Archeological Background Study

Project Name: FM 149 from FM 1791 to the Grimes County Line

Highway: FM 149

District(s): Houston

County(s): Montgomery County

CSJ Number(s): 0720-02-095

Author and Affiliation: Ryan Hale, MS, RPA | Stantec

Report Completion Date: November 18, 2022

Table of Contents

Introduction

This project may require compliance both with Section 106 of the National Historic Preservation Act and with the Texas Antiquities Code. The purpose of this document is to identify risks for archeological historic properties within the project's area of potential effects (APE). The document also considers whether any cemeteries may extend into the APE, requiring compliance with the state Health and Safety Code.

The following sections list the results of review of readily-available information for the APE's setting and adjacent areas. The report also evaluates adjacent areas (a buffer zone; see Recommendations Section for definition of the buffer zone). The buffer zone is evaluated in case a subsequent design change expands the APE. This report concludes with separate recommendations regarding project effects and the need for additional work within shallow deposits less than three feet in depth and within Holocene-age deposits of three feet or greater depth, if such deep deposits are present.

This background study is (check one):

☒ the initial study for this project

☐ a continuation of previous investigations due to design changes or other reasons

Identify previous investigation(s):

If this box is checked, then answer the questions below only for the area that is affected by the design change.

Area of Potential Effects

The APE is defined to encompass the limits of the existing right of way; proposed, new project right of way; permanent and temporary easements; and any project-specific locations and utility relocations designated by TxDOT. Note: the APE encompasses the entirety of the project area, regardless of the extent of prior archeological investigations, the particular locations subject to proposed field investigations, or the portion of a project added through a design change. If impacts are not known, worst-case impacts are assumed in defining the APE.

See Attachment 1 for a map of the APE, which is based on the project information attached as Attachment 2.

Information Source Checklist

(check each source of information that was consulted by the professional archeologist in preparing this background study—the number and type of sources are at the professional archeologist's discretion)

☒ Labelled USGS 7.5' topographic quadrangle project location map (or equivalent if a 7.5' quadrangle is unavailable) is attached and includes an inset map that depicts the county within Texas where the project occurs. (**Attachment 3**)

☒ Predictive Archeological Liability Map (PALM) is attached if available *(consult TxDOT's Environmental Compliance Toolkit).* (**Attachment 4**)

☐ Geologic Atlas of Texas map is attached *(PALM may be substituted for the GAT map, if it's available).*

☒ Soils map is attached *(PALM may be substituted for the soils map, if it's available).* (**Attachment 5**)

☒ FEMA flood hazard map is attached. (**Attachment 6**)

☒ National Wetlands Inventory map is attached (**Attachment 7**)

☒ Texas Archeological Sites Atlas map is attached, depicting any sites within one kilometer of the APE or additional APE. (**Attachment 3**)

☐ Historic topographic map is attached.

☐ Historic soils map is attached.

☐ Historic road map is attached.

☐ As-built plans for roadway are attached.

☐ Other map of historic information is attached.

Specify Map:

☐ Aerial images are attached.

☒ Project area photographs are attached. (**Attachment 8**)

Analysis of Project Setting

- **Previously-Identified Archeological Sites**

☒ No archeological sites have been identified within the APE or within 150 feet of the APE

☐ Archeological sites have been identified within the APE or within 150 feet of the APE

No archeological sites are mapped within the APE. Furthermore, no sites have been recorded within the 1-kilometer (0.6-mile) study buffer (THC 2022; see Attachment 3).

- **Previously–Identified Cemeteries**

☒ No known cemetery sites occur within the APE or within 150 feet of the APE.

☐ Cemeteries occur within the APE or within 150 feet of the APE.

The closest recorded cemetery is Pool's Cemetery, situated approximately 1.16 kilometers east of the project eastern terminus (THC 2022; see Attachment 3).

- **Holocene-Age Deposits**

☐ No Holocene-age deposits occur within or adjacent to the APE.

☒ Holocene-age deposits occur within or adjacent to the APE.

The APE is underlain by three geological units: the Pleistocene-age Willis Formation. the Miocene-age Flemming Formation, and Holocene Alluvium. The Willis Formation is composed of clay, silt, sand, and siliceous gravel. The Flemming Formation consists of clay, silt, and sand, mostly clay. The Alluvium unit consists of clay, silt, and sand, organic matter around point bars, natural levee, stream channel, and back swamp (USGS 2022a).

According to the Natural Resources Conservation Service, the APE is underlain by 5 soil series (Soil Survey Staff 2021). None of these series is associated with buried A horizons or paleosols. More specific information for each series is presented below (in order of first appearance from west to east):

Soil Series Present within APE

Soil Series	Slope (percent)	Landform	Typical depth of B-horizon (cmbs*)
Woodville fine sandy loam	1-5	Sloping uplands	13
Latium clay	1-5	Ridges/backslope	10
Fetzer loamy fine sand	1-5	Nearly level to sloping uplands	15
Bibb series	0-2	Flood plains	30
Normangee clay loam	1–3	Stream terraces	18
Source: Soil Survey Staff (2022); *cmbs = centimeters below surface			

- **Historically-Reliable Water Sources**

☐ No historically-reliable water sources occur within 500 feet of the APE.

☒ Historically-reliable water sources occur within 500 feet of the APE, or this question can't be answered confidently.

The APE is crossed by Bay Branch, Kidhaw Branch, and two unnamed tributaries. Bay Branch is a permanent stream, while the other reaches are intermittent.

- **Wetlands and Frequently-Flooded Areas**

☒ The APE and adjacent areas contain wetlands or frequently-flooded areas.

☐ The APE and adjacent areas do not contain wetlands or frequently-flooded areas, or this question cannot be answered confidently.

According to the United States Fish and Wildlife Service (USFWS) Wetlands map, from east to west, the APE crosses tributaries of Bay Branch three times and tributaries of Kidhaw Branch three times (NWI 2022).

- **Preferred Landforms for Occupation**

☐ The Atlas map or other information shows that the APE does not contain landforms on which human settlement or occupation typically occurred.

☒ The Atlas map or other information shows that the APE does contain landforms on which human settlement or occupation typically occurred, or this issue was not resolved with the available information.

See **Attachments 3 and 4**

- **Prior Disturbances**

Settings that are favorable for human occupation have been subject to the following previous disturbances *(check all that apply).*

☒ Previous road construction and maintenance.

☒ Installations of utilities.

☐ Modern land use practices like plowing, grade modifications, brush clearing, and tree removal,

☒ Industrial, commercial, urban and/or suburban development

☐ Erosion and scouring by natural causes.

☐ Other (identify)

☐ NO PRIOR DISTURBANCES OR UNKNOWN (do not check any foregoing disturbances)

- **Previous Archeological Surveys**

The majority of the settings with high potential for archeological sites within or adjacent to the APE have been previously surveyed.

☒ Atlas data show that the majority of the APE, or approximately 3.94 kilometers (2.45 miles) have been previously surveyed. This survey was conducted along the current ROW of FM 149 within the Sam Houston National Forest for the United States Forest Service (USFS) in 2011. This survey was completed by Brazos Valley Research under TAC Permit #6097 for a fiber optic cable project. The area investigated consists of 2.4 miles of proposed cable with an easement of 10 feet (2.9 acres). The project area is in Forest Service Compartment C-5. No archaeological sites were found, and no artifacts were collected. The area was investigated through a surface survey and shovel testing. Two streams cross the highway, and these are minor tributaries that are low probability areas for significant cultural resources. Copies of the report are on file at the THC, Texas Archeological Research Laboratory (TARL), the Texas State Library, CenturyLink, and BVRA (THC 2022). In 2022, CMEC conducted an archeological

survey along FM 1791 from the intersection of FM 149 to the Walker County line. No archaeological sites were identified during the survey. See **Attachment 3.**

☐ The majority of the settings with high potential for archeological sites within or adjacent to the APE have not been previously surveyed.

Conclusions

- **Results of Previous Investigations**

☒ Previous surveys have covered a sufficient proportion of the APE or adjacent areas to conclude that the APE and adjacent areas are unlikely to contain archeological sites or cemeteries.

☐ Previous surveys have not covered a sufficient proportion of the APE or adjacent areas to draw inferences regarding the presence of archeological sites and cemeteries, or previous surveys show that archeological sites and/or cemeteries are present within the APE.

- **APE Integrity (Prehistoric Sites)**

The APE contains no deposits with sufficient integrity that prehistoric archeological sites would have the potential to address important questions. Any such sites would lack integrity of *(check all that apply):*

☐ Location

☐ Design

☐ Materials

☐ Association

☒ Other (*identify*)

The current APE is not likely to contain intact archeological deposits due to the impacts from urban development including road construction and maintenance, utility installations, and egress/ingress to homes and businesses that have since occurred over time. The potential for prehistoric sites in the APE is considered low to none.

☐ THE APE HAS THE POTENTIAL TO PRESERVE SITES WITH SUFFICIENT INTEGRITY TO QUALIFY THOSE SITES FOR INCLUSION IN THE NATIONAL REGISTER OF HISTORIC PLACES *(if true, do not check any of the forgoing aspects of integrity)*

- **APE Integrity (Historic-Age Sites)**

The APE contains no deposits with sufficient integrity that historic-age archeological sites would have the potential to address important questions. Any such sites would lack integrity of *(check all that apply)*:

☐ Location

☐ Design

☐ Materials

☐ Association

☒ Other (*identify*)

The current APE is not likely to contain intact archeological deposits due to the impacts from urban development including road construction and maintenance, utility installations, and egress/ingress to homes and businesses that have since occurred over time. The potential for intact archeological sites of historic age is considered low.

☐ THE APE HAS THE POTENTIAL TO PRESERVE SITES WITH SUFFICIENT INTEGRITY TO QUALIFY THOSE SITES FOR INCLUSION IN THE NATIONAL REGISTER OF HISTORIC PLACES *(if true, do not check any of the forgoing aspects of integrity)*

- **Results of Historic Map Research (Historic Age Sites)**

☐ Historic map research shows that historic-era archeological deposits are not likely to occur within or adjacent to the APE

Historic map research shows that historic-era archeological deposits could occur within or adjacent to the APE; this research was inconclusive; or this research was not completed because it was not necessary to reach justifiable conclusions.

☒ Historical maps from 1954, 1957, 1962, 1984, 1985, 1997, 2010, 2013, 2016, 2019, and 2022 were reviewed (NETR 2022; USGS 2022b). The 1954 Beaumont Map (1:250,000 scale) is the earliest available historic map and shows the area largely undeveloped. Subsequent imagery shows the area remains undeveloped in large part because the project area is within the Sam Houston National Forest.

- **Results of Map Research (Cemeteries)**

☒ Map research shows that cemeteries are not likely to occur within or adjacent to the APE.

☐ Map research shows that cemeteries could occur within or adjacent to the APE, or this research was inconclusive.

- **Results of Landform Study**

☐ The APE and adjacent areas occur in a setting that was not conducive to human occupation and activity

☒ The APE and adjacent areas occur in a setting that was conducive to human occupation and activity; research on this issue was inconclusive; or this research was not completed because it was not necessary to reach justifiable conclusions.

Recommendations

- **Shallow Deposits**

Evaluate the potential for shallow deposits (Holocene-age deposits less than three-feet in depth) within the APE to contain archeological historic properties and cemeteries. Make appropriate recommendations regarding the need for further work, including the need for shovel test pits, auger probes, or other methods for evaluating shallow deposits.

According to PALM data, approximately 60 percent of the APE (28.5 acres) under evaluation falls in PALM Map Unit 2 which recommends surface survey for this area. It further states that no deep reconnaissance is recommended. Approximately 40 percent of the APE (18.3 acres) under evaluation falls in PALM Map Unit 4 for which no survey is recommended for these areas (see Attachment 4). It is unlikely intact deposits in surficial and near-surface contexts remain within the APE. It is unlikely that the proposed project would impact any known or unknown archeological resources of any kind.

For shallow deposits, no further archeological work is recommended within the APE prior to construction.

- **Deep Deposits**

Evaluation of deep deposits (Holocene-age deposits of three feet or greater depth) may or may not be necessary, depending on the nature of the sediments within the APE and the depth of proposed impacts. If Holocene-age deposits extend to three feet or more within the APE and would be impacted by the project, make appropriate recommendations regarding the need for further work. If no deep, Holocene-age deposits occur within the APE note that they are absent and indicate that no additional work in needed. If the deep Holocene deposits are present but the project either would not affect them or they have been too extensively disturbed to hold intact archeological deposits, provide an appropriate justification that no additional work is needed.

Soils, geology, and HPALM data of the APE all indicate that the potential for preserved cultural deposits at depths of more than 1 meter (3.28 feet) below surface does not exist in the APE. Furthermore, the majority of the APE has been impacted by previous development, and there are no deep impacts associated with this project. Thus, it is unlikely that the proposed project would impact any known or unknown archeological resources of any kind.

For deep deposits, no further archeological work is recommended within the APE prior to construction.

- **Recommendations Summary (select only one check box)**

☒ No further study needed ☐ Survey of entire APE ☐ Variable, see attached figure

- **Results Valid Within**

The purpose of considering adjacent areas is to define, when possible, a buffer zone around the APE to which findings of no effect and recommendations for no further work can be extended. No additional investigation should be necessary if a subsequent design change expands the APE into the buffer zone. In some cases, however, no buffer zone may be reasonably defined for the project or portions of the project as expansion of the APE may warrant survey. In such cases, check the middle box and indicate that the results are valid within zero feet of the APE.

☐ 50 feet of APE ☒ 0 feet of APE ☐ Variable, see attached figure

- **The Definition and Evaluation of this Horizontal Buffer Zone is Based on One or More of the Following Considerations**

☐ The integrity of the areas within and adjacent to the setting is affected by prior development.

☐ Previous investigations show that archeological materials are unlikely to exist in this area.

☒ Adjacent areas have potential to preserve archeological sites with good integrity.

☐ Other (specify)

Findings of no effect to archeological historic properties and/or State Antiquities Landmarks and recommendations for no further work apply to all areas within the horizontal buffer zone, as specified in the previous section. Any design change within this study area would not require further action or review beyond those actions recommended in this study. Design changes that either extend beyond the buffer zone or result in potential impacts deeper than the impacts considered in this report would require additional review. Note that no buffer zone may be defined for some projects, based on local conditions.

References Cited

Abbott, J. T., and S. Pletka

2018 *The Houston District HPALM Model*. Environmental Affairs Division, Texas Department of Transportation. Austin.

Google Earth™ Pro

2022 Historic Aerial Imagery viewed through Google Earth. Available at https://www.google.com/earth/. Accessed October 27, 2022.

Nationwide Environmental Title Research (NETR)

2022 *Historic Aerials Database*. Nationwide Environmental Title Research. Available at http://historicaerials.com. Accessed October 27, 2022.

Soil Survey Staff, U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS)

2022 *Soil Survey Geographic (SSURGO) Database.* Available at http://casoilresource.lawr.ucdavis.edu/soilweb/. Accessed October 27, 2022.

Texas Historical Commission (THC)

2022 *Texas Archeological Sites Atlas*. Texas Archeological Research Laboratory and the Texas Historical Commission. Available at http://nueces.thc.state.tx.us. Accessed October 27, 2022.

U.S. Fish and Wildlife Service (USFWS)

2022 *National Wetlands Inventory Surface Waters and Wetlands.* United States Fish and Wildlife Service. Available at https://www.fws.gov/wetlands/data/mapper.html. Accessed October 27, 2022.

U.S. Geological Survey (USGS)

2022a *USGS Historical Topographic Map Explorer*. United States Geological Survey. Available at http://historicalmaps.arcgis.com/usgs/index.html. Accessed October 27, 2022.

2022b *Texas Geology Map Viewer*. United States Geological Survey. Available at http://txpub.usgs.gov/dss/texasgeology/. Accessed October 27, 2022.

Attachments

Attachment 1 – Map showing horizontal extent of APE, including existing ROW and proposed ROW/new easements- Figure 1.

Attachment 2– Project information

Attachment 3 - Location of Archeological APE- Figure 2.

Attachment 4 – PALM Map- Figure 3.

Attachment 5 – NRCS Soils Series Map- Figure 4.

Attachment 6 – FEMA Floodplain Map- Figure 5.

Attachment 7 – National Wetlands Inventory Map- Figure 6.

Attachment 8 – Project Area Photos

Photo 1. FM 149 at FM 1791, facing west, November 2022.

Photo 2. FM 149 at County Road 203, facing east, November 2022.

Photo 3. FM 149 at CR 219, facing northwest, November 2022.

Photo 4. FM 149 at Longstreet Road, facing west, November 2022.

This report was written on behalf of the Texas Department of Transportation by:

CMEC now Stantec
15990 North Barkers Landing Rd, Suite 125
Houston, TX 77079