Intensive Cultural Resources Survey of the Proposed 77-Acre Pinecrest Energy Center Tract, Lufkin, Angelina County, Texas

Addendum—Linear Facilities

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MANAGEMENT SUMMARY

Horizon Environmental Services, Inc. (Horizon), was selected by Zephyr Environmental Corporation (Zephyr), on behalf of Pinecrest Energy Center, LLC (PEC), to conduct an intensive cultural resources inventory and assessment of the proposed location of the Pinecrest Energy Center in Lufkin, Angelina County, Texas. The proposed site of the Pinecrest Energy Center is located in northeastern Lufkin and would be bordered on the north by the Angelina and Neches River Railroad tracks, on the west by US Highway (US) 69, on the east by Farm-to-Market Road (FM) 842, and on the south by the northern end of Commerce Center. The Area of Potential Effect (APE) of the proposed undertaking covers an area of approximately 31 hectares (ha) (77 acres [ac]).

The results of Horizon's intensive cultural resources survey of the proposed 31-ha (77-ac) Pinecrest Energy Center site were described in the technical report entitled *Intensive Cultural Resources Survey of the Proposed 77-Acre Pinecrest Energy Center Tract, Lufkin, Angelina County, Texas*, by Jeffrey D. Owens, to which this addendum is appended. Subsequent to completion of the cultural resources survey of the proposed energy center site and review of the draft technical report by the US Environmental Protection Agency (EPA), PEC identified the proposed rights-of-way (ROW) of 3 linear utility lines associated with the proposed undertaking. The 3 linear ROWs would include an approximately 1.3-kilometer- (km) (0.8-mile-) long 345-kilovolt (kV) transmission line, an approximately 1.4-km- (0.9-mile-) long water pipeline interconnect, and an approximately 3.2-km- (2.0-mile-) long natural gas pipeline interconnect. The 3 proposed utility lines would share the same linear corridor extending approximately 1.3 km (0.8 mile) eastwards from the proposed Pinecrest Energy Center site, and then the proposed natural gas pipeline ROW would continue eastwards for an additional 1.9 km (1.2 miles). Thus, the combined APE of the 3 linear utility ROWs measures a total of approximately 3.2 km (2.0 miles) in length by no more than 30 m (100 feet) in width, covering a total area of 10 hectares (ha) (24 acres). The 3 proposed utility lines would be constructed entirely within existing utility ROWs that already contain an existing overhead transmission line ROW as well as 4 to 5 subsurface pipeline ROWs. All construction would be restricted to the existing utility easement corridors, and no new ROWs or expansions of existing ROWs would be required.

In March 2014, Horizon conducted a cultural resources background study of the proposed linear utility ROWs to augment the results of the prior archival research presented in the main technical report. The archival background research consisted of a desktop review of potential project impacts on historic properties or other culturally significant features or landscapes within the APE. Based on the results of the desktop archival research, a total of 11 previously recorded archeological sites are present within a 1.6-km (1.0-mile) radius of the proposed utility ROWs; however, no known cultural resources are located within or immediately adjacent to the boundaries of the existing linear ROW easement within which the 3 proposed utility lines would be constructed. The 11 previously recorded archeological sites present within a 1.6-km (1.0-mile) radius of the proposed project's APE are discussed in Chapter 4.0 of the

main technical report. None of the 11 previously recorded archeological sites would be impacted as a result of construction of the 3 proposed linear utilities.

On March 24, 2014, Horizon conducted informal consultation with the Texas Historical Commission (THC) on behalf of PEC to determine whether or not any additional cultural resources survey activities would be required within the proposed linear ROWs in order to ensure PEC's compliance with Section 106 of the National Historic Preservation Act (NHPA). Based on the extent of prior disturbance resulting from construction, use, and ongoing maintenance within the existing shared utility ROW within which the 3 proposed utility lines would be constructed, the THC determined that no further cultural resources survey activities were warranted within the existing utility easement provided that no construction would occur beyond the boundaries of the existing, previously disturbed utility corridor. As such, Horizon did not conduct any supplemental field survey efforts within the 3 proposed linear utility ROWs. However, in the event that project design should change in the future to include any areas of proposed new ROW or expansions of existing utility corridors beyond their current boundaries, then cultural resources survey efforts, including pedestrian walkover with shovel testing and/or backhoe trenching, as appropriate, would be warranted within any areas of proposed new or expanded ROW prior to construction.

The APE associated with the construction of the 3 linear utility lines falls entirely within the existing ROW of previously constructed subsurface and overhead utility lines. Based on the extent of existing disturbances resulting from prior construction, use, and ongoing maintenance of within the existing utility easement, there is a low probability that intact cultural resources are present that would be eligible for listing on the National Register of Historic Places (NRHP). No known cultural resources were identified within or immediately adjacent to the boundaries of the existing linear ROW easement within which the 3 proposed utility lines would be constructed based on desktop archival research. The THC determined that no further cultural resources survey activities were warranted within the existing utility easement provided that no construction would occur beyond the boundaries of the existing, previously disturbed utility corridor.

However, in the event that any human remains or burial accoutrements are inadvertently discovered at any point during construction, use, or ongoing maintenance in the APE, even in previously surveyed areas, all work should cease immediately and the THC should be notified of the discovery.

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1.0 INTRODUCTION

Horizon Environmental Services, Inc. (Horizon), was selected by Zephyr Environmental Corporation (Zephyr), on behalf of Pinecrest Energy Center, LLC (PEC), to conduct an intensive cultural resources inventory and assessment of the proposed location of the Pinecrest Energy Center in Lufkin, Angelina County, Texas. The proposed site of the Pinecrest Energy Center is located in northeastern Lufkin and would be bordered on the north by the Angelina and Neches River Railroad tracks, on the west by US Highway (US) 69, on the east by Farm-to-Market Road (FM) 842, and on the south by the northern end of Commerce Center. The Area of Potential Effect (APE) of the proposed undertaking covers an area of approximately 31 hectares (ha) (77 acres [ac]).

As the proposed upgrades would require a Prevention of Significant Deterioration (PSD) permit issued by the US Environmental Protection Agency (EPA), the undertaking falls under the regulations of Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, which is invoked when federal funds are utilized or when federal permitting is required for a proposed project. The NHPA states that the Advisory Council for Historic Preservation (ACHP) and the Texas Historical Commission (THC), which serves as the State Historic Preservation Office (SHPO) for the state of Texas, must be afforded the opportunity to comment when any cultural resources potentially eligible for inclusion in the National Register of Historic Places (NRHP) are present in a project area affected by federal agency actions or covered under federal permits or funding.

The results of Horizon's intensive cultural resources survey of the proposed 31-ha (77-ac) Pinecrest Energy Center site were described in the technical report entitled *Intensive Cultural Resources Survey of the Proposed 77-Acre Pinecrest Energy Center Tract, Lufkin, Angelina County, Texas*, by Jeffrey D. Owens, to which this addendum is appended. Subsequent to completion of the cultural resources survey of the proposed site of the energy center and review of the draft technical report by the US EPA, PEC identified the proposed rights-of-way (ROW) of 3 linear utility lines associated with the proposed undertaking (Figures 1 and 2). The 3 linear ROWs would include an approximately 1.3-kilometer- (km) (0.8-mile-) long 345-kilovolt (kV) transmission line, an approximately 1.4-km- (0.9-mile-) long water pipeline interconnect, and an approximately 3.2-km- (2.0-mile-) long natural gas pipeline interconnect. The 3 proposed utility lines would share the same linear corridor extending approximately 1.3 km (0.8 mile) eastwards from the proposed Pinecrest Energy Center site, and then the proposed natural gas pipeline ROW would continue eastwards for an additional 1.9 km (1.2 miles). Thus, the combined APE of the 3 linear utility ROWs measures a total of approximately 3.2 km (2.0 miles) in length by no more than 30 m (100 feet) in width, covering a total area of 10 hectares (ha) (24 acres). The 3 proposed utility lines would be constructed entirely within existing utility ROWs that already contain an existing overhead transmission line ROW as well as 4 to 5 subsurface pipeline ROWs. All construction would be restricted to the existing utility easement corridors, and no new ROWs or expansions of existing ROWs would be required.

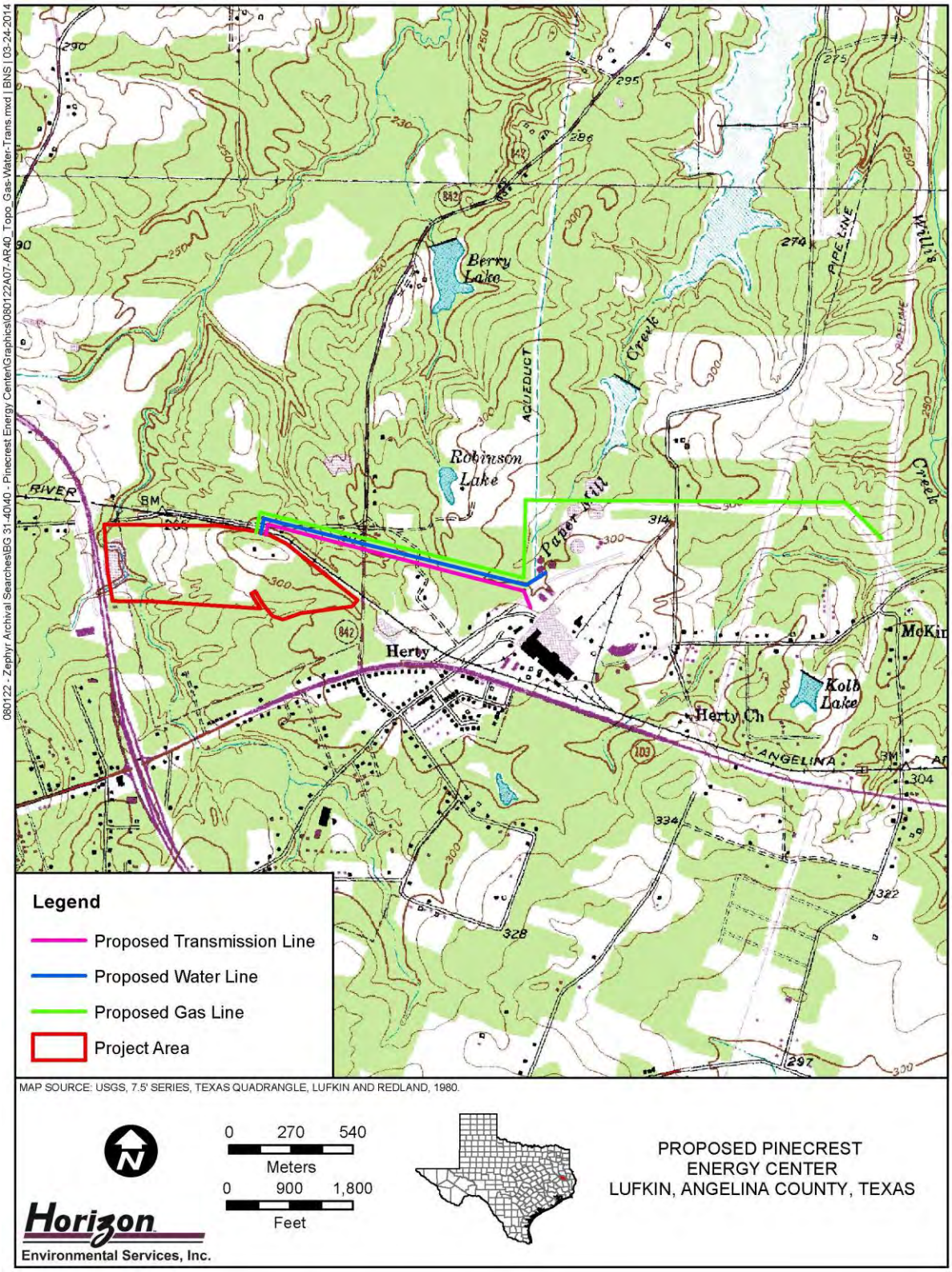

Figure 1. Location of APE on USGS Topographic Quadrangle

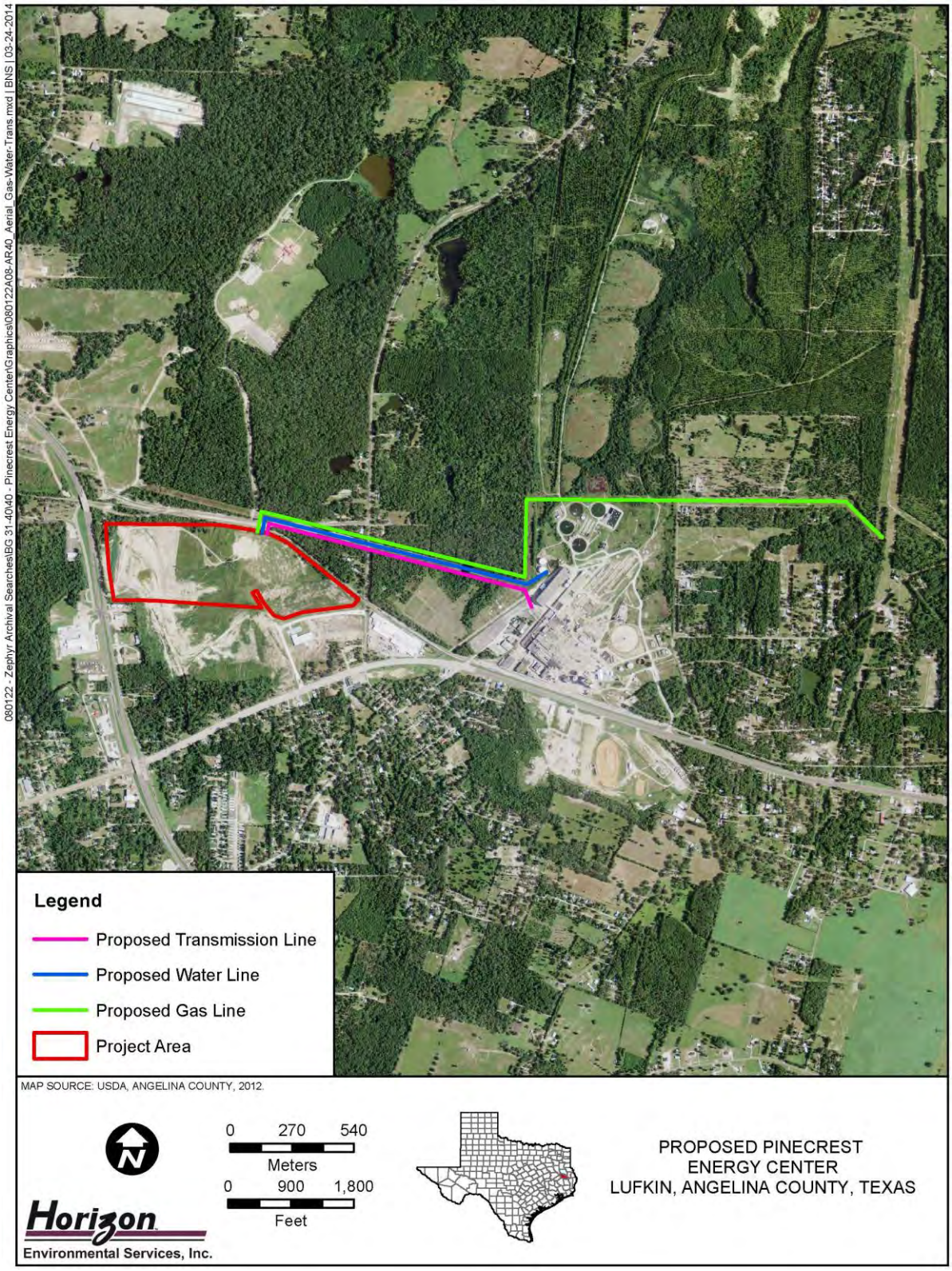

Figure 2. Location of APE on Aerial Photograph

In March 2014, Horizon conducted a cultural resources background study of the proposed linear utility ROWs to augment the results of the prior archival research presented in the main technical report. The archival background research consisted of a desktop review of potential project impacts on historic properties or other culturally significant features or landscapes within the APE. In addition, on March 24, 2014, Horizon conducted informal consultation with the THC on behalf of PEC to determine whether or not any additional cultural resources survey activities would be required within the proposed linear ROWs in order to ensure PEC's compliance with Section 106 of the NHPA. The results of the supplemental archival desktop research and informal THC consultation are presented below.

2.0 ENVIRONMENTAL SETTING

The environmental background of the proposed project's APE as a whole is presented in the main technical report. The proposed Pinecrest Energy Center is located in northeastern Lufkin in Angelina County, Texas, within the Pineywoods region of the Gulf Coastal Plain physiographic region. The APE is situated within the West Gulf Coastal Plain physiographic province, in which sedimentary bedrock formations of limestone and sandstone laid down during the Cretaceous Period parallel the margins of the ancient, receding coastline of the Gulf of Mexico and crop out as cuestas or escarpments across the generally southwardly dip of the modern land surface.

The proposed linear pipeline ROWs traversess a mosaic of uplands, stream terraces, and floodplain settings in the Angelina River watershed. The shared ROW of the 3 proposed linear utility lines traverse the headwaters of 2 stream channels, including Paper Mill Creek and an unnamed tributary of Paper Mill Creek, that both drain northwards toward the Angelina River. The eastern end of the APE terminates on an upland overlooking Willis Creek, which also flows northward and discharges into Paper Mill Creek. Elevations across the APE range from approximately 82 to 91 meters (270 to 300 feet) above mean sea level, undulating across multiple upland formations and the 2 stream valleys.

Soils in Northeast Texas are divided into 2 broad groups—upland soils and alluvial valley soils. Upland soils support tall grasses and hardwoods and tend to form directly on bedrock, except where colluvial deposition has occurred during the Quaternary Period. These soils vary from moist, acidic soils with a sandy to loamy surface horizon and clayey subsoil to soils whose basic loamy surface horizons overlie clay-enriched B-horizons. Bone and shell preservation is common in archeological deposits in the latter soils. Mixed hardwood and pine forests occur on the acidic upland soils in Northeast Texas. Tall-grass prairie occurs on the dark, clayey soils of the Blackland Prairie to the west of the APE.

The specific soil units underlying the proposed 31-ha (77-ac) site of the Pinecrest Energy Center are discussed in detail in the Chapter 2.0 of the main technical report. A total of 7 soil units characterize the proposed 3.2-km (2.0-mile-) long linear utility ROW (Figure 3; Table 1). Sediments on the upland formations typically consist of loamy and clayey residuum weathered from local bedrock, which includes sandstone, shale, and mudstone. Floodplain and terrace settings are characterized by loamy alluvium.

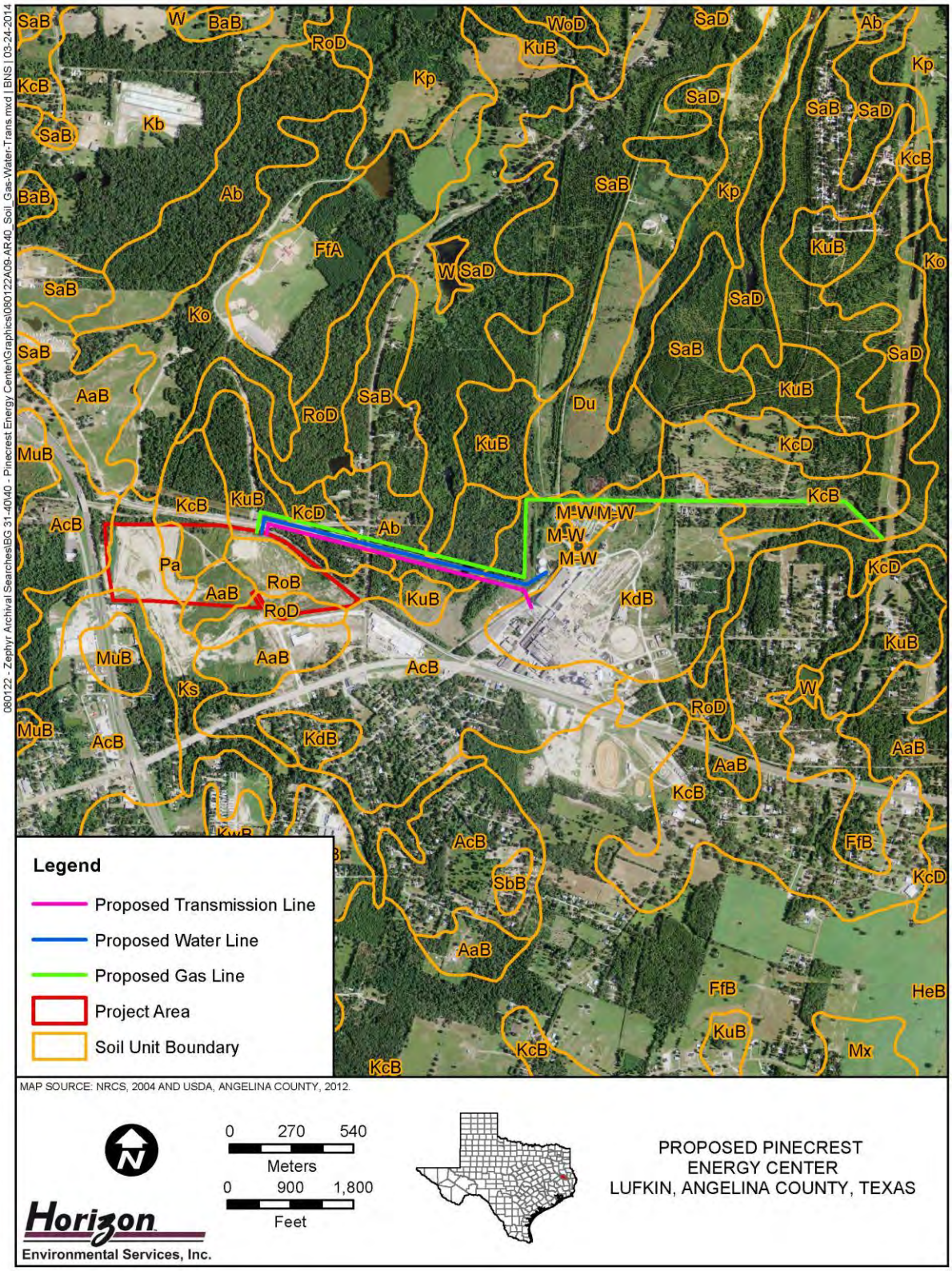

Figure 3. Distribution of Mapped Soils in the APE

Table 1. Summary of Mapped Soils in the APE

NRCS Soil Code	Soil Name	Description	Location
Ab	Alazan-Besner complex, gently undulating	Loamy alluvium on stream terraces	Terraces and uplands west of Paper Mill Creek near western end of APE
AcB	Alazan-Urban land complex, 0 to 4% slopes	Loamy alluvium on stream terraces	Floodplain and lower terraces of Paper Mill Creek
KcB	Keltys fine sandy loam, 1 to 5% slopes	Loamy residuum weathered from sandstone and shale on interfluves	High terraces and uplands near Willis Creek at eastern end of APE
KcD	Keltys fine sandy loam, 5 to 15% slopes	Loamy residuum weathered from sandstone and shale on interfluves	Uplands west of Paper Mill Creek near western end of APE
KdB	Keltys-Urban land complex, 1 to 5% slopes	Loamy residuum weathered from sandstone and shale on interfluves	Uplands east of Paper Mill Creek near eastern end of APE
KuB	Kurth fine sandy loam, 1 to 3% slopes	Loamy residuum weathered from mudstone over clayey residuum weathered from mudstone on interfluves	Uplands west of Paper Mill Creek near western end of APE
SaD	Sacul fine sandy loam, 5 to 15% slopes	Clayey residuum weathered from sandstone and shale on interfluves	Uplands near Willis Creek at eastern end of APE

Source: NRCS 2014

APE = Area of Potential Effect

NRCS = National Resource Conservation Service

In Northeast Texas, aboriginal cultural resources are commonly encountered in deep alluvial sediments adjacent to major streams and rivers as well as on uplands located near reliable water sources. Other things being equal, the proposed APE would appear to possess at least moderate potential for aboriginal cultural resources. However, it is likely that prior ground disturbances resulting from construction, use, and ongoing maintenance of the multiple existing overhead and subsurface utility lines within the linear utility easement within which the 3 proposed utility lines associated with the current project would be constructed would have impacted the integrity of any archeological deposits. Historic-age cultural resources may occur in virtually any physiographic setting. The lack of any visible structures within or adjacent to the APE suggests a reduced potential for historic-age architectural resources, though at least some potential exists for historic-age archeological resources. However, any historic-age archeological resources that may be present within the APE would be expected to retain minimal integrity due to disturbances from prior construction within the APE.

3.0 ARCHIVAL RESEARCH

In March 2014, Horizon conducted a cultural resources background study of the proposed linear utility ROWs to augment the results of the prior archival research presented in the main technical report. The archival background research consisted of a desktop review of potential project impacts on historic properties or other culturally significant features or landscapes within the APE. Based on the results of the desktop archival research conducted via the Internet on the THC's online *Texas Archeological Sites Atlas* (Atlas) restricted-access database (THC 2014) and the National Park Service's (NPS) NRHP Google Earth map layer (NPS 2014), a total of 11 previously recorded archeological sites are present within a 1.6-km (1.0-mile) radius of the proposed utility ROWs (Figure 4; Table 2). A detailed discussion of each of these 11 previously recorded archeological sites is presented in Chapter 4.0 of the main technical report. No known cultural resources are located within or immediately adjacent to the boundaries of the existing linear ROW easement within which the 3 proposed utility lines would be constructed. None of the 11 previously recorded archeological sites would be impacted as a result of construction of the 3 proposed linear utilities.

The desktop archival research revealed that a total of 7 prior cultural resources surveys have been conducted within a 1.6-km (1.0-mile) radius of the APE (as discussed in the main technical report, only 6 of these surveys appear on the Atlas) (Table 3). These 7 prior cultural resources surveys are discussed in detail in the main technical report. Two of these prior surveys covered small portions of the current project's APE. The westernmost end of the APE formed by the shared ROW of the 3 proposed linear utilities was previously surveyed during the 2011 survey conducted for the proposed Lufkin Industrial Park, the same survey that covered a portion of the proposed 31-ha (77-acre) Pinecrest Energy Plant site (Galan 2011). In addition, the 1990 linear survey conducted in association with the Farm-to-Market Road (FM) 842 project crossed the APE. No cultural resources were recorded within the APE associated with the proposed linear facilities during this prior survey.

4.0 RESULTS OF INVESTIGATIONS

In March 2014, Horizon conducted a cultural resources background study of the proposed linear utility ROWs to augment the results of the prior archival research presented in the main technical report. The archival background research consisted of a desktop review of potential project impacts on historic properties or other culturally significant features or landscapes within the APE. Based on the results of the desktop archival research, a total of 11 previously recorded archeological sites are present within a 1.6-km (1.0-mile) radius of the proposed utility ROWs; however, no known cultural resources are located within or immediately adjacent to the boundaries of the existing linear ROW easement within which the 3 proposed utility lines would be constructed. The 11 previously recorded archeological sites present within a 1.6-km (1.0-mile) radius of the proposed project's APE are discussed in Chapter 4.0 of the main technical report. None of the 11 previously recorded archeological sites would be impacted as a result of construction of the 3 proposed linear utilities.

Map redacted from public copy

Table 2. Previously Recorded Cultural Sites within 1 Mile of the APE

Site No./Name	Site Type	NRHP/SAL Eligibility Status	Distance/Direction from APE	Potential to be Impacted by Project?
41AG6	*No information available*	Undetermined	0.8 miles south	No
41AG173	Aboriginal lithic scatter (undated prehistoric)	Ineligible	0.1 miles north	No
41AG174	Aboriginal lithic scatter (undated prehistoric)	Ineligible	0.4 miles north	No
41AG175	Aboriginal lithic scatter (undated prehistoric)	Ineligible	0.4 miles north	No
41AG176	Aboriginal lithic scatter (undated prehistoric)	Ineligible	0.5 miles north	No
41AG178	Aboriginal lithic scatter (Middle to Late Archaic)	Undetermined	0.3 miles north	No
41AG179	Aboriginal lithic artifact (undet4ermined prehistoric)	Undetermined	0.3 miles north	No
41AG180	Aboriginal lithic and ceramic scatter (Early Ceramic?)/19th-century farmstead	Unknown	0.1 miles north	No
41AG181	Aboriginal lithic and ceramic scatter (Early Ceramic?)/19th-century farmstead	Unknown	0.2 miles north	No
41AG203	Aboriginal lithic scatter (undated prehistoric)/ Early to mid-20th century domestic trash scatter	Ineligible	Within APE	Yes
41AG204	Aboriginal lithic scatter (undated prehistoric)/ Early to mid-20th century domestic trash scatter	Ineligible	0.2 miles south	No

APE Area of Potential Effect
NRHP National Register of Historic Places
SAL State Archeological Landmark
USGS United States Geological Survey

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Table 3. Previous Cultural Resource Surveys Conducted within 1 Mile of the APE

Survey Name	Acres Surveyed	Survey Date	No. Sites Recorded within 1 Mile of APE	Site Nos. Recorded within 1 Mile of APE	Reference
Lufkin Industrial Park Survey	148.7	2011	2	41AG203, 41AG204	Galan 2011
McConnico Park Survey	290.0	2000	6	41AG173, 41AG174, 41AG175, 41AG176, 41AG178, 41AG179	Murin et al. 2000
McConnico Park Annex Survey	17.0	2002	2	41AG180, 41AG181	Brownlow 2002
Lufkin Armed Forces Reserve Center Survey	Unknown	2008	0	N/A	Not Available
FM 842 Survey	Unknown	1990	0	N/A	Not Available
Unnamed Utility Survey	Unknown	1983	0	N/A	Not Available

APE Area of Potential Effect (of current project)
NRHP National Register of Historic Places
USGS United States Geological Survey

not conduct any supplemental field survey efforts within the 3 proposed linear utility ROWs. However, in the event that project design should change in the future to include any areas of proposed new ROW or expansions of existing utility corridors beyond their current boundaries, then cultural resources survey efforts, including pedestrian walkover with shovel testing and/or backhoe trenching, as appropriate, would be warranted within any areas of proposed new or expanded ROW prior to construction.

The APE associated with the construction of the 3 linear utility line falls entirely within the existing ROW of previously constructed subsurface and overhead utility lines. Based on the extent of existing disturbances resulting from prior construction, use, and ongoing maintenance of within the existing utility easement, there is a low probability that intact cultural resources are present that would be eligible for listing on the National Register of Historic Places (NRHP). No known cultural resources were identified within or immediately adjacent to the boundaries of the existing linear ROW easement within which the 3 proposed utility lines would be constructed. The THC determined that no further cultural resources survey activities were warranted within the existing utility easement provided that no construction would occur beyond the boundaries of the existing, previously disturbed utility corridor.

However, in the event that any human remains or burial accoutrements are inadvertently discovered at any point during construction, use, or ongoing maintenance in the APE, even in previously surveyed areas, all work should cease immediately and the THC should be notified of the discovery.

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2008 7.5-minute series Redland, Texas, topographic quadrangle map.