Volume 2018 Article 128

2018

Intensive Archaeological Survey for the Proposed City of Conroe Outfall Relocation, Montgomery County, Texas

Susan E. Butler

Steve Cummins

Todd L. Butler

Intensive Archaeological Survey for the Proposed City of Conroe Outfall Relocation, Montgomery County, Texas

Intensive Archaeological Survey for the Proposed City of Conroe Outfall Relocation, Montgomery County, Texas

Texas Antiquities Permit No. 7770

Prepared for

Carollo Engineers, Inc.
City of Conroe, Texas

Prepared by

SWCA Environmental Consultants

SWCA Project No. 40070

SWCA Cultural Resources Report No. 16-504

May 16, 2018

FINAL

INTENSIVE ARCHAEOLOGICAL SURVEY FOR THE PROPOSED CITY OF CONROE OUTFALL RELOCATION, MONTGOMERY COUNTY, TEXAS

TEXAS ANTIQUITIES PERMIT NO. 7770

Prepared for

Carollo Engineers, Inc.
100 East 15th Street, Suite 415
Fort Worth, Texas 76102

and

City of Conroe, Texas
300 West Davis Street
Conroe, Texas 77305

Prepared by

Susan E. Butler
Archaeologist

Steve Cummins
Archaeologist

Todd L. Butler, M.A., RPA
Principal Investigator

SWCA Environmental Consultants
10245 West Little York Road, Suite 600
Houston, Texas 77040
www.swca.com

SWCA Project No. 40070, 49565

SWCA Cultural Resources Report No. 16-504

May 16, 2018

ABSTRACT

On behalf of Carollo Engineers, Inc. and the City of Conroe, Texas, SWCA Environmental Consultants (SWCA) conducted an intensive archaeological survey for the proposed City of Conroe Outfall Relocation project located southwest of the existing City of Conroe wastewater treatment facility in Montgomery County, Texas. The proposed project consists of the construction of a new pipeline and outfall structure within a 2,190-foot-long, 60-foot-wide corridor (approximately 3 acres in total), with potential depth of impact from 5 to 17 feet below surface.

Archaeological investigations were conducted in compliance with the Antiquities Code of Texas (Texas Natural Resource Code, Title 9, Chapter 191) and accompanying Rules of Practice and Procedure (Texas Administrative Code, Title 13, Chapter 26) under Texas Antiquities Permit No. 7770, and with guidelines set forth by the Texas Historical Commission (THC) and Section 106 of National Historic Preservation Act (NHPA) (16 United States Code [USC] 470) and its implementing regulations, 36 Code of Federal Regulations (CFR) 800.

The background review revealed that no previous surveys or recorded cultural resources are located within the proposed project area. An intensive archaeological survey, including pedestrian survey augmented by shovel testing, was conducted along the length of the project area on September 7, 2016. Following THC and USACE recommendations and as a condition of Permit No. SWG-2016-01062 (dated to August 14, 2017), additional deep testing was conducted through the monitoring of the excavation of five trench locations within the proposed alignment on May 2, 2018. No cultural resources were identified during the investigations.

Overall, the project alignment extends across a forested bottomland along the eastern bank of the West Fork San Jacinto River. Vegetation included hardwood forests of elm and sycamore, pine, and palmetto. Evidence of disturbance along the line was obvious and includes hydraulic alteration of the floodplain, land clearing, and power line/water utility construction.

In accordance with Section 106 of the NHPA 36 CFR 800.4 (b)(1) and the Antiquities Code of Texas, SWCA has made a good faith effort to identified significant cultural resources within the project area to the project depth of impact. No properties listed or otherwise eligible for the NRHP, or for designation as a SAL, were found within the investigated project area. Consequently, SWCA recommends no further archaeological investigation and a finding of NO HISTORIC PROPERTIES AFFECTED under 36 CFR 800.4(d)(1).

CONTENTS

APPENDICES

FIGURES

TABLES

MANAGEMENT SUMMARY

Project Title. Intensive Archaeological Survey for the Proposed City of Conroe Outfall Relocation, Montgomery County, Texas

SWCA Project Number. 40070, 49565

Project Description. On behalf of Carollo Engineers, Inc. and the City of Conroe, Texas, SWCA Environmental Consultants (SWCA) conducted an intensive archaeological survey for the proposed City of Conroe Outfall Relocation project located southwest of the existing City of Conroe wastewater treatment facility in Montgomery County, Texas. The proposed project consists of the construction of a new pipeline and outfall structure within a 2,190-foot-long, 60-foot-wide corridor.

Number of Acres Surveyed. Approximately 3.0 acres

Principal Investigator. Todd L. Butler

Dates of Work: September 7, 2016 and May 2, 2018

Purpose of Work: All work was conducted, in compliance with the Antiquities Code of Texas under Texas Antiquities Permit No. 7770.

Number of Sites. No previously recorded sites are located within the proposed project area and no cultural resources were identified during this investigation.

Eligibility. n/a

Curation. SWCA conducted a non-collection survey and, therefore, no cultural materials will be curated. Original survey documentation will be curated with the Texas State University Center for Archaeological Studies.

Comments. In accordance with Section 106 of the NHPA 36 CFR 800.4 (b)(1) and the Antiquities Code of Texas, SWCA has made a good faith effort to identified significant cultural resources within the project area to the depth of project impact. No properties listed or otherwise eligible for the NRHP, or for designation as a SAL, were found within the investigated project area. Consequently, SWCA recommends no further archaeological investigation and a finding of NO HISTORIC PROPERTIES AFFECTED under 36 CFR 800.4(d)(1).

INTRODUCTION

On behalf of Carollo Engineers, Inc. and the City of Conroe, Texas, SWCA Environmental Consultants (SWCA) conducted an intensive archaeological survey for the proposed City of Conroe Outfall Relocation project located southwest of the existing City of Conroe wastewater treatment facility in Montgomery County, Texas.

Archaeological investigations were conducted in compliance with the Antiquities Code of Texas (Texas Natural Resource Code, Title 9, Chapter 191) and accompanying Rules of Practice and Procedure (Texas Administrative Code, Title 13, Chapter 26) under Texas Antiquities Permit No. 7770, and with guidelines set forth by the Texas Historical Commission (THC) and Section 106 of National Historic Preservation Act (NHPA) (16 United States Code [USC] 470) and its implementing regulations, 36 Code of Federal Regulations (CFR) 800.

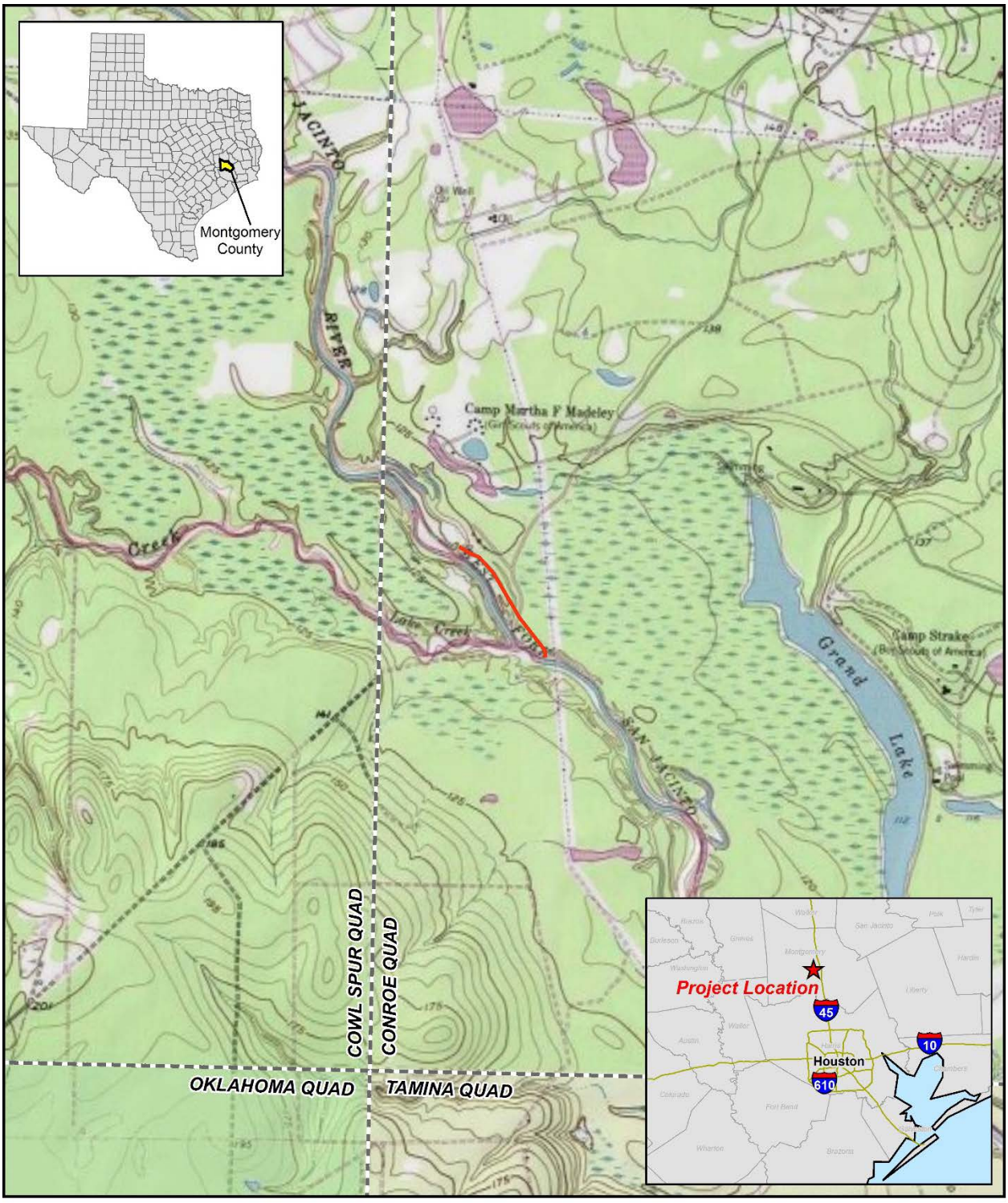
A background research and literature review was completed for the project and surrounding area. Additionally, SWCA archaeologists conducted an intensive archaeological survey of the planned area of effect of the project area. Following THC and USACE recommendations and as a condition of Permit No. SWG-2016-01062 (dated to August 14, 2017), additional deep testing was conducted through the monitoring of the excavation of five trench locations within the proposed alignment on May 2, 2018. No cultural resources were identified during the investigations. All investigations were conducted in accordance with the standards and guidelines of the NHPA and the THC minimum archaeological survey standards for such projects.

Todd L. Butler served as the Principal Investigator for the project. Allison King and Todd McLeod conducted the survey on September 7, 2016. Monitoring trench excavation was conducted by Steve Cummins on May 2, 2018. The report was prepared by Susan E. Butler and Steve Cummins. Geographic information systems (GIS) support was provided and report graphics were prepared by GIS Specialist Lolita Guarin and Colleen Kennedy. The report was edited by Joy Hengst.

Project Area Description

The proposed project consists of the construction of a new pipeline and outfall structure within a 2,190-foot-long, 60-foot-wide corridor, totaling approximately 3.0 acres of land. The potential depth of impact is between 5 to 17 feet below surface.

The proposed project area is located along the West Fork San Jacinto River and begins at the existing City of Conroe wastewater treatment plant located at 2400 Sergeant Ed Holcombe Boulevard South, which is approximately 1.16 miles southwest of the intersection of Sergeant Ed Holcombe Boulevard South and TX-336 Loop West in Montgomery County, Texas. The project area continues southeast for approximately 0.4 mile to its termination in the east bank of the West Fork San Jacinto River. The project area is depicted on the Conroe 7.5-minute U.S. Geological Survey (USGS) topographic map (Figure 1).



SWCA ENVIRONMENTAL CONSULTANTS

10245 West Little York, Suite 600
Houston, Texas 77040
(281) 617-3217 phone
(281) 617-3227 fax
www.swca.com

CITY OF CONROE
OUTFALL RELOCATION
USACE GALVESTON DISTRICT
PROJECT LOCATION
MONTGOMERY COUNTY, TEXAS

Alignment
1:24K Quad Boundary

Background:	NGS Topographic Maps
Scale:	1:24,000
Created By:	LG
Approved By:	SB
SWCA Project No.:	40070
Date Produced:	September 13, 2016

NAD 1983 UTM Zone 15N

0 1,000 2,000 3,000 Feet
0 300 600 900 Meters

Figure 1. Project location map.

ENVIRONMENTAL SETTING

Physiographic Regions

The project area is located in the Flatwoods ecoregion of the Coastal Plain physiographic province (Griffith et al. 2007). Generally, the area is mostly flat to gently sloping. Local topography is limited to small, natural pimple mounds or to the sloping terraces of streams and rivers, which are generally slow and sluggish. The eastern portion of the Coastal Plain was initially covered in longleaf pine and open savannahs. During the historic occupation of the region, timber harvesting, oil and gas exploitation, and occasional pasture have been the predominant land uses. The urban development of Houston has also significantly changed the landscape of the Coastal Plain in the last 150 years.

Geology

The proposed project area is situated on landforms located immediately east of the West Fork of the San Jacinto River near its confluence with Lake Creek. Geologically, the project area is located on Quaternary Alluvium. Alluvium deposits consist primarily of clay, silt, and sand located on landforms adjacent to stream channels, point bars, and natural levees (Barnes 1992).

Houston-PALM

According to Abbott's (2001) Houston-PALM, a guide to archaeological potential related to geomorphology in the Houston area, the project area is within Map Unit 1. Briefly, Map Unit 1 is characteristic of areas underlain by deep Holocene deposits that exhibit low to moderate surficial disturbance (Abbott 2001:156). Abbot (2001) recommends a surface survey with shovel testing and recommends deep testing if deep impacts are anticipated for projects within Map Unit 1.

Soils

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, the soils mapped along the project area consist of the Bruno loamy fine sand. The Bruno series consists of very deep, excessively drained soils formed in sandy alluvium on floodplains (NRCS 2016). According to Abbott (2001:21), Bruno soils have a high geoarchaeological potential.

Flora and Fauna

The modern vegetation communities within the Flatwoods differs slightly from past biotic communities (Griffith et al. 2007). Vegetation in the Flatwoods once consisted of piney forests dominated by longleaf pine (*Pinus palustris*) intermixed with white oak (*Quercus alba*), southern red oak (*Quercus falcata*), willow oak (*Quercus phellos*), sweetgum (*Liquidambar styraciflua*), blackgum (*Nyssa sylvatica*), and hollies (*Ilex* spp.) (Griffith et al. 2007:92). Pine wetlands included sweetbay (*Magnolia virginiana*) and wax myrtle (*Morella cerifera*). Today, the Flatwoods ecological province is dominated by loblolly (*Pinus taeda*) and shortleaf (*Pinus echinata*) pine plantations.

The project area is located in the southern Austroriparian biotic as defined by Blair (1950). The western border of the Austroriparian biotic province is largely based on the expansion of the pine and hardwood forest. As such, the expansion of this timber and the Austroriparian province fluctuates with the amount of rainfall (Blair 1950).

The province has a high faunal diversity. Blair (1950) identified at least 47 species of mammals, 41 species of reptiles, and 35 species of amphibians native to the region. Blair (1950) defines the following mammals as common within the Austroriparian province: white-tailed deer (*Odocoileus virginianus*), muskrat (*Ondatra zibethicus*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), opossum (*Didelphis virginiana*), eastern mole (*Scalopus aquaticus*), eastern pipistrelle bat (*Pipistrellus subflavus*), red bat (*Lasiurus carolinensis*), fox squirrel (*Sciurus niger*), gray squirrel (*Sciurus carolinensis*), southern flying squirrel (*Glaucomys volans*), gopher (*Geomys breviceps*), fulvous harvest mouse (*Reithrodonomys fulvescens),* white-footed mouse (*Peromyscus leucopus*), marsh rice rat (*Oryzomys palustris*), cotton rat (*Sigmodon hispidus*), packrat (*Neotoma floridana*), eastern cottontail (*Sylvilagus floridanus*), and swamp rabbit (*Sylvilagus aquaticus*). Historically, red wolf, bison, and black bear ranged into or near the project area, although bison was intermittently absent from the region (Burt and Grossenheider 1976; Dillehay 1974; Kricher and Morrison 1998; Sutton and Sutton 1985).

Common land turtles include the eastern box turtle (*Terrapene carolina*) and western box turtle (*Terrapene ornate*), while the snapping turtle (*Chelydra serpentinia*), river cooter (*Chrysemys concinna*), and diamondback terrapin (*Malaclemys terrapin*) comprise common water turtles. Common lizards include the green anole (*Anolis carloinensis*), eastern fence lizard (*Sceloporus undulates*), broad-headed skink (*Eumeces laticeps*), six-lined racerunner (*Chemidophorus sexlineatus*), and eastern grass lizard *(Ophiosaurus ventralis*). Snakes, amphibians, and birds are also present in considerable numbers and diversity (Blair 1950).

The reptilian assemblage includes the racer (*Coluber constrictor*), rat snake (*Elaphe obsoleta*), timber rattlesnake (*Crotalus horridus*), common kingsnake (*Lampropeltis getulus*), woodhouse toad (*Bufo woodhousii*), bullfrog (*Rana catesbiana*), northern leopard frog (*Rana pipiens*), eastern box turtle, and the gulf coast toad (*Bufo vallicepus*) (Blair 1950; Conant and Collins 1998; Sutton and Sutton 1985).

Breeding birds common to the wooded areas include black vulture (*Coragyps atratus*), turkey vulture (*Cathartes aura*), wild turkey (*Meleagris gallopavo*), northern bobwhite quail (*Colinus virginianus*), mourning dove (*Zenaida macroura*), red-bellied woodpecker (*Melanerpes carolinus*), downy woodpecker (*Picoides pubescens*), scissor-tailed flycatcher (*Tyrannus forficatus*), blue jay (*Cyanocitta cristata*), American crow (*Corvus brachyrhynchos*), eastern bluebird (*Sialia sialis*), northern mockingbird (*Mimus polyglottos*), northern cardinal (*Cardinalis cardinalis*), painted bunting (*Passerina ciris*), and lark sparrow (*Chondestes grammacus*). Migratory species within wooded areas include yellow-bellied sapsucker (*Sphyrapicus varius*), northern flicker (*Colaptes auratus*), eastern phoebe (*Sayornis phoebe*), ruby-crowned kinglet (*Regulus calendula*), hermit thrush (*Catharus guttatus*), American robin (*Turdus migratorius*), and many sparrows (Bull and Farrand 1977; Brown 1985; Kricher and Morrison 1998; Sutton and Sutton 1985).

BACKGROUND REVIEW

The background review consisted of a cultural resources and environmental literature review of the proposed project area, as well as a 1-mile radius around the project area. An SWCA archaeologist reviewed the corresponding USGS 7.5-minute topographic quadrangle map on the Texas Archeological Sites Atlas (TASA), a restricted online database, for any previously recorded surveys and historic or prehistoric sites located in or near the project area. Site files, relevant maps, NRHP properties, State Antiquities Landmark (SAL) listings, Registered Texas Historic Landmarks, cemeteries, and local neighborhood surveys were also examined. Listings on TASA are limited to projects under purview of the Antiquities Code of Texas or the NHPA of 1966. Therefore, all work conducted in the area may not be available. The Texas Historic Sites Overlay, aerial photographs, Bureau of Economic Geology Maps, and the NRCS Web Soil Survey were also examined for historical and environmental information related to the project area.

Previous Investigations

The background review revealed that the project area has not been previously surveyed for cultural resources. Five cultural resources surveys have been conducted within 1 mile of the project area (Table 1). Two linear projects were conducted in 1980 and 1990, associated with the wastewater treatment facility (THC 2016). One survey was for the Texas Express Pipeline by SWCA (THC 2016). The remaining two surveys were completed by HRA Gray & Pape in 2013 and were residential/commercial development projects (THC 2016). None of these projects identified cultural resources in the immediate vicinity of the proposed project area.

Table 1. Previously conducted cultural investigations within 1 mile of the project area.

Year	Distance	Project	Investigated by	Agency
1980	110 feet	Utility line/wastewater treatment plant survey	Unknown	EPA
1990	0.1 mile	Wastewater treatment plant survey	Unknown	EPA/TWDB
2012	0.9 mile	Texas Express Pipeline survey	SWCA	USACE
2013	0.8 mile	Development project survey	HRA Gray & Pape	Montgomery County
2013	0.9 mile	Development project survey	HRA Gray & Pape	USACE

Previously Recorded Cultural Resources

No previously recorded cultural resources are located within or immediately adjacent to the proposed project area. One previously recorded archaeological site (41MQ62) is located within a 1-mile radius of the project area. Site 41MQ62 is a prehistoric campsite/artifact scatter located approximately 0.38 mile northwest of the project area within the vicinity of the Martha Foster Madeley Girl Scout Camp. Site 41MQ62 remains unevaluated for the NRHP and will not be impacted by the proposed project. There are no NRHP-listed structures, RTHLs, or SALs located within a 1-mile radius of the project area.

Potential Cultural Resources

Historical topographic maps (USGS 1958, 1967, 1978, 1986), aerial photographs (NETR 1957, 1995), and historical maps on the Texas Historical Overlay (Foster et al. 2006) were also examined. No additional potential cultural resources were identified within or immediately adjacent to the project area during the review of these sources.

Figure Redacted

Figure 2. Previous investigations and recorded cultural resources.

FIELD INVESTIGATIONS

Field Methods

The archaeological investigation of the proposed project area was designed to be of sufficient intensity to determine the nature, extent, and if possible, significance of any cultural resources located within the project area. An intensive pedestrian survey with systematic shovel testing was conducted within the project area.

During the survey, a team of archaeologists walked the project area while inspecting the ground surface for artifacts and anomalies that may indicate subsurface cultural deposits. Subsurface explorations consisted of shovel tests placed systematically along the project alignment at 100-m intervals, per THC survey standards, and at any landforms suspected of having archaeological potential, including areas of dramatic elevation change or suspected pimple mounds. The intensity of the subsurface investigations complied with THC survey standards and was commensurate with the proposed depth of ground disturbance.

Individual 30-cm-diameter shovel tests were excavated until culturally sterile clay, water table, or other obstruction was reached. The excavated matrix was screened through ¼-inch hardware mesh to retrieve any cultural materials that were present. The data from each shovel test was recorded on standardized shovel test forms and the location of each test was plotted with a handheld global positioning system (GPS) unit.

As geoarchaeological assessments of the project area indicated potential for deeply buried cultural materials, deep testing by controlled trenching with a backhoe was conducted in strategic areas throughout the project corridor. These areas are mainly second order or higher creeks or river drainages with floodplain or alluvial terraces (San Jacinto River) of the project drainage crossing.

During deep testing, an SWCA archaeologist monitored the backhoe efforts while observing the soil profile of strata and bucket backfill for potential deeply buried cultural deposits. The archaeological monitor recorded change of color, texture, mottles, disturbances, and cultural deposits, if any, within each stratum of the excavated profile on appropriate field notes and recorded each location with a GPS.

All trench excavation was performed in accordance with Occupational Health and Safety Administration (OSHA) regulations (29 CFR Part 1926) and the Texas Trench Safety Act (H. B. 1569). SWCA thoroughly photographed the entire process. All trenches were backfilled and leveled upon completion of excavation and recording.

Results of Field Investigations

Archaeological Survey

Intensive archaeological survey was conducted throughout the length of the project area on September 7, 2016. Six shovel tests were excavated at 100-m intervals (Figure 3). All were negative for cultural materials (Appendix A).

Shovel Tests 1 and 2 were situated on an improved/mechanically-altered terrace overlooking the east bank of the West Fork San Jacinto River. Shovel Tests 3 through 5 were located within a frequently flooded/inundated forested low-lying area. As a result, Bruno soils including mottled clays were encountered near the surface. Shovel Test 6 was located on a sand bank on the eastern edge of the river. This shovel test was excavated to 140 cm below surface (cmbs); the water table was reached at approximately 130 cmbs.

Overall, the project alignment extends across a forested bottomland along the eastern bank of the West Fork San Jacinto River. Vegetation included hardwood forests of elm and sycamore, pine, and palmetto. Evidence of disturbance along the line was obvious and includes hydraulic alteration of the floodplain, land clearing, and power line/water utility construction (Figure 4 through Figure 9).

Figure 3. Results of archaeological investigation.

Figure 4. Northern terminus, showing edge of station and guy wires, view north.

Figure 5. Northern terminus, showing existing pipeline, view west.

Figure 6. Edge of cleared right-of-way crossed by project, view south.

Figure 7. Edge of cleared right-of-way, showing road and utilities in distance, view north.

Figure 8. Southern terminus showing sediment deposited by recent flooding, view north.

Figure 9. Southern terminus showing sediment deposited by recent flooding, view south.

Deep Testing and Monitoring

Following THC and USACE recommendations and as a condition of Permit No. SWG-2016-01062 (dated to August 14, 2017-see Appendix B), additional deep testing was conducted through the monitoring of the excavation of five trench locations within the proposed alignment on May 2, 2018. The five trenches were excavated to the depth of project impacts and situated along the alignment in areas outside delineated wetlands (Figure 10). Each trench measured approximately 10 feet in length, 3 feet in width, and was excavated to a depth between 10 and 17 feet deep, depending on the anticipated depth of the proposed project impacts (Figures 11, 12, 13 and 14). All trenches were negative for cultural material (Appendix C).

Trenches 1 through 3 revealed generally four strata in profile. Stratum I extended from the surface to approximately 150 cmbs and consisted of brown to grayish brown (10YR 5/3 to 5/2) sandy loam to sandy clay loam with 5 to 10 percent light yellowish brown to brownish yellow (10YR 6/4 to 6/6) mottles. The soils were loose and slightly friable with a weak granular structure. Stratum II extended from the termination of Stratum I to approximately 300 cmbs and consisted of grayish brown to pale brown (10YR 5/2 to 6/3) sandy loam to sandy clay with 5 to 10 percent light yellowish brown to brownish yellow (10YR 6/4 to 6/6) mottles. The soils were loose to very friable and smooth with a weak to moderate structure. Stratum III extended from approximately 300 to 450 cmbs and consisted of very dark gray (10YR 3/1) clay with 5 percent dark yellowish brown to yellowish brown (10YR 4/6 to 5/8) mottles. The soils were very firm with a massive structure. Stratum IV extended from approximately 450 to 520 cmbs and consisted of light gray to light brownish gray (10YR 7/2 to 6/2) sand with 3 to 5 percent brownish yellow to yellow (10YR 6/8 to 7/8) mottles. The soils were loose and very moist with a single grained structure. Trenches 1 through 3 were terminated at the depth of the anticipated project impacts. No cultural material was encountered in the trenches or backfill.

Trench 4 exhibited three strata in profile. Stratum I consisted of light yellowish brown (10YR 6/4) sand from the surface to approximately 150 cmbs. Stratum II extended from approximately 150 to 250 cmbs and consisted of grayish brown (10YR 5/2) sandy clay with 1 to 5 percent dark brown to pale brown (10YR 3/3 to 6/3) mottles. The soils were firm with a moderate granular structure. Stratum III extended from approximately 250 to 520 cmbs and consisted of very pale brown (10YR 7/3) sand. The soils were loose and very moist with a single grained structure. Trench 4 terminated at the depth of the anticipated project impacts. No cultural material was encountered in the trench or backfill.

Trench 5, located at the southern terminus of the project and adjacent to the West Fork San Jacinto River, revealed one stratum in profile. The stratum consisted of light yellowish brown (10YR 6/4) sand from the surface to approximately 300 cmbs. The trench was terminated at the depth of the anticipated project impacts. No cultural material was encountered in the trench or backfill.

Overall, deep testing revealed that the project area has been disturbed by frequent episodes of flooding. Soils observed throughout the deep testing study areas revealed that the soil matrix has been displaced or translocated throughout periods of constant inundation. There was no sign of a stable matrix column and or intact soil level that could potentially have deeply buried cultural deposits.

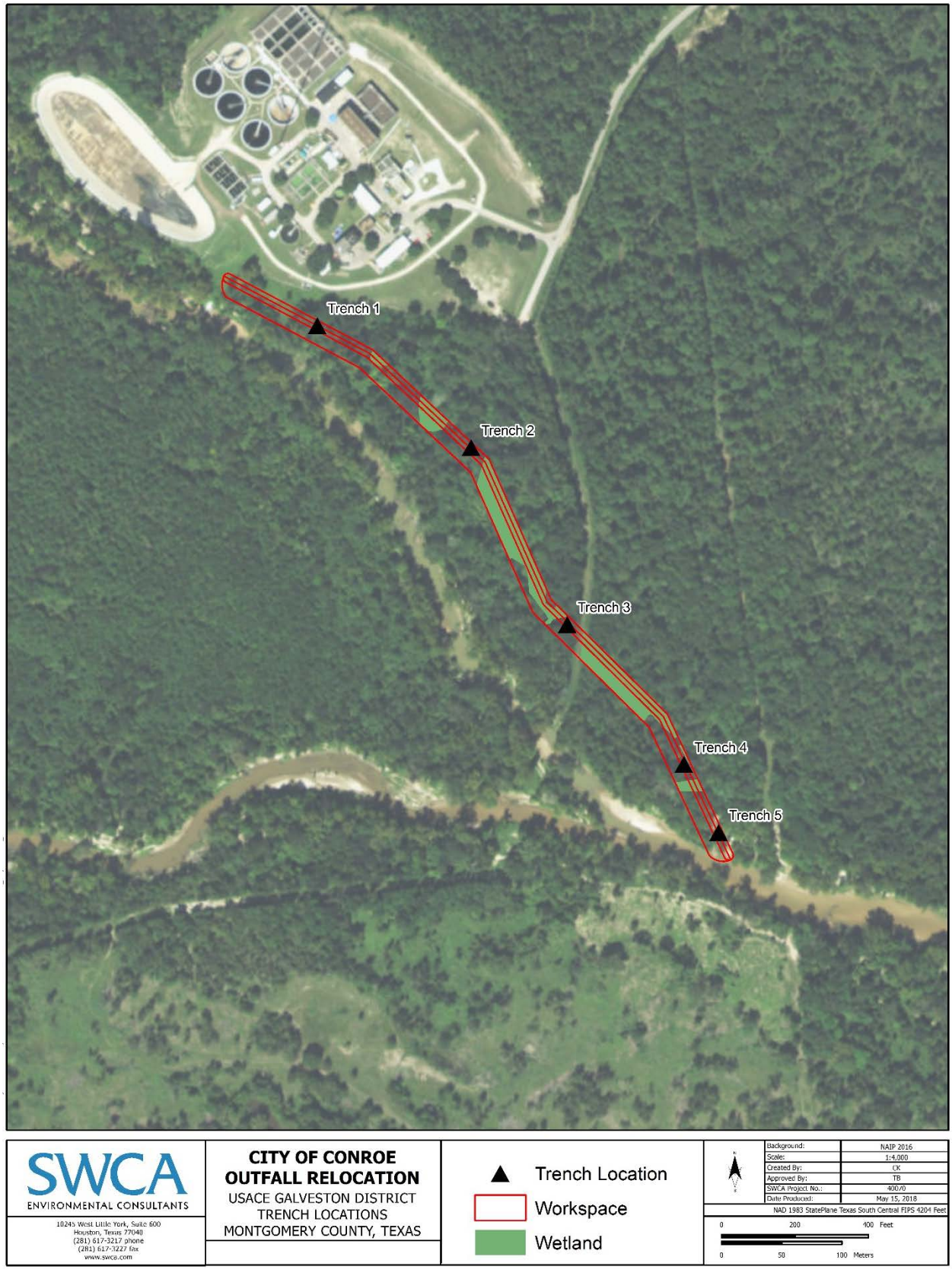


Figure 10. Location of excavated trenches along proposed outfall alignment.

Figure 11. Trench 1 at bottom of project impact.

Figure 12. Trench 2 at bottom of project impact.

Figure 13. Trench 3 at bottom of project impact.

Figure 14. Trench 4 at bottom of project impact.

SUMMARY AND RECOMMENDATIONS

On behalf of Carollo Engineers, Inc. and the City of Conroe, Texas, SWCA conducted an intensive archaeological survey for the proposed project located southwest of the existing City of Conroe wastewater treatment facility in Montgomery County, Texas. The proposed project consists of the construction of a new pipeline and outfall structure within a 2,190-foot-long, 60-foot-wide corridor.

Archaeological investigations were conducted in compliance with the Antiquities Code of Texas (Texas Natural Resource Code, Title 9, Chapter 191) and accompanying Rules of Practice and Procedure (Texas Administrative Code, Title 13, Chapter 26) under Texas Antiquities Permit No. 7770, and with guidelines set forth by the THC and Section 106 of NHPA (16 USC 470) and its implementing regulations, 36 CFR 800.

The background review revealed that no previous surveys or recorded cultural resources are located within the proposed project area. An intensive archaeological survey, including pedestrian survey augmented by shovel testing, was conducted along the length of the project area on September 7, 2016. Following THC and USACE recommendations and as a condition of a Permit No. SWG-2016-01062 (dated to August 14, 2017), additional deep testing was conducted through the excavation of five trench locations within the proposed alignment on May 2, 2018. No cultural resources were identified during the investigations.

Overall, the project alignment extends across a forested bottomland along the eastern bank of the West Fork San Jacinto River. Vegetation included hardwood forests of elm and sycamore, some pine, some palmetto, and understory. Evidence of disturbance along the line was obvious and includes frequent flooding, land clearing, and power line/water utility construction.

In accordance with Section 106 of the NHPA 36 CFR 800.4 (b)(1) and the Antiquities Code of Texas, SWCA has made a good faith effort to identified significant cultural resources within the project area to the bottom of anticipated project impacts. No properties listed or otherwise eligible for the NRHP, or for designation as a SAL, were found within the investigated project area. Consequently, SWCA recommends no further archaeological investigation and a finding of NO HISTORIC PROPERTIES AFFECTED under 36 CFR 800.4(d)(1).

REFERENCES

Abbott, James T.

2001 *Houston Area Geoarcheology: A Framework for Archeological Investigation, Interpretation, and Cultural Resource Management in the Houston Highway District.* Archaeology Studies Program Report 27, Environmental Affairs Division, Texas Department of Transportation.

Barnes, Virgil E.

1978 *Geologic Atlas of Texas, Beaumont Sheet*. Bureau of Economic Geology, University of Texas, Austin.

Blair, W. Frank

1950 Biotic Provinces of Texas. *Texas Journal of Science* 2 (1):93–117.

Bull, J., and J. Farrand, Jr.

1977 *The Audubon Society Field Guide to North American Birds: Eastern Region*. Fourth Edition. Alfred A. Knopf, New York.

Burt, W. H., and R. P. Grossenheider

1976 *Peterson Field Guides: Mammals*. Houghton Mifflin Company, Boston and New York.

Conant, R., and J. T. Collins

1998 *Peterson Field Guides: Reptiles and Amphibians Eastern and Central North America.* Third Edition. Houghton Mifflin Company, Boston and New York.

Foster, T. R., T. Summerville, and T. Brown

2006 *The Texas Historic Overlay: A Geographic Information System of Historic Map Images for Planning Transportation Projects in Texas.* Prepared for the Texas Department of Transportation by PBS&J, Austin, Texas.

Griffith, Glen, Sandy Bryce, James Omernik, and Anne Rogers

2007 *Ecoregions of Texas.* Project report to Texas Commission on Environmental Quality, Austin.

Kricher, J., and G. Morrison

1998 *Peterson Field Guides: A Field Guide to Eastern Forests North America*. Houghton Mifflin Company, Boston and New York.

National Environmental Title Research (NETR)

1957 Historical Imagery. Available at http://www.HistoricAerials.com. Accessed September 2016.

1995 Historical Imagery. Available at http://www.HistoricAerials.com. Accessed September 2016.

Natural Resources Conservation Service (NRCS)

2016 Official Soil Series Descriptions. Natural Resources Conservation Service, U.S. Department of Agriculture. Available at: http://soils.usda.gov/technical/classification/osd/index.html. Accessed September 2016.

Sutton, A., and M. Sutton

1985 *The Audubon Society Nature Guides: Eastern Forests.* Alfred A. Knopf, Inc., New York.

Texas Historical Commission (THC)

2016 Texas Archeological Sites Atlas (TASA) restricted database. Texas Historical Commission. Available at: http://pedernales.thc.state.tx.us. Accessed September 2016.

U.S. Geological Survey (USGS)

1958 Conroe 7.5 Minute Quadrangle. Map. 1:24000. United States Department of the Interior, Washington, D.C.

1967 Conroe 7.5 Minute Quadrangle. Map. 1:24000. United States Department of the Interior, Washington, D.C.

1978 Conroe 7.5 Minute Quadrangle. Map. 1:24000. United States Department of the Interior, Washington, D.C.

1986 Conroe 7.5 Minute Quadrangle. Map. 1:24000. United States Department of the Interior, Washington, D.C.

APPENDIX A

Shovel Test Log

Appendix A. Shovel Test Logs

ST#	Level	Depth cmbs	Pos/ Neg	Munsell	Soil Texture	Description/Comments	Reason for Termination
1	1	0-60	N	10YR 4/2	sand	at northern terminus, just outside facility	
1	2	60-	N	10YR 4/2	sand	clay nodules increase with depth	basal clay
2	1	0-50	N	10YR 4/2	sand	by fenceline and manmade berm of facility	
2	2	50-75	N	10YR 5/3	sand	clay nodules increase with depth	disturbed
3	1	0-45	N	10YR 6/3	fine sandy loam	dwarf palmetto, privet, treefall, 10% GSV	
3	2	45-	N	10YR 5/2	sandy clay	roots	roots
4	1	0-35	N	10YR 4/2	clay loam	near edge of utility corridor, leaf litter, 10% GSV; roots, compact with depth	roots
5	1	0-5	N	10YR 3/2	loam	palmetto, leaf litter	
5	2	5-10	N	10YR 4/3	clay loam		
5	3	10-20	N	10YR 5/3	clay loam	mottles, roots	roots
6	1	0-40	N	10YR 7/3	sand	southern terminus, sandy beach dunes, trash/debris from recent flooding	
6	2	40-45	N	n/a		thin layer of storm debris, roots, leaves	
6	3	45-140	N	10YR 6/4	sand	loose with pea gravel	water table

APPENDIX B

Permit No. SWG-2016-01062; Nationwide Permit Verification that includes the Proposed Scope of Work for Archaeological Deep Testing, City of Conroe, Outfall Relocation, Montgomery County, Texas

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON, TEXAS 77553-1229

August14, 2017

REPLY TO
ATTENTION OF:

Evaluation Branch

SUBJECT: Permit No. SWG-2016-01062; Nationwide Permit Verification

City of Conroe
300 W. Davis, PO Box 3066
Conroe, TX 77305
Attention: Scott Taylor, P.E.

Dear Mr. Taylor:

This is in reference to your request, dated December 19, 2016, submitted on your behalf by Carollo Engineers, to place fill material across 5 jurisdictional waters to relocate an outfall and conveyance pipeline from the existing Southwest Wastewater Treatment Plant, and to install an armored outfall which extends into the West Fork of the San Jacinto River. The project site is located in non-tidal wetlands adjacent to the West Fork of the San Jacinto River, at 2400 Sargent Ed Holcomb Blvd. S., in Conroe, Montgomery County, Texas.

This request is verified by Nationwide Permits (NWPs) 7, 12 and 13, pursuant to Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. This NWP verification is valid provided the activity is compliant with the enclosed plans, in 12 sheets, and the archeological work plan from SWCA, mentioned in Special Condition 3 below, in 5 sheets. In addition, the activity must be in compliance with the NWP General/Regional Conditions, Section 401 Water Quality Certification, and the Coastal Management Program, which can be found at: http://www.swg.usace.army.mil/Business-With-Us/Regulatory/Permits/Nationwide-General-Permits/ A hard copy can be provided to you upon request.

NWP 7 authorizes activities related to the construction or modification of outfall structures and associated intake structures, where the effluent from the outfall is authorized, conditionally authorized, or specifically exempted by, or that are otherwise in compliance with regulations issued under the National Pollutant Discharge Elimination System Program.

NWP 12 authorizes activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2-acre of waters of the United States for each single and complete project.

NWP 13 authorizes minimal bank stabilization activities necessary for erosion prevention.

This NWP verification is valid until the NWP is modified, reissued, or revoked. All of the existing NWPs are scheduled to be modified, reissued, or revoked prior to March 18, 2022. It is incumbent upon you to remain informed of changes to the NWPs. We will issue a public notice when the NWPs are reissued. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant NWP is modified or revoked, you will have 12 months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this NWP.

The following special conditions have been added to your authorization:

1. Before commencing work, the applicant will purchase a total of 0.9 functional credit units (FCUs); 0.2 FCUs for Temporary Storage and Detention of Storage Water, 0.4 FCUs for Maintain Plant and Animal Community and 0.3 FCUs for Removal and Sequestration of Elements and Compounds from Spellbottom Mitigation Bank.

2. The permittee will submit documentation to the Corps, Chief, Compliance Branch, Regulatory Division, Galveston District, verifying that 0.9 FCUs were purchased from Spellbottom Mitigation Bank, prior to the start of work in the jurisdictional area.

3. The permittee shall adhere to archeological monitoring plan titled "Proposed Scope of Work for Archaeological Deep Testing, City of Conroe, Outfall Relocation, Montgomery County, Texas" prepared by SWCA Environmental Consultants and dated July 5, 2017 (attached in 5 sheets). In the event the archeological investigations result in the identification of unexpected cultural remains, the permittee shall (1) cease all work in the immediate area of the find (within 5 meters); (2) notify the Corps of Engineers (Corps) Regulatory Archeologist and the Texas State Historic Preservation Officer (SHPO); (3) provide sufficient information regarding the find for the Corps and the SHPO to evaluate the significance of the find and to assess the effects the project would have to any significant finds. Should the archeological monitoring result in the identification of a significant archeological deposit that will be adversely affected by the proposed project, the permittee shall work with the Corps and the SHPO to avoid, minimize, or mitigate the adverse effects. Work may not resume within 5 meters of the find until the permittee is granted permission by the Corps.

The impacts to waters of the United States (U.S.) associated with this NWP verification are based on a Preliminary Jurisdictional Determination (PJD) for

your subject site. If you wish, you may request an Approved Jurisdictional Determination (AJD) (which may be appealed), by submitting a written request to us within 30 days from the date of this letter. Please note that if you request an AJD and then decide to appeal it, the appeal will not be accepted if any work has started in waters of the U.S. or that would alter the hydrology of waters of the U.S.

Corps determinations are conducted to identify the limits of the Corps CWA jurisdiction for particular sites. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are U.S. Department of Agriculture (USDA) program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

If you have any questions regarding this verification, please contact Mr. Steve Walls at the letterhead address or by telephone at 409-766-3125. Please notify the Chief of the Compliance Branch in the Galveston District Regulatory Division, in writing, at the letterhead address, upon completion of the authorized project.

FOR THE DISTRICT COMMANDER:

Andria Davis
Leader, Central Evaluation Unit

Enclosures:

cc:

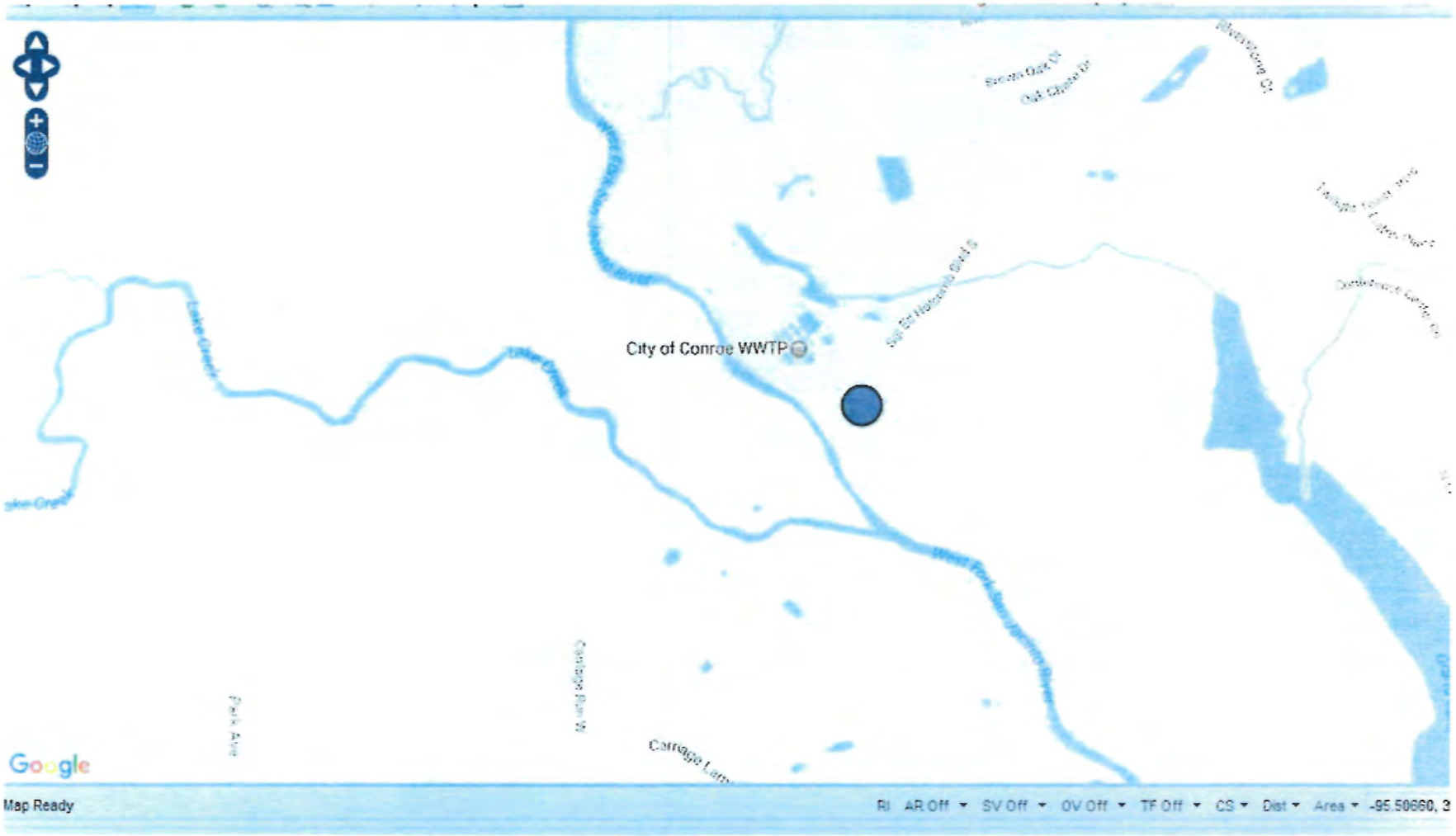
Dossett, Corollo Engineers, Inc.
100 E. 15th Street, Suite 415
Fort Worth, Texas 76102

Eighth Coast Guard District, New Orleans, LA, d8dpball@uscg.mil;

National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), Coast & Geodetic Survey, Silver Spring, MD, ocs.ndb@noaa.gov;

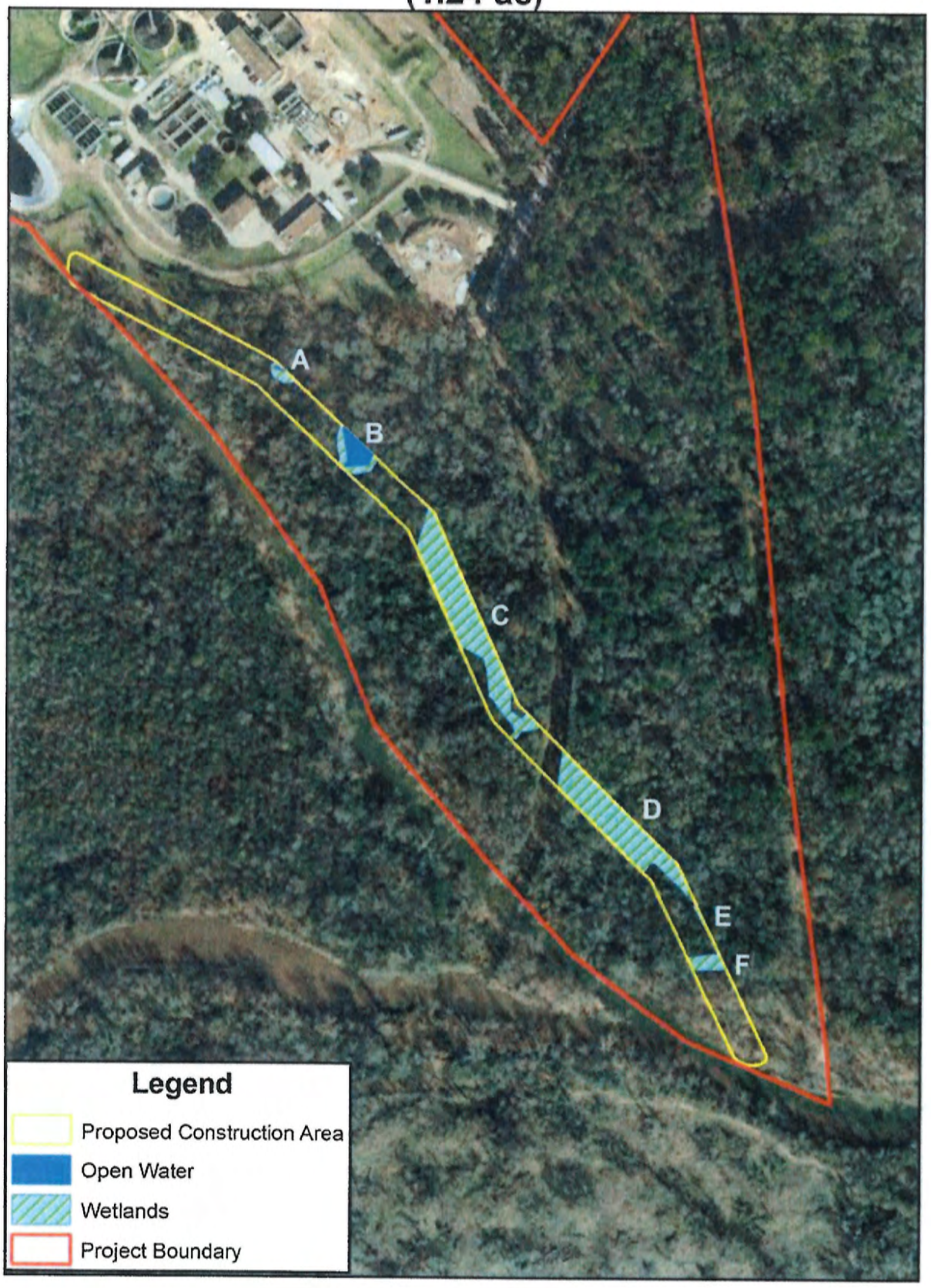
Texas Commission on Environmental Quality, 401CERTS@tceq.texas.gov;

Texas General Land Office, USACEnotice@glo.texas.gov;

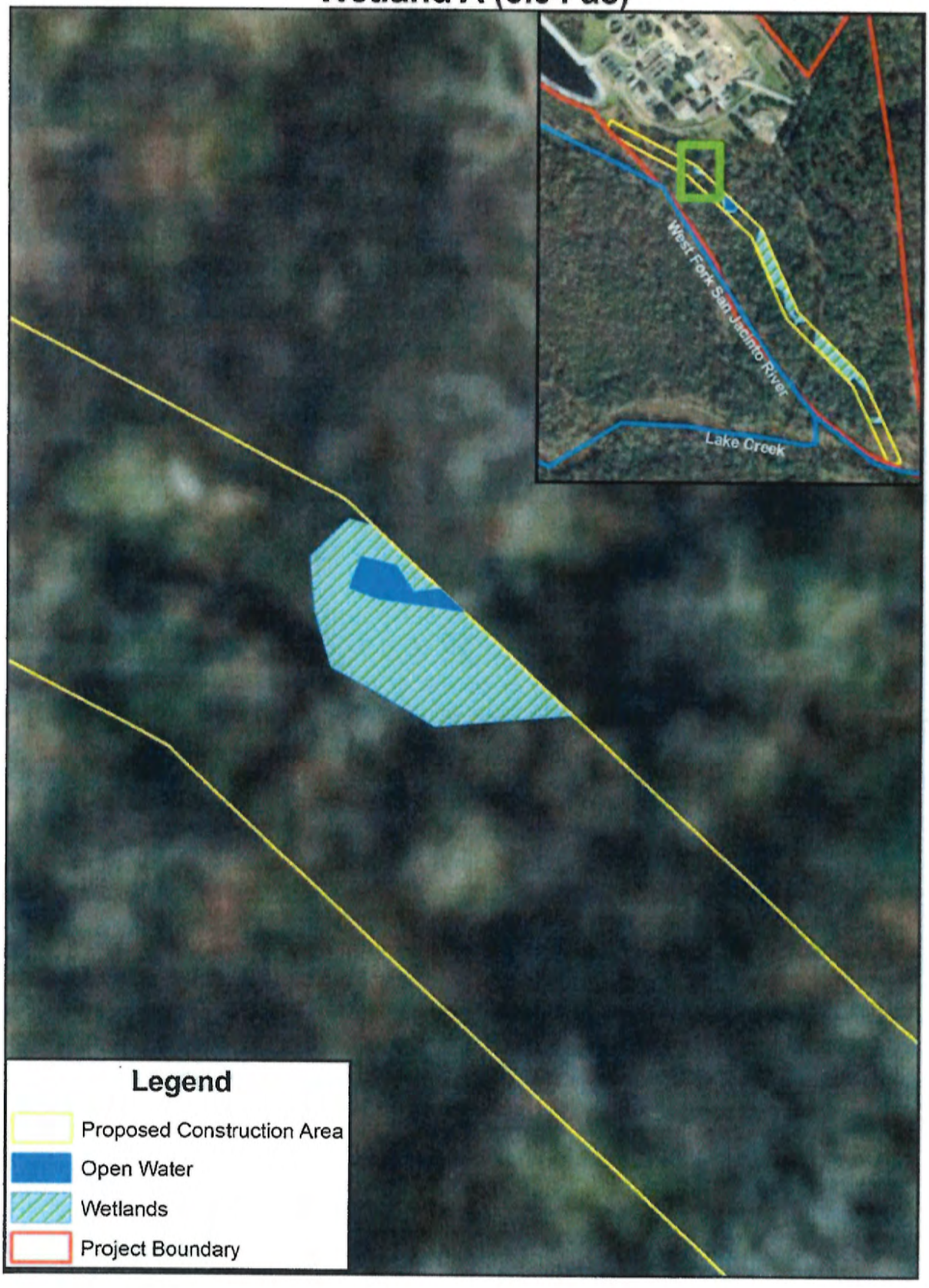


PERMITTED PLANS

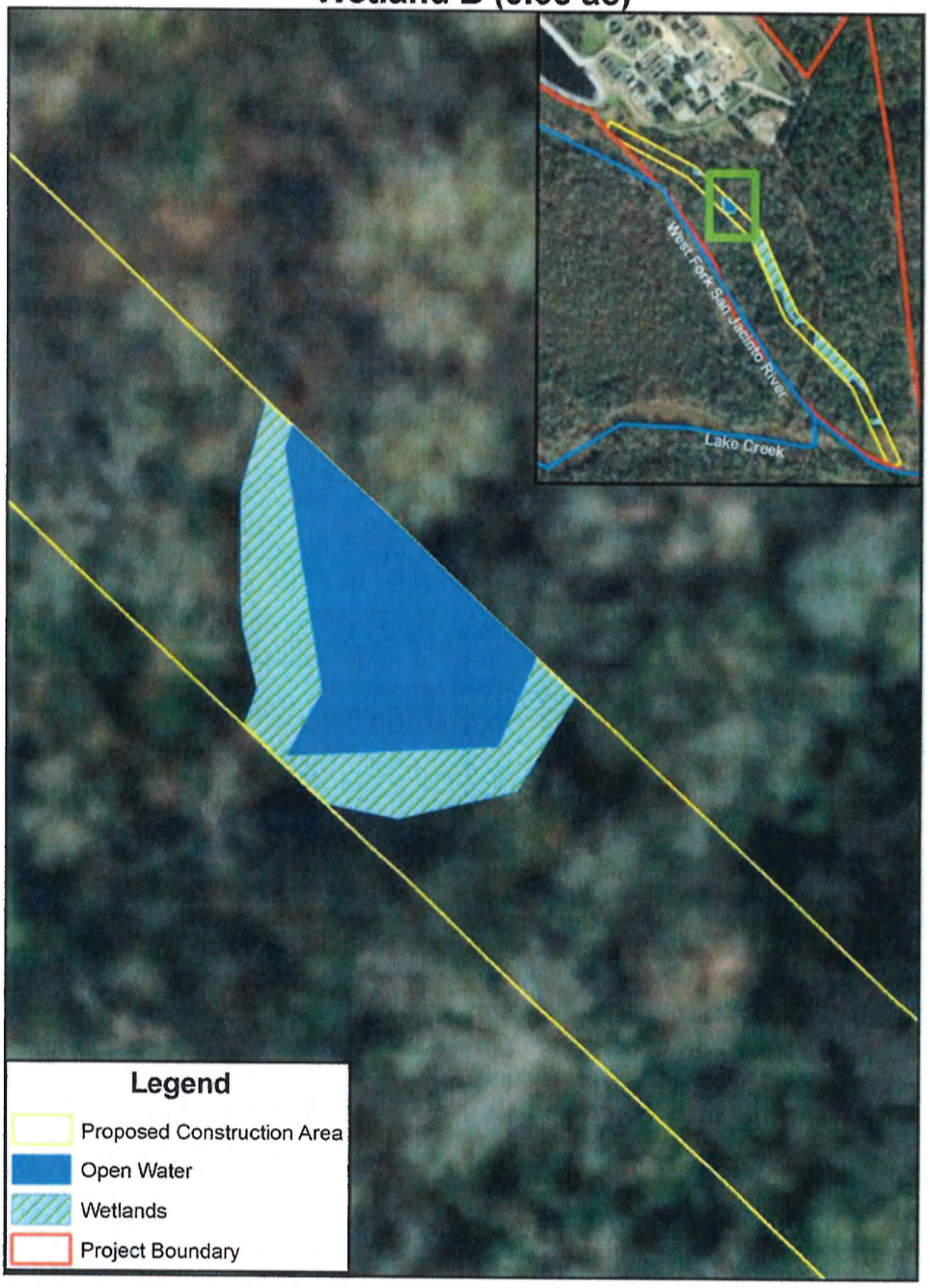
Proposed Project Impacts
(1.24 ac)



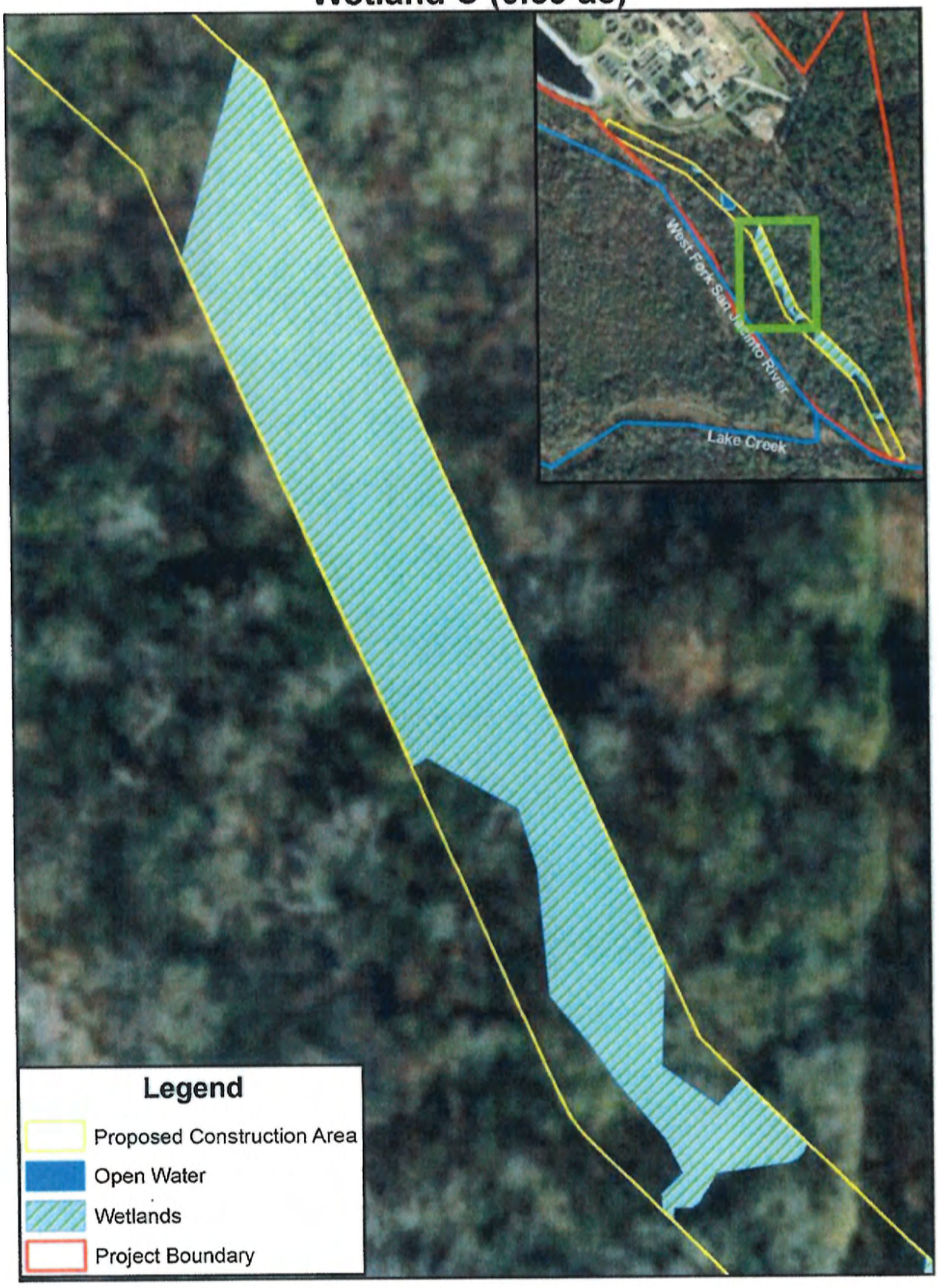
Proposed Project Impacts
Wetland A (0.04 ac)



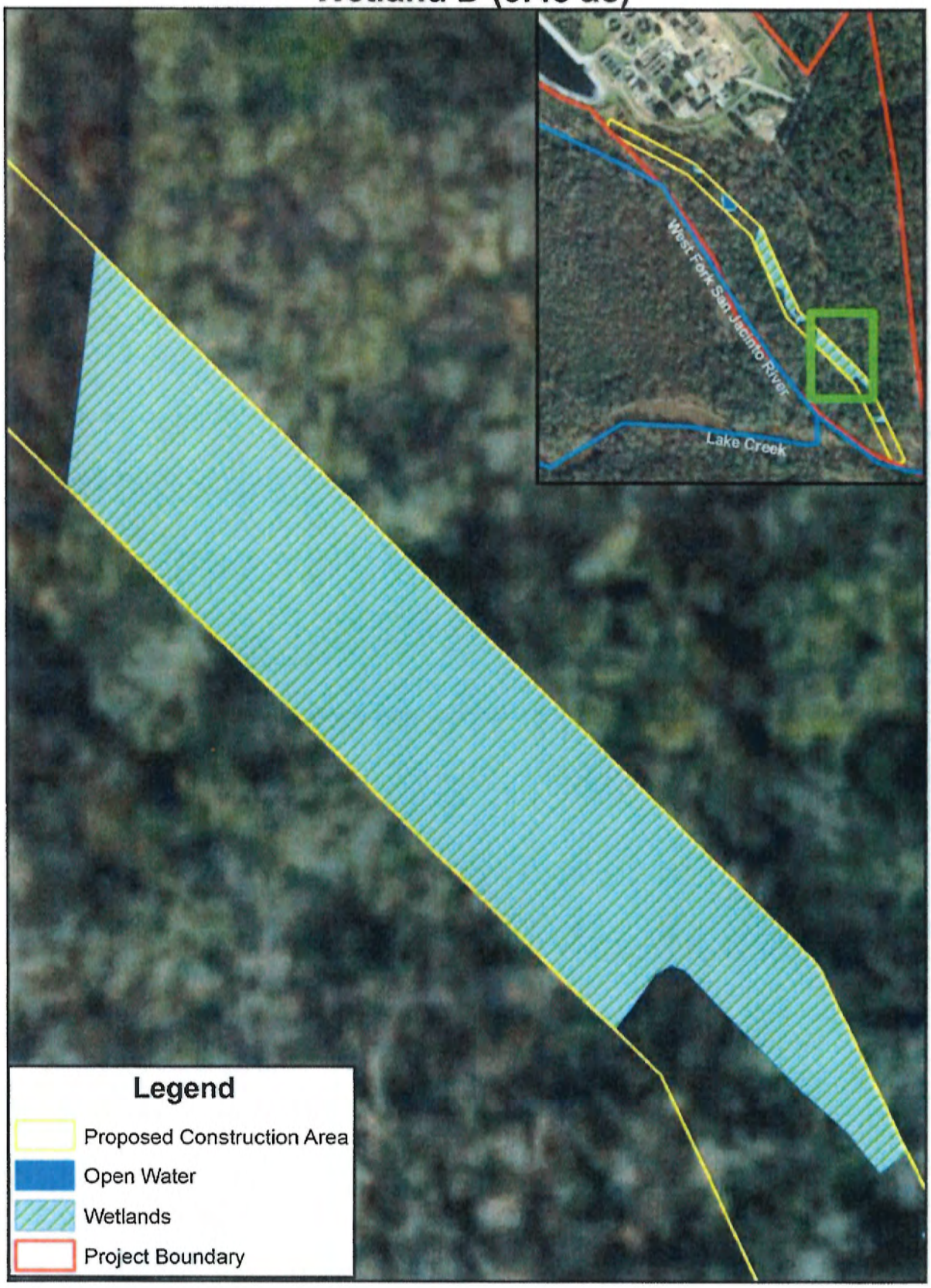
Proposed Project Impacts
Wetland B (0.05 ac)



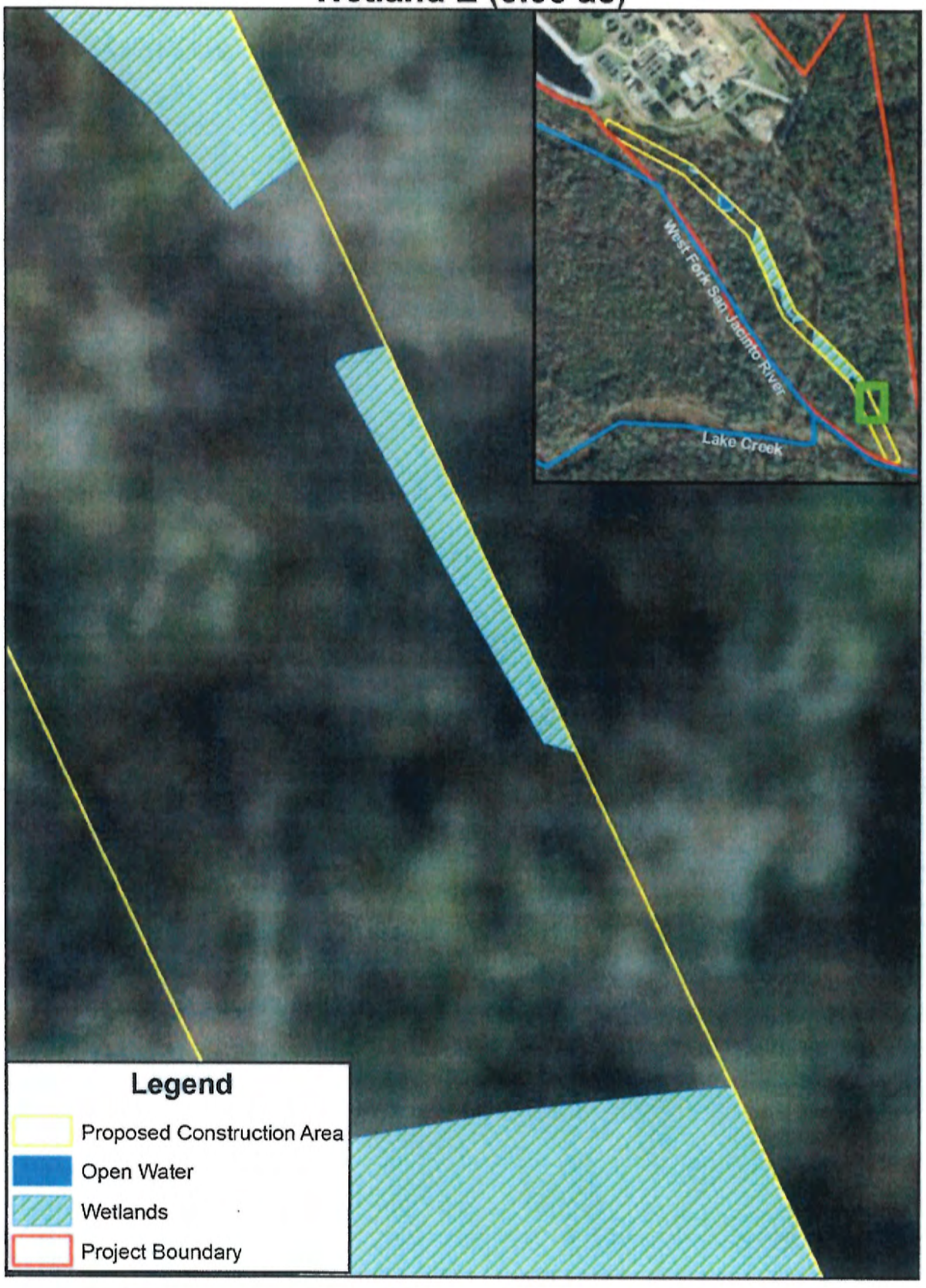
Proposed Project Impacts
Wetland C (0.59 ac)



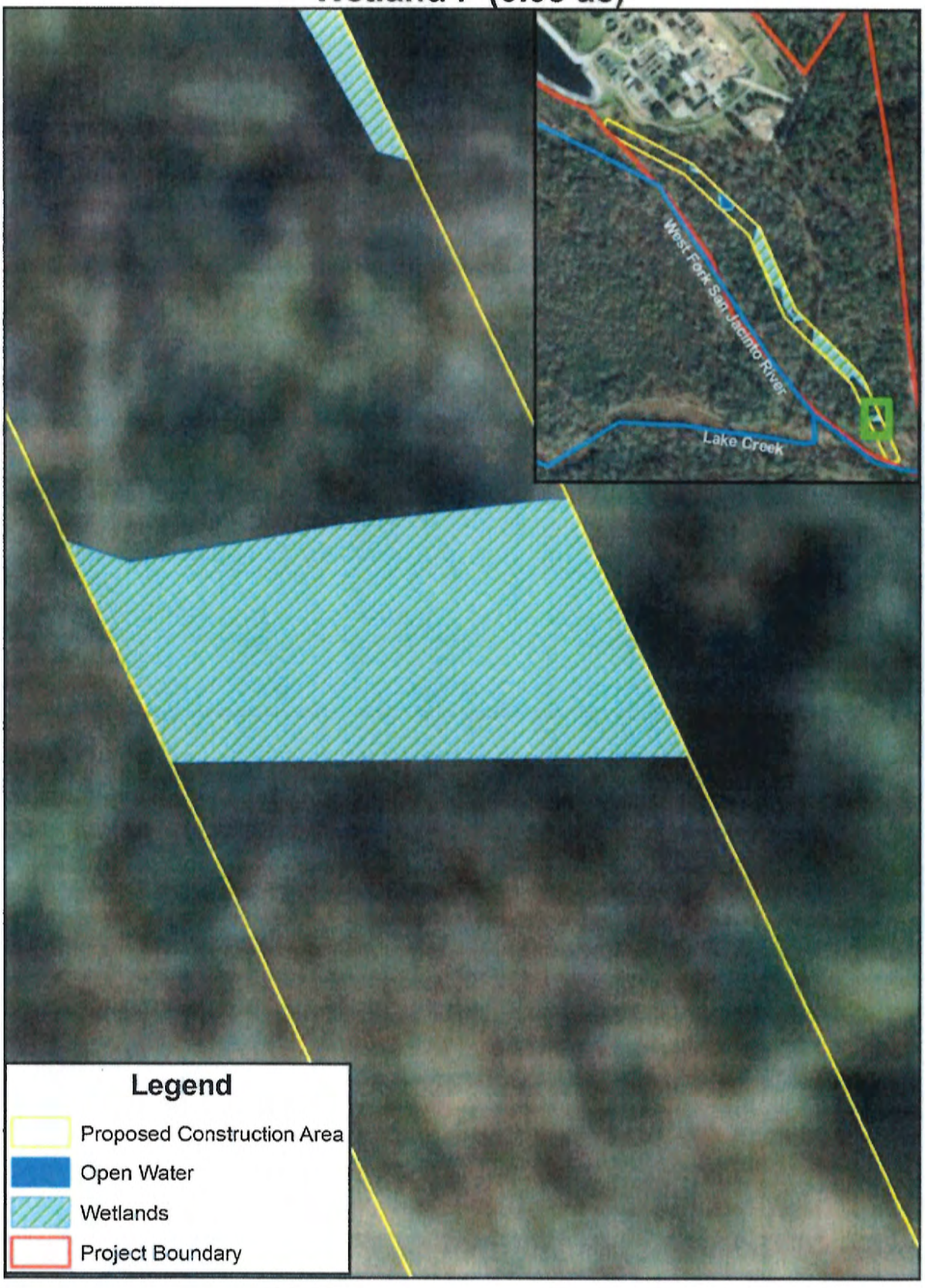
Proposed Project Impacts
Wetland D (0.48 ac)

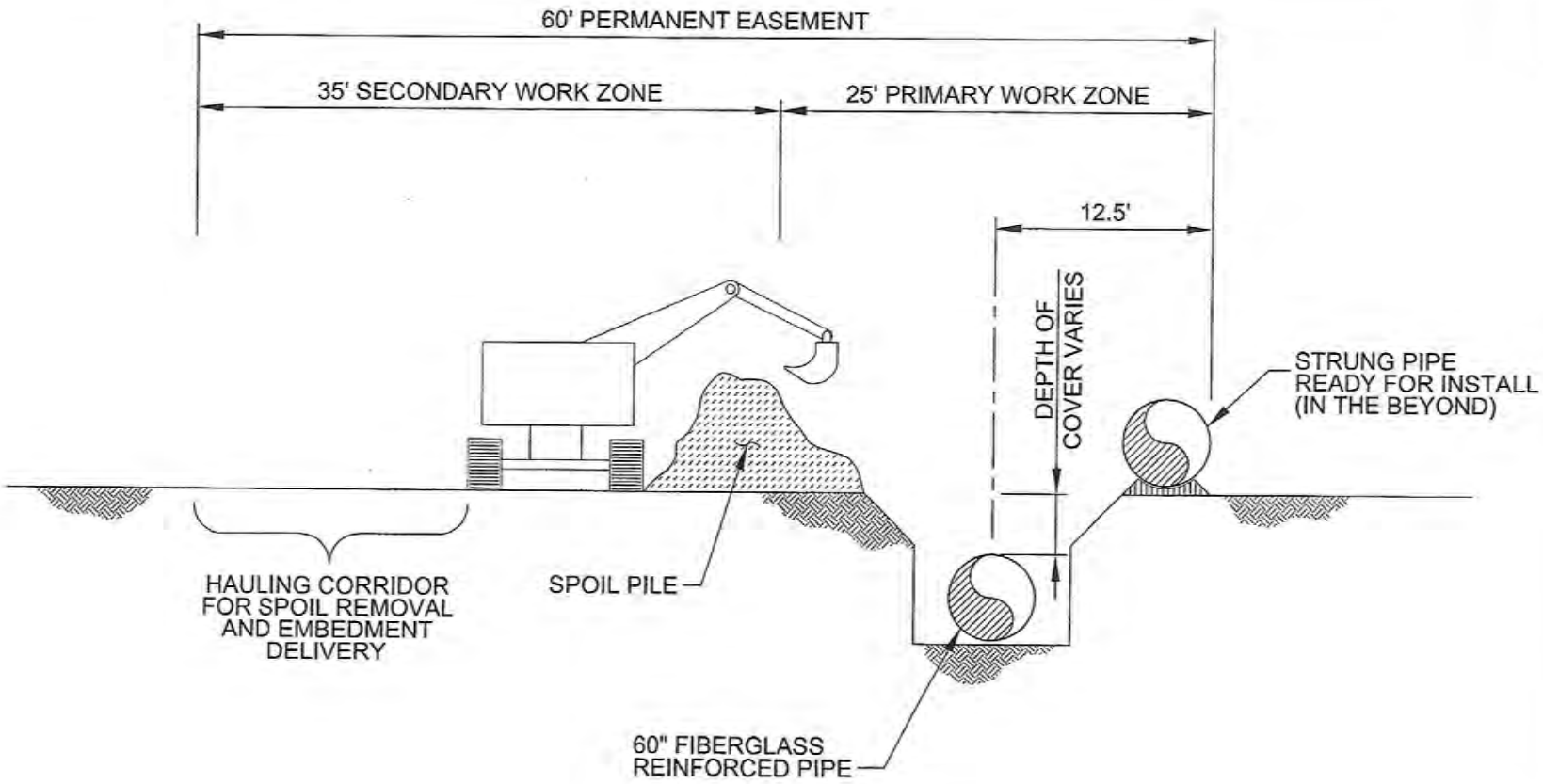


Proposed Project Impacts
Wetland E (0.03 ac)



Proposed Project Impacts
Wetland F (0.05 ac)



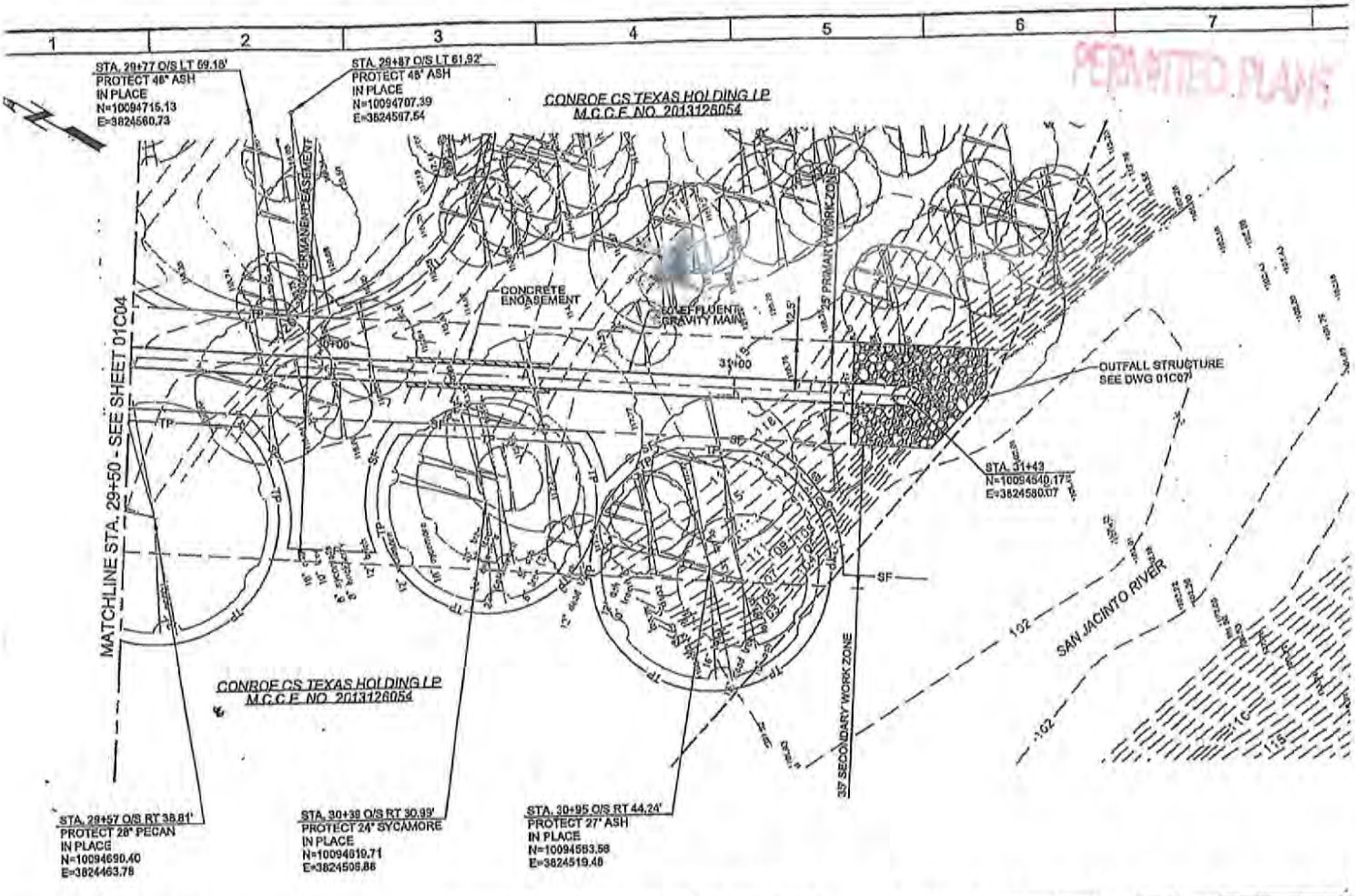


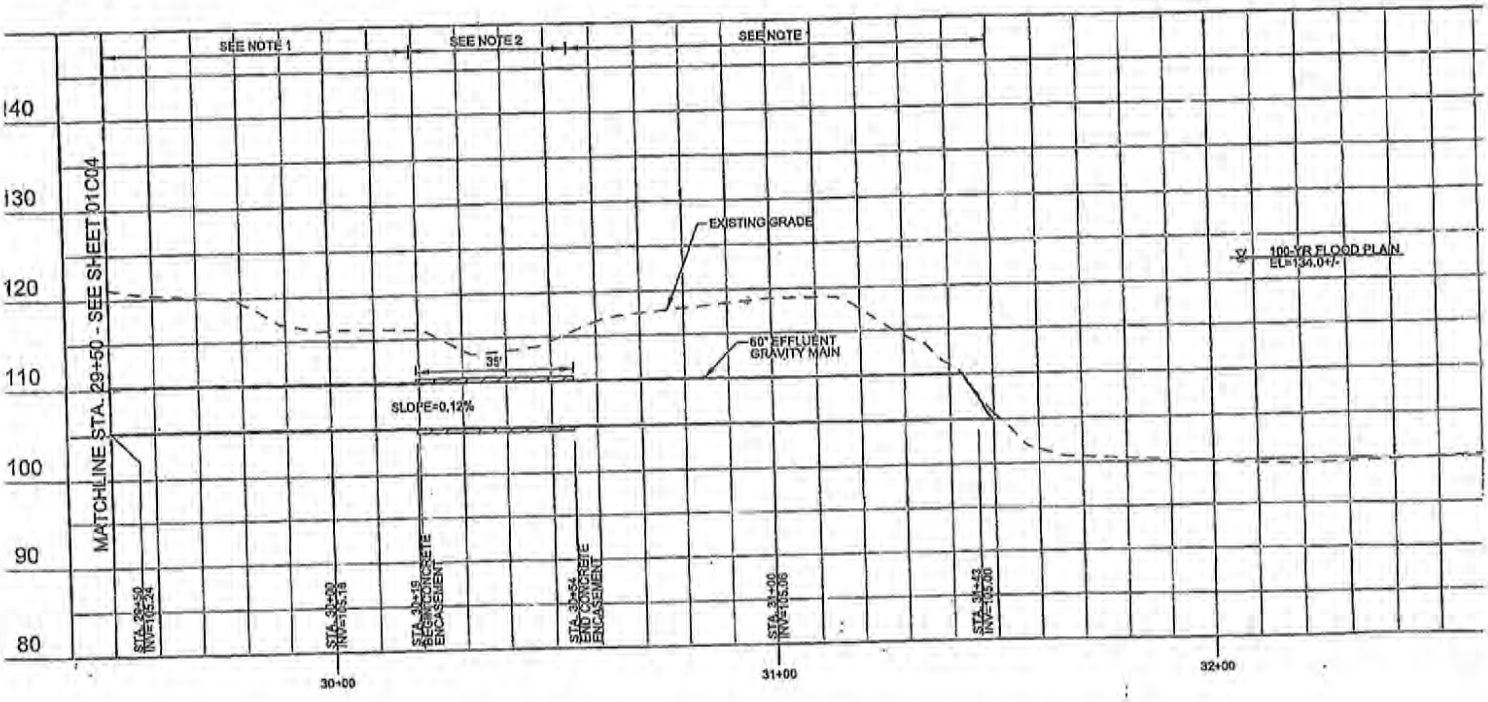
FACING DOWN STATION (NORTHWEST)

TYPICAL PIPELINE CONSTRUCTION SECTION

CITY OF CONROE

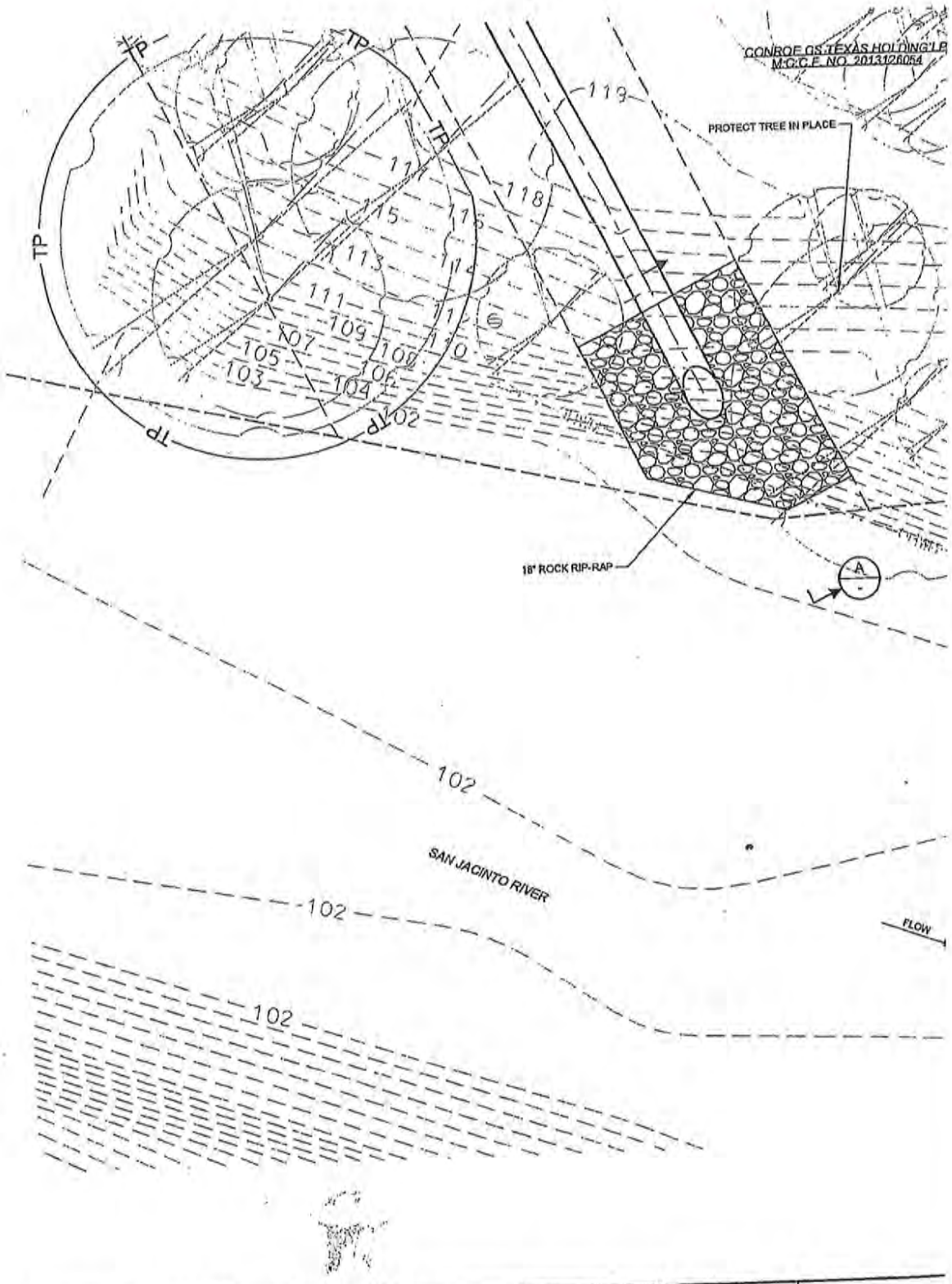
carollo





			INTERMEDIATE DESIGN 60% SUBMITTAL NOT FOR CONSTRUCTION	DESIGNED PSD DRAWN LCD CHECKED DATE NOVEMBER 2016	This document is released for the purpose of information exchange review and planning only under the authority of Paul B. Dossett, P.E. (Texas License No. 104553) on November 4, 2016. It is not to be used for bidding, permit or construction purposes.	This document is released for the purpose of information exchange review and planning only under the authority of Meera D. Victor, P.E. (Texas License No. 97503) on November 4, 2016. It is not to be used for bidding, permit or construction purposes.	caroll TBPE No. F-882
REV	DATE	BY	DESCRIPTION				

PROJECT NO. 9950A10 FILE NAME: 9959A1001C05.dgn



REV	DATE	BY	DESCRIPTION
			INTERMEDIATE DESIGN 60% SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED PSD
DRAWN LGD
CHECKED
DATE NOVEMBER 2016

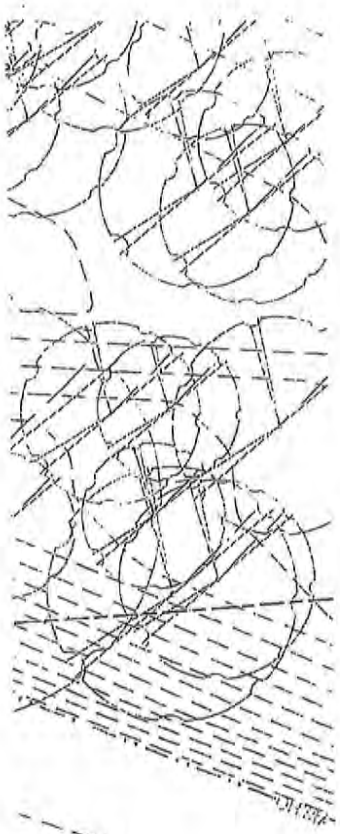
This document is released for the purpose of information exchange review and planning only under the authority of Paul S. Dossett, P.E. (Texas License No. 104953) on November 4, 2016. It is not to be used for bidding, permit or construction purposes.

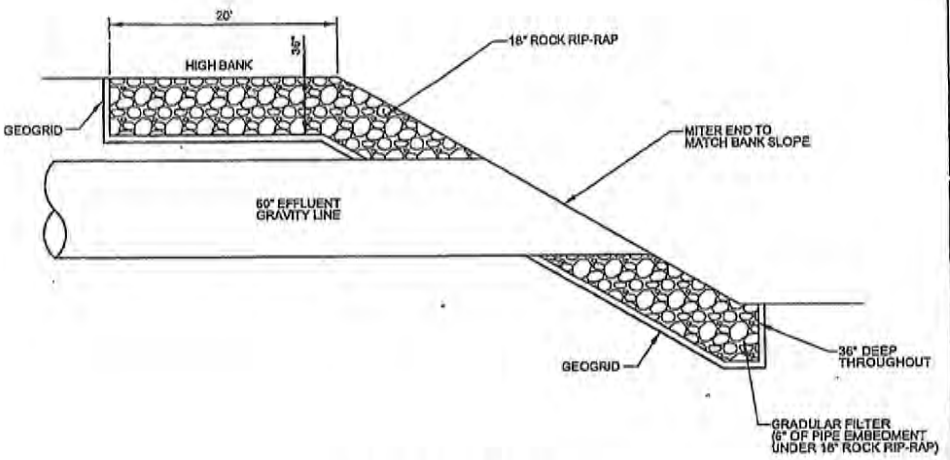
This document is released for the purpose of information exchange review and planning only under the authority of Meera D. Victor, P.E. (Texas License No. 97503) on November 4, 2016. It is not to be used for bidding, permit or construction purposes.

TBPE

PROJECT NO. 9959A10 FILE NAME: 9959A1001C06.dgn

DEC 1 6 2016





A SECTION
SCALE: N.T.S.
FILE: 9959A1001101

SCALE: 1=10

0 5' 10' 20'

	CITY OF CONROE	VERIFY SCALES	JOB NO. 9959A.10
CITY OF CONROE	EFFLUENT OUTFALL RELOCATION	BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	DRAWING NO. 01C06
	CIVIL OUTFALL STRUCTURE	IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SHEET NO. OF XX

SWCA
ENVIRONMENTAL CONSULTANTS
Sound Science. Creative Solutions.

PERMITTED PLANS

Proposed Scope of Work for Archaeological Deep Testing City of Conroe, Outfall Relocation, Montgomery County, Texas

Project Sponsor – City of Conroe
Project Consultant – SWCA Environmental Consultants (SWCA)
USACE # SWG-2017-00138
Antiquities Permit 7770
Principal Investigator – Todd L. Butler
Date – July 5, 2017

INTRODUCTION

The following provides the scope of work for additional cultural resources services associated with the City of Conroe Outfall Relocation Project (hereafter refer to as the "project") located southwest of the City of Conroe, Montgomery County, Texas (Figure 1). SWCA completed intensive archaeological investigations of the proposed alignment on September 7, 2016. These investigations consisted of a pedestrian surface survey and shovel/auger testing within the proposed alignment. At the time of the investigation, the project area was heavily forested which precluded backhoe trenching for deeply buried archaeological deposits. A report was prepared and submitted to the Texas Historical Commission (THC) on September 22, 2016.

On October 4, 2016, SWCA received comments from the THC that requested additional information/revision of the report that included the width and depth of the planned outfall, as they were concerned that the Area of Potential Effect (APE) had not been sufficiently tested. Mr. Martin recommended additional deep testing prior to construction and/or monitoring during construction by a Secretary of the Interior-qualified archaeologist to determine the presence or absence of deeply buried archaeological deposits.

On March 20, 2017, the Galveston District U.S. Army Corps of Engineers (USACE), after completing their own review of SWCA's report, sent a letter to the State Historic Preservation Office indicating that, in their opinion, further cultural resources investigations were not warranted. On April 17, 2017, the THC replied to the Galveston District indicating that they cannot concur with the USACE's determination that no historic properties will be affected.

On June 12, 2017, SWCA modified the original project report recommending that at least five (5) backhoe trenches be excavated in the upland portions of the project area to the depth of project impacts or archaeological monitoring during construction be completed under the existing Texas Antiquities Permit No. 7770. On June 27, 2017, the THC concurred with the additional information provided in the supplemental report.

On June 28, 2017, the USACE requested that SWCA prepare a scope of work for the archaeological deep testing be prepared to allow a conditional permit be issued for the project. The scope of work for the archaeological deep testing is as follows:

SWCA
ENVIRONMENTAL CONSULTANTS

PERMITTED IN LIEU

PROPOSED SCOPE OF WORK

Archaeological Deep Testing

Once the project alignment has been cleared of vegetation by a third-party contractor to be arranged by Carrollo Engineers, Inc., SWCA proposes to excavate a series of five (5) trenches along the 2,190-foot-long project alignment to determine the presence or absence of deeply buried archaeological sites (Figure 2). Trench placement, as depicted in Figure 2, is tentative and will be further refined as conditions are seen in the field based on the level of disturbance within the proposed alignment, the location of any buried utilities, and avoidance of identified wetlands. Trenches will be excavated to a depth sufficient to determine the presence/absence of buried cultural materials and allow the complete recording of all features and geomorphic information to the extent allowable by the heavy equipment utilized. Generally, trenches will be 5 to 17m deep, 8 m in length (dependent upon depth), and 1.5 m wide (dependent upon depth).

An experienced archaeologist will monitor all trenching while excavations are underway. Stratigraphic profile drawings or photographs with soils descriptions will be recorded for each trench by an experienced archaeologist that is allowable with safety considerations. SWCA will map and photograph all features encountered during trenching. Excavated soil will be examined for the presence of artifacts during excavation.

All trench excavation will be performed in accordance with the Occupational Safety and Health Administration (OSHA) (29 CFR Part 1926) and the Texas Trench Safety Act (H. B. 1569). Appropriate measures will be taken for any trenches that will exceed 2 m in depth, utilizing stepping back of sidewalls to ensure that all OSHA protocols are followed. SWCA will thoroughly photograph the entire process. All trenches will be backfilled and leveled upon completion of excavation and recording.

If an archaeological site is encountered in the proposed project area during the investigations, it will be explored as much as possible with consideration to land access constraints. Any discovered sites will be assessed in regards to potential significance so that recommendations can be made for proper management (avoidance, non-avoidance, or further work). Additional shovel tests will be conducted per THC standards at any discovered sites to define horizontal and vertical boundaries, if feasible. If an archaeological site with features is located in deeply buried deposits greater than 2 meters depth, work will be temporally delayed until the appropriate individuals at the USACE and THC are consulted with for determination of appropriate steps forward with regard to evaluating the resource for eligibility for listing in the National Register of Historic Places.

Appropriate State of Texas Archeological Site Data Forms will be filled out for each site discovered during the investigations. A detailed plan map of each site will be produced, and locations will be plotted on USGS 7.5-minute topographic maps and relevant project maps. SWCA will utilize submeter accuracy geographic positioning system (GPS) units to map sites and spatially relate them to the project corridor.

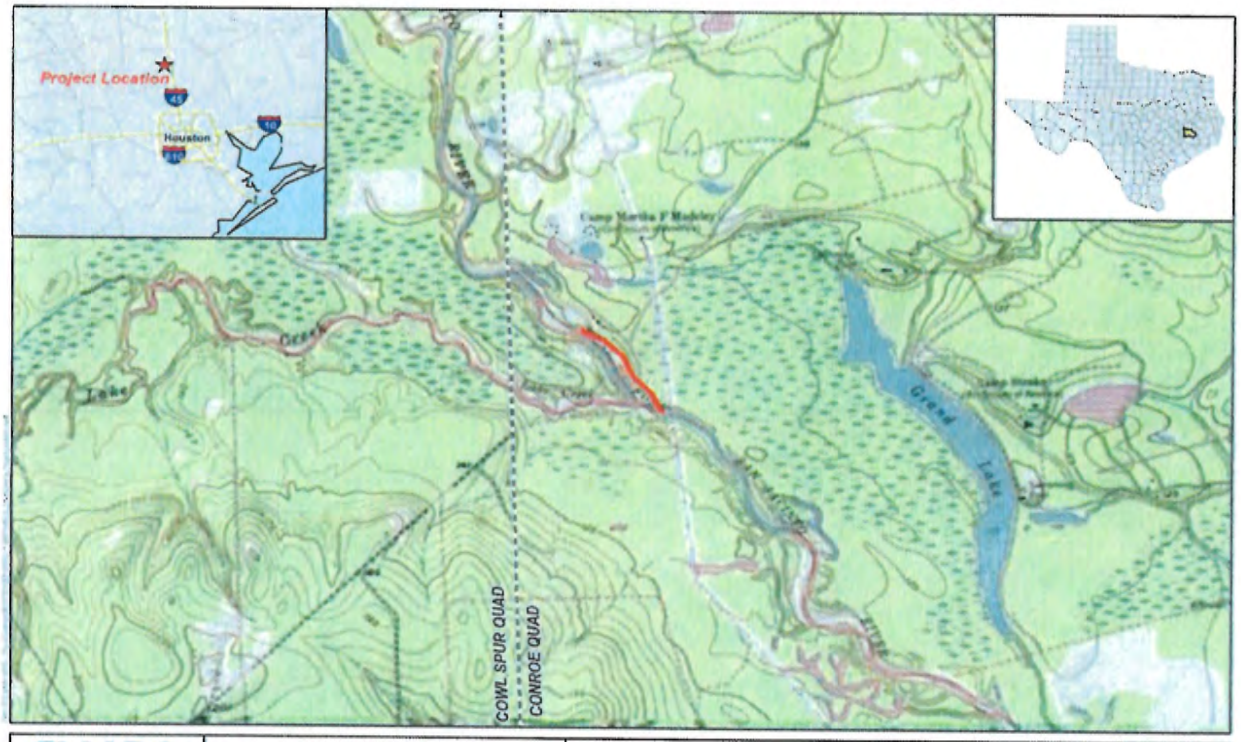
SWCA is proposing a non-collection survey. Artifacts will be tabulated, analyzed, and documented in the field, but not collected. Only diagnostic or especially rare artifacts may be collected. At the conclusion of all field and reporting efforts, the collected artifacts will either be returned to the landowners from whose property they were collected, or be curated at an approved repository. If it is necessary to curate artifacts from this project, they will be curated at the Texas State University Center for Archaeological Studies (TSU-CAS) in San Marcos, Texas.

Reporting

Once the trenching has been completed, SWCA will analyze the field data and artifacts (if any). Analysis of field data and collected artifacts will include mapping, the production of appropriate site forms for all documented sites, analysis and tabulation of artifacts, and the review, organization, and assessment of field notes. Once this is complete, SWCA will update the previously prepared report to include the trenching investigations. The report will be updated to include the methodology used in the investigation, the general nature and extent of any cultural resources encountered, and recommendations on the need for further work (if any), and the potential significance of the cultural resources in regard to future development and eligibility for the National Register of Historic Places (NRHP) or designation as a State Antiquities Landmark (SAL).

Draft copies of the report will be submitted to Carollo Engineers and the City of Conroe for review and comment. Once this has been accomplished, any appropriate edits will be made and a draft report will be submitted to the THC and the USACE for review. Following THC/USACE review and approval, SWCA will produce a final report and satisfy all requisite Texas Antiquities Permit obligations.

SWCA
ENVIRONMENTAL CONSULTANTS
Sound Science. Creative Solutions.



SWCA
ENVIRONMENTAL CONSULTANTS

CITY OF CONROE
OUTFALL RELOCATION
USACE GALVESTON DISTRICT
PROJECT LOCATION
MONTGOMERY COUNTY, TEXAS

FIGURE 1

Workspace
1:24K Quad Boundary

SWCA ENVIRONMENTAL CONSULTANTS

CITY OF CONROE
OUTFALL RELOCATION
USACE GALVESTON DISTRICT
TRENCH LOCATIONS
MONTGOMERY COUNTY, TEXAS
FIGURE 2

Workspace
Wetland
Approximation of Proposed Trenches

APPENDIX C

Trench Logs

Appendix C. Trench Logs.

TR#	Level	Depth cmbs	Pos/ Neg	Munsell	Soil Texture	Description/Comments	Bottom of Impact
1	1	0-150	N	10YR 5/3	Sandy loam	5% mottles of 10YR 6/4, loose, moist	-
	2	150-300	N	10YR 5/2	Sandy loam	10% mottles of 10YR 6/4, loose, moisture increases with depth	-
	3	300-450	N	10YR 3/1	Clay	5% mottles of 10YR 5/8, Very firm, massive	-
	4	450-520	N	10YR 5/8	sand	5% mottles of 10YR 5/1, single grained, loose, water table	17ft
2	1	0-150	N	10YR 5/2	Sandy loam	5% mottles of 10YR 6/6, loose	-
	2	150-300	N	10YR 5/3	Clay	5% mottles of 10YR 6/6, smooth, no grit, sticky, friable	-
	3	300-450	N	7.5YR 3/1	Clay	5% mottles of 10YR 4/6, very firm, massive	-
	4	450-520	N	10YR 7/2	sand	3% mottles of 10YR 7/8, loose, single grained, water table	17ft
3	1	0-150	N	10YR 5/3	Sandy clay loam	5% mottles of 10YR 6/6, friable	-
	2	150-250	N	10YR 6/3	Sandy clay	10% mottles of 10YR 6/6, sticky, friable	-
	3	250-350	N	10YR 3/1	clay	5% mottles of 10YR 5/4, very firm, massive	-
	4	350-520	N	10YR 6/2	Sandy clay	3% mottles of 7.5YR 6/8, granular, water table	17ft
4	1	0-150	N	10YR 6/4	Sandy loam	3% mottles of 10YR 5/2	-
	2	150-250	N	10YR 5/2	Sandy clay	5% mottles of 10YR 6/3, 1% mottles of 10YR 3/3, firm	-
	3	250-520	N	10YR 7/3	sand	Loose, no inclusions, water table	17ft
5	1	0-300	N	10YR 6/4	sand	3% mottles of 10YR 4/2, very loose, water table	10ft