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Intensive Archeological Survey Of Little River Basin Water And Wastewater Lines City Of Temple, Bell County, Texas

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Cultural Resources Survey

INTENSIVE ARCHEOLOGICAL SURVEY OF LITTLE RIVER BASIN WATER AND WASTEWATER LINES CITY OF TEMPLE, BELL COUNTY, TEXAS

July 11, 2020

Final Report – Restricted Copy

Terracon Project No. 96197851C

Antiquities Permit No. 9392

Caitlin Gulihur, MA, RPA, Principal Investigator

Prepared for:

Kasberg Patrick and Associates LP
Temple, Texas

Prepared by:

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ABSTRACT

The City of Temple has proposed the Little River Basin Water and Wastewater Lines project where water and wastewater lines will be constructed in southeast Temple, Bell County, Texas. The project engineer, Kasberg Patrick and Associates LP, retained Terracon Consultants, Inc. to conduct a systematic, intensive pedestrian survey of the approximately 73.4-acre project area. Because the City of Temple, a political subdivision of the State of Texas, sponsored the project, the proposed undertaking is subject to compliance with the Antiquities Code of Texas and oversight from the Texas Historical Commission (THC). In addition, the survey meets the standards for compliance under Section 106 of the National Historic Preservation Act of 1966, as amended, should federal funding or permitting be required for the project. The cultural resources survey was carried out under Texas Antiquities Permit Number 9392, issued to Caitlin Gulihur, MA, RPA, Principal Investigator. Fieldwork was carried out by Caitlin Gulihur with assistance from Archeological Technician Matthew Larsen. Records from the project will be curated at the Center for Archaeological Studies at Texas State University.

The alignments for water and wastewater lines, totaling 36,000 linear feet, with construction corridor widths of no more than 100 feet, was considered the Area of Potential Effect (APE). The acreage of the APE is approximately 73.4 acres. Survey of the APE consisted of systematic pedestrian coverage, including discretionary shovel tests. The work was carried out on April 27-29 and May 1, 2020. Seventy-six shovel tests were excavated in areas that appeared previously undisturbed. Cultural materials were not observed during the excavation of shovel tests. Isolated finds, consisting of three concrete drainage features, agricultural equipment, and a small scatter of glass, ceramic, and metal artifacts in a secondary context, were observed during the course of the survey. Previously recorded site 41BL1371, recorded adjacent to the project alignment, was not revisited during the course of the survey. No archaeological sites were recorded or revisited during the course of the survey.

Given the absence of eligible historic properties within the APE, it is Terracon's recommendation that the proposed project be allowed to proceed as currently designed. In the unlikely event that human remains or cultural features are discovered during construction, construction should cease in the vicinity of the remains and Terracon, the Texas Historical Commission's Archeology Division, or other proper authorities shall be contacted. On June 27, 2020, the THC concurred with the recommendations in the draft report.

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1.0 INTRODUCTION

This report presents the findings from an intensive pedestrian survey of approximately 73.4 acres on which the City of Temple has proposed constructing water and wastewater lines in southeast Temple, Bell County, Texas (Appendix A, Exhibits 1 and 2). The 73.4-acre survey was performed on behalf of the City of Temple, a political subdivision of the State of Texas. Therefore, the project is under the purview of the Texas Historical Commission (THC) in compliance with the Antiquities Code of Texas. In addition, the survey meets the standards for compliance under Section 106 of the National Historic Preservation Act of 1966, as amended, should federal funding or permitting be required for the project. Work was performed under Texas Antiquities Permit Number 9392, issued to Caitlin Gulihur, MA, RPA Principal Investigator, and in adherence to Title 13, Chapter 26 of the Texas Administrative Code.

Abiding by standards set forth by the Council of Texas Archeologists (CTA), this report includes descriptions of the project area, environmental setting, cultural and historical contexts, methods, results, and recommendations. The report was authored by Caitlin Gulihur, Principal Investigator and Ann M. Scott, Environmental Planning Group Manager.

2.0 AREA OF POTENTIAL EFFECT

The project area, which is the same as the area of potential effect (APE), consists of alignments for water and wastewater lines, totaling 36,000 linear feet, with construction corridor widths of no more than 100 feet. The acreage of the APE is approximately 73.4 acres. The project area is located along FM 93, Hartrick Bluff Road, and through agricultural fields, in southeastern Temple, Bell County, Texas (see Appendix A, Exhibits 1 and 2). A 12-inch water line will be constructed along the south side of FM 93 and the eastern side of Hartrick Bluff Road; the alignment for the proposed water line is approximately 10,600 feet long. Gravity-fed wastewater lines, ranging in size from 12 to 18 inches, will be constructed through currently undeveloped agricultural land. The alignment for the proposed gravity-fed wastewater lines is approximately 11,600 linear feet long. An 10-inch force main will be connect at a lift station to the gravity-fed wastewater lines, then run west through agricultural land to Hartrick Bluff Road. The force main will be constructed on the western side of Hartrick Bluff Road, running north to FM 93, where it will be installed on the north side of the road. The proposed force main is approximately 13,800 feet long. Where the alignments are located in undeveloped agricultural land, the study area was 100 feet wide, to account for potential shifts in the location of the proposed lines. Where the alignments parallel

Hartrick Bluff Road and FM 93, the proposed water and wastewater lines will be constructed within the existing roadway right-of-way (ROW). The vertical depth of impacts for the water line and force main will range between 42 and 60 inches. The vertical depth of impacts for the gravity-fed wastewater lines will range from 42 to 96 inches.

3.0 ENVIRONMENTAL SETTING

Environments are composed of various interconnected elements such as underlying bedrock geology, soil, flora, fauna, and climate. It is important to consider environmental conditions of the past and present when assessing cultural resources.

In general terms, the project area is located near the transition between two large-scale biotic provinces or biomes, the Limestone Cut Plains and the Northern Blackland Prairie (Griffith et al. 2007). Each of these biomes is characterized by a distinct set of physical and biological properties, and the transitional zone is known to have endemic plant and animal communities as well (Blair 1950). These transitional zones are known as ecotones, and they typically support relatively increased biological richness and diversity (Crumley 1994). Locally, the project area is in Northern Blackland Prairie ecoregion. Limestone Cut Plains begins west of the project area. More specifically, the APE is nestled in the gently sloping plain north and east of the Leon River in the Brazos River Basin.

3.1 Geology

The bedrock geology of the western portion of the project area is identified as Austin Chalk (Late Cretaceous; Gulfian Series) (Kau) consisting of chalk, marlstone, and claystone (Barnes 1992). The bedrock geology of the eastern portion of the project area is identified as Ozan Formation (Late Cretaceous; Gulfian Series) (Ko) consisting of claystone.

3.2 Soils

Soil formation is a function of local climate, biology, parent material, topography, and time, and so it is clearly tied to environment as defined above. Accordingly, soil can serve as a proxy for environmental conditions of the present and past. Defining soils as they are relevant to investigations of cultural resources, however, is useful because of how they are characterized and mapped by the Natural Resources Conservation Service, formerly Soil Conservation Service. Though agricultural in nature, county soil surveys provide a description of soil characteristics, including depth, color, inclusions, etc., which can be used to elucidate site formation processes.

Five soils are mapped within the APE and are presented in Table 1 (Appendix A, Exhibit 3) (Huckabee et al. 1977; USDA NRCS 2020).

Table 1. Soil Survey data in Area of Potential Effect.

Soil or Series Name	*Drainage*	*Soil Depth*	*Associated Landform*
Austin silty clay, 1 to 3 percent slopes (AsB)	Well-drained; moderate slow permeability	29 inches to Cr Horizon	Ridges/summit and shoulder
Austin silty clay, 2 to 5 percent slopes, moderately eroded (AsC)	Well-drained; moderate slow permeability	29 inches to Cr Horizon	Ridges/summit and shoulder
Branyon clay, 0 to 1 percent slopes (BrA)	Moderately well-drained; very slow permeability	80 inches to bedrock	Stream Terraces
Eddy-Stephen complex, 3 to 8 percent slopes (EsD)	Well-drained; moderate permeability	10 inches to Cr Horizon	Ridges/backslope
Houston Black clay, 1 to 3 percent slopes (HoB)	Moderately well-drained; very slow permeability	104 inches to bedrock	Ridges/summit and shoulder
Stephen silty clay, 1 to 4 percent slopes (StB)	Well-drained; Moderate slow permeability	12 inches to Cr Horizon	Ridges/summit and shoulder

3.3 Vegetation and Wildlife

Flora and fauna of the ecotone include species that are representative of both the Limestone Cut Plain and the Northern Blackland Prairie as well as endemic species (Blair 1950). Major game species of the region include whitetail deer, javelina, and several species of bird, and pronghorn and bison were periodically present further back in history. The region's natural vegetation is typically a grassland-woodland mosaic (Ellis et al. 1995).

The natural vegetation of the Blackland Prairie was dominated by tallgrass prairie on uplands. Deciduous bottomland woodland and forest were common along rivers and creeks (Diamond and Smeins 1993). The Blackland Prairie is characterized by a high degree of plant community diversity. This diversity, which is in part represented by four major prairie community types, is attributable to the ecoregion's variety of soil orders and their variation in texture and soil pH (Diamond and Smeins 1985).

The Blackland Prairie was a disturbance-maintained system. Prior to European settlement (pre-1825 for the southern and pre-1845 for the northern half) important natural landscape-scale disturbances included fire and periodic grazing by large herbivores, primarily bison, and to a lesser extent, pronghorn. Fire and infrequent, but intense, short-duration grazing suppressed woody vegetation and invigorated herbaceous prairie species. Bison herds, though reported for the Blackland Prairie, were far smaller than those found further west in the mixed and shortgrass prairies (Strickland and Fox 1993). Their impact was probably local with long intervals between grazing episodes. Bison were probably extirpated in the region by the 1850s.

3.4 Current and Past Climates

Temple has a climate classified as warm temperate (hot summers and cool winters), with precipitation ranging from 35 to 40 inches in an average year. Precipitation is less in the western part of the ecoregion and greater in the east (Bailey 2014).

Because most cultural resources originate in the period between the Last Glacial Maximum and the colonization of the western hemisphere by emigrants of the European continent, it is necessary to consider past climates, too. Since past climatic conditions cannot be observed (i.e., measurements did not begin in this region until the late 19th century), proxy data must be relied upon to reconstruct past conditions. Proxy data do not directly reflect past environments, but they can be used to infer conditions under which they form (Ellis et al. 1995).

Based on fossil pollens (Bousman 1998), phytoliths (Joines 2005), microfaunal remains (Toomey 1993), soil chemistry (Nordt et al. 2002), and speleothems (Musgrove et al. 2001), it is clear that climatic conditions of the past approximately 20,000 years have steadily become warmer and increasingly arid with several punctuated episodes. The transition from the Pleistocene to the Holocene at approximately 11,700 years ago was marked by an increase in warmth and aridity. In addition to increased warmth and aridity, the Holocene has been characterized by increasing seasonal variation of temperatures and precipitation. Peak warmth and aridity occurred during the mid- to late-Holocene Altithermal. Following the Altithermal, conditions similar to the early-Holocene returned, but warmth and aridity increase to the present.

4.0 CULTURAL HISTORY

Generally, the cultural chronology of Central Texas can be divided into three periods, prehistoric, protohistoric, and historic. The protohistoric effectively marks the boundary between the prehistoric and historic periods, and is characterized by the initial introduction of Europeans into the western hemisphere. The following description of Central Texas' cultural history is a gross compilation of a vast suite of data and interpretations (cf. Collins 1995, 2004).

4.1 Prehistoric

The prehistoric people of Central Texas were primarily hunter-gatherers. Through the last 75-plus years of archaeological research in the region, identifiable and repeated patterns in artifact assemblages have indicated major shifts in subsistence strategies and technology through time. As a result, the prehistoric period now has three subdivisions: Paleoindian, Archaic, and Late Prehistoric.

The Paleoindian period (ca. 12,500-8800 years ago) includes the earliest human occupation of North America, which extends back into the late Pleistocene. During this time, people hunted large game, but they generally had a broad diet. This included plant foods, small game, in addition to megafauna that went extinct with the close of the Pleistocene (i.e., mammoth, mastodon, bison,

horse, camel, etc.). Technological traditions further subdivide the Paleoindian period into Early and Late.

The Archaic period (ca. 8800-1250 years ago) of Central Texas was the longest period in prehistory, and it is generally marked by the introduction of hot rock cooking in addition to the proliferation of a wide variety of diagnostic projectile points. Cooking with fire-heated rocks developed with increased reliance on plant foods, which may have been a response to diminishing game resources and ultimately climatic change or variation. This is not to say that human agency did not play an important role in the shift of economic and subsistence strategies. The Archaic period is subdivided into Early-, Middle-, and Late-Archaic periods, each with a slight variation in response to cultural shifts and ambient conditions.

The Late Prehistoric (ca. 1250-250 years ago) was a relatively brief period, but it was marked by a shift in weapon technology: the introduction of the bow-and-arrow. Like the Archaic, the Late Prehistoric people utilized hot rock cooking to process plants to edible forms. There also appeared to be increasing contact among groups, which resulted in increased trade of materials and evident competition over resources.

4.2 Protohistoric and Historic

Spanish Entradas (expeditions) mark the onset of European influence in the New World. These explorations effectively scouted the new land and resulted in the settlement and establishment of missions spread throughout what has become northern Mexico and Texas. The Spanish entered into what is now Texas along the *El Camino Real de los Texas*. During this time, European populations and influence steadily increased as native populations steadily diminished.

The area which would become Bell County was first settled in the 1830s. The county was formed in 1850 with Belton, then called Nolanville, as the county seat. The current boundaries of Bell County were established in 1860 (Connor and Odintz 2016). In the 1850s and 1860s, the economy of the county was largely focused on agriculture, mostly raising livestock such as cattle and sheep, although wheat, corn, and later cotton were also grown. Farming and ranching is still a major economic force in Bell County. During World War II, Fort Hood was established in the western part of the county. The fort, which is still in use today, greatly contributed to economic and population growth (Connor and Odintz 2016). Manufacturing is also an important part of the present-day economy. As of 2014, the population of Bell County was roughly 329,000, with Killeen (138,000) as the largest city.

Temple was established in 1880 as a railroad construction camp. The population rose rapidly with the construction of stores, a post office, and a second rail line. Temple was incorporated in 1882 (Smyrl 2010). The population continued to grow due to the railroads and medical facilities in the city. Despite the population growth and the important railroad junctions, Temple never became the county seat of Bell County. From the 1920s until the 1990s, population grew to roughly 50,000, with the manufacturing of many products as the basis of the economy (Smryl 2010). Temple was

also the location for the state office of the United States Soil Conservation Services, as well as an agricultural experiment station. In 2000, the population was roughly 54,500.

5.0 METHODS

The methods described below were employed to identify and characterize cultural resources present within the APE to the extent practicable. Desktop review focused on identifying previously known cultural materials, while fieldwork was used to both search for unknown cultural resources and gather more information based on the desktop review.

5.1 Desktop Review

To search for known cultural resources within and in proximity to the APE, reviews of the Texas Archeological Sites Atlas (Atlas), the list of State Archeological Landmarks, and the National Register of Historic Places were conducted. Historic-period maps and aerial images that include the project area were reviewed for evidence that the location contained buildings or other features that may be considered historic (at least 50 years old).

5.2 Intensive Pedestrian Survey

In order to examine the approximately 73.4-acre APE for previously unknown cultural resources, and to gather additional information based on the desktop review, an intensive pedestrian survey was conducted.

The ground surface in the APE was systematically inspected by two archaeologists walking transects spaced approximately 15 to 30 meters apart for 100 percent coverage of the project area. Shovel tests were placed in areas that appeared to be previously undisturbed or had less than 30 percent visibility. As a general method, shovel tests are excavated to varying depths that target Holocene-aged soils. Sediment was excavated in arbitrary 20-cm levels to depth and passed through ¼-inch hardware mesh. Characteristics and contents of shovel tests are recorded with photographs, forms and notes, and a hand-held global positioning system (GPS) unit; upon completion of excavation and documentation, the unit holes and artifacts, if present, are backfilled. Cultural materials encountered through the course of shovel test excavations are described and returned to their approximate origin.

Archeological sites, if encountered, would be recorded with the Texas Archeological Research Laboratory and be assessed for eligibility for inclusion in the NRHP or designation as a SAL as appropriate. This survey has a “no-collection” policy; therefore, diagnostic artifacts (if encountered) would be documented in the field and not collected. Records will be temporarily housed in Terracon’s office in Austin and will be permanently curated by the Center for Archaeological Studies (CAS) at Texas State University upon completion of the project.

5.3 Artifact Analysis

Artifacts, if encountered through the course of investigations, would be described and photographed on-site, and then returned to their respective places. The importance of the artifacts is in their capacity to relate temporal and other information about the former occupants of the site, and as such they are categorized according to their material and subdivided by unique or diagnostic characteristics.

5.4 National Register of Historic Places and State Antiquities Landmark Criteria

For a historic resource to be deemed eligible for inclusion in the National Register of Historic Places (NRHP), the resource must be at least 50 years old and must possess significance and integrity. The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location design, setting, materials, workmanship, feeling, and association and:

A. That are associated with the events that have made a significant contribution to the broad patterns of our history; or
B. That are associated with the lives of persons significant in our past; or
C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. That have yielded, or may be likely to yield, information important in our prehistory or history (36 CFR 60.4).

Additionally, the State of Texas affords important cultural resources a level of protection beyond that of NRHP status if the resource meets the criteria for listing as a State Antiquities Landmark (SAL). The SAL criteria are divided into four categories based on the type of resource: archaeological site, shipwreck, cache and collection, and historic structure. The criteria for archaeological sites are:

1) The site has the potential to contribute to a better understanding of the prehistory and/or history of Texas by the addition of new and important information;
2) The site's archeological deposits and the artifacts within the site are preserved and intact, thereby supporting the research potential or preservation interest of the site;
3) The site possesses unique or rare attributes concerning Texas prehistory and/or history;
4) The study of the site offers the opportunity to test theories and methods of preservation, thereby contributing to new scientific knowledge; and
5) There is a high likelihood that vandalism and relic collecting has occurred or could occur, and official landmark designation is needed to ensure maximum legal protection, or alternatively, further investigations are needed to mitigate the effects of vandalism and relic collecting when the site cannot be protected (Title 13, Rule 26.10).

6.0 RESULTS

6.1 Desktop Review

Review of the Texas Archeological Sites Atlas (Atlas) and THC geospatial data using a 0.5-mile search buffer shows that no portion of the proposed project area has likely been previously surveyed; no previous investigations are mapped within the search buffer. No archaeological sites have been previously recorded in the project APE. One archaeological site, 41BL1371, has been recorded within the 0.5-mile search buffer, immediately adjacent to the project area (Appendix A, Exhibit 4). Harry Shafer encountered and collected from 41BL1371 in the 1950s, but the site was not given a trinomial until 2013. According to information obtained from the Texas Archeological Research Laboratory, the site is a Late Archaic to Late Prehistoric open campsite, with burned rock, lithics, mussel shell, and ceramics, including a Caddo ceramic sherd. Site 41BL1371 has no NRHP eligibility determination from the THC. No SALs, NRHP properties, or Recorded Texas Historic Landmarks (RTHLs) are present in the search buffer.

Historic-period topographic maps dating back over 100 years cover the project area. Several years were examined including 1892, 1931, 1965, 1974, and 1993. In the 1892 topographic map, the railroad, Hartrick Bluff Road, and FM 93 are mapped at the project area. In the 1931 topographic map, these features are still present, with the addition of structures mapped on either side of Hartrick Bluff Road. Hartrick Bluff Road and FM 93 appear to be in their current configuration in the 1965, 1974, and 1993 topographic maps, with increasing amounts of structures and streets in the vicinity through time. Several structures are mapped near, but not within, the project area in the 1931 and later maps.

Historic aerials were also reviewed, the earliest of which was dated 1943. Others were dated 1953, 1964, 1974, 1985, 1995, 2005, 2014, and 2018. In the aerial photographs from 1943 through 1974, the project area is in a primarily agricultural setting, with vacant fields, channelized drainages, and few nearby structures; Hartrick Bluff Road, FM 93, and the railroad generally appear to be in their current configuration. In the aerial photographs from 1985 to 2018, the project area is still in a primarily agricultural setting but increasing development in the vicinity of the project area can be seen through increasing amounts of structures and roads. As with the topographic maps, several structures can be observed near but not within the project area, especially on either side of Hartrick Bluff Road.

6.2 Intensive Pedestrian Survey

The intensive pedestrian survey resulted in the excavation of seventy-six shovel tests in areas which appeared mostly undisturbed (Appendix A, Exhibit 5). The portion of the project area from CG01 to CG05 was located in agricultural fields, with good ground surface visibility between rows of corn (Appendix B, Photos 1 and 2). The portion of the project alignment from ML05 to CG06 was located between a corn field and a wooded area, and had good ground surface visibility (Appendix B, Photo 3). Between ML06 and CG09, the project alignment ran through corn fields,

with good ground surface visibility between the rows. The eastern portion of the project area from ML09 to ML12 ran through a grass field with poor ground surface visibility (Appendix B, Photo 4). A channelized drainage was present in this field, near CG12 and ML12 (Appendix B, Photo 5). Between CG13 and ML17, the project alignment generally ran through corn fields with good ground surface visibility between the rows (Appendix B, Photo 6). This portion of the alignment crossed a moderately sized drainage between CG15 and ML15, with moderately to steeply sloping banks and bedrock visible in the bed of the drainage (Appendix B, Photo 7). The alignment east of ML17 was located near a railroad and was heavily disturbed by the railroad, access roads, and drainage ditches (Appendix B, Photos 8 and 9). The alignment from CG18 to ML23 was located just north of a channelized drainage; ground surface visibility varied from good to very poor (Appendix B, Photos 10 and 11).

The southern portion of the alignments that ran on either side of Hartrick Bluff Road were generally located in an upland setting, with areas of fill and shallow soils to bedrock (Appendix B, Photo 12). Soils were somewhat deeper in the portion of the alignment closest to 41BL1371, with disturbances from shallow roadside drainage ditches and poles for overhead electrical lines (Appendix B, Photo 13). Cultural materials associated with 41BL1371 were not observed on the ground surface or in shovel test excavations, and no evidence of the site could be observed from the ROW (Appendix B, Photo 14). The central portion of the alignments that ran on either side of Hartrick Bluff Road generally contained disturbances from buried utilities, roadside drainage ditches, and driveways (Appendix B, Photos 15 and 16). In addition, bedrock was visible at the surface at various locations along this portion of the alignments on either side of the road (Appendix B, Photo 17). The northern portion of the alignments that ran on either side of Hartrick Bluff Road also contained disturbances from buried utilities, drainage ditches, and driveways (Appendix B, Photo 18). Gravels were visible at the surface at various locations, especially on the western side of Hartrick Bluff Road (Appendix B, Photo 19).

The portion of the project alignment along FM 93 west of the intersection with Hartrick Bluff Road was located on the north side of FM 93. This portion of the project alignment was in an upland setting, with shallow soils and/or gravels at the surface, and disturbances from landscaping and drainage ditches (Appendix B, Photos 20 and 21). The portion of the alignment along FM 93 east of the intersection with Hartrick Bluff Road was located on the south side of FM 93. This portion of the alignment was generally disturbed by a large roadside drainage ditch, as well as both overhead and buried utility lines (Appendix B, Photos 22 and 23).

During the course of the survey, five isolated finds were observed (see Appendix A, Exhibit 5). Isolated Find 01 (IF01) was recorded as a pull behind tiller of unknown age; the tiller was located on the edge of an agricultural field and partially overgrown with wooded vegetation (Appendix B, Photos 24 and 25). Isolated Find 02 (IF02) was a small scatter of historic-age artifacts, consisting of glass shards (aqua, clear, milkglass), a whiteware ceramic fragment, asbestos tile fragment, and a metal hoe (Appendix B, Photo 26). No maker's marks or diagnostic features were observed on the artifacts. These artifacts were not recorded as a site, due to the low density (less than 10 artifacts observed) and the likely secondary context, as the nearby drainage appeared to have

been partially channelized (Appendix B, Photo 27). No structures were observed near the location of IF02 in either historical aerial photographs or topographic maps. Isolated Finds 03 through 05 (IF03-IF05) were recorded as concrete spillways in a channelized drainage (Appendix B, Photos 28-30). The drainage containing IF03-IF05 was channelized in the earliest available aerial photograph, dated 1943. The concrete features are too small to be observed in aerial photographs, so their exact construction date is unknown. In addition to the isolated finds, two small structures were observed adjacent to, but outside the project APE (see Appendix A, Exhibit 5). Both structures were small outbuildings, one collapsed and one standing (Appendix B, Photos 31 and 32). These structures could not be closely examined, as they were outside the Hartrick Bluff Road ROW on private property where the survey crew did not have right-of-entry. The structures are not evident in the 1931 topographic map but do appear to be present in the 1943 aerial photograph. Given that the structures are outside of the Hartrick Bluff Road ROW, they should not be impacted by the proposed project.

No archaeological sites were recorded or revisited during the course of the current survey. Seventy-six shovel tests were excavated. The majority encountered clay/clay loam, but a number of shovel tests along both Hartrick Bluff Road and FM 93 contained fill materials (Appendix B, Photos 33 and 34). No cultural materials were observed during the excavation of shovel tests. See Appendix C for details in the Shovel Tests Log. It should be noted that the field forms for shovel tests CG01 through CG36 were in a backpack that was stolen at the end of the third day of fieldwork; the information for those shovel tests was recreated as much as possible by memory. The photologs for the first three days and the daily field notes for the first two days of fieldwork also had to be recreated from memory. Photographs and the GPS data for the first three days of fieldwork were on a device that was not in the stolen backpack and was, therefore, not lost.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Terracon archaeologists conducted an intensive pedestrian survey of an approximate 73.4-acre area in advance of the proposed construction of water and wastewater lines by the City of Temple in southeast Temple, Bell County, Texas. Seventy-six shovel tests were excavated. No archaeological sites were recorded or revisited. Isolated finds, consisting of three concrete drainage features, agricultural equipment, and a small scatter of glass, ceramic, and metal artifacts in a secondary context, were observed during the course of the survey.

It is Terracon's opinion that there are no historic properties in the APE eligible for listing on the NRHP or designation as a SAL. Therefore, Terracon recommends that the project be allowed to proceed as currently planned because future construction of the water and wastewater lines will not affect historic properties. In the unlikely event that human remains or intact cultural resources are discovered after THC's review, activities should cease in the vicinity of the discovery and Terracon, the Texas Historical Commission's Archeology Division, or other proper authorities shall be contacted. On June 27, 2020, the THC concurred with the recommendations in the draft report.

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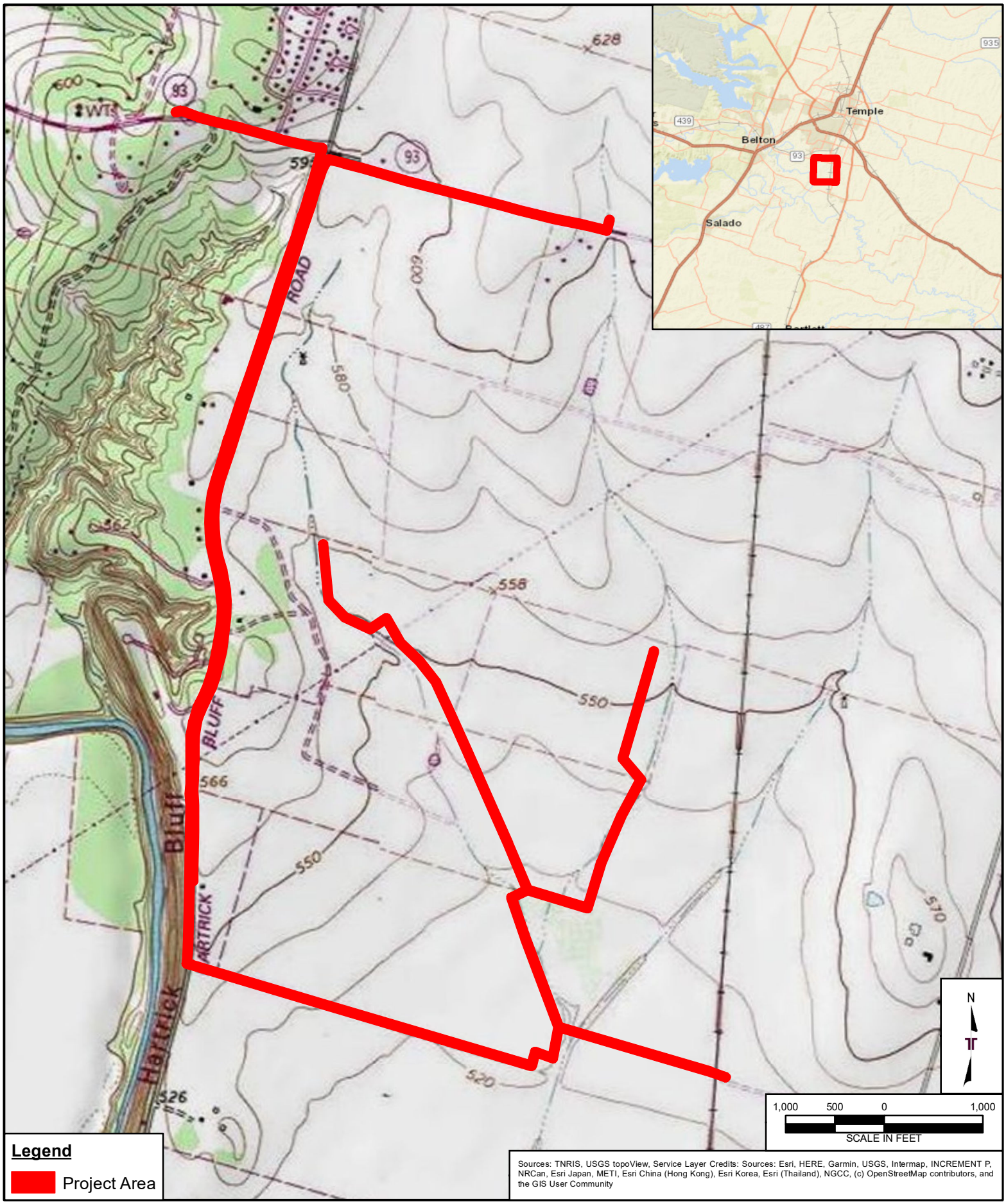
APPENDIX A
Exhibit Maps



Legend

Project Area

Sources: TNRIS, USGS topoView, Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Project Mngr:	CG
Drawn By:	Terracon
Checked By:	CG
Approved By:	AS

Project No.	96197851C
Scale:	AS SHOWN
File No.:	96197851C
Date:	Mar 27, 2020

Terracon
Consulting Engineers & Scientists
5307 INDUSTRIAL OAKS BLVD. - #160 AUSTIN, TX 78735
PH. (512) 442-1122 FAX. (512) 442-1181

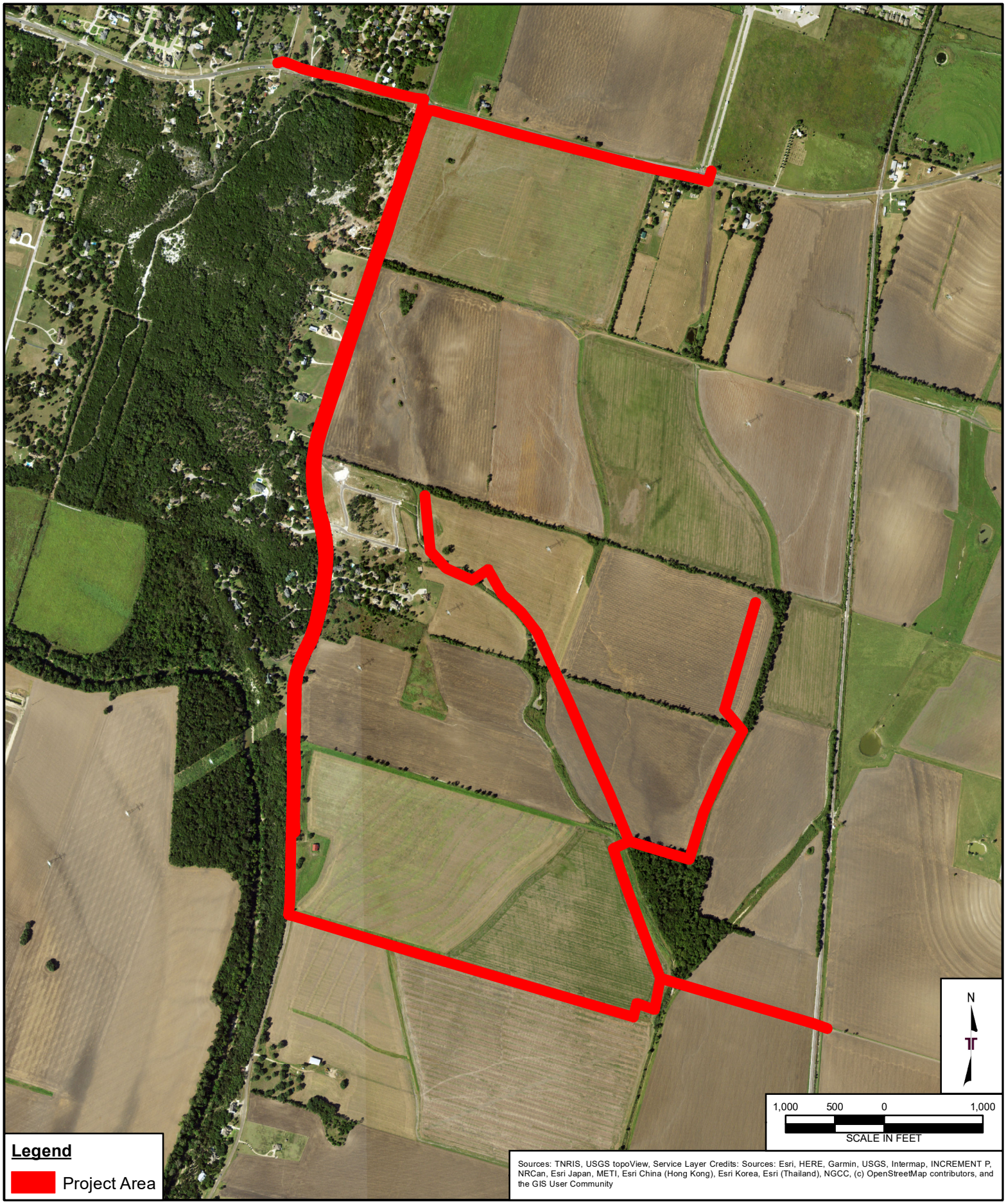
1993 USGS Topographic Maps: Belton and Temple

Little River Basin Water and Wastewater Lines

Hartrick Bluff Road and FM 93
Temple, Bell County, Texas

EXHIBIT

1



Sources: TNRIS, USGS topoView, Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

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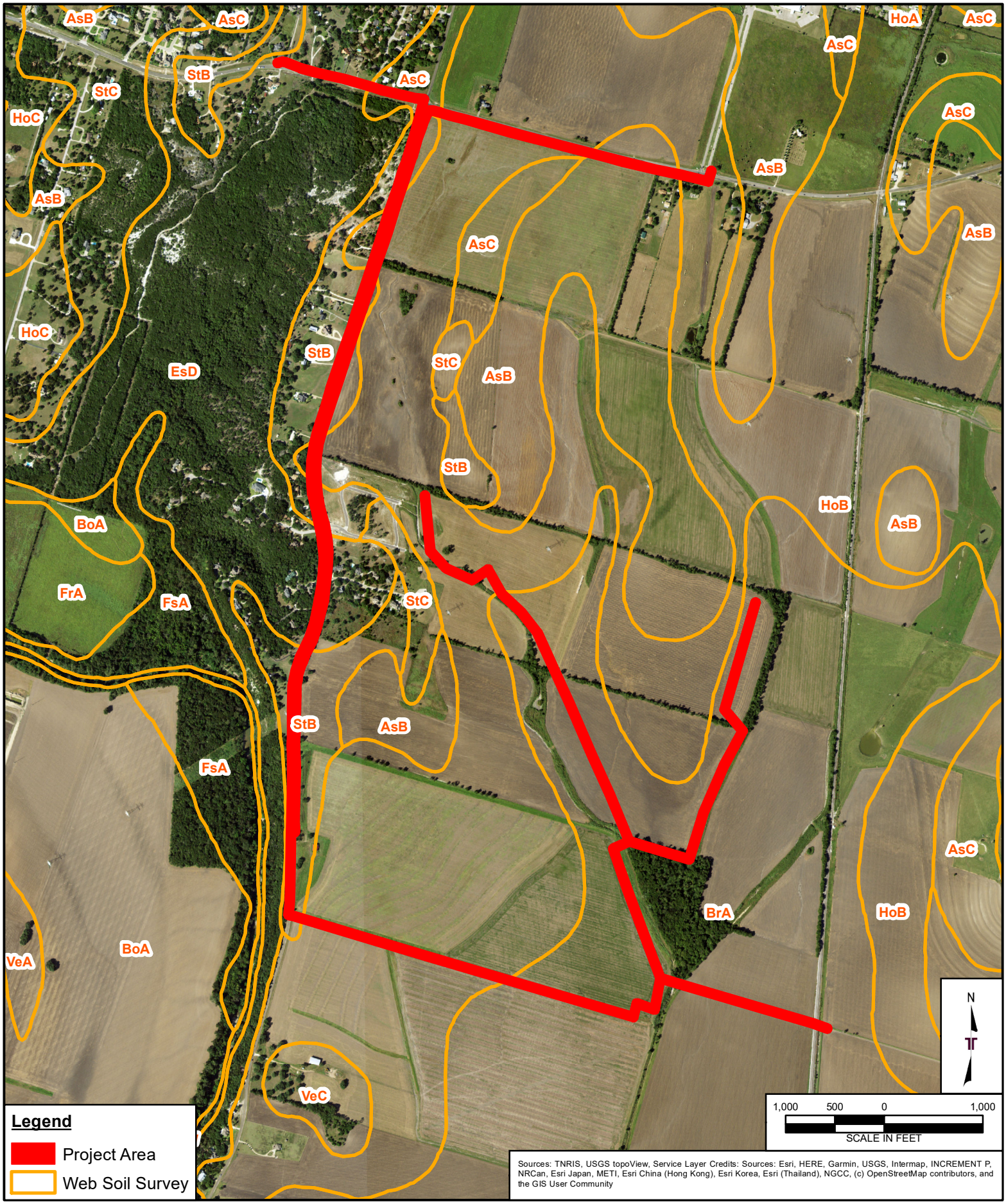
2016 Aerial Photograph

Little River Basin Water and Wastewater Lines

Hartrick Bluff Road and FM 93
Temple, Bell County, Texas

EXHIBIT

2



Project Mngr:	CG
Drawn By:	Terracon
Checked By:	CG
Approved By:	AS

Project No.	96197851C
Scale:	AS SHOWN
File No.:	96197851C
Date:	Mar 27, 2020

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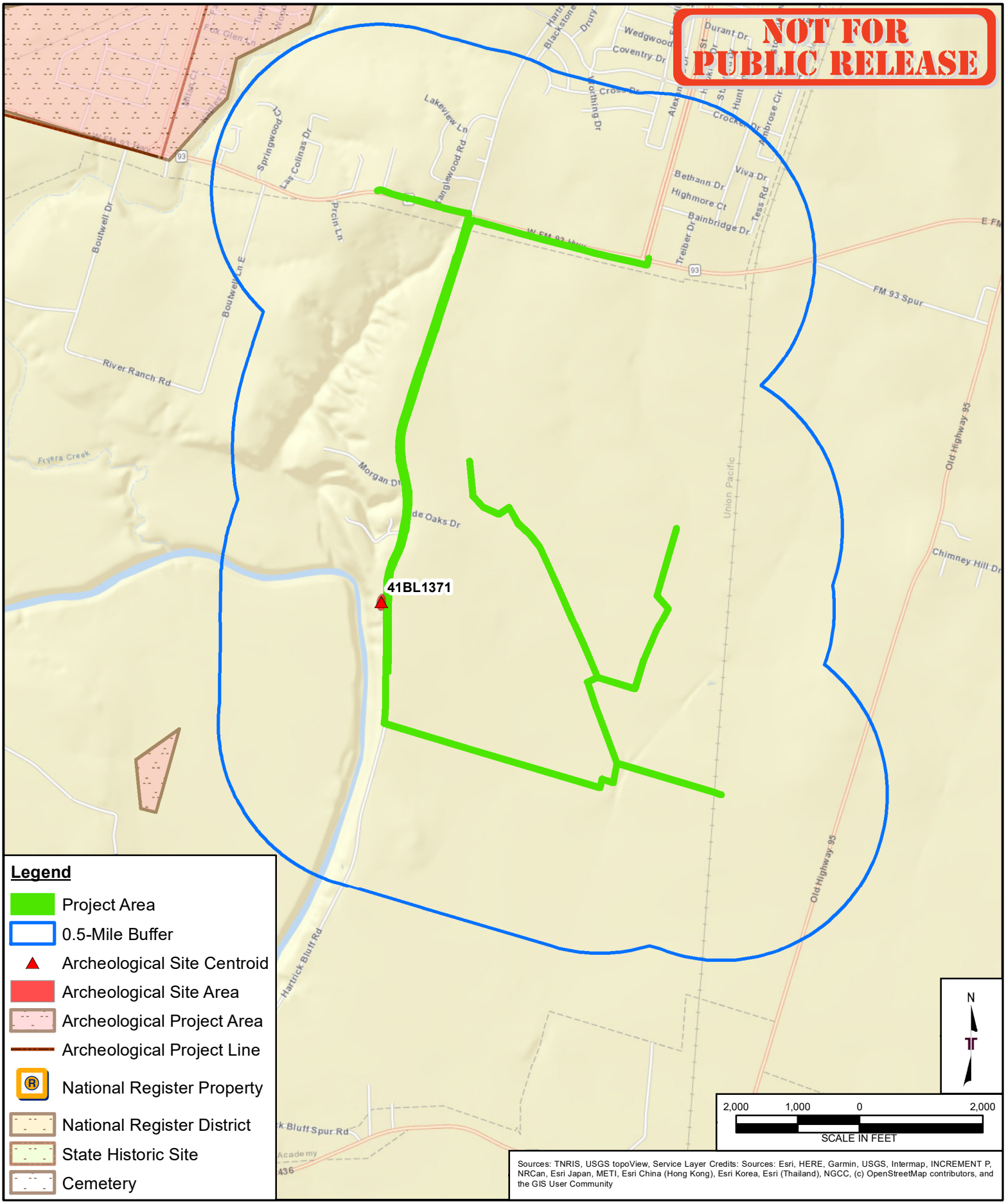
USDA Web Soil Survey

Little River Basin Water and Wastewater Lines

Hartrick Bluff Road and FM 93
Temple, Bell County, Texas

EXHIBIT

3



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Drawn By:	Terracon
Checked By:	CG
Approved By:	AS

Project No.	96197851C
Scale:	AS SHOWN
File No.:	96197851C
Date:	Mar 27, 2020

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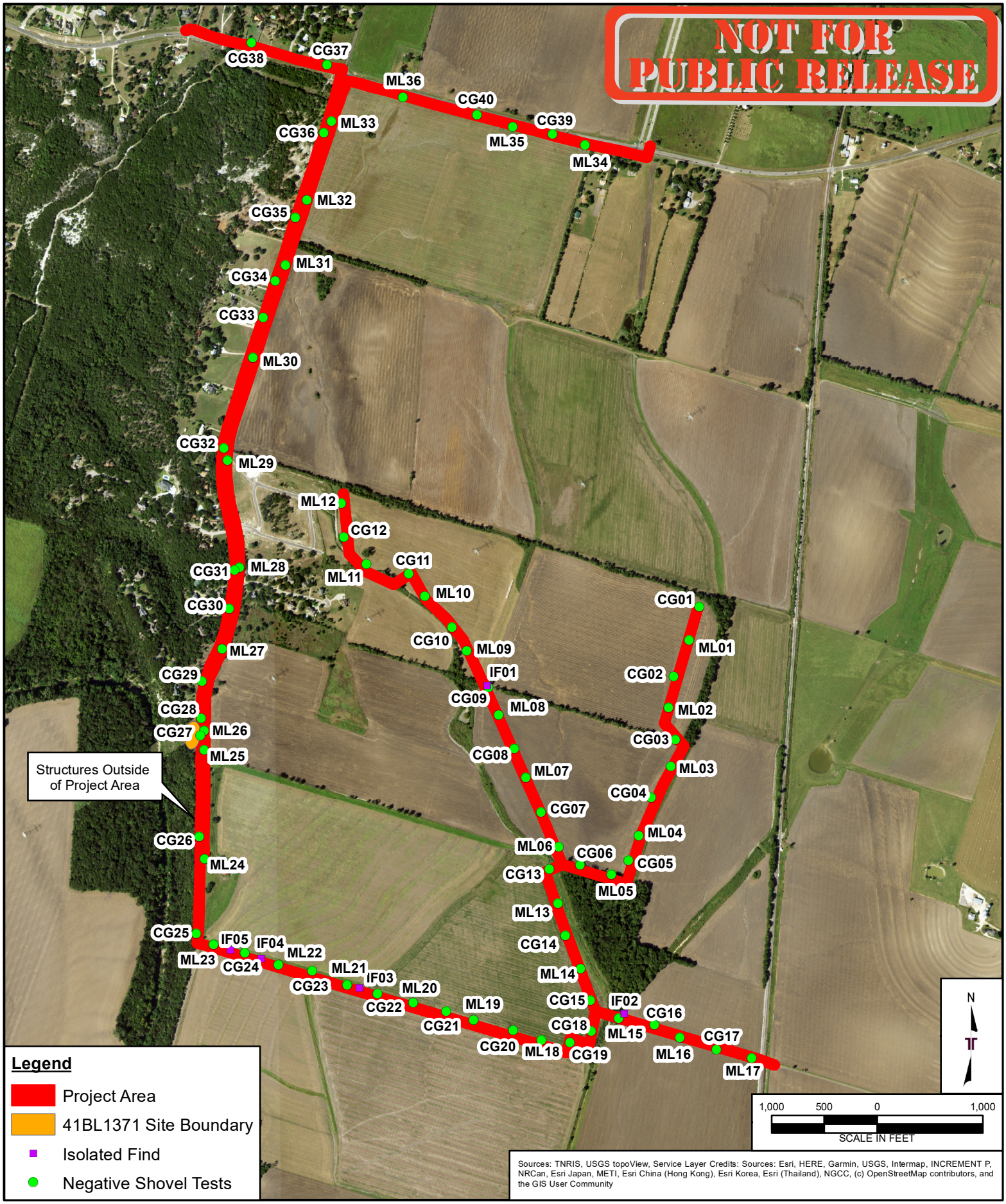
THC Atlas and TARL Map

Little River Basin Water and Wastewater Lines

Hartrick Bluff Road and FM 93
Temple, Bell County, Texas

EXHIBIT

4



Project Mngr:	CG
Drawn By:	Terracon
Checked By:	CG
Approved By:	AS

Project No.	96197851C
Scale:	AS SHOWN
File No.:	96197851C
Date:	May 11, 2020

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Results Map

Little River Basin Water and Wastewater Lines

Hartrick Bluff Road and FM 93
Temple, Bell County, Texas

EXHIBIT

5

APPENDIX B
Photographs

Appendix B. Photographs

Little River Water and Wastewater Lines ■ Temple, Bell County, Texas

Terracon Project No. 96197851C ■ Photos taken April 27-29 and May 1, 2020

Photo 1. View of alignment from CG01. Note good ground surface visibility. Matt Larsen in frame. View to the south.

Photo 2. View of alignment from CG04. Note good ground surface visibility. View to the south.

Appendix B. Photographs
Little River Water and Wastewater Lines ■ Temple, Bell County, Texas
Terracon Project No. 96197851C ■ Photos taken April 27-29 and May 1, 2020

Photo 3. View of alignment east of CG06. Note good ground surface visibility. View to the west.

Photo 4. Alignment through grass-covered field. Note poor ground surface visibility. View to the northwest.

Appendix B. Photographs

Little River Water and Wastewater Lines ■ Temple, Bell County, Texas

Terracon Project No. 96197851C ■ Photos taken April 27-29 and May 1, 2020

Photo 5. View from CG12. Note channelized drainage in left side of photo. Matt Larsen in frame. View to the northwest.

Photo 6. View of alignment from CG13. Note good ground surface visibility. View to the south.

Appendix B. Photographs
Little River Water and Wastewater Lines ■ Temple, Bell County, Texas
Terracon Project No. 96197851C ■ Photos taken April 27-29 and May 1, 2020

Photo 7. View of drainage between CG15 and ML15. Note bedrock. View to the northwest.

Photo 8. Eastern end of alignment, western side of railroad tracks. View to the east.

Appendix B. Photographs

Little River Water and Wastewater Lines ■ Temple, Bell County, Texas

Terracon Project No. 96197851C ■ Photos taken April 27-29 and May 1, 2020

Photo 9. Eastern end of alignment, east side of railroad tracks. View to the west.

Photo 10. Alignment north of channelized drainage. View from CG21. Note good ground surface visibility. View to the west.

Appendix B. Photographs

Little River Water and Wastewater Lines ■ Temple, Bell County, Texas

Terracon Project No. 96197851C ■ Photos taken April 27-29 and May 1, 2020

Photo 11. Alignment north of channelized drainage. View from CG23. Note poor ground surface visibility. View to the west.

Photo 12. Western side of Hartrick Bluff Road, north of CG25. Note gravels at ground surface. View to the north.

Appendix B. Photographs

Little River Water and Wastewater Lines ■ Temple, Bell County, Texas

Terracon Project No. 96197851C ■ Photos taken April 27-29 and May 1, 2020

Photo 13. Western side of Hartrick Bluff Road, near 41BL1371. Note shallow roadside drainage ditch. View to the north.

Photo 14. View towards recorded location of 41BL1371, from Hartrick Bluff Road ROW. View to the west.

Appendix B. Photographs

Little River Water and Wastewater Lines ■ Temple, Bell County, Texas

Terracon Project No. 96197851C ■ Photos taken April 27-29 and May 1, 2020

Photo 15. Eastern side of Hartrick Bluff Road, north of ML28. Note drainages, roadway, buried utility marker near wooded pole. View to the north.

Photo 16. Western side of Hartrick Bluff Road, north of CG31. Note driveways and drainage ditch. View to the north.

Appendix B. Photographs

Little River Water and Wastewater Lines ■ Temple, Bell County, Texas

Terracon Project No. 96197851C ■ Photos taken April 27-29 and May 1, 2020

Photo 17. Western side of Hartrick Bluff Road, north of CG29. Note bedrock at surface, markers for buried utilities in background. View to the north.

Photo 18. Western side of Hartrick Bluff Road, north of CG33. Note driveway, drainage, and buried utility markers. View to the north.

Appendix B. Photographs

Little River Water and Wastewater Lines ■ Temple, Bell County, Texas

Terracon Project No. 96197851C ■ Photos taken April 27-29 and May 1, 2020

Photo 19. Western side of Hartrick Bluff Road, north of CG35. Note gravels at surface. View to the north.

Photo 20. Northern side of FM 93, west of CG37. Note drainage ditch. View to the west.

Appendix B. Photographs
Little River Water and Wastewater Lines ■ Temple, Bell County, Texas
Terracon Project No. 96197851C ■ Photos taken April 27-29 and May 1, 2020

Photo 21. Northern side of FM 93, western end of alignment. Note gravels at surface. View to the west.

Photo 22. Southern side of FM 93, near CG39. Note drainage ditch. View to the east.

Appendix B. Photographs

Little River Water and Wastewater Lines ■ Temple, Bell County, Texas

Terracon Project No. 96197851C ■ Photos taken April 27-29 and May 1, 2020

Photo 23. Southern side of FM 93, east of ML34. Note markers for buried utilities. View to the east.

Photo 24. Isolated Find 01. Pull behind tiller, unknown age. View to the northwest.

Appendix B. Photographs

Little River Water and Wastewater Lines ■ Temple, Bell County, Texas

Terracon Project No. 96197851C ■ Photos taken April 27-29 and May 1, 2020

Photo 25. Isolated Find 01. Pull behind tiller, unknown age. View to the northeast.

Photo 26. Isolated Find 02. Artifacts observed on ground surface. Metal hoe, aqua glass, milk glass, clear glass, whiteware ceramic, and asbestos tile. No maker's marks or diagnostic features observed.

Appendix B. Photographs

Little River Water and Wastewater Lines ■ Temple, Bell County, Texas

Terracon Project No. 96197851C ■ Photos taken April 27-29 and May 1, 2020

Photo 27. Isolated Find 02. Note slope of ground and limestone gravels indicate fill material from channelized drainage at left side of photo at surface. View to the northeast.

Photo 28. Isolated Find 03. Concrete spillway in channelized drainage. View to the southwest.

Photo 29. Isolated Find 04. Concrete spillway in channelized drainage. View to the southwest.

Photo 30. Isolated Find 05. Concrete spillway in channelized drainage. View to the southwest.

Appendix B. Photographs

Little River Water and Wastewater Lines ■ Temple, Bell County, Texas

Terracon Project No. 96197851C ■ Photos taken April 27-29 and May 1, 2020

Photo 31. Collapsed structure on western side of Hartrick Bluff Road, outside of roadway ROW. View to the west.

Photo 32. Standing structure on western side of Hartrick Bluff Road, outside of roadway ROW. View to the northwest.

Appendix B. Photographs

Little River Water and Wastewater Lines ■ Temple, Bell County, Texas

Terracon Project No. 96197851C ■ Photos taken April 27-29 and May 1, 2020

Photo 33. Shovel Test ML14.

Photo 34. Shovel Test CG36. Note fill material.

APPENDIX C
Shovel Test Log

Appendix C. Shovel Test Log

Little River Basin Water and Wastewater Lines ■ Temple, Bell County, Texas

Shovel Tests from April 27-29 and May 1, 2020 ■ Terracon Project No. 96197851C

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
CG01		-	5-20%		Clay		In cornfield. Original form in stolen backpack.
CG02		-	5-20%		Clay		In cornfield. Original form in stolen backpack.
CG03		-	5-20%		Clay		In cornfield. Original form in stolen backpack.
CG04		-	5-20%		Clay		In cornfield. Original form in stolen backpack.
CG05		-	5-20%		Clay		In cornfield. Original form in stolen backpack.
CG06		-			Clay		On edge of wooded area near cornfield. Original form in stolen backpack.
CG07		-	5-20%		Clay		In cornfield. Original form in stolen backpack.
CG08		-	5-20%		Clay		In cornfield. Original form in stolen backpack.

Appendix C. Shovel Test Log

Little River Basin Water and Wastewater Lines ■ Temple, Bell County, Texas

Shovel Tests from April 27-29 and May 1, 2020 ■ Terracon Project No. 96197851C

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
CG09		-	5-20%		Clay		Near IF01, on edge of corn field. Original form in stolen backpack.
CG10		-	90+%		Clay		In grass covered field. Original form in stolen backpack.
CG11		-	90+%		Clay		In grass covered field. Original form in stolen backpack.
CG12		-	90+%		Clay		In grass covered field, near channelized drainage. Original form in stolen backpack.
CG13		-	5-20%		Clay		In cornfield. Original form in stolen backpack.
CG14		-	5-20%		Clay		In cornfield. Original form in stolen backpack.
CG15		-	5-20%		Clay		In cornfield. Original form in stolen backpack.
CG16		-	5-20%		Clay		In cornfield. Original form in stolen backpack.

Appendix C. Shovel Test Log

Little River Basin Water and Wastewater Lines ■ Temple, Bell County, Texas

Shovel Tests from April 27-29 and May 1, 2020 ■ Terracon Project No. 96197851C

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
CG17		-	5-20%		Clay		In cornfield. Original form in stolen backpack.
CG18		-	5-20%		Clay		In cornfield. Original form in stolen backpack.
CG19		-	5-20%		Clay		In cornfield. Original form in stolen backpack.
CG20		-			Clay		On edge of cornfield, near channelized drainage. Original form in stolen backpack.
CG21		-			Clay		On edge of cornfield, near channelized drainage. Original form in stolen backpack.
CG22		-			Clay		On edge of cornfield, near channelized drainage. Original form in stolen backpack.
CG23		-	90+%		Clay		In grassy area near channelized drainage. Original form in stolen backpack.
CG24		-	90+%		Clay		In grassy area near channelized drainage. Original form in stolen backpack.

Appendix C. Shovel Test Log

Little River Basin Water and Wastewater Lines ■ Temple, Bell County, Texas

Shovel Tests from April 27-29 and May 1, 2020 ■ Terracon Project No. 96197851C

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
CG25		-					In roadway ROW – abandoned, fill material. Original form in stolen backpack.
CG26		-					In roadway ROW. Encountered Cr Horizon. Original form in stolen backpack.
CG27		-			Clay		In roadway ROW. At edge of 41BL1371. Encountered bedrock. Original form in stolen backpack.
CG28		-			Clay		In roadway ROW. At edge of 41BL1371. Encountered bedrock. Original form in stolen backpack.
CG29		-					In roadway ROW. Original form in stolen backpack.
CG30		-					In roadway ROW. Original form in stolen backpack.
CG31		-					In roadway ROW. Original form in stolen backpack.
CG32		-					In roadway ROW. Original form in stolen backpack.

Appendix C. Shovel Test Log

Little River Basin Water and Wastewater Lines ■ Temple, Bell County, Texas

Shovel Tests from April 27-29 and May 1, 2020 ■ Terracon Project No. 96197851C

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
CG33		-					In roadway ROW. Fill material. Original form in stolen backpack.
CG34		-					In roadway ROW. Fill material. Original form in stolen backpack.
CG35		-					In roadway ROW. Modern plastic and asphalt in fill material. Original form in stolen backpack.
CG36		-					In roadway ROW. Abandoned, fill material. Original form in stolen backpack.
CG37	0-20	-	90+%	10YR 4/2 Dark Greyish Brown	Clay Loam	2-20%	In roadway ROW, slight slope. Grass roots. Common fine gravels. Cr horizon starts at 10-15 cmbs. Terminated due to Cr Horizon.
CG38	0-30	-	90+%	10YR 4/2 Dark Greyish Brown	Sandy Clay Loam	>50%	In roadway ROW, slight slope. Damp, sandy loamy clay. Very many gravels, up to 5 centimeters in size. Mottles of 10YR 6/2 Light Brownish Grey. Terminated due to apparent fill.
CG39	0-20	-	90+%	10YR 4/1 Dark Grey	Clay Loam	>20%	In roadway ROW, south of channelized drainage. Many gravels. Compact clay loam. Sandy mottles, 10YR 7/3 Very Pale Brown. Terminated due to apparent fill.

Appendix C. Shovel Test Log

Little River Basin Water and Wastewater Lines ■ Temple, Bell County, Texas

Shovel Tests from April 27-29 and May 1, 2020 ■ Terracon Project No. 96197851C

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
CG40	0-30	-	90+%	10YR 4/2 Dark Grey	Clay	>50%	In roadway ROW. Many fine gravels throughout. Sticky clay. Large mottles of 10YR2/1 Black. Increasing gravels with depth. Terminated due to apparent fill.
ML01	0-30	-	0-10%	2.5Y 2.5/1 Black	Clay Loam	2-20%	Approximately 60 meters from fence/treeline. 0-15 centimeters below surface cornfield plowzone. Less than 2 centimeter sized cherty limestone gravels. Some carbonate flecks.
ML01	30-50	-	0-10%	2.5Y 3/1 Very Dark Grey	Clay Loam	2-20%	Some carbonate flecks. Terminated at subsoil.
ML02	0-43	-	0-10%	2.5Y 2.5/1 Black	Clay Loam	2-20%	Approximately 60 meters from fence/treeline. 0-15 centimeters below surface cornfield plowzone. Less than 2 centimeter sized cherty limestone gravels. Some carbonate flecks.
ML02	43-45	-	0-10%	2.5Y 3/1 Very Dark Grey	Clay Loam	2-20%	Some carbonate flecks. Terminated at subsoil.
ML03	0-32	-	0-10%	2.5Y 2.5/1 Black	Clay Loam	2-20%	Approximately 20 meters from center of erosional channel. No loose plowzone. Less cherty limestone fragments than ML01 and ML02.
ML03	32-42	-	0-10%	2.5Y 3/1 Very Dark Grey	Clay Loam	2-20%	Terminated at compact subsoil.

Appendix C. Shovel Test Log

Little River Basin Water and Wastewater Lines ■ Temple, Bell County, Texas

Shovel Tests from April 27-29 and May 1, 2020 ■ Terracon Project No. 96197851C

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
ML04	0-24	-	0-10%	2.5Y 3/1 Very Dark Grey	Clay	0%	Test approximately 20 meters from center of erosional channel. 0-6 centimeters below surface: dense, compact clay with 5% coarse sand. 6-16 centimeters below surface: layer of 75% coarse sand, 25% clay. 16-24 centimeters below surface: Dense clay
ML04	24-38	-	0-10%	2.5Y 5/4 Light Olive Brown	Clay	0%	24-38 centimeters below surface: same as above but also with about 50% of lighter clay. Terminated at subsoil
ML05	0-48	-	20%	2.5Y 3/1 Very Dark Grey	Clay	0%	In cleared strip between crops and woods. Hackberry, ragweed, rye and hedge parsley in woods. Fairly homogeneous clay. Terminated at large root.
ML06	0-48	-	0%	2.5Y 2.5/1 Black	Clay	0%	Flat cornfield. Terminated at extreme compactness.
ML07	0-52	-	0%	2.5Y 2.5/1 Black	Clay	0%	Flat cornfield. Terminated at extreme compactness.
ML08	0-48	-	0%	2.5Y 2.5/1 Black	Clay	0%	Flat cornfield. Mottles of 2.5Y 5/4 Light Olive Brown at base of test. Terminated at subsoil.

Appendix C. Shovel Test Log

Little River Basin Water and Wastewater Lines ■ Temple, Bell County, Texas

Shovel Tests from April 27-29 and May 1, 2020 ■ Terracon Project No. 96197851C

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
ML09	0-45	-	100%	2.5Y 2.5/1 Black	Clay	0%	Flat grassland/prairie. 0-20 centimeters below surface: rootzone. Mottles of 2.5Y 5/4 Light Olive Brown at 45 centimeters below surface. Terminated at subsoil.
ML10	0-41	-	100%	2.5Y 2.5/1 Black	Clay	0%	Flat grassland/prairie. Lighter mottles and carbonate nodules at 41 centimeters below surface. Terminated at subsoil.
ML11	0-38	-	100%	2.5Y 2.5/1 Black	Clay	0%	Flat grassland/prairie, approximately 10 meters north of small drainage. Carbonate flecks increase with depth. Terminated at extreme compactness and roots.
ML12	0-41	-	100%	2.5Y 2.5/1 Black	Clay	0%	Flat grassland/prairie, approximately 10 meters east of constructed subdivision stormwater drainage channel. Carbonates increase with depth. Terminated at extreme compactness.
ML13	0-30	-	0%	2.5Y 3/1 Very Dark Grey	Clay	0-20%	East edge of flat cornfield, cleared of forbs and grass with a small drainage. Woods about 40 meters east of test. Mottles of 2.5Y5/4 Light Olive Brown sandy clay at 26 centimeters below surface. Terminated at subsoil.
ML14	0-46	-	0%	2.5Y 3/1 Very Dark Grey	Clay	0-20%	East edge of flat cornfield, cleared of forbs and grass with a small drainage. Woods about 40 meters east of test. Uniform dense clay throughout. Terminated at extreme compactness.

Appendix C. Shovel Test Log

Little River Basin Water and Wastewater Lines ■ Temple, Bell County, Texas

Shovel Tests from April 27-29 and May 1, 2020 ■ Terracon Project No. 96197851C

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
ML15	0-50	-	0%	2.5Y 3/1 Very Dark Grey	Clay	0-20%	Cornfield edge meets with deeply incised stream. Soil contains about 1% coarse sand and less than 2 centimeter sized gravels. Terminated at extreme compactness.
ML16	0-45	-	0%	2.5Y 3/1 Very Dark Grey	Clay	0%	Cornfield edge meets with deeply incised stream; test about 200 meters from stream. Terminated at extreme compactness.
ML17	0-48	-	0%	2.5Y 3/1 Very Dark Grey	Clay	0-20%	Flat cornfield about 20 meters west of railroad crossing. Turn around zone for tractors. Carbonates at 30 centimeters below surface, increasing with depth. Terminated at extreme compactness
ML18	0-34	-	20-40%	10YR 3/3 Very Dark Greyish Brown	Clay	0-20%	Edge of cornfield at shallow drainage between fields. Less than 1% coarse sand and less than 2 centimeter sized limestone gravels.
ML18	34-43	-	20-40%	10YR 3/3 Very Dark Greyish Brown	Clay	0-20%	Less than 1% coarse sand and less than 2 centimeter sized limestone gravels. Mottles of 10YR 4/3 Brown. Terminated at subsoil.
ML19	0-34	-	20-40%	10YR 3/2 Very Dark Greyish Brown	Clay	0-20%	Edge of cornfield at shallow drainage between fields. 0-21 centimeters below surface: about 5% coarse sand and limestone gravels less than 6 centimeters in size. 21-34 centimeters below surface: clay.

Appendix C. Shovel Test Log

Little River Basin Water and Wastewater Lines ■ Temple, Bell County, Texas

Shovel Tests from April 27-29 and May 1, 2020 ■ Terracon Project No. 96197851C

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
ML19	34-44	-	20-40%	10YR 2/1 Black	Clay	0-20%	Subsoil begins. Terminated due to subsoil.
ML20	0-30	-	20-40%	10YRV3/2 Very Dark Greyish Brown	Clay	0%	Edge of cornfield at shallow drainage between fields. Less than 2% coarse sand throughout.
ML20	30-39	-	20-40%	10YR 2/1 Black	Clay	0%	Less than 2% coarse sand throughout. Terminated at subsoil.
ML21	0-18	-	100%	10YR 2/1 Black	Clay	0-20%	Grassy area between two fields. Less than 10% coarse sand, limestone gravels, and carbonate flecks.
ML21	18-30	-	100%	10YR 4/2 Dark Greyish Brown	Clay	0-20%	Mottles of 10YR 6/3 Pale Brown. Less than 10% coarse sand, limestone gravels, and carbonate flecks. Terminated at subsoil.
ML22	0-40	-	100%	10YR 2/1 Black	Clay	0-20%	Grassy area between two fields. Less than 10% coarse sand, limestone gravels, and carbonate flecks. Subsoil color change begins at base. Terminated at subsoil.
ML23	0-47	-	100%	10YR 2/1 Black	Clay	0-20%	Less than 1% coarse sand and sparse limestone and quartz gravels less than 4 centimeters in size. One fragment of burned chert between 20-40 centimeters below surface, not cultural. Terminated at extreme compaction.

Appendix C. Shovel Test Log

Little River Basin Water and Wastewater Lines ■ Temple, Bell County, Texas

Shovel Tests from April 27-29 and May 1, 2020 ■ Terracon Project No. 96197851C

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
ML24	0-25	-	90-100%	10YR 3/2 Very Dark Greyish Brown	Clay	60-80%	East side of Hartrick Bluff Drive in ROW. 0-25 centimeters below surface: mixed clay and limestone rubble. Disturbed by road construction.
ML24	25-47	-	90-100%	2.5Y 7/3 Pale Brown	Limestone	100%	Crushed limestone and weathered, soft bedrock. Terminated due to bedrock.
ML25	0-35	-	100%	10YR 3/2 Very Dark Greyish Brown	Clay	0%	In ROW about 30 meters south of 41BL1371, probably disturbed by road construction of Hartrick Bluff Drive.
ML25	35-41	-	100%	2.5Y 7/3 Pale Brown	Limestone	100%	Weathered bedrock C horizon. Terminated due to bedrock.
ML26	0-40	-	100%	10YR 3/2 Very Dark Greyish Brown	Clay	100%	In ROW, in middle of 41BL1371 if it crossed road. Surface is a culvert, about 50 centimeters lower than presumably undisturbed ground one meter east in pasture. Terminated at crushed rock.
ML27	0-15	-	100%	N/A	Limestone	N/A	In ROW. Surface is a culvert, about 50 centimeters lower than presumably undisturbed ground one meter east in pasture. Crushed rock at surface. 3 centimeter O horizon on top of crushed rock.
ML28	0-17	-	20-40%	10YR 3/2 Very Dark Greyish Brown	Clay loam	50-70%	In culvert in ROW. Soil very alluvial/erosional with heavy organic material from nearby vegetation (oaks).

Appendix C. Shovel Test Log

Little River Basin Water and Wastewater Lines ■ Temple, Bell County, Texas

Shovel Tests from April 27-29 and May 1, 2020 ■ Terracon Project No. 96197851C

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
ML28	17-25	-	20-40%	N/A	Limestone	N/A	Terminated at crushed rock.
ML29	0-10	-	100%	10YR 3/2 Very Dark Greyish Brown	Clay and Crushed rock (limestone)	90%	ROW near Hartrick Valley subdivision. Fence nearby. C horizon very near surface.
ML30	0-10	-	100%	10YR 3/2 Very Dark Greyish Brown	Clay and Crushed rock (limestone)	90%	ROW is about 80 centimeters below Hartrick Bluff Drive, but about even with field surface at fenceline. Limestone gravel at surface.
ML31	0-12	-	100%	10YR 3/2 Very Dark Greyish Brown	Clay and Pea gravel	80-90%	ROW of Hartrick Bluff Drive. Road is raised but ROW closest to fenceline is original surface. Fill material.
ML31	12-45	-	100%	10YR 3/2 Very Dark Greyish Brown	Clay	0-2%	Clay subsoil. Less than 1% coarse sand and limestone gravels less than 1 centimeter in size. More gravels at 45 centimeters below surface.
ML32	0-18	-	60-100%	10YR 3/2 Very Dark Greyish Brown	Clay loam	0%	ROW of Hartrick Bluff Drive at edge of cornfield. Uniform clay.
ML32	18-37	-	60-100%	10YR 5/3 Brown	Clay	30%	C horizon or possible disturbance from road construction. Limestone gravels.
ML33	0-26	-	60-100%	10YR 3/2 Very Dark Greyish Brown	Clay	≤2%	ROW on east side of Hartrick Bluff Drive about 100 meters south of FM 93. Overgrown ROW at edge of crop field. Uniform clay.

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ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
ML33	26-32	-	60-100%	10YR 5/3 Brown	Clay	50%	50% limestone gravels. Cr horizon.
ML34	0-20	-	100%	10YR 3/2 Very Dark Greyish Brown	Clay	≤2%	South edge of ROW south side FM 93. Clay cap over road fill.
ML34	20-25	-	100%	10YR 5/3 Brown	Road fill	70%	70% gravels and cobbles. Road fill.
ML35	0-20	-	100%	10YR 3/2 Very Dark Greyish Brown	Clay	≤40%	South edge of ROW south side of FM 93. Coarse sand and limestone gravels. Road fill at 20 centimeters below surface.
ML36	0-11	-	100%	10YR 4/3 Brown	Clay	≤10%	South edge of ROW south side of FM 93. Gravels.
ML36	11-20	-	100%	10YR 3/2 Very Dark Greyish Brown	Road fill	~50%	Limestone gravels and coarse sand. Road fill.