002045	Diesel	200	0.43	2	60	19.2	1152	2304	2.8391	0.2017	0.8566	0.8127	0.2150	0.2086	0.624	0.048	0.192	0.176	0.048	0.048
Boring Machines	2270002033	Diesel	200	0.43	1	40	17.6	704	704	2.8391	0.2017	0.8566	0.8127	0.2150	0.2086	0.192	0.016	0.064	0.048	0.016	0.016
Directional Drill Units [6]	2270002033	Diesel	800	0.43	1	60	9.6	576	576	4.7859	0.2097	0.8414	0.8126	0.2002	0.1942	1.040	0.048	0.176	0.176	0.048	0.048
Mechanic Rig	2270002051	Diesel	250	0.59	2	12	20.8	249.6	499.2	2.9013	0.2117	1.3107	0.8208	0.3168	0.3073	0.240	0.016	0.112	0.064	0.032	0.032
Pipe Bending Machine	2270002081	Diesel	70	0.59	1	12	6.4	76.8	76.8	4.5993	0.4155	3.9848	0.9115	0.4535	0.4399	0.016	0.000	0.016	0.000	0.000	0.000
Skid Truck [6]	2270002078	Diesel	350	0.21	1	10	3.2	32	32	9.5199	0.8337	5.9384	0.9560	1.0293	0.9984	0.032	0.000	0.016	0.000	0.000	0.000
Tack Rig	2270002069	Diesel	185	0.43	1	40	17.6	704	704	2.9013	0.2117	1.3107	0.8208	0.3168	0.3073	0.176	0.016	0.080	0.048	0.016	0.016
Motor Grader	2270002048	Diesel	220	0.59	1	30	19.2	576	576	2.9013	0.2117	1.3107	0.8208	0.3168	0.3073	0.240	0.016	0.112	0.064	0.032	0.032
Road Sweepers [6]	2270003030	Diesel	70	0.43	2	10	25.6	256	512	4.8414	0.3957	2.6044	0.9026	0.3646	0.3536	0.080	0.000	0.048	0.016	0.000	0.000
Farm Tractors [6]	2270005015	Diesel	30	0.59	1	10	12.8	128	128	4.5319	0.3028	2.5812	0.9121	0.5905	0.5728	0.016	0.000	0.000	0.000	0.000	0.000
Mulching Machine [6]	2270004066	Diesel	40	0.43	1	30	4.8	144	144	4.7705	0.2884	1.6871	0.9031	0.4759	0.4616	0.016	0.000	0.000	0.000	0.000	0.000
Air Compressors	2270006015	Diesel	80	0.43	2	50	25.6	1280	2560	4.8414	0.3957	2.6044	0.9026	0.3646	0.3536	0.464	0.032	0.256	0.080	0.032	0.032
Ditch Witches [6]	2265002030	Gasoline	10	0.66	1	20	4.8	96	96	2.4500	4.4200	299.6845	0.1086	0.0300	0.0276	0.000	0.000	0.208	0.000	0.000	0.000
Generator/Light Plants	2270006015	Diesel	14	0.43	4	2	25.6	51.2	204.8	11.4800	2.2782	10.1024	1.8876	0.6123	0.6123	0.016	0.000	0.016	0.000	0.000	0.000
Water Pumps	2265006010	Gasoline	10	0.69	2	5	20.8	104	208	1.7500	2.6000	176.2850	0.1086	0.0300	0.0276	0.000	0.000	0.272	0.000	0.000	0.000
Water Trucks	2270002051	Diesel	175	0.59	2	20	6.4	128	256	2.9013	0.2117	1.3107	0.8208	0.3168	0.3073	0.080	0.000	0.032	0.016	0.016	0.016

TABLE 9.1-2

EMISSIONS FROM NON-ROAD CONSTRUCTION EQUIPMENT FOR PIPELINE CONSTRUCTION ACTIVITIES FOR THE CENTRAL ARKANSAS PIPELINE ENHANCEMENT PROJECT

Equipment Type [1]	SCC	Fuel Type	Engine Rating (hp)	Load Factor [2]	Pipeline Placement [3]				Total Operation	Exhaust Emission Factors [4]						Project Emission Rates [5]					
					Quantity	Single Unit Operation (hr/wk)	Single Unit Operation (wks/ project)	Single Unit Operation (hr/ project)	(hr/ project)	NOx (g/hp-hr)	VOC (g/hp-hr)	CO (g/hp-hr)	SO2 (g/hp-hr)	PM10 (g/hp-hr)	PM2.5 (g/hp-hr)	NOx (tons)	VOC (tons)	CO (tons)	SO2 (tons)	PM10 (tons)	PM2.5 (tons)
Welding Machines	2265006025	Gasoline	55	0.68	10	60	25.6	1536	15360	1.0570	0.5015	25.3810	0.0720	0.0300	0.0276	0.672	0.320	16.064	0.048	0.016	0.016
Utility Truck	2270002051	Diesel	250	0.59	2	20	17.6	352	704	2.9013	0.2117	1.3107	0.8208	0.3168	0.3073	0.336	0.032	0.144	0.096	0.032	0.032
Welding Trucks [6]	2265002051	Gasoline	110	0.80	10	50	25.6	1280	12800	1.0570	0.5015	25.3810	0.07200	0.0300	0.02760	1.312	0.624	31.520	0.096	0.032	0.032
X-Ray Trucks [6]	2265002051	Gasoline	125	0.80	1	50	25.6	1280	1280	1.0570	0.5015	25.3810	0.07200	0.0300	0.02760	0.144	0.064	3.584	0.016	0.000	0.000
TOTAL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**22.70**	**2.99**	**88.32**	**3.81**	**2.00**	**1.98**

NOTES:
[1] List includes representative equipment for construction activities (clearing and grading, ditching, bending, etc.) and crew types (welding crew, coating crew, lowering crew, etc.).
[2] Based on values presented in the EPA guidance document "Median Life, Annual Activity, and Load Factor Values for Non-Road Engine Emissions Modeling" (EPA420-R-10-016, dated July 2010).
[3] Pipeline construction equipment hours are based on a typical pipeline spread. The weeks/project are based on typical pipeline spreads adjusted to a 20-week construction schedule.
[4] Factors developed using the methodology presented in the EPA guidance documents "Exhaust and Crankcase Emission Factors for Non-Road Engine Emissions Modeling--Compression-Ignition" and "Exhaust Emission Factors for Non-Road Engine Modeling: Spark Ignition."
[5] Project Emissions Rate = Engine Rating (hp) x Load Factor x Total Operation (hr/project) x Exhaust Emission Factor (g/hp-hr) / 453.6 grams/lb / 2000 lb/ton
[6] Equipment counts are based on typical pipeline construction spreads. All other equipment counts are based on project-specific information.
SCC = Source Classification Code

TABLE 9.1-3

ON-ROAD VEHICLE EMISSIONS FROM COMMUTER AND DELIVERY VEHICLES FOR THE CENTRAL ARKANSAS PIPELINE ENHANCEMENT PROJECT

Vehicular Traffic [1] (Veh/day)	Estimated Project Travel Days [1]	Average Daily Travel Distance Per Vehicle [1] (VMT/vehicle/day)	Vehicle Miles Traveled [2] (VMT)	Emission Factors [3]						Project Emission Rate [4]					
				NOx (g/mi)	VOC (g/mi)	CO (g/mi)	SO2 (g/mi)	PM10 (g/mi)	PM2.5 (g/mi)	NOx (tons)	VOC (tons)	CO (tons)	SO2 (tons)	PM10 (tons)	PM2.5 (tons)
15	160	40	96,000	2.58	0.73	7.40	0.00	0.00	0.00	0.27	0.08	0.78	0.00	0.00	0.00

NOTES:
[1] Values for vehicular traffic and average daily travel distance per vehicle are conservative estimates. Estimated travel days are based on an estimated project schedule of approximately 5 days a week for 32 weeks to complete construction of the project. A conservative 160 travel days for the project was assumed.
[2] Vehicle Miles Traveled (VMT) = Vehicular Traffic x Project Travel Days x Average Daily Travel Distance per Vehicle
[3] The emission factors are based on AP-42, Volume II: Mobile Sources, based on the MOBILE5 highway vehicle emission factor model. MOBILE5 has been replaced with MOBILE6. However, due to the complexity of MOBILE6, EPA has not yet updated the information in AP-42, Volume II: Mobile Sources. MOBILE5 emission factors are assumed to estimate worst-case scenarios for the Project's on-road emissions, because MOBILE5 overestimates emissions for vehicles of future years. Emission factors are collected from Appendix I for 2005 vehicles with a speed of 55 mph, temperature of 75 F, low altitude, and Federal Test Procedure (FTP) conditions.
[4] Project Emission Rate = Vehicle Miles Traveled (VMT) x Emission Factor (g/mi) x (1 lb/453.6 g) x (1 ton)/2000 lb)

TABLE 9.1-4

FUGITIVE EMISSIONS FROM MATERIALS HANDLING FOR PIPELINE CONSTRUCTION ACTIVITIES FOR THE CENTRAL ARKANSAS PIPELINE ENHANCEMENT PROJECT

Construction Activity	Daily Material Handling Rate [1] (ton/day)	Construction Days [2]	Storage Pile Surface Area [3] (acre)	Emission Factor [4]		Emissions [5]		Emission Factor AP-42 Reference [6]
				PM10	PM2.5	PM10 (tons)	PM2.5 (tons)	
Removal of debris and topsoil and unloading to storage piles	96	160	---	0.058	0.058	0.445	0.445	Section 11.9, Table 11.9-4, Topsoil removal by scraper
Trench excavation and unloading to storage piles	96	160	---	0.012	0.012	0.092	0.092	Section 11.9, Table 11.9-4, Overburden replacement
Backfilling trench	96	160	---	0.012	0.012	0.092	0.092	Section 11.9, Table 11.9-4, Overburden replacement
Topsoil replacement	96	160	---	0.012	0.012	0.092	0.092	Section 11.9, Table 11.9-4, Overburden replacement
Storage Piles [7]	---	160	3.2	13.940	13.940	3.569	3.569	---
TOTAL	---	---	---	---	---	**4.291**	**4.291**	---

NOTES:

[1] Assumes an average spoil pile of 48 tons and an average of 2 stockpiles/day.

[2] Number of construction days is based on the project's anticipated schedule.

[3] Assumes typical dimensions of a stockpile are 4 ft high x 6 ft wide x 5000 ft long, which corresponds to a surface area of 3.2 acres.

[4] As a worst-case scenario, the Total Suspended Particulate (TSP) emission factor is assumed to represent PM10 and PM2.5 emissions. For storage piles, the emission factor units are lbs/day/acre. The units for the rest of the emission factors are lb/ton.

[5] Emissions = Daily Handling Rate (or Storage Pile Surface Area) x Construction Days x Emission Factor x (1 ton / 2,000 lb)

[6] US EPA's AP-42 reference, Section 11.9 Western Surface Coal Mining (10/98).

[7] Emission factors based on "Control of Fugitive and Hazardous Dusts" by C. Cowherd, P. Englehart, G.E. Muleski, and J.S. Kinsey of the Midwest Research Institute in Kansas City, Missouri, 1990.

$$E = 1.7 (s / 1.5) ((365 - p) / 235) (f / 15)$$

Where: E = Total suspended particulate emission factor (lb/day/acre)

s = silt content of aggregate (%) = 8.5%

p = number of days per year with > 0.01 inches of precipitation, assumed to be an average of 110 days

f = percentage of time that the unobstructed wind speed exceeds 12 mph at the mean pile height

Source: "Air /Superfund National Technical Guidance Study Series, Models for Estimating Air Emission Rates from Superfund Remedial Actions (EPA-451/R-93-001 dated March 1993)."

Table 7-3 "Default Values for Estimating PM Emission from Other Area Sources" states that f = 20 (unitless).

Therefore: E = (1.7) (8.5/1.5)((365 days - 110 days)/235) (20/15) = 13.94 lbs/day/acre

TABLE 9.1-5

FUGITIVE DUST EMISSIONS FROM ROADWAYS FOR PIPELINE CONSTRUCTION ACTIVITIES FOR THE CENTRAL ARKANSAS PIPELINE ENHANCEMENT PROJECT

Vehicle Type	Onsite Vehicular Traffic [1] (Veh/day)	Construction Days [1]	Average Daily Travel Distance per Vehicle (VMT/vehicle/day)		Distance per Vehicle Traveled [2] (VMT)		Estimated Vehicle Weight	
			Paved	Unpaved	Paved	Unpaved	(lbs)	(tons)
1/2 Ton Trucks	10	160	1	5	1600	8000	1000	0.5
1 Ton Trucks	5	160	1	5	800	4000	2000	1
2 1/2 Ton Trucks	1	128	1	5	128	640	5000	2.5
Tractor Trailers	2	160	1	5	320	1600	50000	25
Dump Trucks	1	104	1	5	104	520	50000	25
Hydrovac Truck	1	24	1	5	24	120	50001	25
Concrete Trucks	1	16	1	5	16	80	60000	30
Rock Trencher	1	8	1	5	8	40	60001	30
Truck Tractor with Stringing Trailer	2	48	1	5	96	480	60002	30
T755 Trencher	2	32	1	5	64	320	66000	33
Fuel Trucks	1	128	1	5	128	640	40000	20
Backhoes	6	128	1	5	768	3840	25000	12.5
Carryall	5	16	1	5	80	400	60001	30
Front End Loaders	1	16	1	5	16	80	30000	15
D6 Bulldozers	4	128	1	5	512	2560	44418	22
Sidebooms	2	96	1	5	192	960	50002	25
Boring Machines	1	88	1	5	88	440	50003	25
Directional Drill Units	1	48	1	5	48	240	50004	25
Mechanic Rig	2	104	1	5	208	1040	50007	25
Pipe Bending Machine	1	32	1	5	32	160	50008	25
Skid Truck	1	16	1	5	16	80	50010	25
Tack Rig	1	88	1	5	88	440	50011	25
Motor Grader	1	96	1	5	96	480	50012	25

TABLE 9.1-5

FUGITIVE DUST EMISSIONS FROM ROADWAYS FOR PIPELINE CONSTRUCTION ACTIVITIES FOR THE CENTRAL ARKANSAS PIPELINE ENHANCEMENT PROJECT

Vehicle Type	Onsite Vehicular Traffic [1] (Veh/day)	Construction Days [1]	Average Daily Travel Distance per Vehicle (VMT/vehicle/day)		Distance per Vehicle Traveled [2] (VMT)		Estimated Vehicle Weight	
			Paved	Unpaved	Paved	Unpaved	(lbs)	(tons)
Road Sweepers	2	128	1	5	256	1280	50014	25
Farm Tractors	1	64	1	5	64	320	50015	25
Mulching Machine	1	24	1	5	24	120	50016	25
Air Compressors	2	128	1	5	256	1280	50017	25
Ditch Witches	1	24	1	5	24	120	50018	25
Generator/Light Plants	4	128	1	5	512	2560	2025	1
Water Pumps	2	104	1	5	208	1040	50021	25
Water Trucks	2	32	1	5	64	320	50022	25
Welding Machines	10	128	1	5	1280	6400	50023	25
Utility Truck	2	88	1	5	176	880	50024	25
Welding Trucks	10	128	1	5	1280	6400	25000	12.5
X-Ray Trucks	1	128	1	5	128	640	40000	20
Totals	**---**	**---**	**---**	**---**	**9,704**	**48,520**	**---**	**---**
Weighted Average Vehicle Weight	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**17.82**

Parameter	PM10			PM2.5		
	Paved	Unpaved	Total	Paved	Unpaved	Total
Uncontrolled Emission Factor (lb/VMT) [3, 4]	0.24	1.71	--	0.06	0.17	--
Control Efficiency for dust suppression activities	50%		--	50%		--
Controlled Emission Factor (lb/VMT)	0.12	0.855	--	0.03	0.085	--
Fugitive Roadways Emissions (tons) [5, 6]	0.58	20.74	21.32	0.14	2.06	2.20

NOTES:
[1] Values listed for on-site vehicular traffic and construction days are based on project-specific information.
[2] VMT = Vehicles/day x Construction Days x Daily Distance Traveled per Vehicle.

TABLE 9.1-5

FUGITIVE DUST EMISSIONS FROM ROADWAYS FOR PIPELINE CONSTRUCTION ACTIVITIES FOR THE CENTRAL ARKANSAS PIPELINE ENHANCEMENT PROJECT

Vehicle Type	Onsite Vehicular Traffic [1] (Veh/day)	Construction Days [1]	Average Daily Travel Distance per Vehicle (VMT/vehicle/day)		Distance per Vehicle Traveled [2] (VMT)		Estimated Vehicle Weight	
			Paved	Unpaved	Paved	Unpaved	(lbs)	(tons)

[3] The emission factor for paved roads was estimated using EPA's AP-42 (1/11) Section 13.2.1 "Paved Roads" and the following:

A. Emission factor (E) is calculated using Equation (2) in Section 13.2.1: E =(k x (sL)^0.91 x (W)^1.02) x (1 - P/4N)

B. Table 13.2.1-1 specifies that for PM-10, k is 0.0022 lb/VMT and for PM-2.5, k is 0.00054 lb/VMT.

C. Table 13.2.1-3 specifies that the typical mean silt loading value (sL) for a municipal solid waste landfill is 7.4 g/m^2, which is assumed to represent the construction site condition.

D. Figure 13.2.1-2 estimates that days of precipitation >0.01 inch per year (P) is assumed to be an average of 110 days for entire pipeline route and N is 365 days.

[4] The emission factor for unpaved roads was estimated using USEPA's AP-42 (11/06) Section 13.2.2 "Unpaved Roads" and the following:

A. Emission factor (E) is calculated using Equations (1a) and (2) in Section 13.2.2: E = (k x (s/12)^a x (W/3)^b) x ((365-P)/365)

B. Table 13.2.2-1 specifies that the typical mean silt content value (s) for a construction site is 8.5%.

C. Table 13.2.2-2 specifies that for PM-10, k is 1.5 lb/VMT, a is 0.9, and b is 0.45, and for PM-2.5, k is 0.15 lb/VMT, a is 0.9, and b is 0.45.

D. Figure 13.2.2-1 estimates that days of precipitation >0.01 inch per year (P) is assumed to be an average of 110 days for the entire pipeline route.

[5] Dust suppression by water spray at construction site is conservatively assumed to have a control efficiency of 50%.

[6] Fugitive Roadways Emissions were calculated using the following equation: [Controlled Emission Factor (lb/VMT)] x [Total VMT] / [2000 lb/ton]

Emissions from open burning are regulated under Chapter 6 of the Arkansas Air Pollution Control Code. Under Section 18.603(D) of this chapter, controlled fires for the purposes of on-site land clearing operations are exempt from the general prohibition of open burning. Faulkner County, Arkansas, does not have regulations for open burning. However, the Arkansas Forestry Commission occasionally implements open burning bans. Any burning conducted during construction will comply with such bans.

Emissions generated from burning of any brush or debris generated during construction will be minimized to the greatest extent possible by implementing the following best management practices:

- Minimize the number and size of burn piles to the extent practicable;
- Excavate a burn pit and surround the pit with an earthen berm to minimize the risk of forest fire and damage to areas outside of the construction right-of-way ("ROW");
- Do not burn petroleum-based, non-woody, or other noxious construction debris or materials (*e.g.,* old tires, batteries, plastic packaging, treated timber); and
- Monitor burn piles until burning is complete or the fire is extinguished.

9.1.2.2 Operation

Because the proposed Project does not involve the construction or operation of a compressor station or modifications at existing compression facilities, there will be no impacts on air quality during operation.

9.2 NOISE

Noise is defined as unwanted sound resulting from vibrations in the air (EPA, 1978). The range of pressures that cause the vibrations that create noise is large. Noise is therefore measured on a logarithmic scale, expressed in decibels ("dB"). The frequency of a sound is the "pitch" (high or low). The unit for frequency is hertz ("Hz"). Most sounds are composed of a composite of frequencies. The normal human ear can usually distinguish frequencies from 20 Hz (low frequency) to about 20,000 Hz (high frequency), although people are most sensitive to frequencies between 500 and 4,000 Hz. The individual frequency bands can be combined into one overall dB level.

Noise typically is measured on the A-weighted scale, which was developed to correspond with the ear's sensitivity, given that the human ear is not uniformly sensitive to all noise frequencies. The A-weighted scale has been shown to provide a good correlation with the human response to sound and is the most widely used descriptor for community noise assessments (Harris, 1991). The faintest sound that can be heard by a healthy ear is about 0 A-weighted decibels ("dBA"), while an uncomfortably loud sound is about 120 dBA. Some common sound levels are listed below to provide a frame of reference.

- Pile Driver at 100 feet 90 to 100 dBA
- Chainsaw at 30 feet 90 dBA
- Truck at 100 feet 85 dBA
- Noisy Urban Environment 75 dBA
- Average Speech at 3 feet 60 dBA
- Lawn Mower at 100 feet 65 dBA
- Typical Suburban Daytime 50 dBA
- Quiet Office 40 dBA
- Quiet Suburban nighttime 35 dBA

Because noise levels can vary over a given time period, they are further quantified using the Equivalent Sound Level ("L_{eq}"), which is an average of the time-varying sound energy for a specified time. The Day-Night Sound Level ("L_{dn}") is an average of the time-varying sound energy for one 24-hour period, with a 10 dB addition to the sound energy for the period of 10:00 p.m. to 7:00 a.m. to compensate for nighttime sensitivity. If the sound energy does not vary with time, the L_{dn} level will be equal to the L_{eq} level, plus 6.4 dB.

9.2.1 Applicable Standards

There are no compressor stations associated with the proposed Project. Noise generated during construction will be temporary in nature. The most notable noise impacts associated with construction of the Project will result from HDD activities. The FERC utilizes its 55 dBA day-night sound level ("L_{dn}") standard at nearby noise sensitive areas ("NSA"s) for compressor stations as a target level in order to evaluate potential noise impacts associated with HDD activity. A continuous noise level of approximately 48.6 dBA over a 24-hour period equates to an L_{dn} level of 55 dBA. There are no state or local noise standards applicable to the Project.

9.2.2 HDD Noise Impacts

HDD techniques will be used at eight locations where waterbody, wetland, road, and railroad crossings are proposed. Hoover & Keith, Inc. ("H&K") was contracted to conduct an acoustical assessment of each of the planned HDD sites. As a part of this assessment, the nearest NSAs to each HDD entry and exit point were identified. All of the planned HDD crossings have NSAs located within 0.5 mile of either the entry or exit points. The HDD entry and exit points and identified NSAs within 0.5 mile of each are shown on mapping provided in the Acoustical Noise Survey Report (Appendix 9.A). Additionally, Table 9.2-1 lists the closest NSAs identified within 0.5 mile of each HDD entry and exit site, the approximate distance and direction to the nearest NSA, and the anticipated duration of each HDD. HDD activity currently is planned to be conducted only during daytime hours, and CEGT does not propose to conduct overnight drilling. HDD-associated construction at any given HDD site is estimated to have a duration of 7 to 24 days. Consequently, the noise impact analysis presents the calculated sound level (*i.e.,* L_{dn}) for HDD activities, if required during nighttime hours.

TABLE 9.2-1

NEAREST NSA(S) IDENTIFIED WITHIN 0.5 MILE OF EACH HORIZONTAL DIRECTIONAL DRILL LOCATION

HDD No.	HDD Location	Approx. MP	Approx. HDD Length (feet)	NSA and Type of NSAs	Nearest NSA (feet)	Direction
# 1	Hwy 64 & UCPR RR HDD Entry	0.30	634	NSA #1 Residence	420	SE
	Hwy 64 & UCPR RR HDD Exit	0.42		NSA #1 Residence	350	NE
#2	Tucker Creek HDD Entry	6.13	2,376	NSA #1 Residence	2,080	NNW
	Tucker Creek HDD Exit	6.57		NSA #2 Residence	2,090	SE
#3	Luker Lane HDD Entry	15.17	1,056	NSA #1 Residence	430	W
	Luker Lane HDD Exit	14.97		NSA #1 Residence	1,060	S
#4	Center Road HDD Entry	16.23	475	NSA #1 Residences	200	S
	Center Road HDD Exit	16.32		NSA #1 Residences	350	W
#5	Palarm Tributary HDD Entry	17.31	1,531	NSA #1 Residence	500	SW
	Palarm Tributary HDD Exit	17.60		NSA #2 Residence	1,600	NW
#6	Palarm Creek HDD Entry	18.20	1,584	None within ½ mile	> ½ mile	N/A
	Palarm Creek HDD Exit	17.82		NSA #1 Residence	2,230	NW
#7	Unnamed Impoundment HDD Entry	18.72	1,320	NSA #1 Residence	1,800	ENE
	Unnamed Impoundment HDD Exit	18.47		NSA #1 Residence	1,780	E
#8	Interstate 40 HDD Entry	20.56	1,637	NSA #1 Residence	2,600	SW
	Interstate 40 HDD Exit	20.87		None within ½ mile	> ½ mile	N/A

HDD utilizes a number of pieces of equipment. The majority of the equipment operates from the entry side of the HDD and includes a drilling rig and associated engine-driven hydraulic power unit, mud pumps, engine-driven electric generators, mud mixing/cleaning equipment, backhoes and/or forklifts, and one or more cranes, boom trucks, and loaders. Equipment at the HDD exit side may include a backhoe, sidebooms, and, possibly, an engine-driven generator set. Of the noise generating sources associated with HDD, the diesel engine power generation units are the most significant. Due to the type of equipment operating on each end of the HDD, noise levels on the

exit side of an HDD are inherently lower than on the entry side, where the drill rig is located. General mitigation measures are available to reduce HDD noise and will be implemented by CEGT to reduce noise impacts at all HDD locations. For example, CEGT will require the use of fully functioning exhaust mufflers on diesel engines used to drive generators and pumps. CEGT also will make efforts to remotely locate some of the HDD equipment, and/or target the exhaust of noise producing equipment away from nearby NSAs.

Daytime and/or nighttime ambient sound measurements and verification of NSAs around the HDD sites were performed by H&K. Ambient sound levels were measured at the closest NSA(s) to the HDD sites (refer to Appendix 9.A for a discussion of noise survey methodologies). An analysis of noise impacts for the nearest NSAs within 0.5 mile of the proposed HDD entry and exit sites was conducted, and the results of this analysis are presented in Table 9.2-2. Although HDD activities are anticipated to occur only during daytime hours, the L_{dn} ambient level was used as background in the event that nighttime HDD activities become necessary. Detailed noise calculations are provided in Appendix 9.A.

TABLE 9.2-2

PROJECT HDD SOUND LEVELS (dBA) AT NEAREST NOISE SENSITIVE AREAS

HDD No.	HDD Location	Approx MP	Distance & Direction of Nearest NSA (ft)	Calculated HDD L_{dn} Sound Level (dBA)[1]	Ambient L_{dn} (dBA)	Combined Ambient L_{dn} Plus HDD (dBA)	Increase Over Ambient (dB)	Mitigation Required
#1	Hwy 64 & UCPR RR HDD Entry	0.30	420 (SE)	67.6 (53.5 with mitigation)	50.0	67.7 (55.1 with mitigation)	17.7 (5.1 with mitigation)	Yes
	Hwy 64 & UCPR RR HDD Exit	0.42	350 (NE)	58.6 (52.1 with mitigation)	50.0	59.1 (54.2 with mitigation)	9.1 (4.2 with mitigation)	Yes
#2	Tucker Creek HDD Entry	6.13	2,080 (NNW)	49.4	46.9	51.3	4.4	No
	Tucker Creek HDD Exit	6.57	2,090 (SE)	38.1	39.8	42.0	2.2	No
#3	Luker Lane HDD Entry	15.17	430 (W)	67.4 (53.2 with mitigation)	41.6	67.4 (53.5 with mitigation)	25.8 (11.9 with mitigation)	Yes
	Luker Lane HDD Exit	14.97	1,060 (S)	45.1	41.6	46.7	5.1	No
#4	Center Road HDD Entry	16.23	200 (S)	76.0 (54.6 with mitigation)	46.5	76.0 (55.2 with mitigation)	29.5 (8.7 with mitigation)	Yes
	Center Road HDD Exit	16.32	350 (W)	57.7 (51.3 with mitigation)	46.5	58.0 (52.5 with mitigation)	11.5 (6.0 with mitigation)	Yes
#5	Palarm Tributary HDD Entry	17.31	500 (SW)	65.9 (51.0 with mitigation)	49.8	66.0 (53.4 with mitigation)	16.2 (3.6 with mitigation)	Yes
	Palarm Tributary HDD Exit	17.60	1,600 (NW)	39.9	49.8	50.2	0.4	No
#6	Palarm Creek HDD Entry	18.20	> ½ mile	N/A	N/A	N/A	N/A	No
	Palarm Creek HDD Exit	17.82	2,230 (NW)	47.6	49.8	50.2	0.4	No
#7	Unnamed Impoundment HDD Entry	18.72	1,800 (ENE)	51.0	57.8	58.6	0.8	No
	Unnamed Impoundment HDD Exit	18.47	1,780 (E)	39.8	55.5	55.6	0.1	No
#8	Interstate 40 HDD Entry	20.56	2,600 (SW)	46.9	48.7	50.9	2.2	No
	Interstate 40 HDD Exit	20.87	> ½ mile	N/A	N/A	N/A	N/A	No

[1] For hemispherical sound propagation, sound pressure level = sound power level - 20 * Log (r) - 2.3, where r = distance to the receiver.

CEGT considered whether the calculated HDD L_{dn} will be greater than 55 dBA to determine whether additional noise mitigation will be needed at any of the HDD locations. If analysis shows that this threshold would be exceeded at the NSAs within 0.5 mile of an HDD entry or exit point and if overnight HDD operations are required, then additional noise mitigation will be required.

As shown in Table 9.2-2, the results of the noise analysis indicate that the estimated noise attributable to HDD equipment operations will be less than 55 dBA at the nearest NSAs to both the entry and exit locations of all of the proposed HDDs except for the Hwy 64 & UCPR Railroad HDD entry and exit points, the Luker Lane HDD entry, the Center Road HDD entry and exit points, and the Palarm Tributary HDD entry. Noise attributable to HDD can be reduced to below 55 dBA at the nearest NSAs for each of these HDD entry and exit points by implementing appropriate mitigation measures. Noise mitigation measures that might be employed include partial enclosure of the hydraulic unit, partial enclosure or partial barrier of pumps and engine-driven gen sets, and/or erection of a temporary noise barrier (*e.g.*, constructed of plywood panels and/or hay bale structure) around the HDD work space.

Limiting the hours of HDD construction activities to general daytime hours, as proposed, is considered a practical and significant mitigation measure to minimize the potential for noise impacts at nearby NSAs. In the unanticipated and unlikely event that any of the planned HDDs require overnight operations, CEGT will notify residents of nearby NSAs in advance of any planned overnight HDD-related construction activities to advise them that noise-generating equipment may be operated during night-time hours. Additionally, CEGT would implement measures to mitigate noise levels associated with HDD construction at those HDD entry/exit locations where analysis indicates that the FERC noise level criterion might otherwise be exceeded. Since mitigated noise levels attributable to HDD will be below the FERC criterion at any NSAs, overnight HDD construction activities, if necessary, is not expected to create significant impacts on residents. If the noise levels cannot be reduced to target levels, then CEGT will offer to provide temporary housing to the occupants of affected NSAs at a commercial hotel or motel in the Project area until HDD-related construction activities are completed.

9.2.3 Pipeline Construction Noise Impacts

Construction of the proposed replacement pipeline is anticipated to occur over an approximately five-month period. Pipeline construction generally will proceed at rates ranging from several hundred feet to one mile per day. However, due to the assembly-line method of construction, construction activities in any one area may last for several weeks on an intermittent basis. Construction equipment will be operated on an as-needed basis during this period and will be maintained to manufacturers' specifications to minimize noise impacts. Although individuals in the immediate vicinity of the construction activities will experience annoyance, the impact on the noise environment at any specific location along the proposed pipeline route will be short-term. Further, nighttime noise levels normally will be unaffected, since most construction activities will be limited to daylight hours.

Construction noise typically will result from activities such as trenching, pipe laying, boring, backfilling, and ROW restoration. For the purposes of this analysis, these construction activities have been addressed by construction phases. Table 9.2-3 lists typical ranges of equipment sound levels from the construction equipment associated with each key construction phase at a standard distance of 50 feet and longer distances of 400 and 1,000 feet.

TABLE 9.2-3

CONSTRUCTION PHASE NOISE LEVELS FOR PIPELINE INSTALLATION

Construction Phase	Construction Phase Noise Levels (dBA)		
	50 Feet	400 Feet	1,000 Feet
Trenching	60 to 90	42 to 72	33 to 63
Pipe Laying	50 to 90	32 to 72	23 to 63
Backfilling	73 to 84	54 to 65	46 to 57
Source: New York Power Authority, 1987			

Construction equipment used will differ from phase to phase, but will include dozers, cranes, dump trucks, and loaders. The construction equipment to be used is similar to that used during typical public works projects (*e.g.*, road resurfacing, storm sewer installation, etc.). Noise is generated during construction primarily from diesel engines, which power the equipment. Exhaust noise usually is the predominant source of diesel engine noise. CEGT will require that construction equipment have fully functional mufflers during construction of the facilities. Noise levels associated with construction equipment typically used for this type of project are presented in Table 9.2-4.

TABLE 9.2-4

NOISE LEVELS ASSOCIATED WITH MAJOR CONSTRUCTION EQUIPMENT (dBA)

Equipment Type	50 Feet	400 Feet	1,000 Feet
Trucks	91	72	64
Cranes	83	64	56
Roller	89	70	62
Bulldozers	80	61	53
Pickup Trucks	60	41	33
Backhoes	85	66	58
Source: Bolt, Beranek and Newman, Inc., 1971			

As presented in the above tables, maximum noise levels associated with the construction equipment are not expected to exceed 91 dBA at a distance of 50 feet. The noise levels presented in Tables 9.2-3 and 9.2-4 are those that would be experienced by people outdoors. A building will provide significant attenuation of associated construction noise impacts. For instance, sound levels can be expected to be up to 27 dBA lower indoors with windows closed. Even in homes with windows open, indoor sound levels can be reduced by up to 17 dBA (EPA, 1978).

9.2.4 Pipeline Operation Noise Impacts

Once operational, the underground pipeline will not generate significant noise.

9.3 REFERENCES

Bolt, Beranek and Newman, Inc. 1971. Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances.

Harris. 1991. Handbook of Acoustical Measurements and Noise Control, Third Edition. McGraw-Hill, Inc.

New York Power Authority. 1987. Sound Cable Project Article VII Application. Prepared by Ebasco Environmental.

United States Environmental Protection Agency (EPA). 1978. Protective Noise Levels. Office of Noise Abatement & Control. Report Number EPA 550/9-79-100. Washington, D. C. 20460.

APPENDIX 9.A

ACOUSTICAL NOISE SURVEY REPORT

HOOVER & KEITH INC.
ACOUSTICS & NOISE CONTROL ENGINEERING
TX Office: 11391 Meadowglen, Suite D, Houston, TX 77082
CO Office: 1680 Northwestern Rd, Longmont, CO 80503
CO Phone: 303-834-9455 TX Phone: 281-496-9876
h&k

H&K Job No. 4636

Subject: **Acoustical Assessment of the Potential HDDs associated with the CEGT Central Arkansas Pipeline Enhancement Project**

Prepared for: **AK Environmental**
Project Applicant: **Centerpoint Energy Gas Transmission** ("CEGT")

H&K Report No. 2867
Date of Report: June 11, 2013
Submitted by: Paul D. Kiteck, P.E.**, Hoover & Keith Inc.** ("H&K")

1.0 INTRODUCTION

The following report provides the results of an acoustical assessment of the planned horizontal directional drilling ("HDD") sites for the natural gas replacement pipeline associated with the proposed **CEGT Central Arkansas Pipeline Enhancement Project** ("Project"). The HDD construction technique is an alternative to traditional "open cut" construction and is itself an "environmental mitigative measure" for avoiding foreign pipelines, utilities and water bodies. For the reader's information, a summary of applicable acoustical terminology in this report and description of typical metrics used to measure and regulate environmental noise is provided at the end of the report (p. 20).

The purpose of the acoustical assessment is to estimate the sound contribution at nearby noise-sensitive areas ("NSAs"), such as residences, schools or hospitals, resulting from drilling operations at the HDD site with NSAs within ½ mile and present noise mitigations measures to minimize the noise impact of HDD activities if the assessment indicates that the noise attributable to HDD operations could exceed an equivalent day-night sound level (L_{dn}) of **55 dBA**. Consequently, **55 dBA** (L_{dn}) is defined as the sound level guideline for HDD operations, as normally utilized by the Federal Energy Regulatory Commission ("FERC"), and this sound criterion assumes that HDD operations could be employed for a 24-hour workday.

2.0 DESCRIPTION OF PLANNED HDD SITES

Currently, there will be eight (8) HDDs along the replacement pipeline associated with the Project. Based on recent site visits by H&K, all of the planned HDD sites have NSAs within ½ mile of either the entry point and/or exit point of the respective HDD Crossing. Consequently, the noise impact assessment of the HDD operations will be provided for those planned HDD sites that have NSAs within ½ mile. For reference, **Figures 1 – 7** (pp. 7–13) provides an area layout around each HDD crossing with NSAs within ½ mile, and these drawings show the NSAs within ½ mile of the HDD entry point and exit point of each respective HDD construction site.

The following **Table A** summarizes the currently planned HDD sites for the Project pipeline system. **Table A** also includes the observed nearby NSAs to the HDD entry/exit point along with the distance/direction of the nearby (closest) NSAs and observed obstructions between the HDD site and the respective NSA that could provide additional attenuation of the HDD noise.

No.	HDD Crossing/Segment	Entry or Exit Point	MP	Length of HDD	NSA and Type of NSA	Distance & Direction of Closest NSA	Land Contour and Obstructions between NSA & HDD Site	Ref. Figure in Report
#1	Hwy. 64 & UCPR RR HDD	Entry	0.30	634 ft.	NSA #1 (Residence)	420 ft. (SE)	Some obstructions & foliage/trees	Fig. 1 (p. 7)
	Hwy. 64 & UCPR RR HDD	Exit	0.42		NSA #1 (Residence)	350 ft. (NE)	Some obstructions & foliage/trees	Fig. 1 (p. 7)
#2	Tucker Creek HDD	Entry	6.13	2,376 ft.	NSA #1 (Residence)	2,080 ft. (NNW)	Some obstructions & foliage/trees	Fig. 2 (p. 8)
	Tucker Creek HDD	Exit	6.57		NSA #2 (Residence)	2,090 ft. (SE)	Obstructions & foliage/trees	Fig. 2 (p. 8)
#3	Lucker Lane HDD	Entry	15.17	1,056 ft.	NSA #1 (Residence)	430 ft. (west)	Limited obstructions & foliage	Fig. 3 (p. 9)
	Lucker Lane HDD	Exit	14.97		NSA #1 (Residence)	1,060 ft. (south)	Some obstructions & foliage	Fig. 3 (p. 9)
#4	Center Road HDD	Entry	16.23	475 ft.	NSA #1 (Residences)	200 ft. (south)	Some foliage/trees	Fig. 4 (p. 10)
	Center Road HDD	Exit	16.32		NSA #1 (Residences)	350 ft. (west)	Some obstructions & foliage	Fig. 4 (p. 10)
#5	Palarm Tributary HDD	Entry	17.31	1,531 ft.	NSA #1 (Residence)	500 ft. (SW)	Some obstructions & foliage	Fig. 5 (p. 11)
	Palarm Tributary HDD	Exit	17.60		NSA #2 (Residence)	1,600 ft. (NW)	Some obstructions & foliage	Fig. 5 (p. 11)
#6	Palarm Creek HDD	Entry	18.20	1,584 ft.	No NSA within ½ mile of Entry Site	>1/2 mile	Not applicable (N/A)	Fig. 5 (p. 11)
	Palarm Creek HDD	Exit	17.82		NSA #1 (Residence)	2,230 ft. (NW)	Some obstructions & foliage	Fig. 5 (p. 11)
#7	Reservoir HDD	Entry	18.72	1,320 ft.	NSA # (Residence)	1,800 ft. (ENE)	Obstructions (highway) & foliage	Fig. 6 (p. 12)
	Reservoir HDD	Exit	18.47		NSA #1 (Residence)	1,780 ft. (east)	Obstructions (highway) & foliage	Fig. 6 (p. 12)
#8	Interstate 40 (IH-40) HDD	Entry	20.56	1,637 ft.	NSA #1 (Residence)	2,600 ft. (SW)	Obstructions & significant foliage	Fig. 7 (p. 13)
	IH-40 HDD	Exit	20.87		No NSA within ½ mile of Exit Site	>1/2 mile	N/A	Fig. 7 (p. 13)

Table A: Summary of the Planned HDD Crossings for the Project along with the Distance/Direction of the Closest NSA(s) to each Respective HDD Entry/Exit Site and Other Related Information

3.0 AMBIENT SOUND SURVEYS AND MEASUREMENT METHODOLOGY

Daytime ambient sound measurements (i.e., L_d) and verification of the NSAs around the respective HDD site were performed by Orlando Fernandez of H&K, either during recent sound surveys in the daytime of May 15, 2013 or during previous ambient sound surveys at two (2) of the HDDs conducted on June 7, 2011. Ambient sound levels were measured at the closest NSA(s) to the HDD sites with NSAs within ½ mile. At each sound measurement location, the A-weighted ("A-wt.") equivalent sound level (i.e., L_{eq}) and unweighted octave-band ("O.B.") sound pressure levels ("SPLs") were measured. The acoustical measurement system consisted of a Rion Model NA-27 Sound Level Meter (a Type 1 "SLM" per ANSI S1.4 & S1.11) equipped with a Rion Model UC-53A microphone with a windscreen.

4.0 ACOUSTICAL ASSESSMENT AND HDD EQUIPMENT

The spreadsheet analyses (i.e., acoustical calculations) of the estimated A-wt. sound level contributed by the HDD operations during peak operating conditions associated with the potential HDD sites at the closest NSA (i.e., within ½ mile of either the HDD entry or exit site) are provided in **Tables 1 – 14** (pp. 14–18), and it is assumed that the HDD operations could be employed for a 24-hour workday. For those HDD sites (i.e., entry or exit location) in which the sound level guideline could be exceeded, the acoustical assessment predicts the noise contribution of HDD operations if additional noise mitigation measures are employed to minimize the noise impact at the nearby NSAs. For reference, a description of the acoustical analysis methodology and the source of sound data are provided at the end of the report (pp. 19–20) along with a brief summary of acoustical metrics and terminology associated with the report.

The following denotes the typical equipment at the HDD entry side and most of the listed equipment are considered noise sources associated with the HDD operations:

- Drilling rig and engine-driven hydraulic power unit (i.e., most significant noise source);
- Engine-driven mud pump(s) and engine-driven generator set(s);
- Mud mixing/cleaning equipment and associated fluid systems shale shakers;
- Crane, backhoe, frontloader, forklift and/or truck(s);
- Frac tanks (i.e., water & drilling mud storage); engine-driven light plants (nighttime operation).

The following denotes the typical equipment at the HDD exit side and most of the listed equipment are considered noise sources, noting that the noise generated at the HDD exit side is significantly lower than the noise generated at the entry side:

- Backhoe, sideboom, backhoe and/or trucks;
- Possibly one (1) engine-driven generator set and one (1) "small" engine-driven pump;
- Engine-driven light plants (used for nighttime operation).

The following **Table B** summarizes the estimated sound level (Ldn) of drilling operations, as calculated from estimated A-wt. sound level, at the closest NSA(s) to each respective HDD site with NSAs within ½ mile of either the HDD entry or HDD exit site. In addition, **Table B** denotes those sites in which the sound level criterion could be exceeded during the HDD operations.

No.	HDD Crossing/Segment	Entry or Exit Point	Distance & Direction of Closest NSA	Exceed Noise Criterion	Calc'd Ldn due to HDD	Ambient Ldn	Ldn of HDD + Ambient	Increase Above Ambient	Reference Table in Appendix
#1	Hwy. 64 & UCPR RR HDD	Entry	420 ft. (SE)	**Yes**	67.6 dBA	50.0 dBA	67.7 dBA	17.7 dB	Table 1 (p. 14)
	Hwy. 64 & UCPR RR HDD	Exit	350 ft. (NE)	**Yes**	58.6 dBA	50.0 dBA	59.1 dBA	9.1 dB	Table 2 (p. 14)
#2	Tucker Creek HDD	Entry	2,080 ft. (NNW)	**No**	49.4 dBA	46.9 dBA	51.3 dBA	4.4 dB	Table 3 (p. 14)
	Tucker Creek HDD	Exit	2,090 ft. (SE)	**No**	38.1 dBA	39.8 dBA	42.0 dBA	2.2 dB	Table 4 (p. 15)
#3	Lucker Lane HDD	Entry	430 ft. (west)	**Yes**	67.4 dBA	41.6 dBA	67.4 dBA	25.8 dB	Table 5 (p. 15)
	Lucker Lane HDD	Exit	1,060 ft. (south)	**No**	45.1 dBA	41.6 dBA	46.7 dBA	5.1 dB	Table 6 (p. 15)
#4	Center Road HDD	Entry	200 ft. (south)	**Yes**	76.0 dBA	46.5 dBA	76.0 dBA	29.5 dB	Table 7 (p. 16)
	Center Road HDD	Exit	350 ft. (west)	**Yes**	57.7 dBA	46.5 dBA	58.0 dBA	11.5 dB	Table 8 (p. 16)
#5	Palarm Tributary HDD	Entry	500 ft. (SW)	**Yes**	65.9 dBA	49.8 dBA	66.0 dBA	16.2 dB	Table 9 (p. 17)
	Palarm Tributary HDD	Exit	1,600 ft. (NW)	**No**	39.9 dBA	49.8 dBA	50.2 dBA	0.4 dB	Table 10 (p. 17)
#6	Palarm Creek HDD	Exit	2,230 ft. (NW)	**No**	47.6 dBA	49.8 dBA	51.9 dBA	2.1 dB	Table 11 (p. 17)
#7	Reservoir HDD	Entry	1,800 ft. (ENE)	**No**	51.0 dBA	57.8 dBA	58.6 dBA	0.8 dB	Table 12 (p. 18)
	Reservoir HDD	Exit	1,780 ft. (east)	**No**	39.8 dBA	55.5 dBA	55.6 dBA	0.1 dB	Table 13 (p. 18)
#8	Interstate 40 (IH-40) HDD	Entry	2,600 ft. (SW)	**No**	46.9 dBA	48.7 dBA	50.9 dBA	2.2 dB	Table 14 (p. 18)

Table B: Summary of Est'd Sound Level Contribution (Ldn) of the HDD Sites, assuming No Additional Noise Mitigation Measures and whether the Benchmark Noise Criterion could be Exceeded.

In summary, the acoustical assessment indicates that the noise of HDD operations at the following six (6) HDD entry and/or exit locations could exceed the sound level criterion at the closest NSAs if no additional noise mitigation measures are employed:

(1) UCPR RR & Hwy. 64 HDD entry site;
(2) UCPR RR & Hwy. 64 HDD exit site;
(3) Lucker Lane HDD entry site;
(4) Center Road HDD entry site;
(5) Center Road HDD exit site, and
(6) Palarm Tributary HDD site.

6.0 NOISE MITIGATION MEASURES

6.1 Discussion of General Mitigation Measures/Options

In general, for HDDs in which the benchmark sound criterion could be exceeded if no additional mitigation measures are employed, it is necessary to develop a noise mitigation plan to reduce the noise of the HDD operations (i.e., address primarily noise generated by stationary–type HDD equipment). Reducing the noise of mobile equipment is more difficult since mobile equipment may work outside the general HDD workspace.

The following summarizes some potential noise mitigation measures/options that could be employed at the HDD entry and/or exit site, and each specific HDD site that requires additional noise mitigation will need be addressed individually. Note that employing full temporary enclosures for primary equipment (e.g., hydraulic power unit) may not be feasible due to equipment cooling requirements and associated costs.

- Employ a temporary noise barrier around the workspace associated with the HDD entry site, which could be constructed of ¾-in. thick plywood panels (e.g., 16-ft. high), installed around 2 or 3 sides of the HDD workspace; as an alternative to a workspace barrier, HDD workspace site could be covered with a large acoustically-lined tent (i.e., HDD entry side, only);
- Employ hospital–grade exhaust silencers on all engines in conjunction with any of the site HDD equipment (e.g., generators, pumps & hydraulic power unit);
- Partial noise barrier or enclosure around the hydraulic power unit and engine-driven pumps (e.g., cover sides and roof of equipment with an acoustically-lined plywood barrier system);
- Employ a partial noise barrier around any engine jacket-water ("JW") coolers;
- Install a partial barrier or partial enclosure around the mud mixing/cleaning system;
- Relocation of specific equipment (e.g., remotely relocate mud rig);
- Employ "low-noise" generators (i.e., designed with a factory acoustical enclosure);
- For an HDD exit site, the most practical noise mitigation method is to employ a temporary noise barrier at the workspace (i.e., between the site equipment and the closest NSAs), since HDD exit sites include mostly "mobile" operating equipment;
- As a possible alternative to noise mitigation to achieve the sound criterion at NSA(s) that are relatively close to the HDD sites (e.g., residences within 300 feet of an HDD entry site), prior to operation of HDD activities, temporary housing or equivalent monetary compensation should be discussed and/or offered to the nearby land owner(s).

For those HDD sites in which the sound criterion could be exceeded during drilling operations, the following **Table C** summarizes the projected sound level (Ldn) of HDD operations at the closest NSA(s) for each HDD site in which additional noise mitigation measures are assumed to be employed. Note that the potential increase above the ambient noise should be minimal if adequate noise mitigation measures are employed.

No.	HDD Construction Segment	Entry or Exit Site	Distance & Direction of Closest NSA	Calc'd Sound Level (Ldn) of HDD	Ambient Sound Level (Ldn)	Level of HDD plus Ambient	Increase Above Ambient	Ref. Table
#1	Hwy. 64 & UCPR RR HDD	Entry	420 ft. (SE)	53.5 dBA	50.0 dBA	55.1 dBA	5.1 dBA	Table 1 (p. 14)
#1	Hwy. 64 & UCPR RR HDD	Exit	350 ft. (NE)	52.1 dBA	50.0 dBA	54.2 dBA	4.2 dBA	Table 2 (p. 14)
#3	Lucker Lane HDD	Entry	430 ft. (west)	53.2 dBA	41.6 dBA	53.5 dBA	11.9 dBA	Table 5 (p. 15)
#4	Center Road HDD	Entry	200 ft. (south)	54.6 dBA	46.5 dBA	55.2 dBA	8.7 dBA	Table 7 (p. 16)
#4	Center Road HDD	Exit	350 ft. (west)	51.3 dBA	46.5 dBA	52.5 dBA	6.0 dBA	Table 8 (p. 16)
#5	Palarm Tributary HDD	Entry	500 ft. (SW)	51.0 dBA	49.8 dBA	53.4 dBA	3.6 dBA	Table 9 (p. 17)

Table C: Summary of Est'd Sound Contribution of HDD Operations at the Closest NSA assuming that Additional Noise Mitigation Measures are Employed to meet the Sound Criterion.

7.0 SUMMARY AND FINAL COMMENT

The acoustical assessment indicates that the noise attributable to the drilling operations at six (6) of the HDD entry and/or exit sites associated with the installation of gas replacement pipeline for the **CEGT Central Arkansas Pipeline Enhancement Project** could exceed the sound level guideline of **55 dBA** (L_{dn}) at the closest NSA(s). As a result, feasible noise mitigation measures/options are discussed which could be implemented during drilling activity to reduce the noise at the nearby NSAs associated with the HDD operations. Consequently, if adequate noise mitigations are successfully employed, the sound level due to HDD operations at the planned HDD construction sites should not exceed **55 dBA** (L_{dn}) at the NSAs, which is the anticipated FERC sound level requirement for project HDD operations.

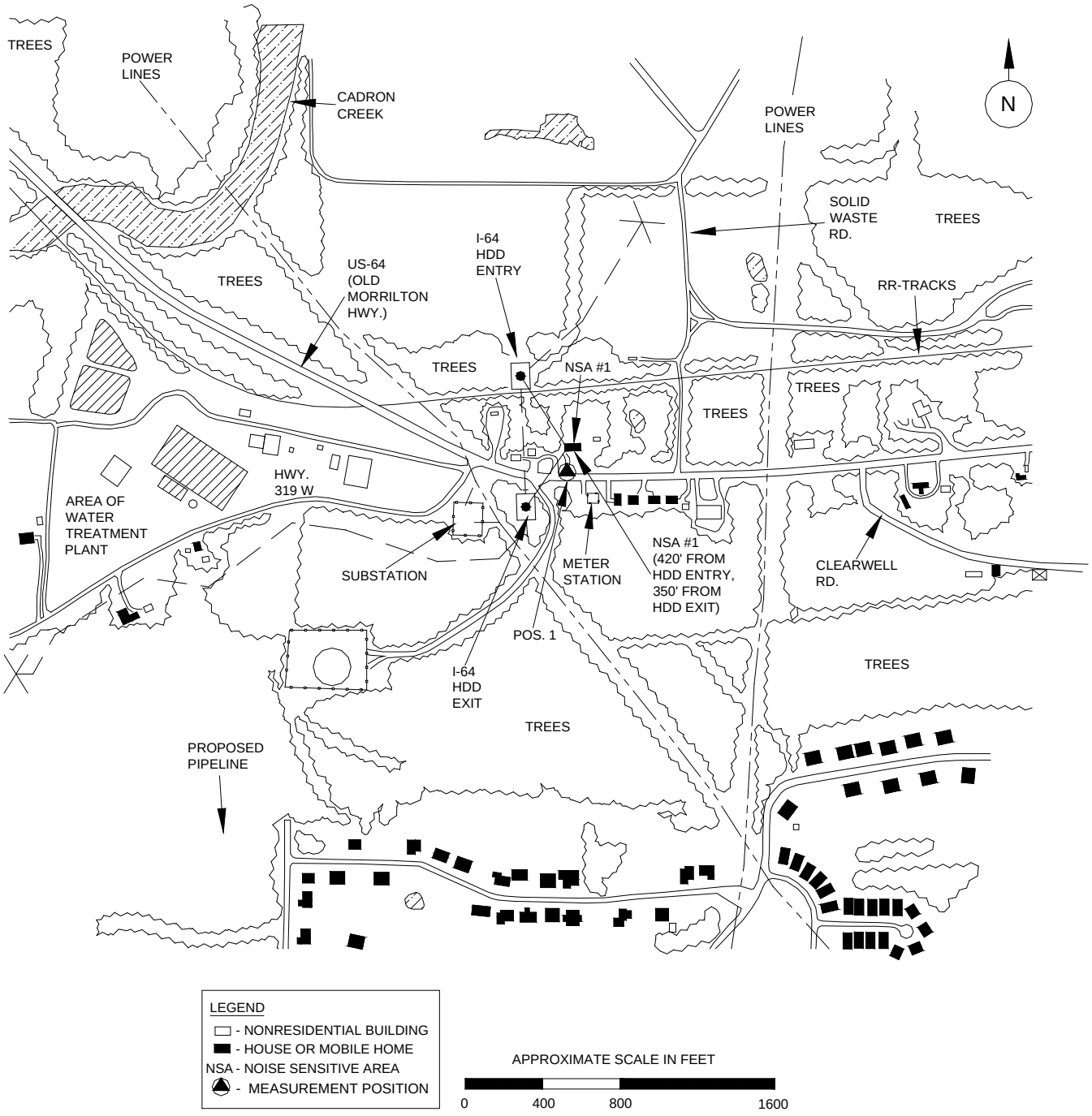


Figure 1: CEGT Central Ark PL Enhancement Project (UCPR RR & Hwy. 64 HDD Crossing): Area Layout Showing the HDD Crossing, HDD Entry/Exit Locations and Nearby NSAs

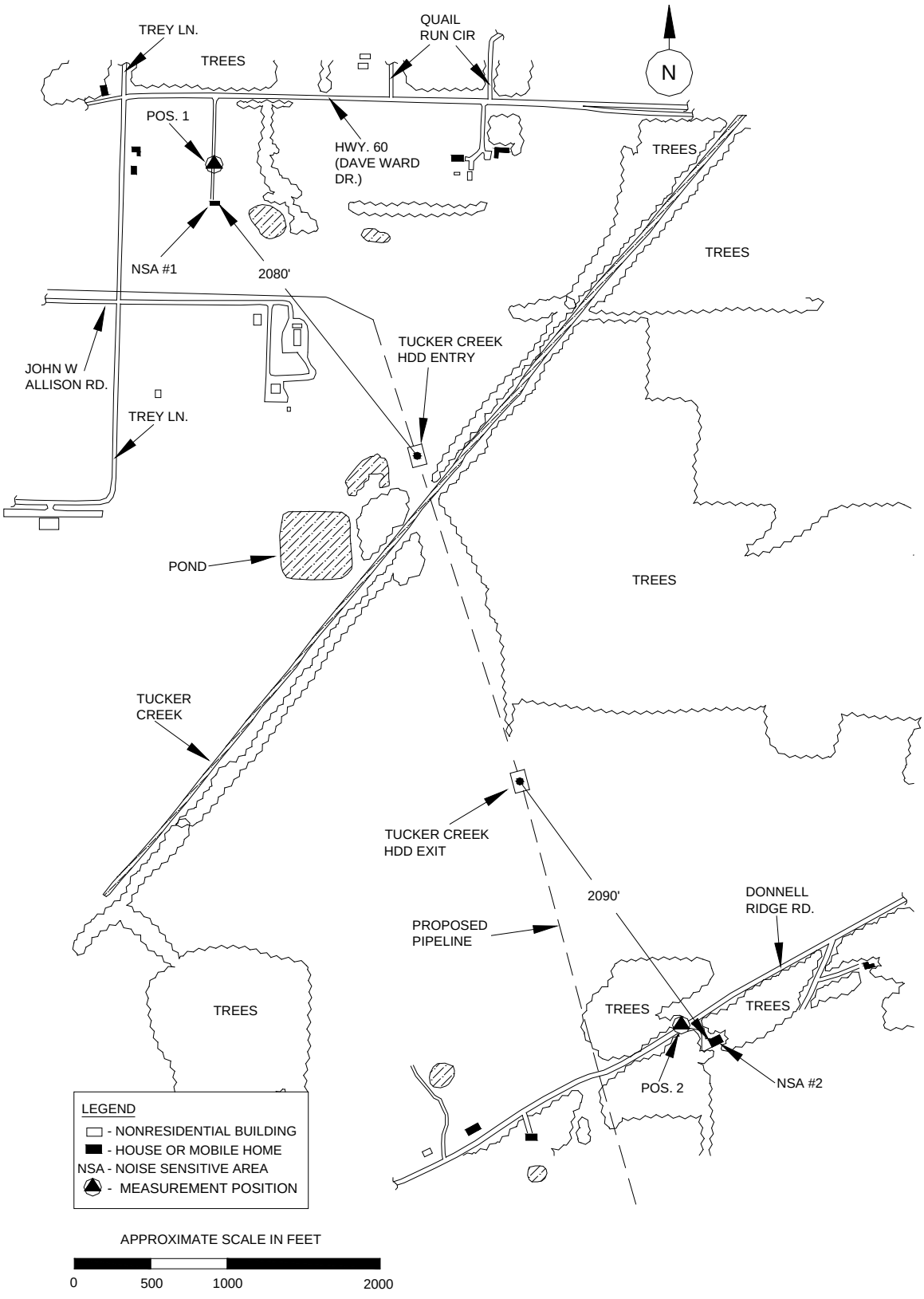


Figure 2: CEGT Central Ark PL Enhancement Project (Tucker Creek HDD Crossing): Area Layout Showing the HDD Crossing, HDD Entry/Exit Locations and Nearby NSAs

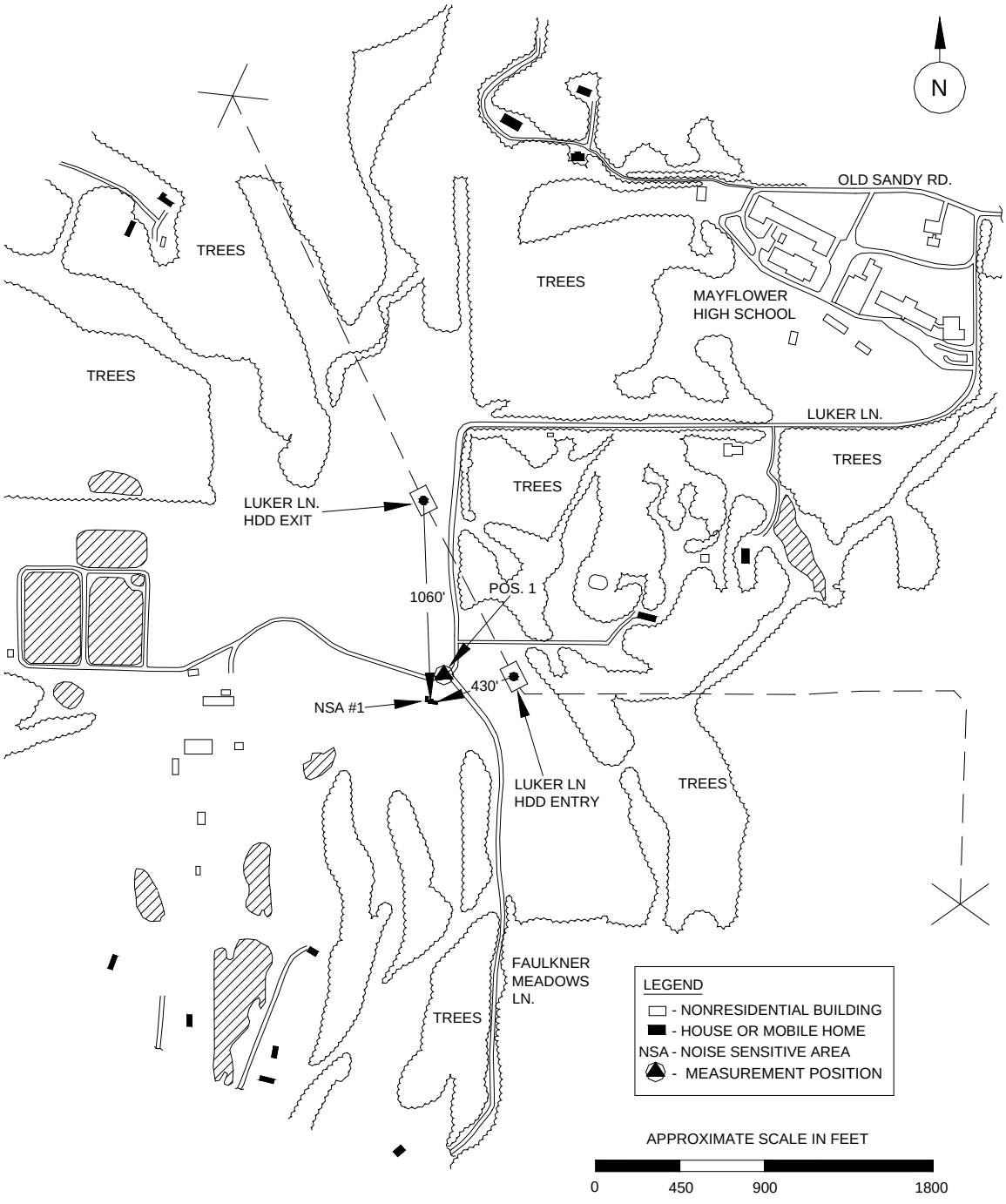


Figure 3: CEGT Central Ark PL Enhancement Project (Luker Lane HDD Crossing): Area Layout Showing the HDD Crossing, HDD Entry/Exit Locations and Nearby NSAs

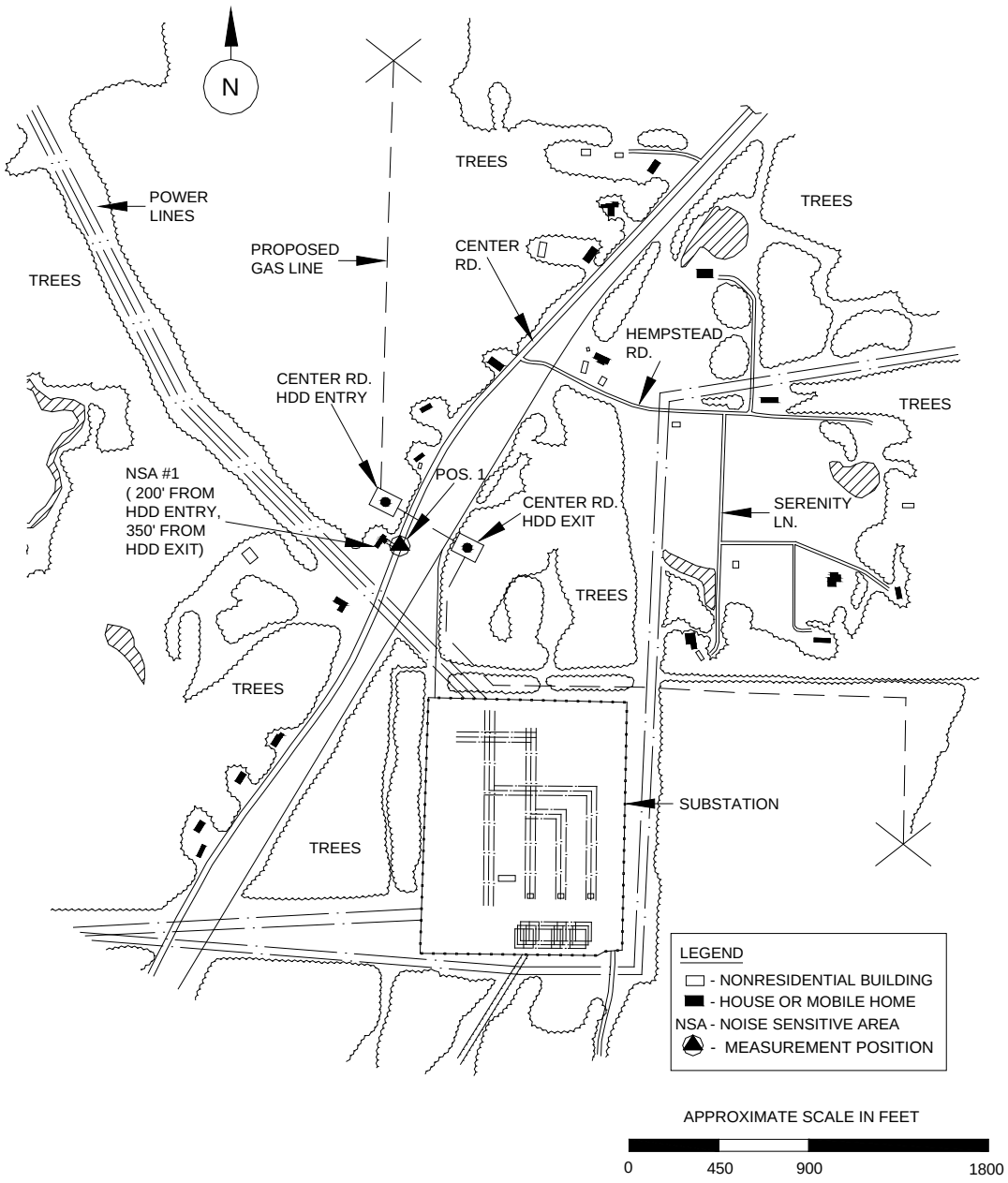


Figure 4: CEGT Central Ark PL Enhancement Project (Center Road HDD Crossing): Area Layout Showing the HDD Crossing, HDD Entry/Exit Locations and Nearby NSAs

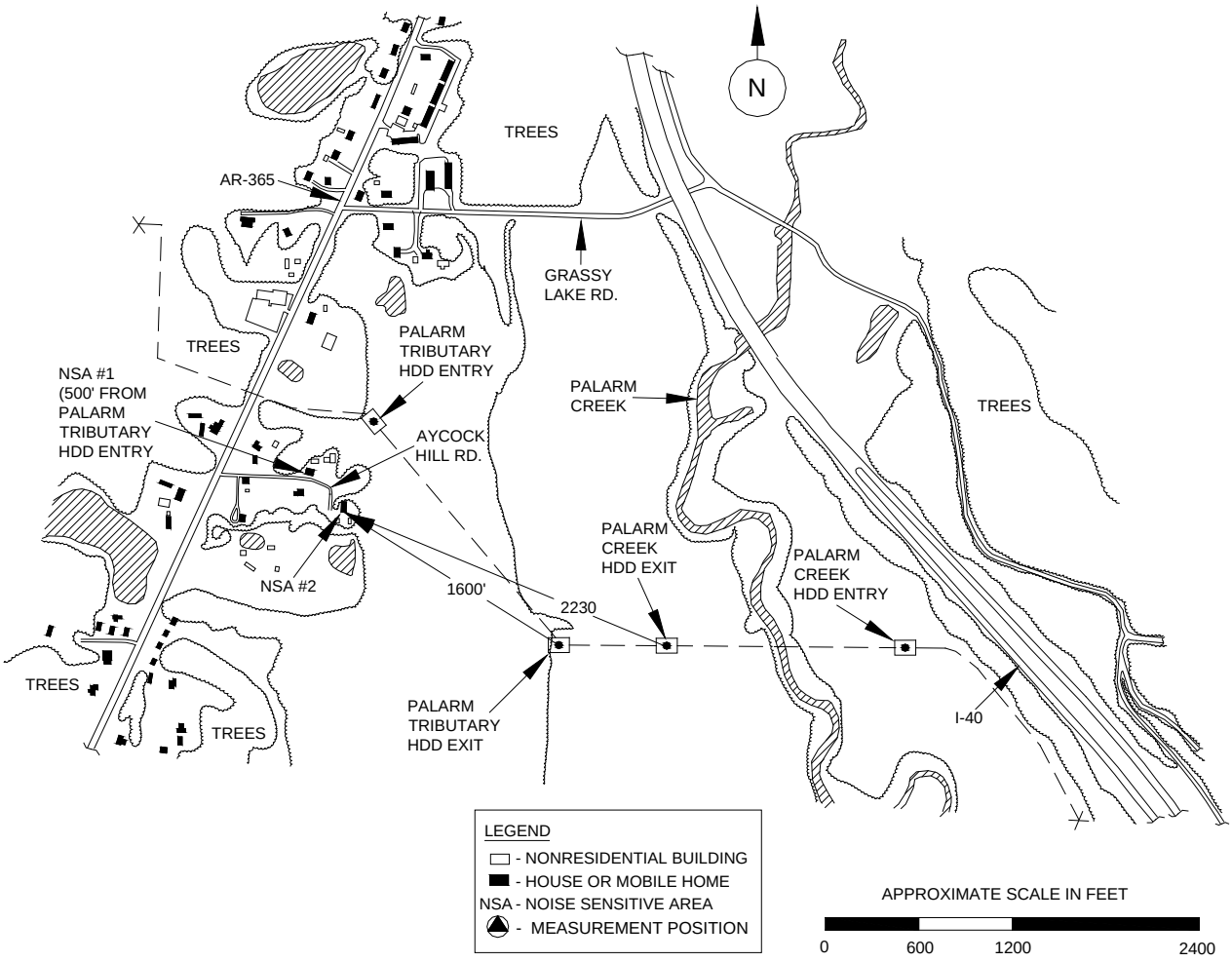


Figure 5: CEGT Central Ark PL Enhancement Project (Palarm Tributary HDD & Palarm Creek HDD): Area Layout Showing HDD Crossings, HDD Entry/Exit Locations and NSAs

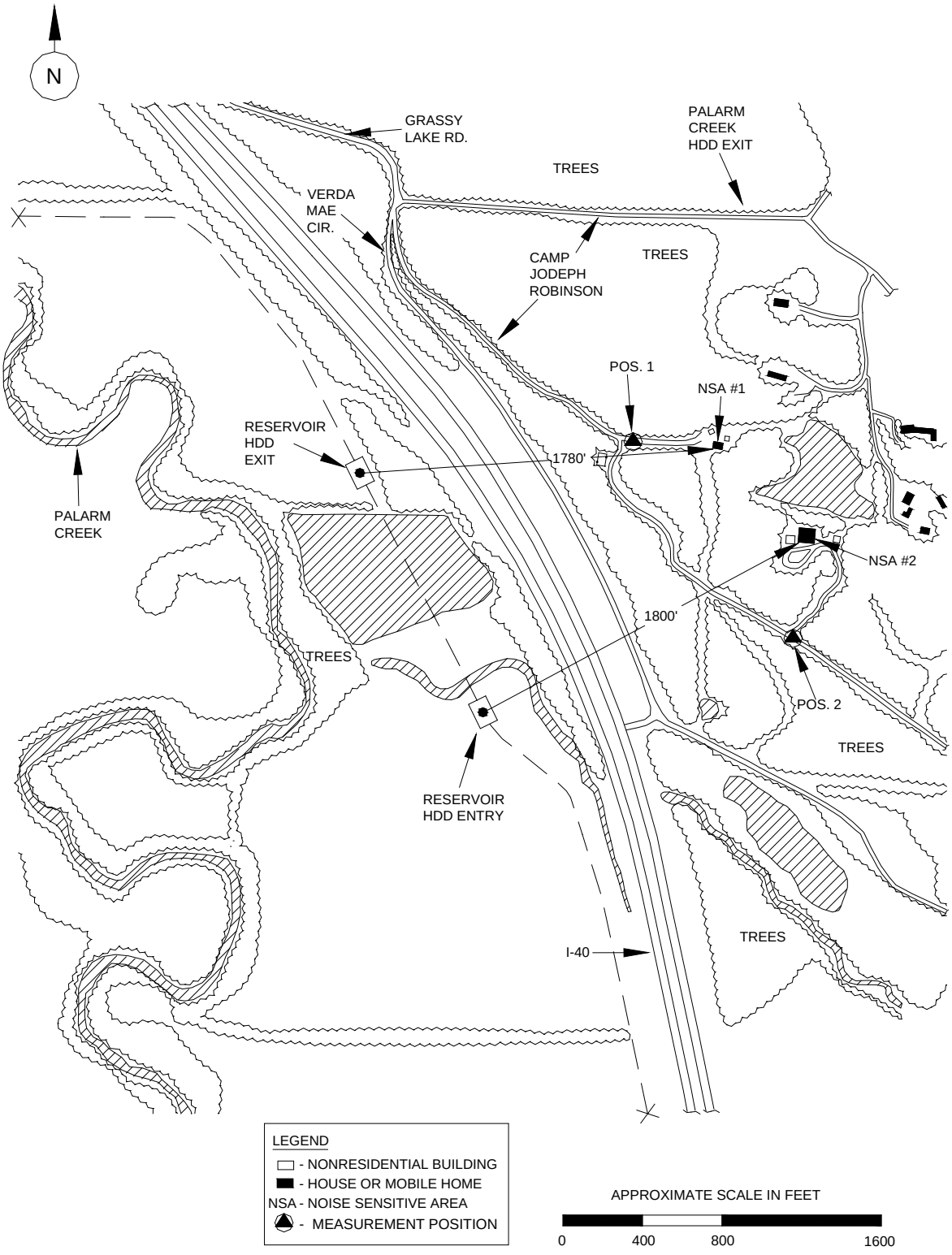


Figure 6: CEGT Central Ark PL Enhancement Project (Reservoir HDD Crossing): Area Layout Showing the location of HDD Crossing, HDD Entry/Exit Location and nearby NSAs

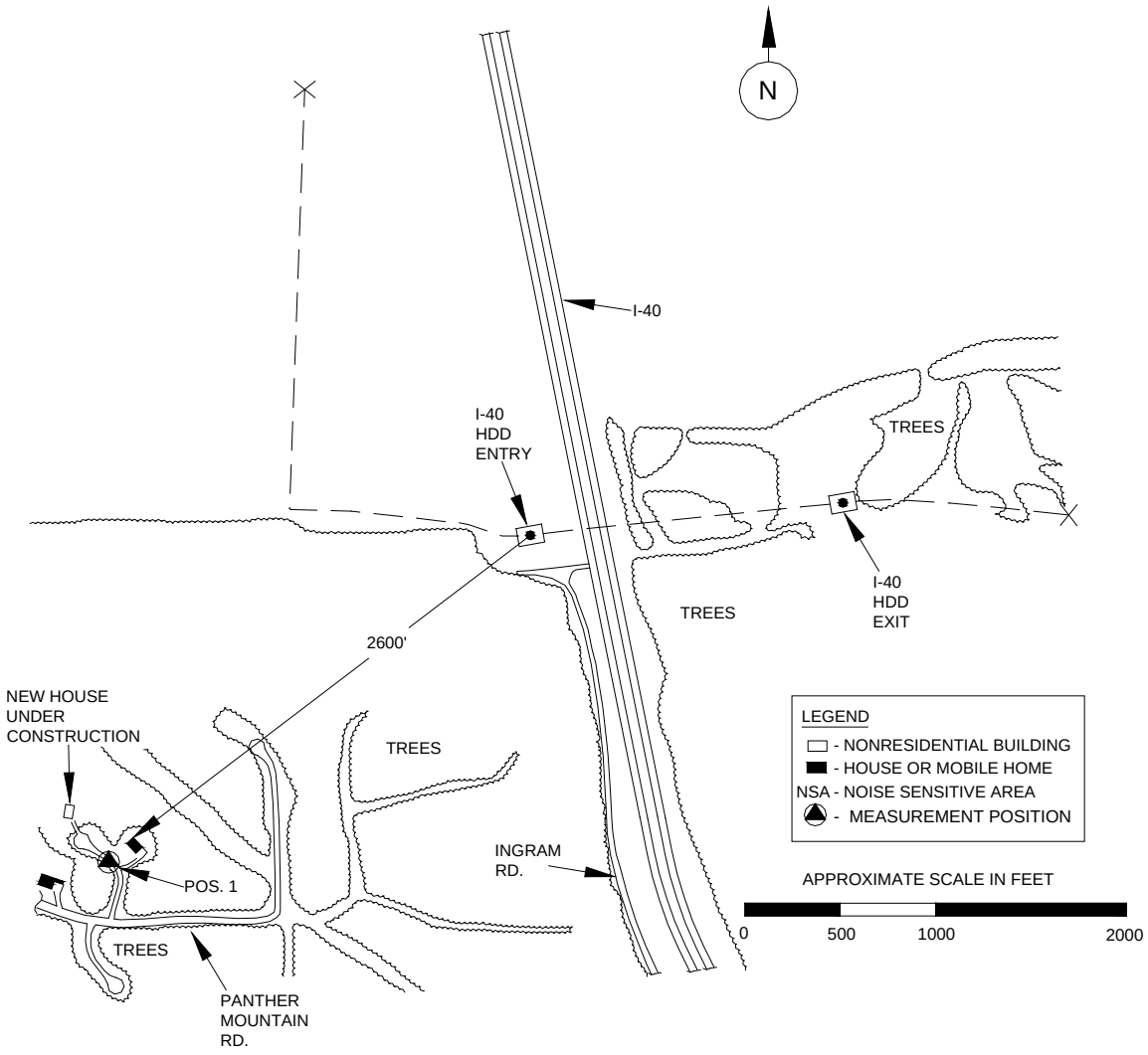


Figure 7: CEGT Central Ark PL Enhancement Project (IH-40 HDD Crossing): Area Layout Showing the HDD Crossing, HDD Entry/Exit Locations and Nearby NSAs

Dist (Ft) or Calculation	Noise Source and Other Conditions/Factors associated with Acoustical Analysis	SPL or PWL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
	Peak PWL of HDD Operation at an Entry Point	118	115	112	114	112	109	108	106	98	115	
	Attenuation by Foliage and/or Land Contour	0	0	0	-1	-2	-3	-4	-5	-5		
420	Hemispherical Radiation	-50	-50	-50	-50	-50	-50	-50	-50	-50		Calc'd
420	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	0	0	-1	-2	-3	-6		Ldn
Est'd Total Sound Contribution with No Additional NC		**68**	**65**	**62**	**63**	**59**	**55**	**52**	**47**	**37**	**61.2**	**67.6**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									50.0
			Sound Contribution of HDD plus Ambient Level (dBA)									67.7
				Potential Increase above the Ambient Sound Level (dB)								17.7
Attenuation due to Added Noise Mitigation Measures		-3	-6	-10	-12	-14	-16	-18	-18	-18		
Est'd Sound Level of HDD + Added Mitigation Measures		65	59	52	51	45	39	34	29	19	**47.1**	**53.5**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									50.0
			Sound Contribution of HDD plus Ambient Level (dBA)									55.1
				Potential Increase above the Ambient Sound Level (dB)								5.1

Table 1: CEGT Central Ark PL Enhancement Project [UCPR RR & Hwy. 64 HDD Entry Point]: Est'd Sound Contribution of the HDD Operations at Closest NSA (NSA #1; Residence 420 Ft. SE of Entry Point), including Sound Level with Additional Noise Mitigation Measures Employed (i.e., Enclosure for Hydraulic Unit, Partial Enclosure or Partial Barrier for Pumps and Engine-Driven Gen Sets, Possible Barrier around HDD Work Space).

Dist (Ft) or Calculation	Noise Source and Other Conditions/Factors associated with Acoustical Analysis	SPL or PWL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
	Peak PWL of HDD Operation at an Exit Point	110	108	105	102	100	98	95	92	88	103	
	Attenuation by Foliage and/or Land Contour	0	0	0	0	-1	-2	-3	-4	-4		
350	Hemispherical Radiation	-49	-49	-49	-49	-49	-49	-49	-49	-49		Calc'd
350	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	0	0	-1	-1	-3	-5		Ldn
Est'd Total Sound Contribution with No Additional NC		**61**	**59**	**56**	**53**	**50**	**47**	**42**	**37**	**31**	**52.2**	**58.6**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									50.0
			Sound Contribution of HDD plus Ambient Level (dBA)									59.1
				Potential Increase above the Ambient Sound Level (dB)								9.1
Attenuation due to Added Noise Mitigation Measures		-2	-3	-4	-5	-6	-8	-9	-10	-10		
Est'd Sound Level of HDD + Added Mitigation Measures		59	56	52	48	44	39	33	27	21	**45.7**	**52.1**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									50.0
			Sound Contribution of HDD plus Ambient Level (dBA)									54.2
				Potential Increase above the Ambient Sound Level (dB)								4.2

Table 2: CEGT Central Ark PL Enhancement Project [UCPR RR & Hwy. 64 HDD Exit Point]: Est'd Sound Contribution of the HDD Operations at Closest NSA (NSA #1; Residence approx. 350 Ft. NE of Exit Point), including Sound Level with Additional Noise Mitigation Measures Employed (i.e., Barrier around Part of Workspace).

Dist (Ft) or Calculation	Noise Source and Other Conditions/Factors associated with Acoustical Analysis	SPL or PWL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
	Peak PWL of HDD Operation at an Entry Point	118	115	112	114	112	109	108	106	98	115	
	Attenuation by Foliage and/or Land Contour	0	0	-1	-3	-4	-5	-6	-7	-7		
2080	Hemispherical Radiation	-64	-64	-64	-64	-64	-64	-64	-64	-64		Calc'd
2080	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-2	-4	-8	-17	-29		Ldn
Est'd Total Sound Contribution with No Additional NC		**54**	**51**	**47**	**46**	**42**	**36**	**30**	**18**	**0**	**43.0**	**49.4**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									46.9
			Sound Contribution of HDD plus Ambient Level (dBA)									51.3
				Potential Increase above the Ambient Sound Level (dB)								4.4

Table 3: CEGT Central Ark PL Enhancement Project [Tucker Creek HDD Entry Point]: Est'd Sound Contribution of the HDD Operations at the Closest NSA (NSA #1; Residence approx. 2,080 Ft. NNW of Entry Point).

Notes: Est'd sound power level ("PWL") of HDD operation based on field tests by H&K on similar type of HDD rigs anticipated for this pipeline system. Est'd PWL at HDD exit point should be typically 12 to 14 dB lower than PWL at HDD entry point.

Dist (Ft) or Calculation	Noise Source and Other Conditions/Factors associated with Acoustical Analysis	SPL or PWL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
	Peak PWL of HDD Operation at an Exit Point	110	108	105	102	100	98	95	92	88	103	
	Attenuation by Foliage and/or Land Contour	0	0	-1	-3	-4	-5	-6	-7	-7		
2090	Hemispherical Radiation	-64	-64	-64	-64	-64	-64	-64	-64	-64		Calc'd
2090	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-2	-4	-8	-17	-29		Ldn
Est'd Total Sound Contribution with No Additional NC		**46**	**44**	**39**	**34**	**30**	**25**	**17**	**4**	**0**	**31.7**	**38.1**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									39.8
			Sound Contribution of HDD plus Ambient Level (dBA)									42.0
				Potential Increase above the Ambient Sound Level (dB)								2.2

Table 4: CEGT Central Ark PL Enhancement Project [Tucker Creek HDD Exit Point]: Est'd Sound Contribution of the HDD Operations at the Closest NSA (NSA #2; Residence approx. 2,090 Ft. SE of Exit Point).

Dist (Ft) or Calculation	Noise Source and Other Conditions/Factors associated with Acoustical Analysis	SPL or PWL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
	Peak PWL of HDD Operation at an Entry Point	118	115	112	114	112	109	108	106	98	115	
	Attenuation by Foliage and/or Land Contour	0	0	0	-1	-2	-3	-4	-5	-5		
430	Hemispherical Radiation	-50	-50	-50	-50	-50	-50	-50	-50	-50		Calc'd
430	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	0	0	-1	-2	-3	-6		Ldn
Est'd Total Sound Contribution with No Additional NC		**68**	**65**	**62**	**62**	**59**	**55**	**52**	**47**	**37**	**61.0**	**67.4**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									41.6
			Sound Contribution of HDD plus Ambient Level (dBA)									67.4
				Potential Increase above the Ambient Sound Level (dB)								25.8
Attenuation due to Added Noise Mitigation Measures		-3	-6	-10	-12	-14	-16	-18	-18	-18		
Est'd Sound Level of HDD + Added Mitigation Measures		65	59	52	50	45	39	34	29	19	**46.8**	**53.2**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									41.6
			Sound Contribution of HDD plus Ambient Level (dBA)									53.5
				Potential Increase above the Ambient Sound Level (dB)								11.9

Table 5: CEGT Central Ark PL Enhancement Project [Luker Lane HDD Entry Point]: Est'd Sound Contribution of Contribution of HDD Operations at Closest NSA (NSA #1; Residence 430 Ft. West of Entry Point), including Sound Level with Additional Noise Mitigation Measures Employed (i.e., Enclosure for Hydraulic Unit, Partial Barrier for Pumps and Engine-Driven Gen Sets and Possible Barrier around HDD Work Space).

Dist (Ft) or Calculation	Noise Source and Other Conditions/Factors associated with Acoustical Analysis	SPL or PWL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
	Peak PWL of HDD Operation at an Exit Point	110	108	105	102	100	98	95	92	88	103	
	Attenuation by Foliage and/or Land Contour	0	0	-1	-3	-4	-5	-6	-7	-7		
1060	Hemispherical Radiation	-58	-58	-58	-58	-58	-58	-58	-58	-58		Calc'd
1060	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-2	-4	-8	-15		Ldn
Est'd Total Sound Contribution with No Additional NC		**52**	**50**	**46**	**40**	**37**	**33**	**27**	**18**	**8**	**38.7**	**45.1**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									41.6
			Sound Contribution of HDD plus Ambient Level (dBA)									46.7
				Potential Increase above the Ambient Sound Level (dB)								5.1

Table 6: CEGT Central Ark PL Enhancement Project [Luker Lane HDD Exit Point]: Est'd Sound Contribution of the Contribution of HDD Operation at Closest NSA (NSA #2; Residence approx. 1,060 Ft. South of Exit Point).

Dist (Ft) or Calculation	Noise Source and Other Conditions/Factors associated with Acoustical Analysis	SPL or PWL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
	Peak PWL of HDD Operation at an Entry Point	118	115	112	114	112	109	108	106	98	115	
	Attenuation by Foliage and/or Land Contour	0	0	0	0	-1	-1	-2	-3	-3		
200	Hemispherical Radiation	-44	-44	-44	-44	-44	-44	-44	-44	-44		Calc'd
200	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	0	0	0	-1	-2	-3		Ldn
Est'd Total Sound Contribution with No Additional NC		**74**	**71**	**68**	**70**	**67**	**64**	**61**	**58**	**48**	**69.6**	**76.0**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									46.5
			Sound Contribution of HDD plus Ambient Level (dBA)									76.0
				Potential Increase above the Ambient Sound Level (dB)								29.5
Attenuation due to Added Noise Mitigation Measures		-5	-10	-14	-18	-22	-24	-25	-25	-25		
Est'd Sound Level of HDD + Added Mitigation Measures		69	61	54	52	45	40	36	33	23	**48.2**	**54.6**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									46.5
			Sound Contribution of HDD plus Ambient Level (dBA)									55.2
				Potential Increase above the Ambient Sound Level (dB)								8.7

Table 7: CEGT Central Ark PL Enhancement Project [Center Road HDD Entry Point]: Est'd Sound Contribution of the HDD Operations at Closest NSA (NSA #1; Residence 200 Ft. South of Entry Point), including Sound Level Additional Noise Mitigation Measures Employed (i.e., Partial Enclosure for Hydraulic Unit, Partial Enclosure or Partial Barrier for Pumps and Engine-Driven Gen Sets and Noise Barrier around HDD Work Space).

Dist (Ft) or Calculation	Noise Source and Other Conditions/Factors associated with Acoustical Analysis	SPL or PWL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
	Peak PWL of HDD Operation at an Exit Point	110	108	105	102	100	98	95	92	88	103	
	Attenuation by Foliage and/or Land Contour	0	0	0	-1	-2	-3	-4	-5	-5		
350	Hemispherical Radiation	-49	-49	-49	-49	-49	-49	-49	-49	-49		Calc'd
350	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	0	0	-1	-1	-3	-5		Ldn
Est'd Total Sound Contribution with No Additional NC		**61**	**59**	**56**	**52**	**49**	**46**	**41**	**36**	**30**	**51.3**	**57.7**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									46.5
			Sound Contribution of HDD plus Ambient Level (dBA)									58.0
				Potential Increase above the Ambient Sound Level (dB)								11.5
Attenuation due to Added Noise Mitigation Measures		-2	-3	-4	-5	-6	-8	-9	-10	-10		
Est'd Sound Level of HDD + Added Mitigation Measures		59	56	52	47	43	38	32	26	20	**44.9**	**51.3**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									46.5
			Sound Contribution of HDD plus Ambient Level (dBA)									52.5
				Potential Increase above the Ambient Sound Level (dB)								6.0

Table 8: CEGT Central Ark PL Enhancement Project [Center Road HDD Exit Point]: Est'd Sound Contribution of the HDD Operations at the Closest NSA (NSA #2; Residence 350 Ft. West of Exit Point), including Sound Level with Additional Noise Mitigation Measures Employed (i.e., Barrier around Part of Workspace).

Dist (Ft) or Calculation	Noise Source and Other Conditions/Factors associated with Acoustical Analysis	SPL or PWL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
	Peak PWL of HDD Operation at an Entry Point	118	115	112	114	112	109	108	106	98	115	
	Attenuation by Foliage and/or Land Contour	0	0	0	-1	-2	-3	-4	-5	-5		
500	Hemispherical Radiation	-52	-52	-52	-52	-52	-52	-52	-52	-52		Calc'd
500	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	0	0	-1	-2	-4	-7		Ldn
Est'd Total Sound Contribution with No Additional NC		**66**	**63**	**60**	**61**	**58**	**53**	**50**	**45**	**34**	**59.5**	**65.9**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									49.8
			Sound Contribution of HDD plus Ambient Level (dBA)									66.0
				Potential Increase above the Ambient Sound Level (dB)								16.2
Attenuation due to Added Noise Mitigation Measures		-3	-6	-10	-14	-15	-16	-18	-18	-18		
Est'd Sound Level of HDD + Added Mitigation Measures		63	57	50	47	43	37	32	27	16	**44.6**	**51.0**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									49.8
			Sound Contribution of HDD plus Ambient Level (dBA)									53.4
				Potential Increase above the Ambient Sound Level (dB)								3.6

Table 9: CEGT Central Ark PL Enhancement Project [Palarm Tributary HDD Entry Point]: Est'd Sound Contribution of Contribution of HDD Operation at Closest NSA (NSA #1; Residence 500 Ft. SW of Entry Point), including Sound Level with Additional Noise Mitigation Measures Employed (i.e., Enclosure for Hydraulic Unit, Partial Enclosure or Partial Barrier for Pumps and Engine-Driven Gen Sets, Possible Barrier around HDD Work Space).

Dist (Ft) or Calculation	Noise Source and Other Conditions/Factors associated with Acoustical Analysis	SPL or PWL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
	Peak PWL of HDD Operation at an Exit Point	110	108	105	102	100	98	95	92	88	103	
	Attenuation by Foliage and/or Land Contour	0	-1	-2	-4	-5	-6	-7	-8	-8		
1600	Hemispherical Radiation	-62	-62	-62	-62	-62	-62	-62	-62	-62		Calc'd
1600	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-3	-6	-13	-22		Ldn
Est'd Total Sound Contribution with No Additional NC		**48**	**45**	**41**	**35**	**32**	**27**	**20**	**9**	**0**	**33.5**	**39.9**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									49.8
			Sound Contribution of HDD plus Ambient Level (dBA)									50.2
				Potential Increase above the Ambient Sound Level (dB)								0.4

Table 10: CEGT Central Ark PL Enhancement Project [Palarm Tributary HDD Exit Point]: Est'd Sound Contribution of the Contribution of HDD Operation at Closest NSA (NSA #2; Residence approx. 1,600 Ft. NW of Exit Point).

Dist (Ft) or Calculation	Noise Source and Other Conditions/Factors associated with Acoustical Analysis	SPL or PWL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
	Peak PWL of HDD Operation at an Entry Point	118	115	112	114	112	109	108	106	98	115	
	Attenuation by Foliage and/or Land Contour	0	-1	-2	-4	-5	-6	-7	-8	-8		
2230	Hemispherical Radiation	-65	-65	-65	-65	-65	-65	-65	-65	-65		Calc'd
2230	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-2	-4	-9	-18	-31		Ldn
Est'd Total Sound Contribution with No Additional NC		**53**	**49**	**45**	**44**	**41**	**34**	**27**	**15**	**0**	**41.2**	**47.6**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									49.8
			Sound Contribution of HDD plus Ambient Level (dBA)									51.9
				Potential Increase above the Ambient Sound Level (dB)								2.1

Table 11: CEGT Central Ark PL Enhancement Project [Palarm Creek HDD Entry Point]: Est'd Sound Contribution of the HDD Operations at the Closest NSA (NSA #1; Residence 2,230 Ft. NW of Entry Point).

Dist (Ft) or Calculation	Noise Source and Other Conditions/Factors associated with Acoustical Analysis	SPL or PWL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
	Peak PWL of HDD Operation at an Entry Point	118	115	112	114	112	109	108	106	98	115	
	Attenuation by Foliage and/or Land Contour	0	0	-1	-3	-4	-5	-6	-7	-7		
1800	Hemispherical Radiation	-63	-63	-63	-63	-63	-63	-63	-63	-63		Calc'd
1800	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-4	-7	-14	-25		Ldn
Est'd Total Sound Contribution with No Additional NC		**55**	**52**	**48**	**47**	**44**	**38**	**32**	**22**	**3**	**44.6**	**51.0**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									57.8
			Sound Contribution of HDD plus Ambient Level (dBA)									58.6
				Potential Increase above the Ambient Sound Level (dB)								0.8

Table 12: CEGT Central Ark PL Enhancement Project [Reservoir HDD Entry Point]: Est'd Sound Contribution of the HDD Operations at the Closest NSA (NSA #1; Residence 1,800 Ft. ENE of Entry Point).

Dist (Ft) or Calculation	Noise Source and Other Conditions/Factors associated with Acoustical Analysis	SPL or PWL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
	Peak PWL of HDD Operation at an Exit Point	110	108	105	102	100	98	95	92	88	103	
	Attenuation by Foliage and/or Land Contour	0	0	-1	-3	-4	-5	-6	-7	-7		
1780	Hemispherical Radiation	-63	-63	-63	-63	-63	-63	-63	-63	-63		Calc'd
1780	Atm. Absorption (70% R.H., 60 deg F)	0	0	0	-1	-1	-4	-7	-14	-25		Ldn
Est'd Total Sound Contribution with No Additional NC		**47**	**45**	**41**	**35**	**32**	**27**	**19**	**8**	**0**	**33.4**	**39.8**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									55.5
			Sound Contribution of HDD plus Ambient Level (dBA)									55.6
				Potential Increase above the Ambient Sound Level (dB)								0.1

Table 13: CEGT Central Ark PL Enhancement Project [Reservoir HDD Exit Point]: Est'd Sound Contribution of the HDD Operations at the Closest NSA (NSA #2; Residence 1,780 Ft. East of Exit Point).

Dist (Ft) or Calculation	Noise Source and Other Conditions/Factors associated with Acoustical Analysis	SPL or PWL in dB Per Octave-Band Center Freq. (Hz) 31.5	63	125	250	500	1000	2000	4000	8000	A-Wt. Level	
	Peak PWL of HDD Operation at an Entry Point	118	115	112	114	112	109	108	106	98	115	
	Attenuation by Foliage and/or Land Contour	0	0	-1	-3	-4	-5	-6	-7	-7		
2600	Hemispherical Radiation	-66	-66	-66	-66	-66	-66	-66	-66	-66		Calc'd
2600	Atm. Absorption (70% R.H., 60 deg F)	0	0	-1	-1	-2	-5	-10	-21	-36		Ldn
Est'd Total Sound Contribution with No Additional NC		**52**	**49**	**44**	**44**	**40**	**33**	**26**	**12**	**0**	**40.5**	**46.9**
			Ambient Sound Level (i.e., Resulting Ldn via Meas'd Ld) in dBA									48.7
			Sound Contribution of HDD plus Ambient Level (dBA)									50.9
				Potential Increase above the Ambient Sound Level (dB)								2.2

Table 14: CEGT Central Ark PL Enhancement Project [Reservoir HDD Entry Point]: Est'd Sound Contribution of the HDD Operations at the Closest NSA (NSA #1; Residence 2,600 Ft. SW of Entry Point).

Description of Acoustical Assessment Methodology and Source of Sound Data

In general, the predicted A-wt. sound level contributed by drilling operations at HDD operations at the nearby NSAs was calculated as a function of frequency from estimated unweighted octave-band ("O.B.") sound power levels ("PWLs") during "peak" operations of HDD stationary equipment at either the HDD entry site or HDD exit site. The following summarizes the acoustical analysis procedure:

- Initially, unweighted O.B. PWLs of the HDD operations were determined from actual sound level measurements by H&K on similar type of HDD operations and equipment expected for this project. Estimated PWL values of the HDD operations were calculated from sound measurements at different distances/directions from HDD operations (e.g., sound measurements at 100 feet, 200 feet, 400 feet and 800 feet from typical HDD equipment operations).*

- Then, expected attenuation in dB per O.B. frequency due to hemispherical sound propagation (discussed in more detail below**), atmospheric sound absorption (discussed in more detail below***) and other factors (e.g., attenuation due to foliage and topography**) were subtracted from the unweighted O.B. PWLs to obtain unweighted O.B. sound pressure levels (SPLs) of HDD operations.

- Finally, the resulting estimated total unweighted O.B. SPLs for the HDD operations, including sound attenuation effects, were logarithmically summed and corrected for A-weighting to provide the estimated overall A-wt. sound level contributed by the drilling operations at the specified distance(s).

*It should be noted that the estimated sound power levels of HDD operations utilized in the H&K acoustical analyses were based on measured sound level data at different distances from actual HDD construction sites, and therefore, the PWL values, for the most part, includes the effect of ground effect (e.g., ground absorption). Consequently, in our opinion, it would not be appropriate to strictly follow international–based standards, such as ISO 9613-2[1], when calculating the estimated A-wt. sound level at a respective receptor (i.e., NSA) via the PWL values utilized in the H&K acoustical analysis methodology.

**Attenuation due to hemispherical sound propagation: Sound propagates outwards in all directions (i.e., length, width, height) from a point source, and the sound energy of a noise source decreases with increasing distance from the source. In the case of hemispherical sound propagation, the source is located on a flat continuous plane/surface (e.g., ground), and the sound radiates hemispherically (i.e., outward, over and above the surface) from the source. The following equation is the theoretical decrease of sound energy when determining the resulting O.B. SPLs of a noise source at a specific distance ("r") of a receiver from a source O.B. PWL values:

> Decrease in SPL ("hemispherical propagation") from a noise source = **20*log(r) – 2.3 dB**
> where "r" is distance of the receiver from the noise source.

[1]International Standard Organization (ISO) 9613-2, Dec. 15, 1996 (Publication Date): *Acoustics - Attenuation of Sound During Propagation Outdoors - Part 2: General Method of Calculation*

***Attenuation due to air absorption, foliage and topography: Air absorbs sound energy, and the amount of absorption ("attenuation") is dependent on the temperature and relative humidity (R.H.) of air and frequency of sound. For example, the attenuation due to air absorption for 1000 Hz O.B. SPL is approximately **1.5 dB** per 1,000 feet for standard day conditions. Potential attenuation of foliage, based on our experience and an ISO Standard[2], the "medium-frequency" attenuation (i.e., 1000 Hz) due to forest/trees greater than 500 feet thick is approximately **10 dB**. Also, forested areas with plantings more than 100 feet deep can provide some attenuation of ground level noise sources. In addition, the topography (i.e., land contour, such as a hill or ridge) between the HDD site and the nearby NSA(s) can provide some additional attenuation of the HDD noise contribution at the respective NSA(s).

Summary of Typical Metrics and Acoustical Terminology

(1) Daytime Sound Level (L_d) & Nighttime Sound Level (L_n): L_d is the equivalent A-weighted sound level, in decibels, for a 15 hour time period, between 07:00 to 22:00 Hours (7:00 a.m. to 10:00 p.m.). L_n is the equivalent A-weighted sound level, in decibels, for a 9 hour time period, between 22:00 to 07:00 Hours (10:00 p.m. to 7:00 a.m.).

(2) Equivalent Sound Level (L_{eq}): The equivalent sound level (L_{eq}) can be considered an average sound level measured during a period of time, including any fluctuating sound levels during that period. In this report, the L_{eq} is equal to the level of a steady (in time) A-weighted sound level that would be equivalent to the sampled A-weighted sound level on an energy basis for a specified measurement interval. The concept of the measuring L_{eq} has been used broadly to relate individual and community reaction to aircraft and other environmental noises.

(3) Day-Night Average Sound Level (L_{dn}): The L_{dn} is an energy average of the measured daytime L_{eq} (L_d) and the measured nighttime L_{eq} (L_n) plus **10 dB**. The **10-dB** adjustment to the L_n is intended to compensate for nighttime sensitivity. As such, the L_{dn} is not a true measure of the sound level but represents a skewed average that correlates generally with past sound surveys which attempted to relate environmental sound levels with physiological reaction and physiological effects. For a steady sound source that operates continuously over a 24-hour period and controls the environmental sound level, a L_{dn} is approximately **6.4 dB** above the measured L_{eq}. Consequently, a L_{dn} of **55 dBA** corresponds to an L_{eq} of **48.6 dBA**. If both the L_d and L_n are measured, then the L_{dn} is calculated using the following formula:

$$L_{\text{dn}} = 10\log_{10}\left(\frac{15}{24}10^{L_{\text{d}}/10} + \frac{9}{24}10^{(L_{\text{n}}+10)/10}\right)$$

(4) Sound Power Level (L_W or PWL): Ten times the common logarithm of the ratio of the total acoustic power radiated by a sound source to a reference power. A reference power of a picowatt or 10^{-12} watt is conventionally used.

End of Report

[2]ISO Standard 9613-1: 1993 (E); *Acoustics – Attenuation of sound during propagation outdoors – Part 1: Calculation of the Absorption of Sound by the Atmosphere, and Part 2: General method of calculation*

APPENDIX 1.D

AGENCY CORRESPONDENCE (SUPPLEMENTAL)

Arkansas Natural Resources Commission

J. Randy Young, PE
Executive Director

101 East Capitol, Suite 350
Little Rock, Arkansas 72201
http://www.anrc.arkansas.gov/

Phone: (501) 682-1611
Fax: (501) 682-3991
E-mail: anrc@arkansas.gov

Mike Beebe
Governor

May 13, 2013

Ms. Rebecca Weissman, PWS
Senior Scientist
AK Environmental, LLC
PO Box 6355
Holliston, Massachusetts 01746

RE: Information Request CenterPoint Energy Gas Transmission Company, LLC Central Arkansas Pipeline Enhancement Project FERC Docket No. PF13-10-000 Faulkner and Pulaski Counties, Arkansas

Dear Ms. Weissman:

In response to your inquiry dated April 10, 2013 ANRC has reviewed the proposal for the Central Arkansas Pipeline Enhancement Project to continue providing natural gas to the Central Arkansas cities and towns of Conway, Mayflower, Maumelle, North Little Rock, and Little Rock. I have the following comments:

1) The proposed gas line is not in a critical groundwater area as designated by the Arkansas Natural Resources Commission pursuant to the Groundwater Protection and Management Act of 1991.

2) The project should be evaluated by the Arkansas Department of Environmental Quality to determine whether the existence of contaminated groundwater is within the .25 mile distance limit.

3) A thorough water use registration and water well construction report location query should be performed along the project area to determine if water wells are within the 300 foot distance noted in the FERC NEPA review.

4) The Cadron Creek Mitigation Bank POC is Kenneth Colbert at (501) 716-2884.

If you need further assistance, please contact me at 501-682-3979, or edward.swaim@arkansas.gov.

These comments are advisory only and do not constitute approval, permitting, or other official sanction of the proposed work.

Thank you for the opportunity to comment on the proposed Central Arkansas Pipeline Enhancement Project.

Sincerely,

Edward C. Swaim

Edward C. Swaim, Chief
Water Resources Management Division

ECS/jt

United States Department of the Interior

FISH AND WILDLIFE SERVICE
110 S. Amity Road, Suite 300
Conway, Arkansas 72032
Tel.: 501/513-4470 Fax: 501/513-4480

IN REPLY REFER TO

June 13, 2013

Rebecca Weissman
AK Environmental, LLC
P.O. Box 6355
Holliston, MA 017

Dear Ms. Weissman:

The Fish and Wildlife Service (Service) has reviewed your letter dated June 4, 2013, concerning the proposed pipeline enhancement project for CenterPoint Energy Gas Transmission Company, LLC in the Cities of Conway, Maumelle, Mayflower, North Little Rock, and Little Rock, Faulkner and Pulaski Counties, Arkansas. Our comments are submitted in accordance with the Fish and Wildlife Coordination Act (FWCA; 16 U.S.C. 661-667e) and the Endangered Species Act of 1973 (87 Stat. 884, as amended 16 U.S.C. 1531 et seq.).

The Service concurs with your determination that the proposed pipeline enhancement project is not likely to adversely affect the interior least tern (*Sterna antillarum athalassos*), piping plover (*Charadrius melodus*), Red-cockaded Woodpecker (*Picoides borealis*), running buffalo clover (*Trifolium stoloniferum*), or the federally protected Bald Eagle *(Haliaeetus leucocephalus)* and would not have any significantly adverse impacts on any non-listed species.

We appreciate the opportunity to provide these comments. If you have any questions, please contact the Arkansas Ecological Services Staff at (501) 513-4487.

Sincerely,

for Jim Boggs
Project Leader

Consulting with Energy

June 4, 2013

Mr. Jim Boggs
Project Leader
U.S. Fish and Wildlife Service
Arkansas Ecological Services Field Office
110 S. Amity Road, Suite 300
Conway, AR 72032

Subject: **CenterPoint Energy Gas Transmission Company, LLC**
Central Arkansas Pipeline Enhancement Project
Faulkner and Pulaski Counties, Arkansas
Reference No. TA0511

Dear Mr. Boggs:

On April 10, 2013, at the direction of CenterPoint Energy Gas Transmission Company, LLC ("CEGT"), AK Environmental, LLC ("AK") submitted a letter to your office introducing the Central Arkansas Pipeline Enhancement ("CAPE") Project in Faulkner and Pulaski Counties requesting a review for potential impacts to federally listed species of concern. In response, AK received a letter from your office dated May 6, 2013 (reference No. TA0511) that identified federally protected species within the Project region. This letter responds to your May 6, 2013 letter and provides additional information about the CAPE Project and results of AK's biological investigations.

An Environmental Report, required as part of the Federal Energy Regulatory Commission ("FERC") Section 7(c) application and National Environmental Policy Act ("NEPA") review process, is currently being prepared for the Project (FERC Docket No. PF13-10-000). In accordance with the FERC's NEPA responsibilities, the Project is subject to review under Section 7 of the Endangered Species Act ("ESA") and its implementing regulations (50 CFR 402), the Fish and Wildlife Coordination Act, and the Migratory Bird Treaty Act. To further address the possibility of the Project to affect protected species and/or habitat, AK is providing additional correspondence summarizing the habitat associations throughout the Project action area in an attempt to complete the informal consultation process under the ESA. These habitats were documented during the pedestrian field survey for wetlands and waterbodies.

Action Area Description

The action area (50 CFR 402.02), which includes all areas of proposed disturbance, is located in central Arkansas through or near the Towns of Conway, Mayflower, Maumelle, North Little Rock, and Little Rock. As part of the Project, CEGT is proposing the installation of approximately 28.5 miles of 12-inch-

diameter natural gas pipeline and ancillary facilities in Pulaski and Faulkner Counties, Arkansas. The proposed pipeline, to be named Line BT-39, will be constructed primarily on new alignment, and will provide replacement transmission service for a portion of two existing CEGT natural gas pipelines (Lines B and BT-14). CEGT will also construct metering and appurtenances at seven new or modified locations along the Line BT-39 pipeline route and tie-in points to the existing Line BT-14 pipeline, as well as two 4-inch-diameter laterals (Lines BT-40 and BT-41) to provide natural gas deliveries to its distribution affiliate. As currently proposed, ownership of an approximately 12.4-mile-long segment of the existing Line BT-14 pipeline through the City of Conway would be transferred to CEGT's distribution affiliate, and an approximately 21.7-mile-long segment of the existing Line B pipeline, extending from Conway to North Little Rock, would be retired from service. Other minor ancillary facilities and small diameter pipelines (Line BM-1, Line BT-19, and a portion of Line BM-21) within the City of Conway would also be retired in association with the proposed Project.

Action Area Assessment

On behalf of CEGT, qualified AK biologists conducted field assessments for wetlands, waterbodies, and habitat associations throughout the action area. Field assessments were conducted on the original proposed alignment, alternate route, and abandonment areas from October 1-12, 2012. A second round of field surveys to cover re-routes, additional access roads, and an additional ancillary facility occurred from January 28-30, 2013. A 200-foot-wide corridor was surveyed along the proposed pipeline route, except at road crossings where planned extra work space necessitated an expansion of the survey corridor. Proposed access roads were surveyed at a width of 50 feet. Yards, other ancillary facilities, and abandonment sites included a survey area that was site-specific. Refer to the attached figures for a depiction of the Project location and facilities surveyed as part of the field assessments.

In general the action area consists of:

- Proposed Facilities: Approximately 595 acres of study corridor for potential new pipeline routes and appurtenant facilities,
- Abandoned Facilities: Approximately 76 acres of study corridor for abandonment pipelines and associated facilities,
- Approximately 5.5 acres of wareyards, and
- Approximately 141 acres of access roads (50-foot-wide corridor).

According to the federally listed species information obtained from the USFWS and the Arkansas Natural Heritage Database, five species, the red-cockaded woodpecker (*Picoides borealis*), interior least tern (*Sterna antillarium athalassos*), running buffalo clover, (*Trifolium stoloniferum*), piping plover (*Charadrius melodus*), and the bald eagle (*Haliaeetus leucocephalus)* are reported to exist within the

region. Publications of the USFWS, NatureServe, and other online resources were consulted to confirm that no designated or proposed critical habitats (as per 50 CFR 17) exist within the action area.

Table 1 presents the federally protected wildlife species with documented habitat and/or range requirements known to exist within the region. The table includes the listing status and the habitat and/or range requirements of each species as available.

TABLE 1
Federally Protected Species Occurring within the Region

Common Name	Scientific Name	Status[1]	Habitat Requirement[2,3,4,5]	Suitable Habitat Present
Birds				
red-cockaded woodpecker	*Picoides borealis*	FE	Mature pine forests, specifically those with long leaves	Unlikely to occur in action area
interior least tern	*Sterna antillarum athalassos*	FE	Sand and gravel islands in the Arkansas and Mississippi Rivers.	Unlikely to occur in action area
piping plover	*Charadrius melodus*	FT	Nests on open, sparsely vegetated sand or gravel beaches adjacent to alkali wetlands and on beaches, sand bars, and dredged material islands of major river systems.	Unlikely to occur in action area
bald eagle	*Haliaeetus leucocephalus*	R / BGEPA	Estuaries, large lakes, reservoirs, rivers, and some seacoasts.	Unlikely to occur in action area
Plants				
running buffalo clover	*Trifolium stoloniferum*	FE	Mesic woodlands in partial to filtered sunlight, where there is a pattern of moderate periodic disturbance for a prolonged period, such as mowing, trampling, or grazing. Limestone or calcareous substrate.	Unlikely to occur in action area

Notes:
[1]Legal Status:
FE – Federally Endangered. **FT** – Federally Threatened.
R – Recovery/Delisted
BGEPA – Bald and Golden Eagle Protection Act
[2]Source: Additional details of Habitat Requirements were obtained from NatureServe Explorer (http://www.natureserve.org/explorer/).
[3]Source: Illinois Wildflowers (http://www.illinoiswildflowers.info/index.htm).
[4]Source: Additional details of Habitat Requirements were obtained from Arkansas Oil and Gas Commission (http://www.naturalheritage.com/!userfiles/Fayetteville_shale_bmp.pdf).
[5]Source: Additional details of Habitat Requirements were obtained from USFWS Species Reports (http://ecos.fws.gov/tess_public/pub/stateListingAndOccurrenceIndividual.jsp?state=AR&s8fid=112761032792&s8fid=112762573902).

The northern portion of the new pipeline corridor primarily includes a reclaimed landfill, a sand quarry, and relatively contiguous tracts of second growth woodland associated with residential subdivisions and stream corridors. The northern portion of the abandonment corridor includes a reclaimed landfill and extensive urban and suburban development in and around the Town of Conway.

As the proposed action area traverses south, the land use becomes a mix of rural single family homes, pastures, fallow fields and fragmented forests that have been compromised by rural roads, overhead power line corridors, or active farmland. The southern portion of the action area is dominated by Camp Robinson, a larger contiguous tract of primarily undeveloped land. The new pipeline corridor through Camp Robinson is within or immediately adjacent to a routinely plowed fire break that primarily includes herbaceous and shrubby invasive species. The abandonment corridor through Camp Robinson appears to only be maintained periodically to remove woody vegetation, however, the herbaceous layer is primarily left unmaintained.

The federally listed species with documented habitat include the following threatened and endangered species. The red-cockaded woodpecker is found in mature, long leaf, pine forests. The interior least tern prefers sand and gravel islands in the Arkansas and Mississippi Rivers. The piping plover nests on open, sparsely vegetated sand or gravel beaches, sand bars, and islands of major river systems. The bald eagle inhabits undisturbed areas near large lakes and reservoirs, marshes and swamps, or stretches along rivers or seacoasts, where they can find open water and their primary food, fish. The running buffalo clover is found in mesic woodlands in partial to filtered sun. It occurs in areas of moderate disturbance for a prolonged period, such as mowing, trampling, or grazing.

None of these species were observed to be within the action area at the time of the assessments in October 2012 and January 2013.

Findings

There is one location throughout the proposed and existing pipeline corridors that includes mature, long leaf, pines. This area is located in Camp Robinson, in the southern portion of the action area. As it relates to the abandonment pipeline, this pipeline corridor is devoid of mature trees and the work proposed here is simply to access valve locations for decommissioning. The proposed new pipeline corridor is located within or immediately adjacent to a routinely plowed fire break that ranges from 50 to 100 feet wide. There may be scattered individual pine trees that will be felled, but there are no large stands of long leaf pine trees that will be removed as part of the undertaking. Due to the minimized tree removal, combined with the transient nature of the red-cockaded woodpecker, it is believed there will be no significant impact to this species.

The interior least tern, piping plover, and bald eagle prefer islands, sand beaches, and/or larger bodies of water to hunt and nest. The nearest point of the proposed new pipeline corridor to the Arkansas River is approximately 500 feet. This location is within an active sand quarry and in an area that was cleared by the USFWS in a letter to AECOM, dated February 13, 2012 (reference Nos. TA0731 and TA1026). The nearest point of the retirement pipeline to Lake Conway is approximately 2,000 feet. The majority of the activities in this area are proposed for retirement in place. There will be some work at existing tap sites that will be conducted using existing access roads or the existing corridor. Although

the action area is within proximity to the Arkansas River and Lake Conway, it is believed there will be no significant impact to these birds.

The preferred habitat of the running buffalo clover may exist throughout the extreme northern, central, and extreme southern portions of the proposed action area. As previously noted, the northern portion was cleared by the USFWS as of February 13, 2012. In addition, the forested areas within the central portion of the new corridor are steeper, rockier, and exhibit a more xeric moisture regime. Also, according to the revised USFWS endangered species inventory dated March 5, 2013, there are currently no known individuals or populations of running buffalo clover in Faulkner County, which includes the northern and central portions of the action area.

The revised inventory does indicate known individuals or populations in Pulaski County, which corresponds with the southern portions of the action area. According to NatureServe, running buffalo clover prefers limestone and other calcareous substrates. It should be noted, that the geology underlying this portion of the action area includes Quaternary sands, gravels, and alluvium (associated with floodplains). It is also underlain by the Upper and Lower Atoka formations and the Jackfork Sandstone formation. According to the Arkansas Geologic Survey, these formations are composed primarily of sandstones and shales, and rarely include calcareous beds. Furthermore, according to the United States Department of Agriculture, Natural Resources Conservation Service, the soils underlying the southern portion of the action area include members of the Leadvale, Linker, and Mountainburg series. Based upon the chemical soil properties for these soils, they are not alkali soils and have mid-to low pH's that range from 4.5 to 6. Therefore, it is believed any known occurrences of running buffalo clover in Pulaski County would likely occur in calcareous substrates located outside of the action area.

The findings of this informal biological assessment indicate that designated and proposed critical habitat (as per 50 CFR 17) or habitats suitable for supporting the federally protected species are likely not present at or in the immediate vicinity of the action area. In addition, no individuals of any federally listed or proposed wildlife species were observed at or in the immediate vicinity of the action area.

CEGT will implement the FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* ("Plan") and *Wetland and Waterbody Construction and Mitigation Procedures* ("Procedures") during construction. The Plan and Procedures provide baseline mitigation measures to control erosion, enhance revegetation, and minimize the extent and duration of construction-related disturbances to environmental resources.

Based upon the nature and location of the undertaking, the data reviewed, site reconnaissance, the comparison of habitat present with habitat necessary to support the continued existence of the listed and proposed species, and the construction mitigation measures, CEGT has determined this Project will not adversely affect listed and proposed species. CEGT respectfully requests USFWS concurrence with that determination.

If you require additional information, please contact me at your earliest convenience.

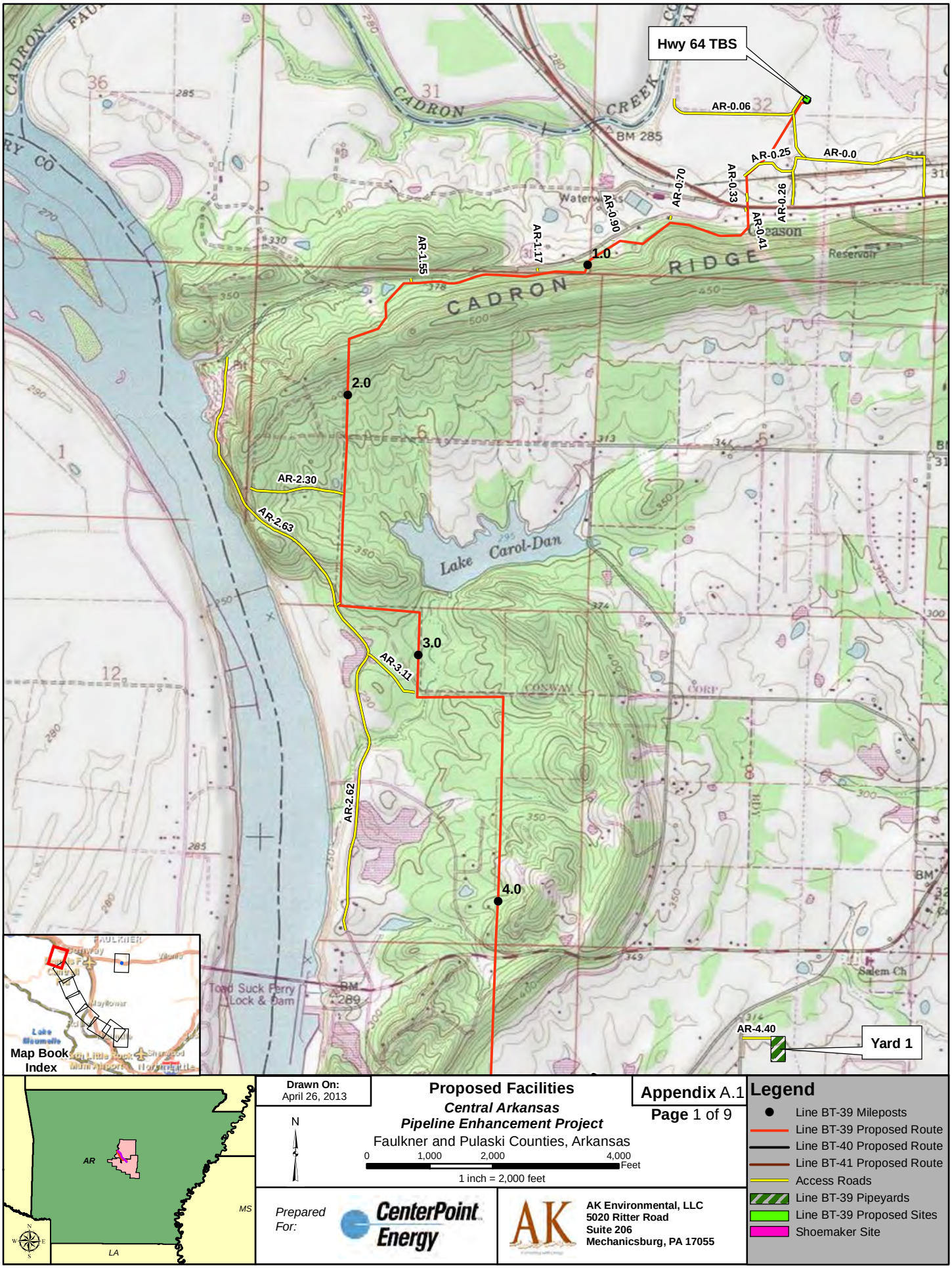
Sincerely,

Rebecca Weissman
Deputy Project Manager

Scott V. Mowery, PWS
Wetland Ecologist

Enclosures: USGS Mapping – Proposed Facilities (9 sheets)
USGS Mapping – Retirement Facilities (10 sheets)

cc: S. Urwick
E. Dilts



Drawn On: April 26, 2013

Proposed Facilities

Central Arkansas
Pipeline Enhancement Project

Faulkner and Pulaski Counties, Arkansas

0 1,000 2,000 4,000 Feet

1 inch = 2,000 feet

Appendix A.1

Page 1 of 9

Prepared For: CenterPoint Energy

AK Environmental, LLC
5020 Ritter Road
Suite 206
Mechanicsburg, PA 17055

Legend

- Line BT-39 Mileposts
- Line BT-39 Proposed Route
- Line BT-40 Proposed Route
- Line BT-41 Proposed Route
- Access Roads
- Line BT-39 Pipeyards
- Line BT-39 Proposed Sites
- Shoemaker Site


AR-4.40
Yard 1
AR-4.89
5.0
AR-5.21
AR-5.50
6.0
Creek
Tucker
Ridge
Donald
7.0
Bryant Road TBS
AR-7.75
AR-7.82
8.0
AR-8.10
Tupelo
Shale Pit
Belk Corner
Trailer Park
Sewage Disposal Pond
Salem Ch
New Bethel Ch
Bethel Ch
Harris Cem
Map Book Index
AR
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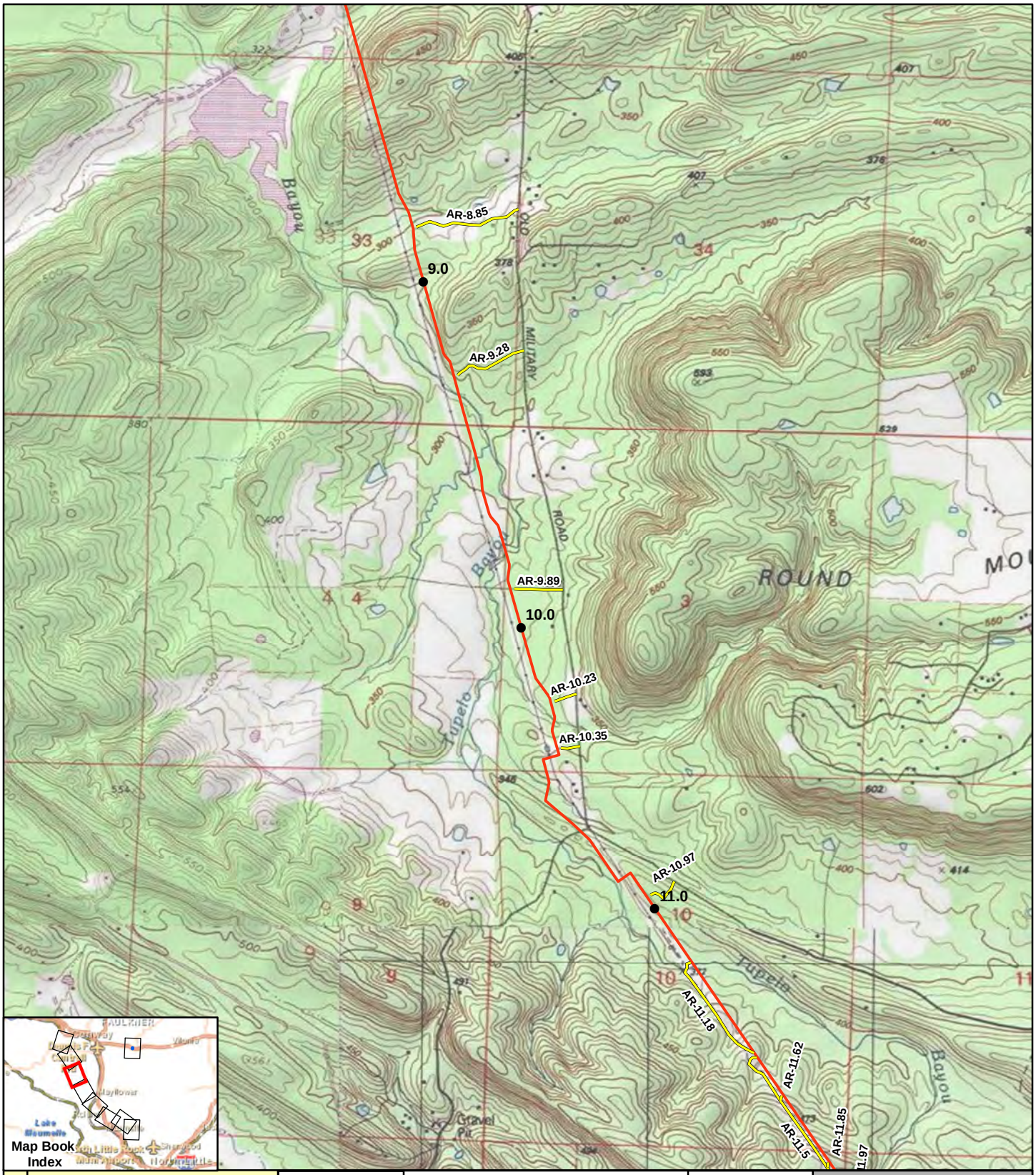
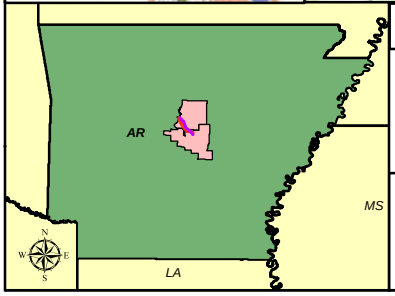
Drawn On:
April 26, 2013
Proposed Facilities
Central Arkansas
Pipeline Enhancement Project
Faulkner and Pulaski Counties, Arkansas
0 1,000 2,000 4,000 Feet
1 inch = 2,000 feet
N
Prepared For:
CenterPoint Energy
AK Environmental, LLC
5020 Ritter Road
Suite 206
Mechanicsburg, PA 17055
Appendix A.1
Page 2 of 9
Legend
Line BT-39 Mileposts
Line BT-39 Proposed Route
Line BT-40 Proposed Route
Line BT-41 Proposed Route
Access Roads
Line BT-39 Pipeyards
Line BT-39 Proposed Sites
Shoemaker Site





Drawn On:
April 26, 2013

Proposed Facilities
Central Arkansas
Pipeline Enhancement Project
Faulkner and Pulaski Counties, Arkansas

N

0 1,000 2,000 4,000 Feet
1 inch = 2,000 feet

Appendix A.1
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- Line BT-39 Pipeyards
- Line BT-39 Proposed Sites
- Shoemaker Site

Prepared For: CenterPoint Energy

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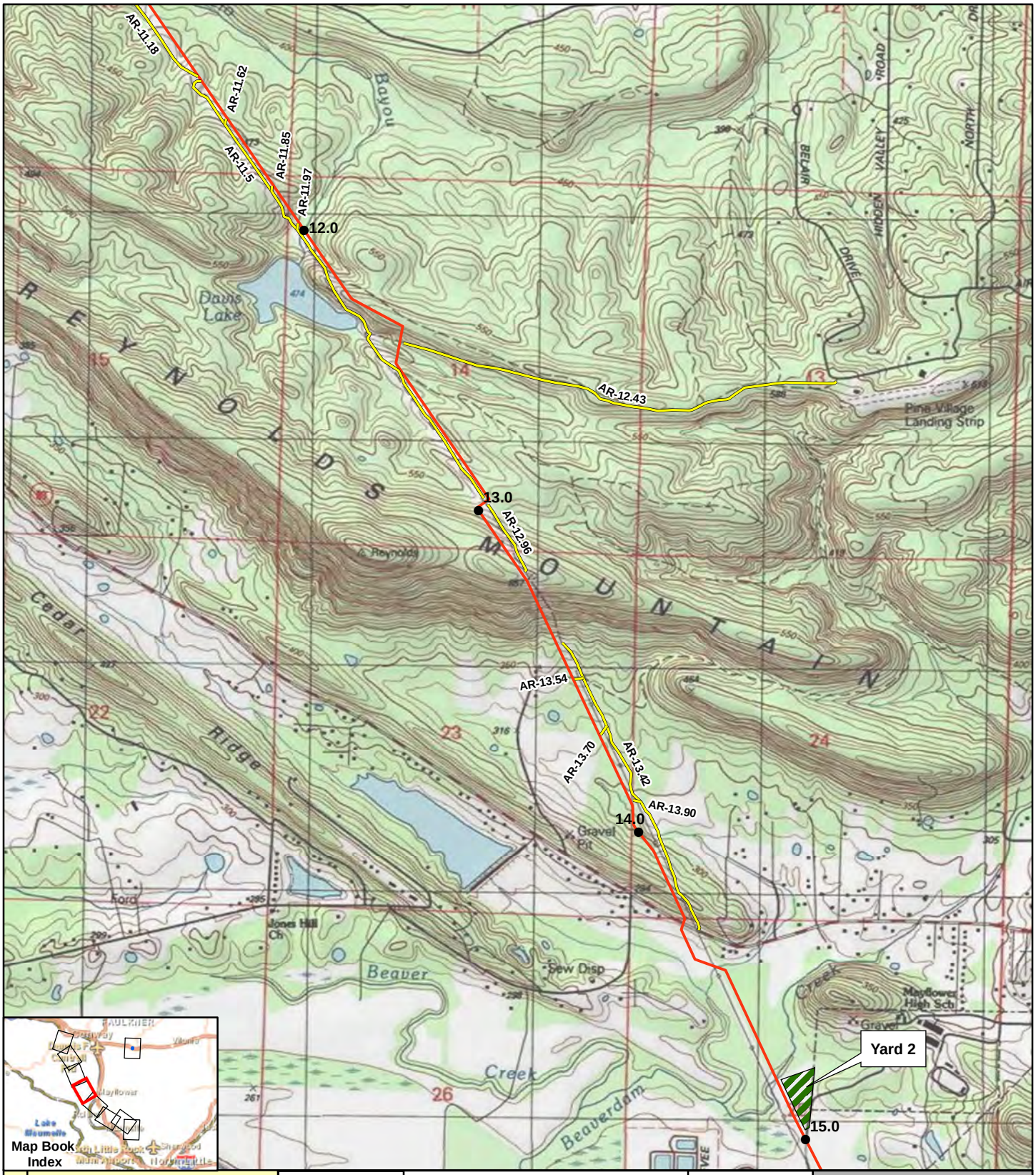
Suite 206
Mechanicsburg, PA 17055



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Proposed Facilities

Central Arkansas
Pipeline Enhancement Project
Faulkner and Pulaski Counties, Arkansas

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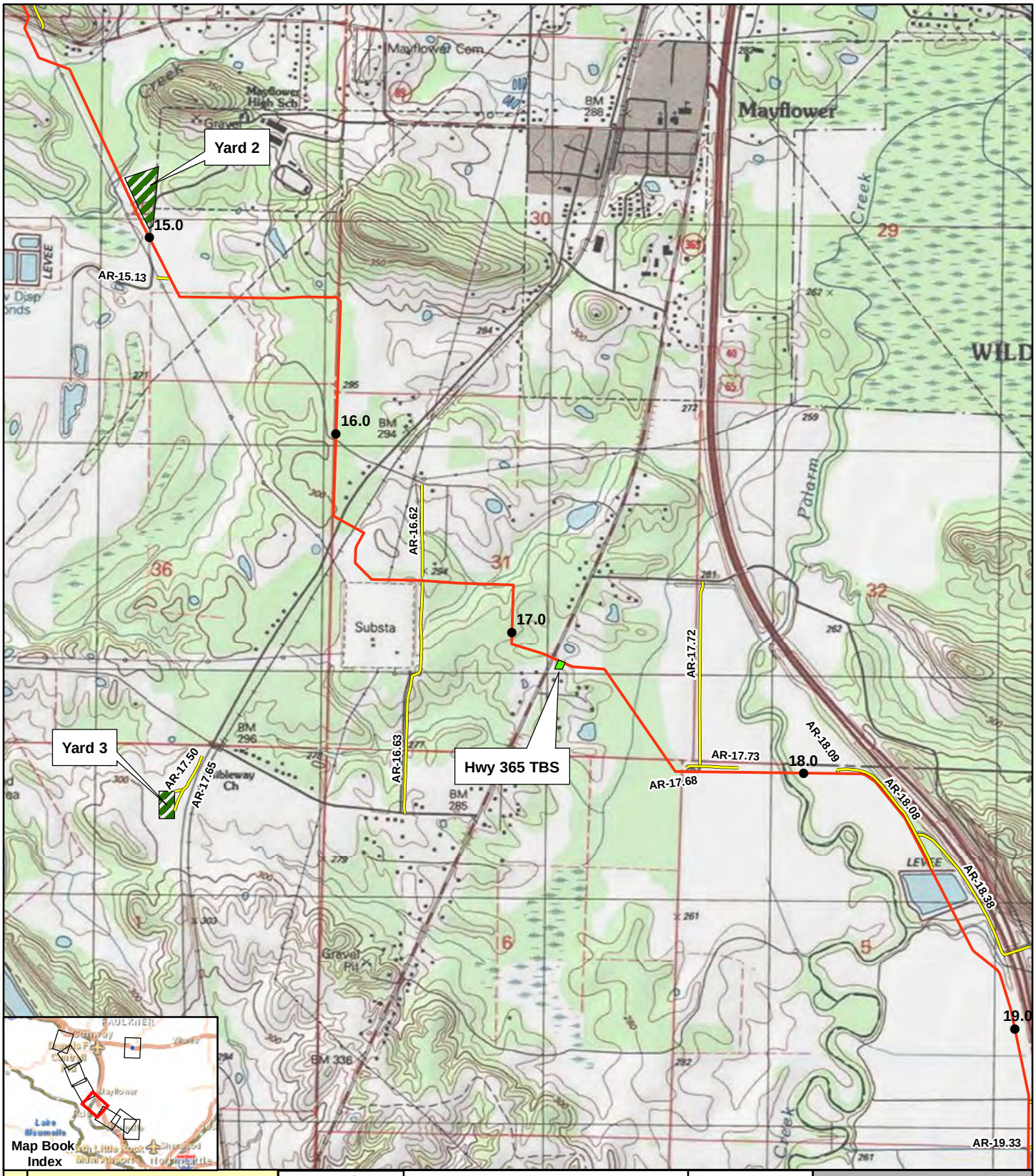

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Proposed Facilities

Central Arkansas
Pipeline Enhancement Project

Faulkner and Pulaski Counties, Arkansas

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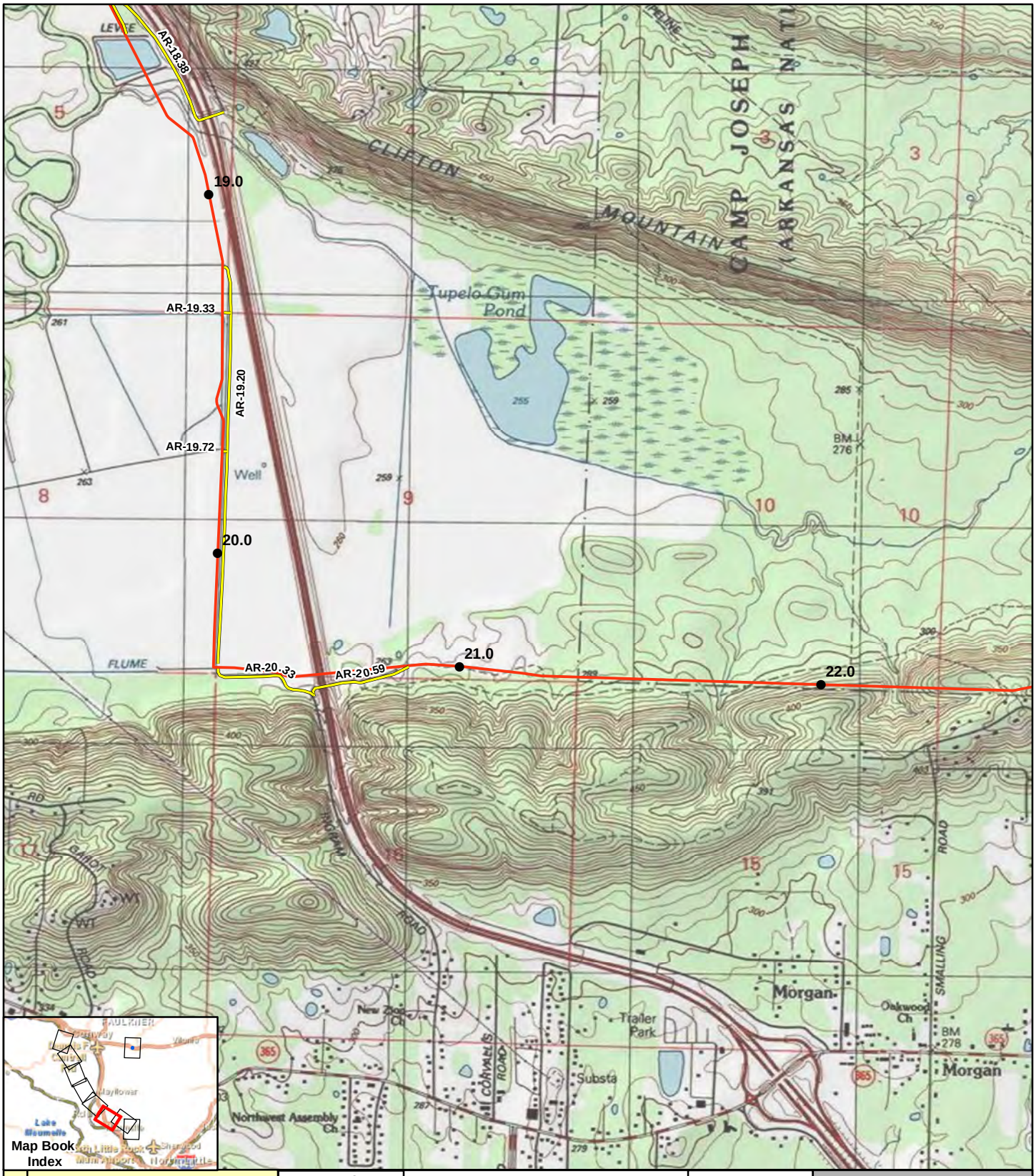

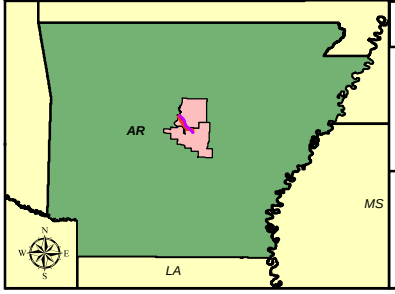

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Proposed Facilities
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Faulkner and Pulaski Counties, Arkansas

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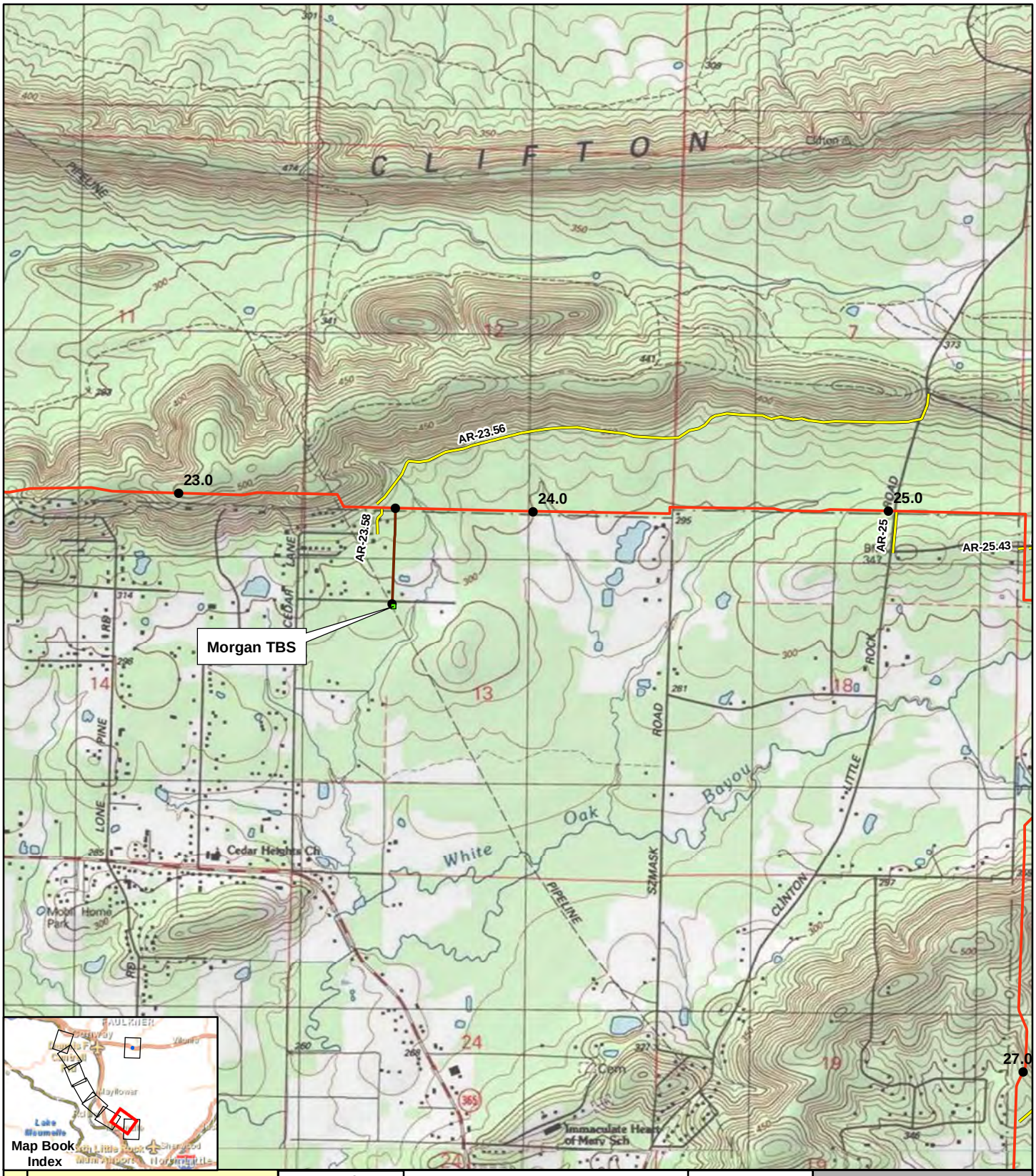

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Proposed Facilities

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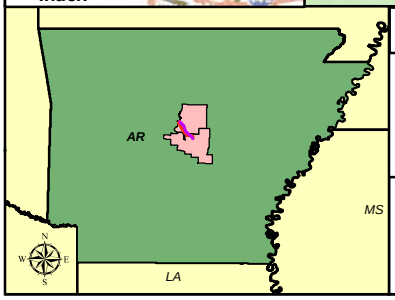

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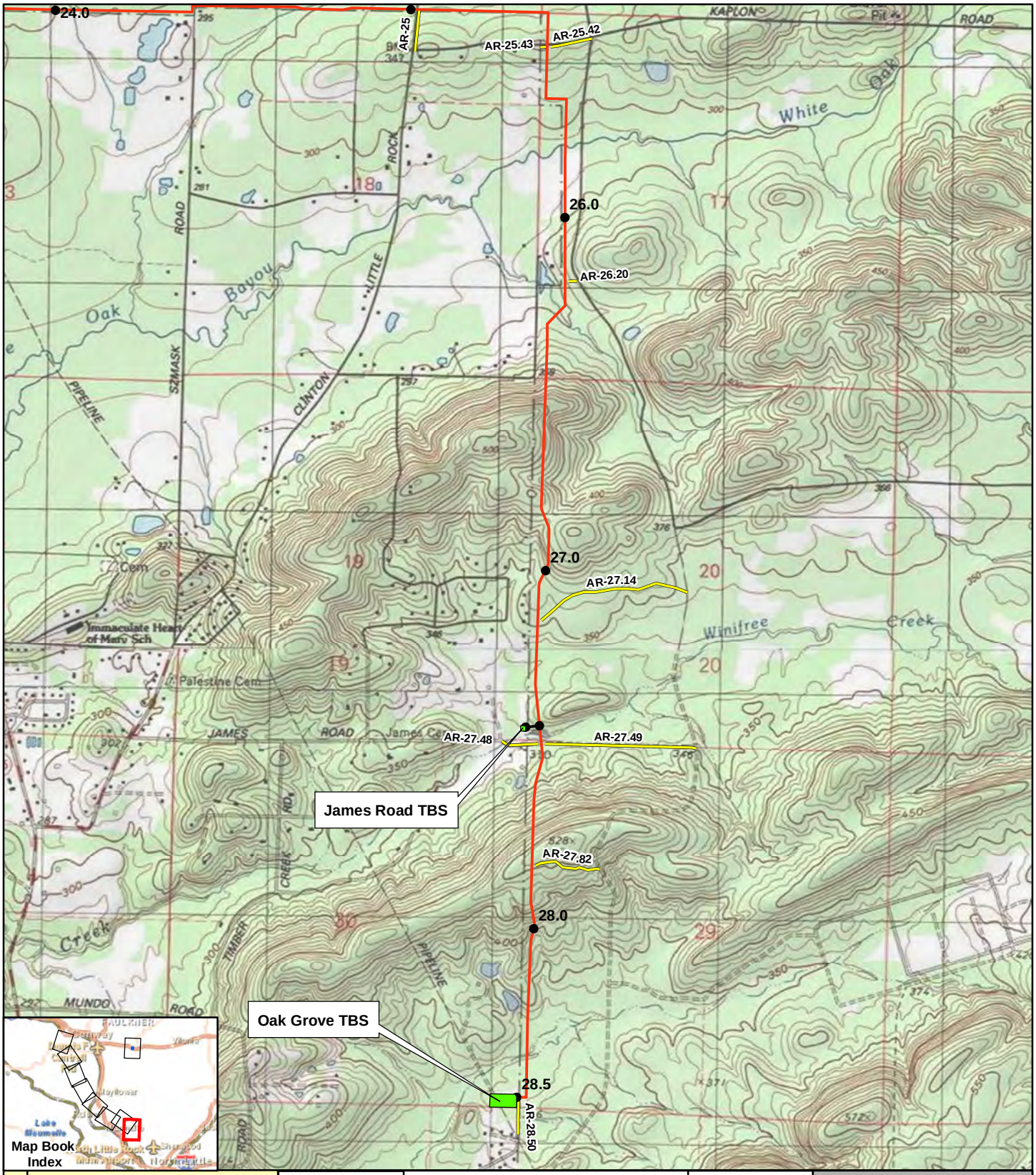
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AR-27.49
James Road TBS
AR-27.82
28.0
Oak Grove TBS
28.5
AR-28.50
Map Book Index
Drawn On:
April 26, 2013
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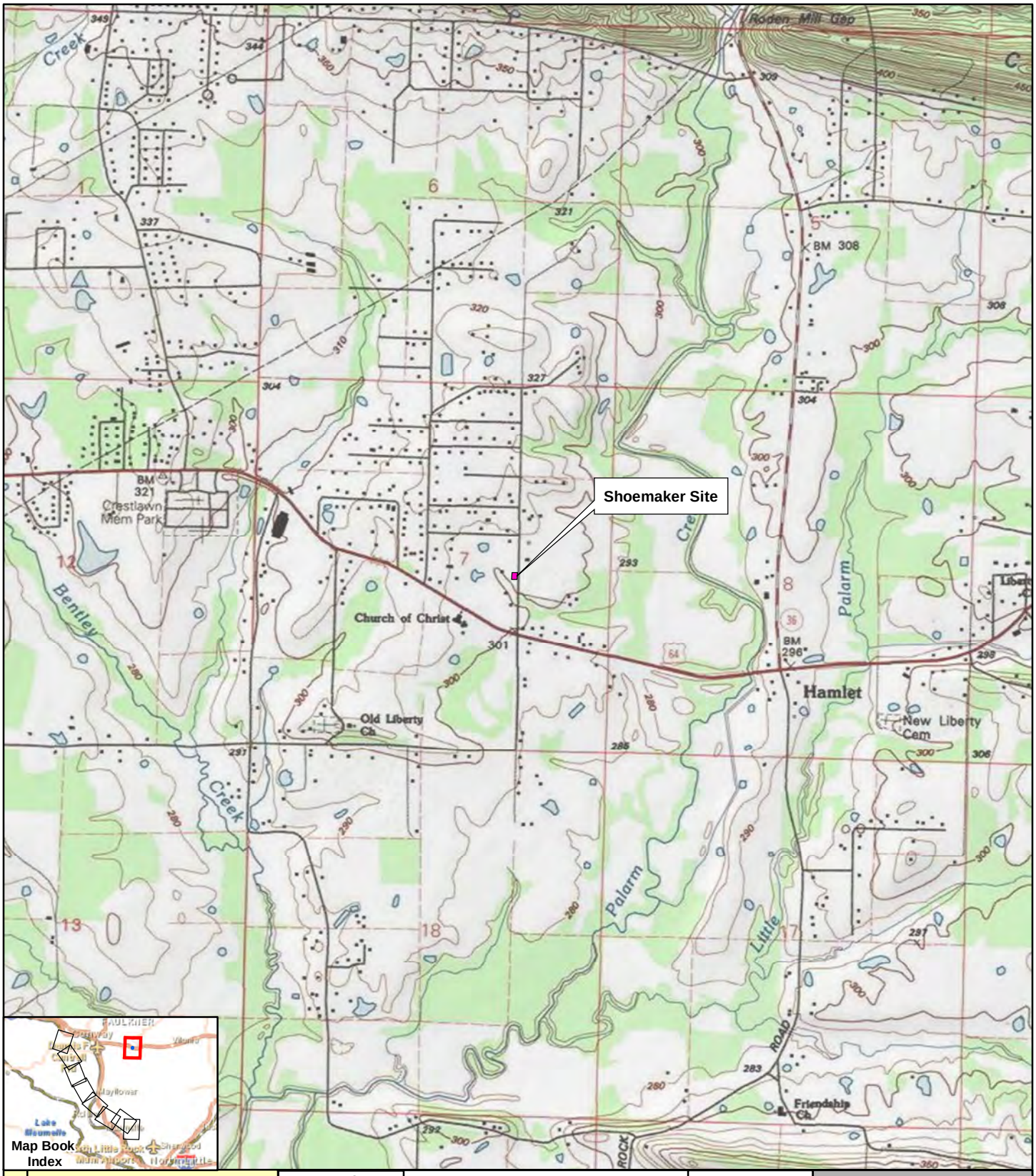

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Proposed Facilities

Central Arkansas
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Faulkner and Pulaski Counties, Arkansas

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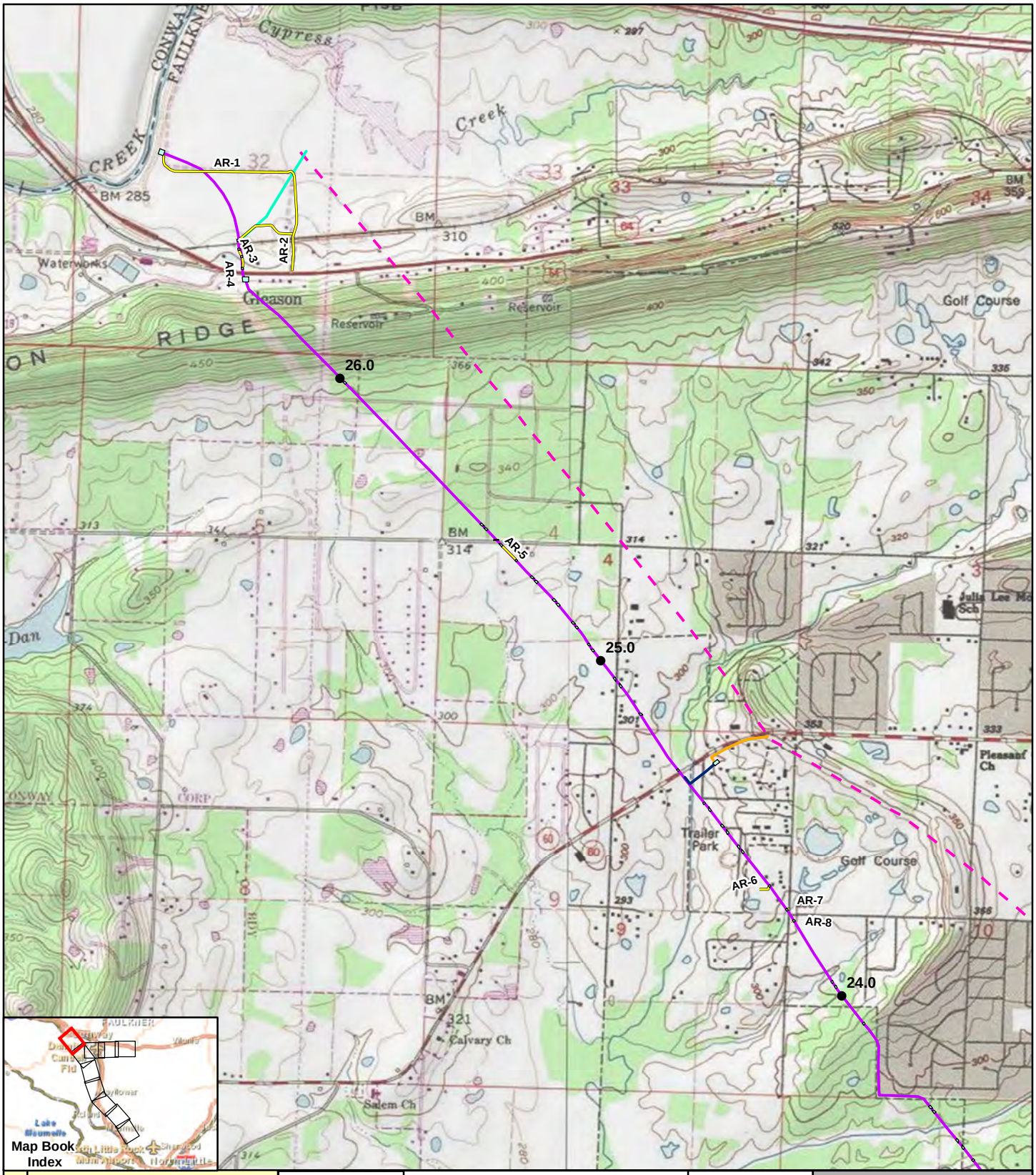

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April 26, 2013

Retirement Facilities

Central Arkansas
Pipeline Enhancement Project
Faulkner and Pulaski Counties, Arkansas

0 1,000 2,000 4,000 Feet
1 inch = 2,000 feet

Appendix A.1
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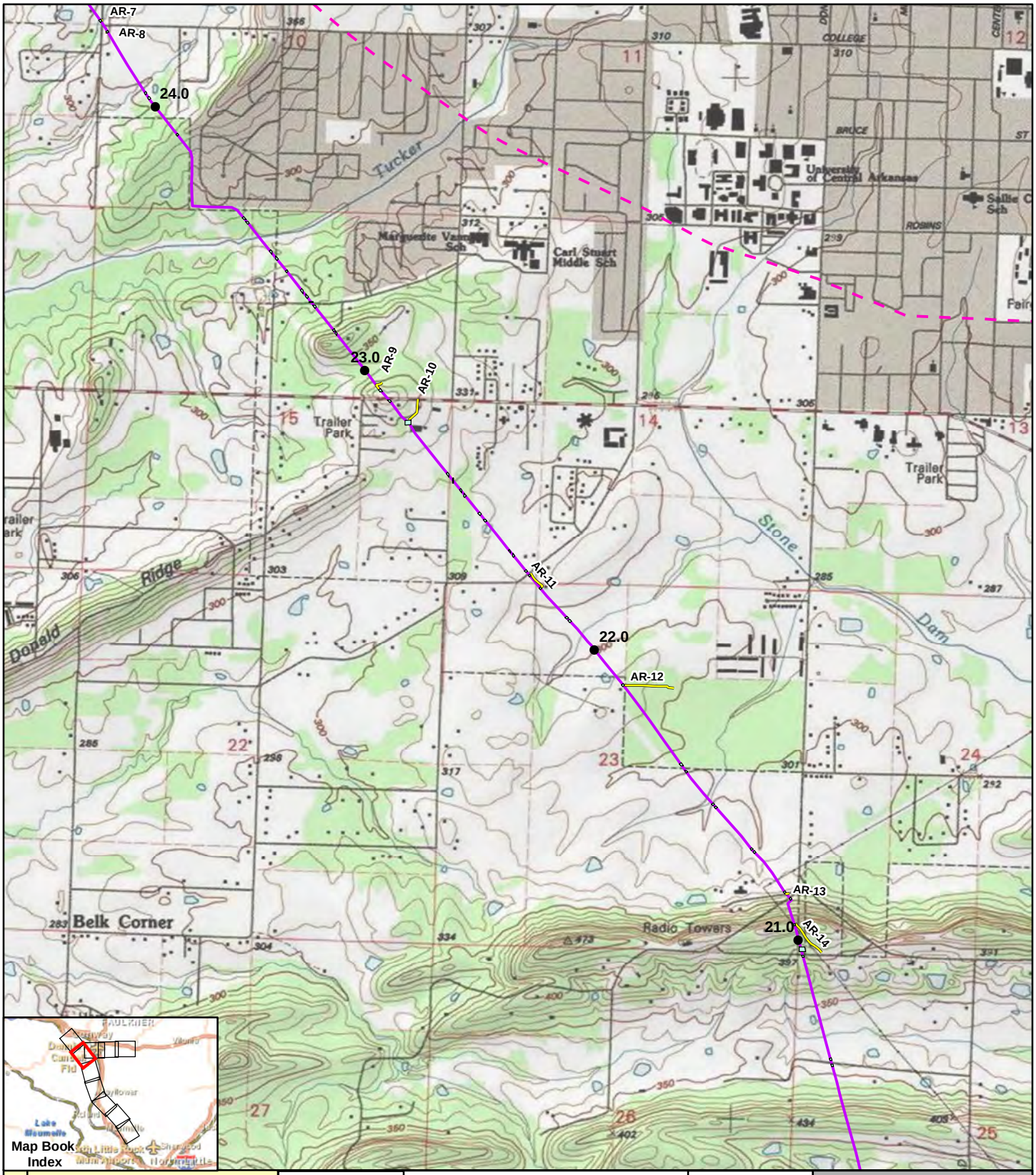

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Retirement Facilities

Central Arkansas

Pipeline Enhancement Project

Faulkner and Pulaski Counties, Arkansas

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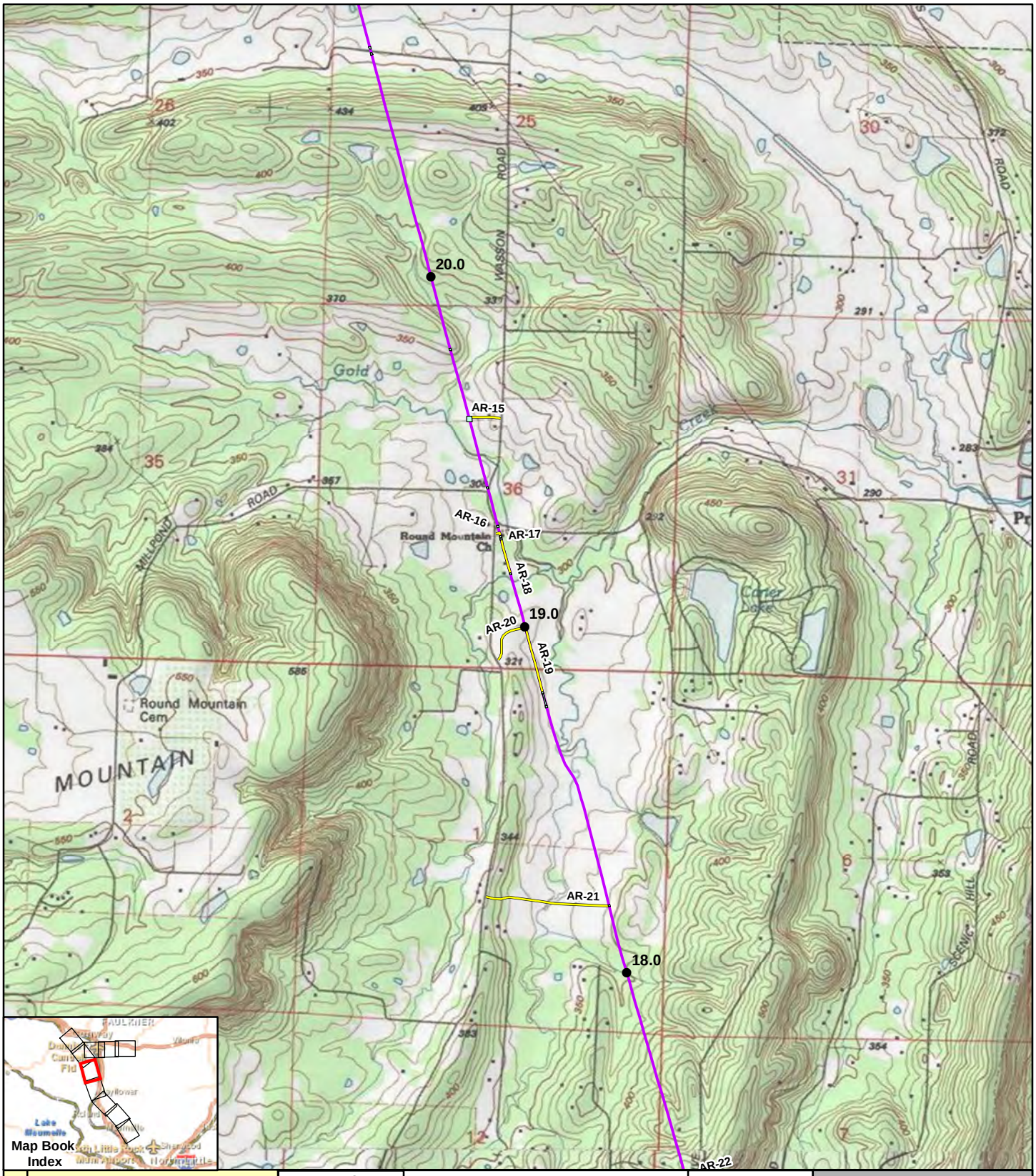

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Retirement Facilities

Central Arkansas

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Faulkner and Pulaski Counties, Arkansas

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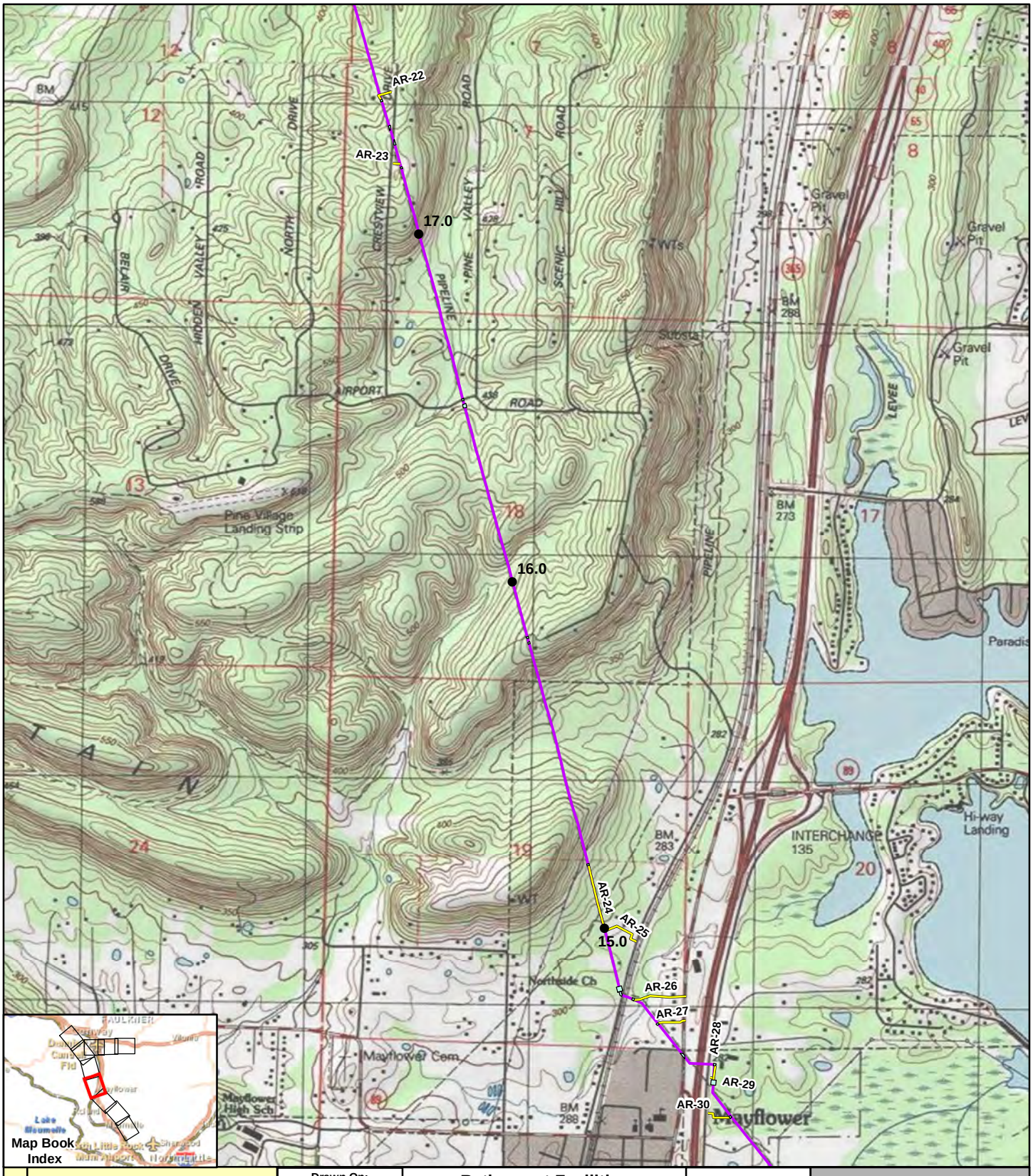

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Retirement Facilities

Central Arkansas

Pipeline Enhancement Project

Faulkner and Pulaski Counties, Arkansas

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Retirement Facilities

Central Arkansas Pipeline Enhancement Project

Faulkner and Pulaski Counties, Arkansas

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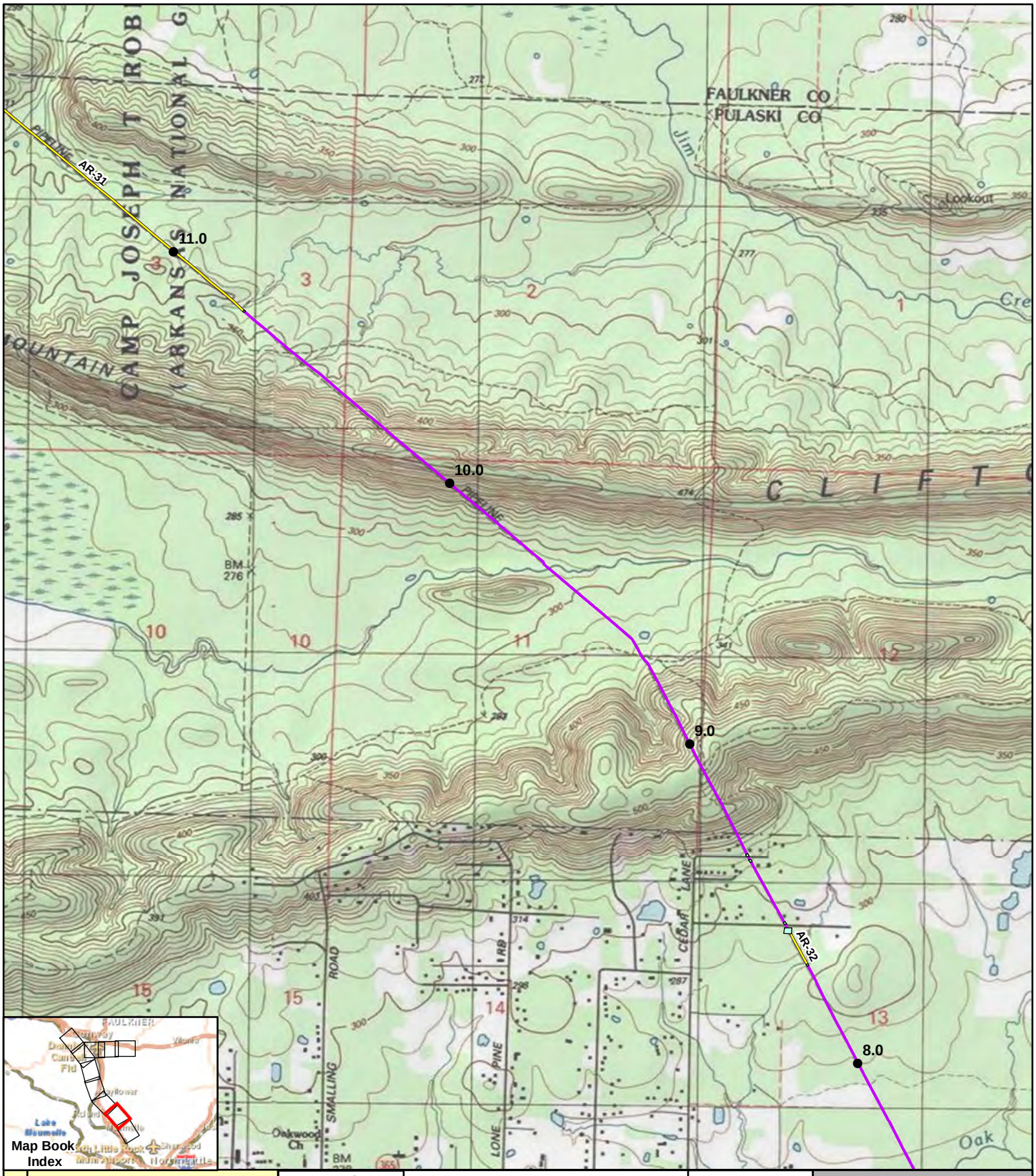

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Retirement Facilities

Central Arkansas
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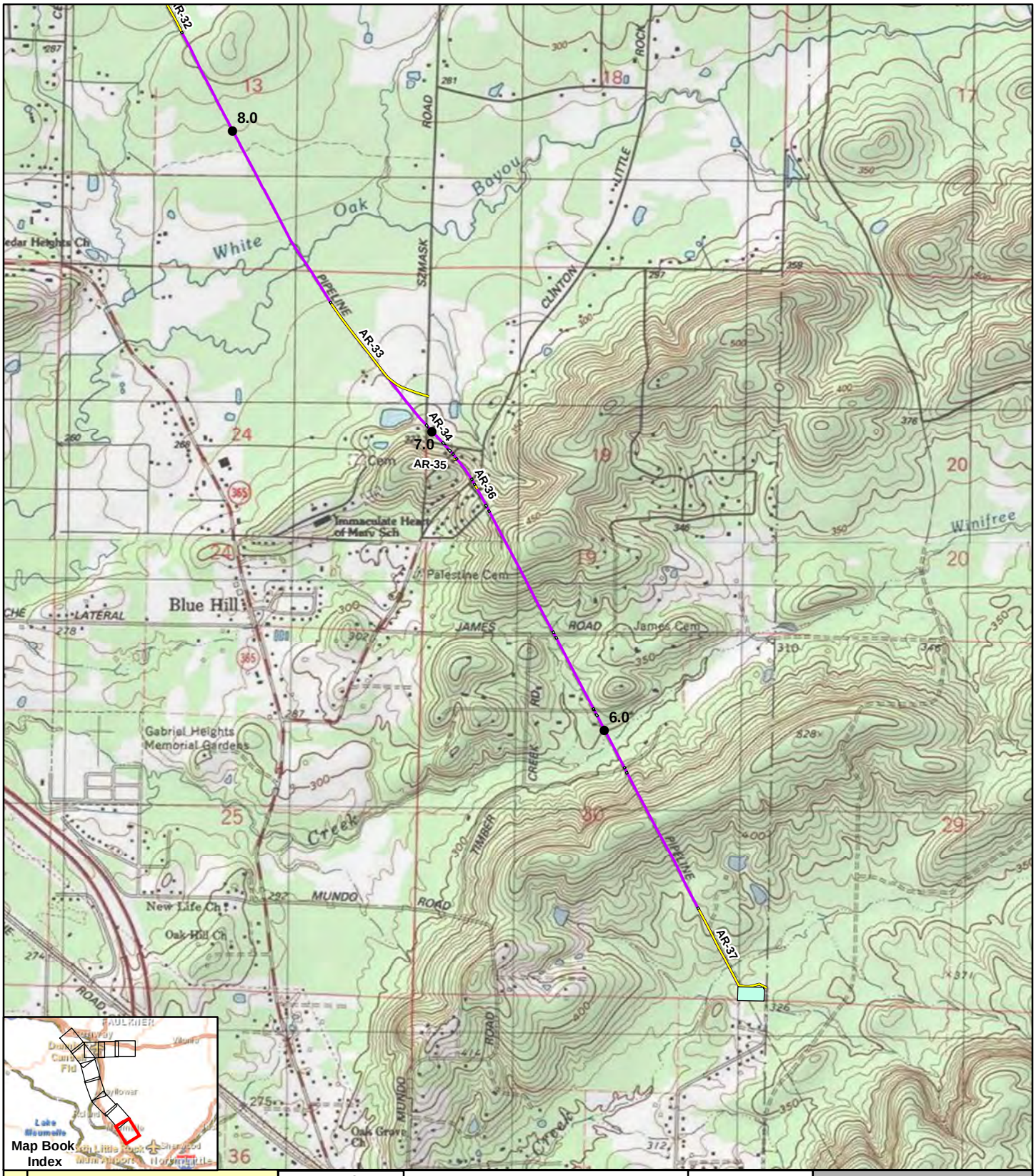

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April 26, 2013

Retirement Facilities
Central Arkansas
Pipeline Enhancement Project
Faulkner and Pulaski Counties, Arkansas

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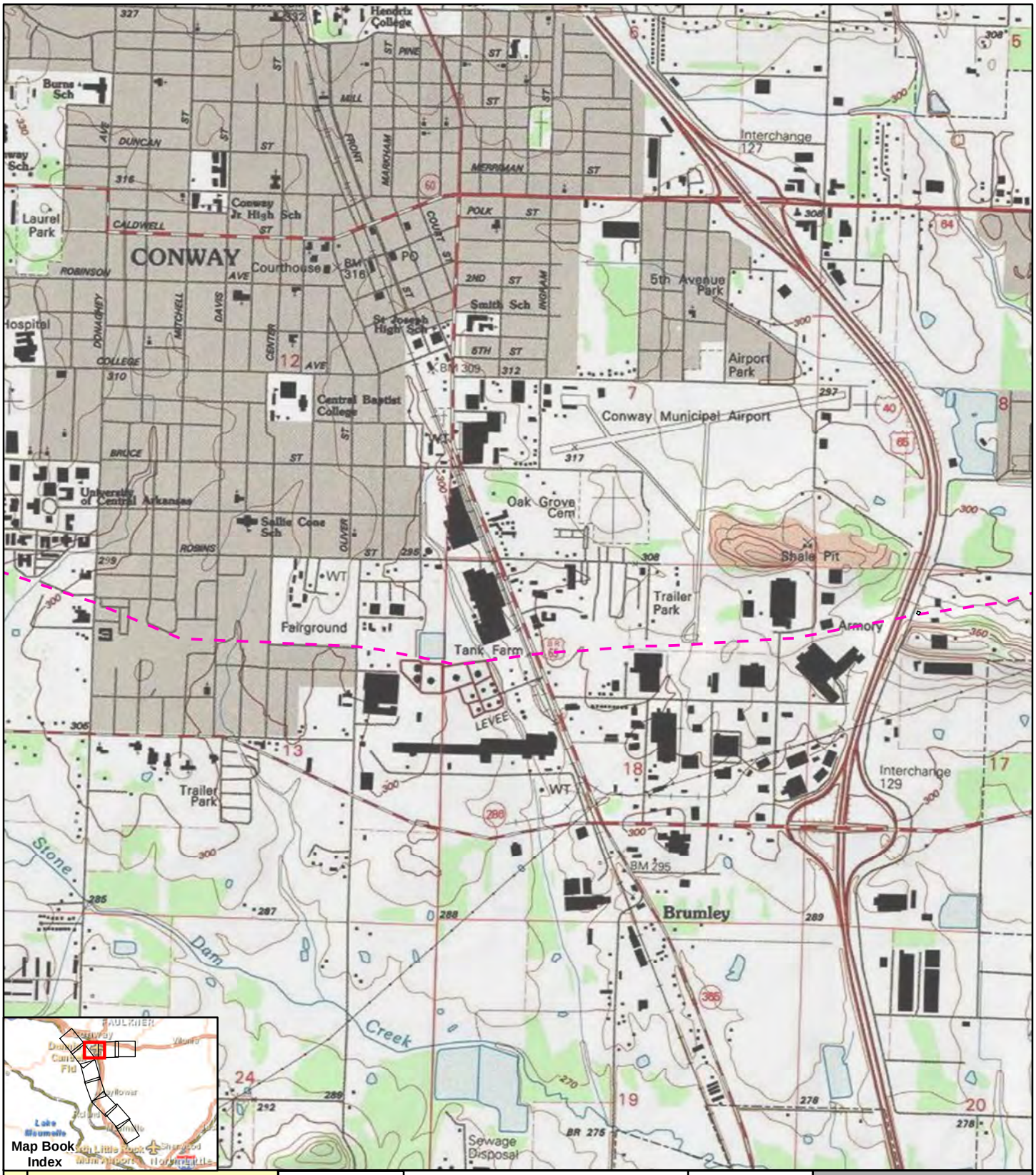

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Retirement Facilities

Central Arkansas

Pipeline Enhancement Project

Faulkner and Pulaski Counties, Arkansas

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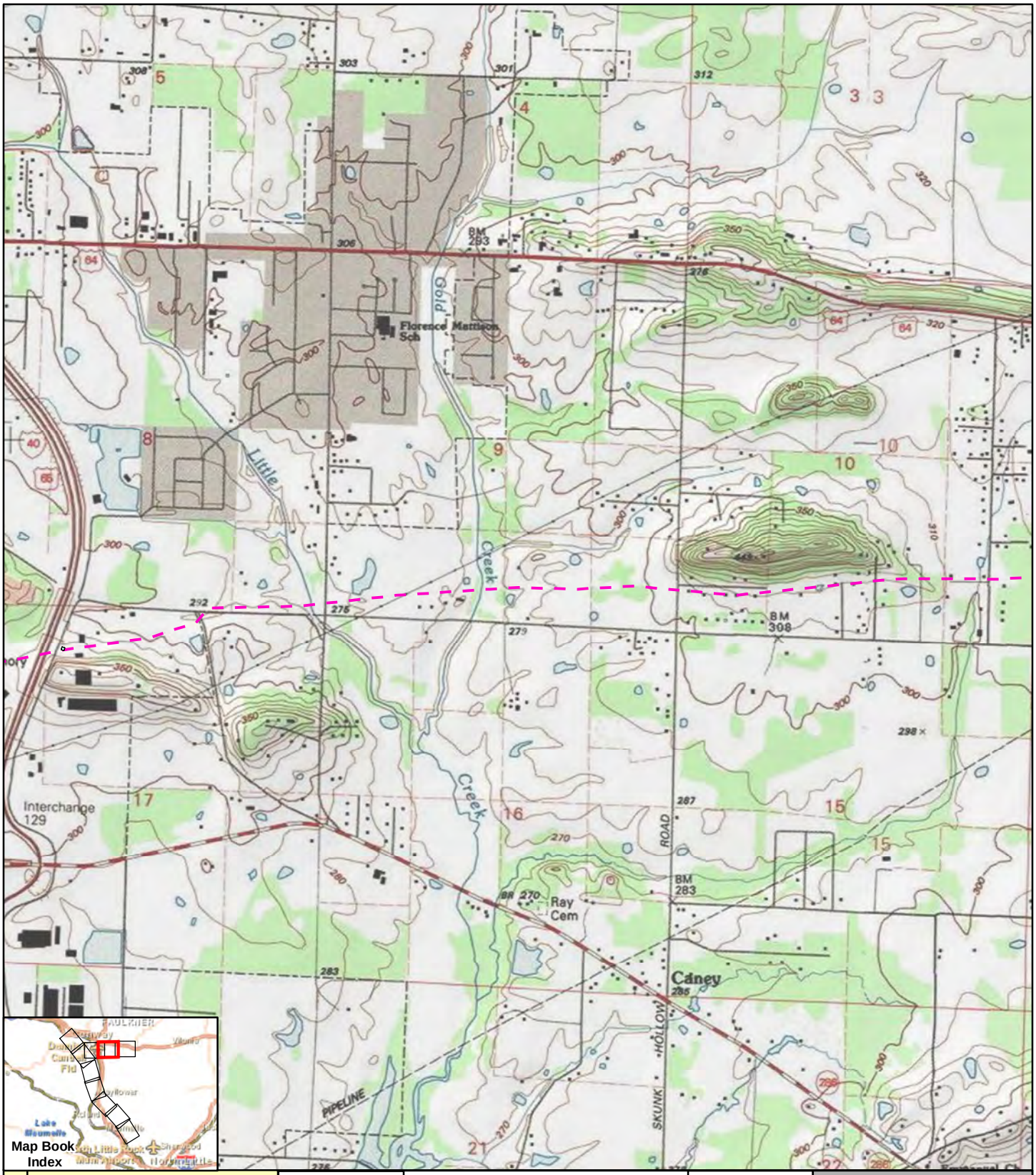

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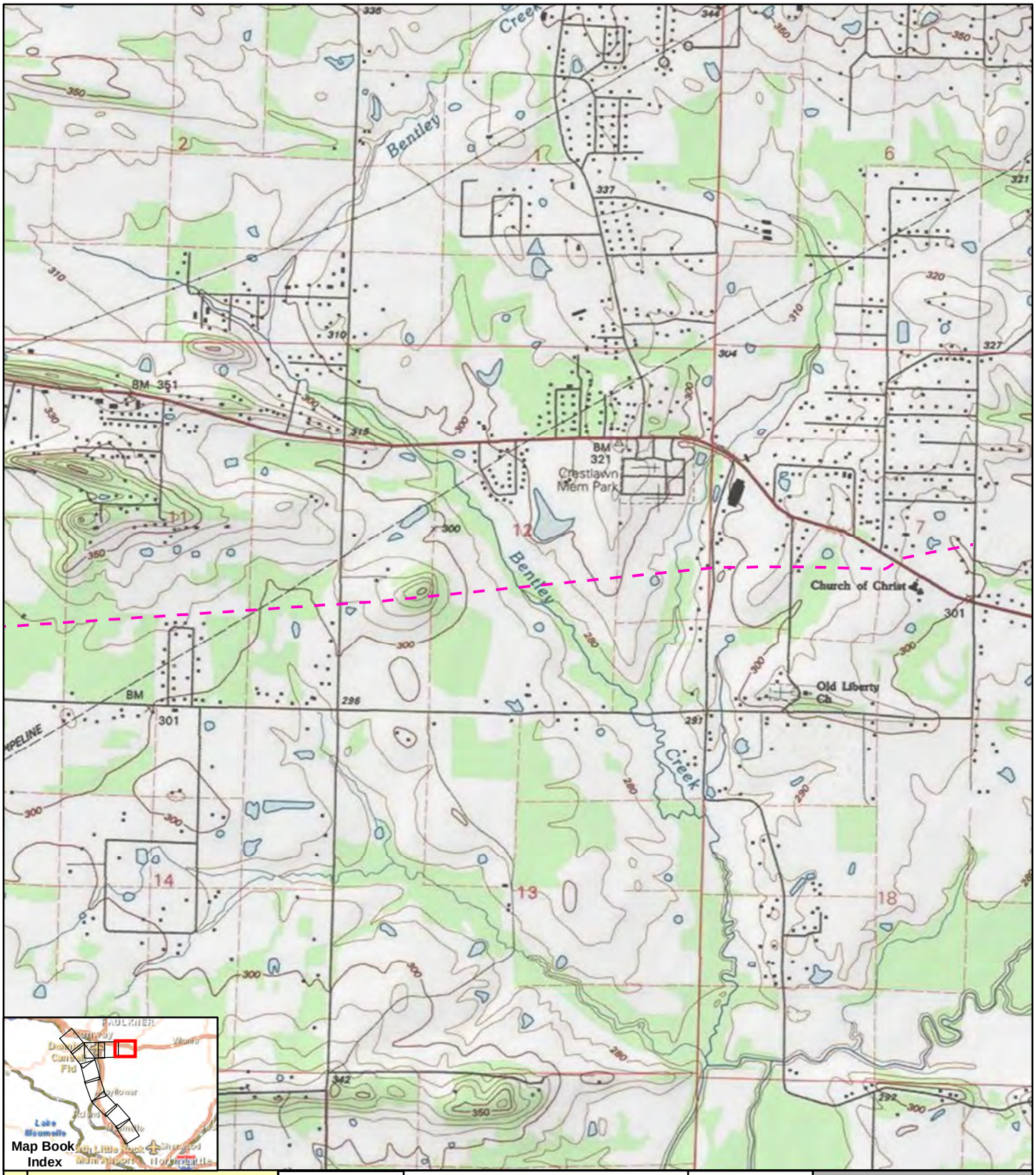

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Central Arkansas

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Faulkner and Pulaski Counties, Arkansas

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
110 S. Amity Road, Suite 300
Conway, Arkansas 72032
Tel.: 501/513-4470 Fax: 501/513-4480

IN REPLY REFER TO

May 6, 2013

Reference: TA0511

Rebecca Weissman
AK Environmental, LLC
P.O. Box 6355
Holliston, MA 01746

Dear Ms. Weissman:

The U.S. Fish and Wildlife Service (Service) has reviewed the information supplied in your letter dated April 10, 2013, regarding the proposed installation of approximately 28.5 miles of twelve inch diameter natural gas pipeline and ancillary facilities in Faulkner and Pulaski Counties, Arkansas. Our comments are submitted in accordance with the Endangered Species Act (87 Stat. 884, as amended 16 U.S.C. 1531 et seq.).

The following federally listed threatened and endangered species are known to occur in this region: Red-cockaded Woodpecker (*Picoides borealis*), Interior Least Tern (*Sterna antillarum athalassos*), running buffalo clover (*Trifolium stoloniferum*), and Piping Plover (*Charadrius melodus*). In addition, the federally protected Bald Eagle (*Haliaeetus leucocephalus*) is also known to occur in this region.

Based on information provided, there are stream crossings and waterways included in the proposed project. We recommend Best Management Practices be incorporated into construction occurring in riparian zones and at stream crossings. These streams may be considered Waters of the United States and may have adjacent wetlands that require a Clean Water Act Section 404 permit prior to being altered. Therefore, we recommend you contact the U.S. Army Corps of Engineers Little Rock District office for additional information. They can be contacted at (501) 324-5295.

The comments herein are for the sole purpose of providing technical assistance to the action agency or for individual pre-project planning assistance. These comments and opinions should not be misconstrued as an "effect determination" or considered as concurrence with any proceeding determination(s) by the action agency in accordance with Section 7 of the ESA. These comments do not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, a finding concurrence letter, etc.) from the Service, both lethal and nonlethal "take" of protected species are in violation of the ESA.

We appreciate your interest in the conservation of endangered species. If you have any questions, please contact the Arkansas Ecological Services Staff at (501) 513-4487.

Sincerely,

for Jim Boggs
Project Leader

Chad Milligan

From: Sheehan, Jennifer <jesheehan@agfc.state.ar.us>
Sent: Wednesday, July 31, 2013 4:31 PM
To: Chad Milligan
Subject: RE: CenterPoint Energy - CAPE Project

Hello Chad,

Our biologist were able to get back to me today. From their review AGFC has the following comments:

- With regard to fishery types crossed, according to the map provided, all crossings will be warm water streams
- AGFC sees no need for construction time requirements when crossing the streams in the project area
- AGFC recommends that established BMP's (best management practices) be utilized when crossing all waterways
- AGFC has no concerns related to the proposed route in relation to Bell Slough WMA, however it appears that there is an access road planned on Bell Slough WMA, on the existing pipeline route. What is the intent of this access road as it leads to nothing on the map?

Please let me know if you need additional information,
Jen

From: Chad Milligan [mailto:CMilligan@ak-env.com]
Sent: Wednesday, July 31, 2013 10:32 AM
To: Sheehan, Jennifer
Subject: RE: CenterPoint Energy - CAPE Project
Importance: High

Jennifer,

As per our discussion this morning, we are looking to acquire information from the Arkansas Game and Fish Commission regarding fishery types along the proposed route as well as construction requirements with regards to time guidelines. CenterPoint Energy is requesting to be allowed to perform construction activities throughout the full calendar year if necessary. Are they any restrictions by the AGFC that would prohibit CenterPoint from completing these tasks? I have attached a general overview map depicting the areas where construction activities will take place. Please review this map and provide the information requested below. If you have any questions, please don't hesitate to contact me at 717.919.5299 or at my office at 717.458.8035.

Request:
- Fishery Types crossed
- AGFC construction time requirements

Thank you,

Chad E. Milligan | Staff Scientist
AK
5020 Ritter Road, Suite 206 | Mechanicsburg, PA 17055
t. 717.458.8035 | c. 717.919.5299
www.ak-env.com

"Consulting with Energy"

From: Chad Milligan
Sent: Wednesday, July 31, 2013 10:58 AM
To: 'jesheehan@agfc.state.ar.us'
Subject: CenterPoint Energy - CAPE Project

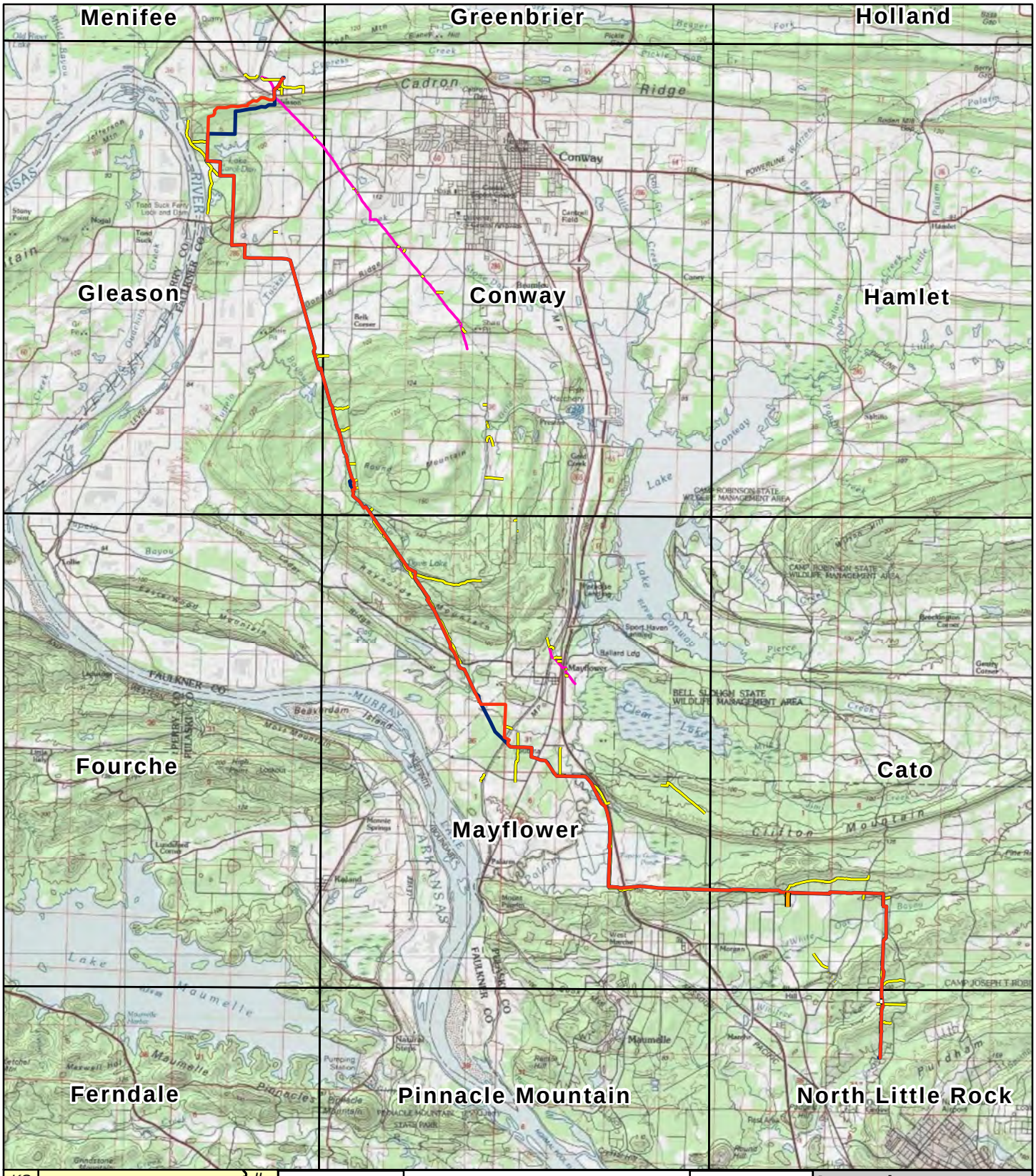
Jennifer,

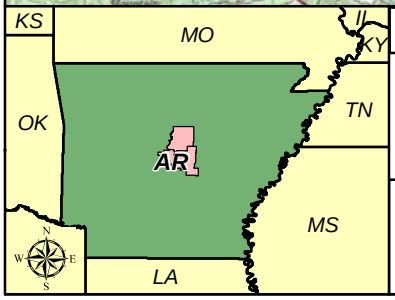
First of all, I would like to thank you for taking the time to speak to me this morning. I have attached the written version of the non-disclosure for you to look at and see if it will be possible for you to agree to it. If this is not feasible, I am allowed to send you PDF maps depicting the route without a non-disclosure agreement. Let me know your thoughts.

Thanks,

Chad E. Milligan | Staff Scientist
AK
5020 Ritter Road, Suite 206 | Mechanicsburg, PA 17055
t. 717.458.8035 | c. 717.919.5299
www.ak-env.com

"Consulting with Energy"





Drawn On:
February 6, 2013

Project Location Map
Central Arkansas
Pipeline Enhancement Project
Faulkner and Pulaski Counties, Arkansas

0 1.25 2.5 5 Miles

1 inch = 2.5 miles

Figure 1

Legend
- Line BT-39 Current Route
- Line BT-39 Original Route
- Line BT-40 Route
- Line BT-41 Route
- Access Roads
- Surveyed Existing Line B
- USGS 24k Topo Map Boundaries

Prepared For: CenterPoint Energy

AK Environmental, LLC
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Suite 206
Mechanicsburg, PA 17055

Patty Riley

From: Gordon, Che - NRCS, North Little Rock, AR <Che.Gordon@ar.usda.gov>
Sent: Wednesday, July 31, 2013 2:23 PM
To: Patty Riley
Subject: RE: CenterPoint project

Yes I think that will work.

From: Patty Riley [mailto:PRiley@ak-env.com]
Sent: Wednesday, July 31, 2013 12:32 PM
To: Gordon, Che - NRCS, North Little Rock, AR
Cc: Chad Milligan; Scott Urwick
Subject: RE: CenterPoint project

I can see what information we have available. Chad Milligan from our office will contact you regarding shape files.

Alternately, I have attached a project location map for your reference. Please let me know if this information will help you with your determination.

Thank you.

Patty Riley
AK
c. 717.645.9670
"Consulting with Energy"

From: Gordon, Che - NRCS, North Little Rock, AR [mailto:Che.Gordon@ar.usda.gov]
Sent: Wednesday, July 31, 2013 1:10 PM
To: Patty Riley
Subject: RE: CenterPoint project

The shape files will not self-execute, requires elevated administrator privileges. It is doubtful I can obtain them to get the files open. Can you send me some other means of viewing the pipeline route?

Sincerely,

Che Gordon
USDA-NRCS
District Conservationist
Pulaski County, AR
North Little Rock Field Service Center
Ph: 501-758-2544 x3
Fax: 501-758-7052

From: Patty Riley [mailto:PRiley@ak-env.com]
Sent: Wednesday, July 24, 2013 4:00 PM

To: Gordon, Che - NRCS, North Little Rock, AR
Cc: Rebecca Weissman
Subject: CenterPoint project

Che,

Thank you for your time today discussing the Central Arkansas Pipeline Enhancement Project. As noted, I have attached for your review:

1. A zip file with a self-executing non-disclosure document that would then open centerline shape files.
2. Copies of the consultation letters that describe the project and our request.

As we discussed, AK has obtained soils information from the web soil survey, and have previously coordinated with Reed Cripps regarding WRP lands. We are looking for information on areas crossed by the centerline with known agricultural restrictions, known noxious or invasive species problem areas, or any additional information that you may have. We have obtained the list of noxious species in AR but would appreciate any additional information you may have.

Thank you for your help with this request. Please feel free to call me if you have any questions.

Patty

Patty Waidelich Riley, AICP, PWS | Sr. Consulting Scientist
AK
5020 Ritter Road, Suite 206 | Mechanicsburg, PA 17055
t. 717.458.8035 | c. 717.645.9670 | f. 717.307.3463
www.ak-env.com

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Telephone Call Summary

By:	Patricia Riley	Date:	July 31, 2013
Talked with:	Brian Mitchell	Project number:	12-046
From (company):	Camp Robinson	Project name:	Central Arkansas Pipeline Enhancement Project
Phone number:	501.212.5891	Subject:	Plant Species Impacts

Distribution: File; Erik Diltz, CEGT; Scott Urwick, AK

I spoke with Brian Mitchell, Water Resource Specialist with the US Army, Camp Joseph T. Robinson regarding the CAPE Project. The following was discussed:

- **Plant Species**: I asked Mr. Mitchell whether use of the access road that passes in close proximity to the 2 rare plant species of state conservation concern identified by Arkansas Natural Heritage Commission (ANHC) would have an impact on the plant species.

  Mr. Mitchell responded that the road is open and accessible; use would not be an issue. Mr. Mitchell further noted that the Camp had partially cleared (logged and burned) some of the land in proximity to the Nemastylis species.

- **Protective Measures:** I asked Mr. Mitchell if any special protective measures were required when driving on the access road.

  Mr. Mitchell responded that no protective measures would be necessary.

- **Fire Break:** The existing fire break is in the area of Line BT-39 construction. Mr. Mitchell noted:

  - *There are no rare plant species in this location.*
  - *There are existing wetland crossings. Mr. Mitchell requested a copy of the wetland survey information.*
  - *Widening of the fire break: would decrease the potential for fire to escape across the break, resulting in a positive impact on safety; and would be a minor loss of habitat, resulting in minimal negative impact.*
  - *The forester will sell the timber taken from the widening, resulting in a positive economic impact.*

- **Coordination:** Mr. Mitchell noted that he would be having a coordination meeting with CenterPoint in the near future at which he would reiterate that, if there were any earth-moving activities, he should be involved at that time.

Patricia Riley

Signature