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Archaeological Monitoring Of The Atmos Energy Corporation Hudgins Street Pipeline Replacement Project #080.53481, City Of Grapevine, Tarrant County, Texas

Charles D. Neel

Chris Kugler

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Archaeological Monitoring Of The Atmos Energy Corporation Hudgins Street Pipeline Replacement Project #080.53481, City Of Grapevine, Tarrant County, Texas

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**ARCHAEOLOGICAL MONITORING
OF THE ATMOS ENERGY CORPORATION
HUDGINS STREET PIPELINE REPLACEMENT PROJECT
#080.53481,
CITY OF GRAPEVINE,
TARRANT COUNTY, TEXAS**

by
Charles D. Neel and Chris Kugler

Principal Investigator
Steve Tomka, Ph. D, RPA



TAC Permit #7861
Technical Report Number 236
RKI Project Number ASF16-196-00



January 2018

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Raba Kistner Environmental, Inc.
10100 North Central Expressway, Suite 160
Dallas, Texas 75231

Prepared for
Atmos Energy Corporation
5420 LBJ Freeway, Suite 1700
Dallas, Texas 75240

and

City of Grapevine
200 South Main Street
Grapevine, Texas 76051

RKI Project Number ASF16-196-00



January 2018

MANAGEMENT SUMMARY

This report presents the results of archaeological monitoring performed by Raba Kistner Environmental, Inc., on behalf of Atmos Energy Corporation for the Atmos Hudgins Street Replacement Project. The project consists of the replacement of aging pipelines with installation of new 2-inch diameter natural gas pipeline within the city of Grapevine, Tarrant County, Texas. The area of pipeline replacement extends along the north side of Hudgins Street within the city of Grapevine right of way for a length of approximate 1,410 feet. Raba Kistner Environmental, Inc., performed archaeological monitoring of mechanical and hand excavations involving trenching, bore pits, tie-in pits, and utility locate pits during project construction. These excavations were performed to place pipe, provide pits for bore machinery, connect to existing pipelines, located buried utilities, or connect to local commercial and residential users. The archaeological monitoring investigations were conducted in accordance with the Antiquities Code of Texas under Texas Antiquities Permit #7861.

All fieldwork for this project was conducted over a period of five days from 21 February to 7 March 2017. No *in situ* prehistoric or historic artifacts or cultural features were observed during the monitoring activities. Raba Kistner Environmental, Inc., recommends that construction proceed as planned with no further cultural resources investigations for the Atmos Hudgins Street Replacement Project. All field records generated by this project will be curated in accordance with Texas Archaeology Research Laboratory guidelines.

1. PROJECT DESCRIPTION

Raba Kistner Environmental, Inc. (RKEI), has been contracted by Atmos Energy (Atmos) to conduct archaeological construction monitoring for relocation and/or replacement of aging gas pipelines with new 2-inch-diameter High Density Polypropylene (HDPE) natural gas pipeline. The project area is located immediately southwest of the downtown city center of Grapevine in northeast Tarrant County, Texas. The project area is located within the city limits of Grapevine and depicted on Figure 1 on the Grapevine, Tex. 7.5 minute topographic quadrangle map (USGS 1981). Specifically, the proposed pipeline relocation extends along the north side of West Hudgins Street within the street right of way (ROW) for a distance of approximately 1,410 feet (ft) between Ball Street to the west and Church Street to the east. The purpose of the project is the relocation and/or replacement of an existing aging Atmos natural gas pipeline with new HDPE pipeline that connects to existing lines. Existing pipelines will be abandoned in place.

The proposed archaeological Area of Potential Effects (APE) was reduced from the original limits as presented in the Scope of Work for the permit application. No work was conducted west of Ball Street in the ROW adjacent to the Nash Farmstead Historic District (#10000866) and the Nash Farmstead Site (41TR213) and no work was conducted south of Hudgins Street adjacent to the Cotton Belt Railroad Industrial Historic District (#97001109) as originally proposed in the permit application. All work was conducted within street pavement or the adjacent grassy ROW on the north side of Hudgins Street from the centerline of Ball Street to the centerline of Church Street. This final APE is approximately 1,410 ft long by 40 ft wide and comprises approximately 1.3 acres. No federal undertaking is anticipated and the project was completed under Texas Antiquities Permit 7861 due to the project location on city of Grapevine owned property. All records associated with this project will be curated at the Texas Archeological Research Laboratory (TARL) in Austin.

2. ENVIRONMENTAL SETTING

The project is located in the Central Texas section of the Great Plains Province as defined by Fenneman (1931:54-57) which comprises a topography of strong relief as a result of weathering of the overlying thick plateau-making limestone and exposure of underlying resistant beds that dip gently to the south and east to the Coastal Plain. The elevation of the project area is 634 to 643 ft above mean sea level (amsl) and lies on the north side of the watershed divide between Denton Creek to the north and Big Bear Creek to the south. The project area crosses the upper end of Morehead Branch, a minor tributary of Denton Creek.

Geology of the project area is mapped as Upper Cretaceous Woodbine Formation (Kwb), an interbedded nonmarine, brackish water and marine shale and sandstone beds containing some marine fossils (Barnes 1987). The project area is comprised of one mapped soil unit within the APE: Navo-Urban land complex, 0 to 8 percent slopes, located on high stream terraces and ridges of stream divides. The Navo soil is described as consisting of a brown to dark brown clay loam plow zone up to 13 centimeters (cm) thick overlying five B horizon soils of combinations of yellow, red, brown, and gray clays to 2.4 meters (m) (California Soil Resource Lab [CSRL] 2016). The deep Navo soil formed in clayey sediments on stream divides. The attributes of this soil map unit is summarized in Table 1. The project area is currently asphalt pavement, manicured ROW, and/or sidewalks adjacent to city streets with dead-end streets at the Morehead Branch drainage. Historically, the APE was native prairie and rural agricultural land. Current land use is urban land of residential housing lots within the city limits of Grapevine (Figure 2).

Figure I. Cultural resources surveys within 1 kilometer of the proposed area of potential effects, Tarrant County, Texas.

Source: Grapevine, Tx (USGS 1981)

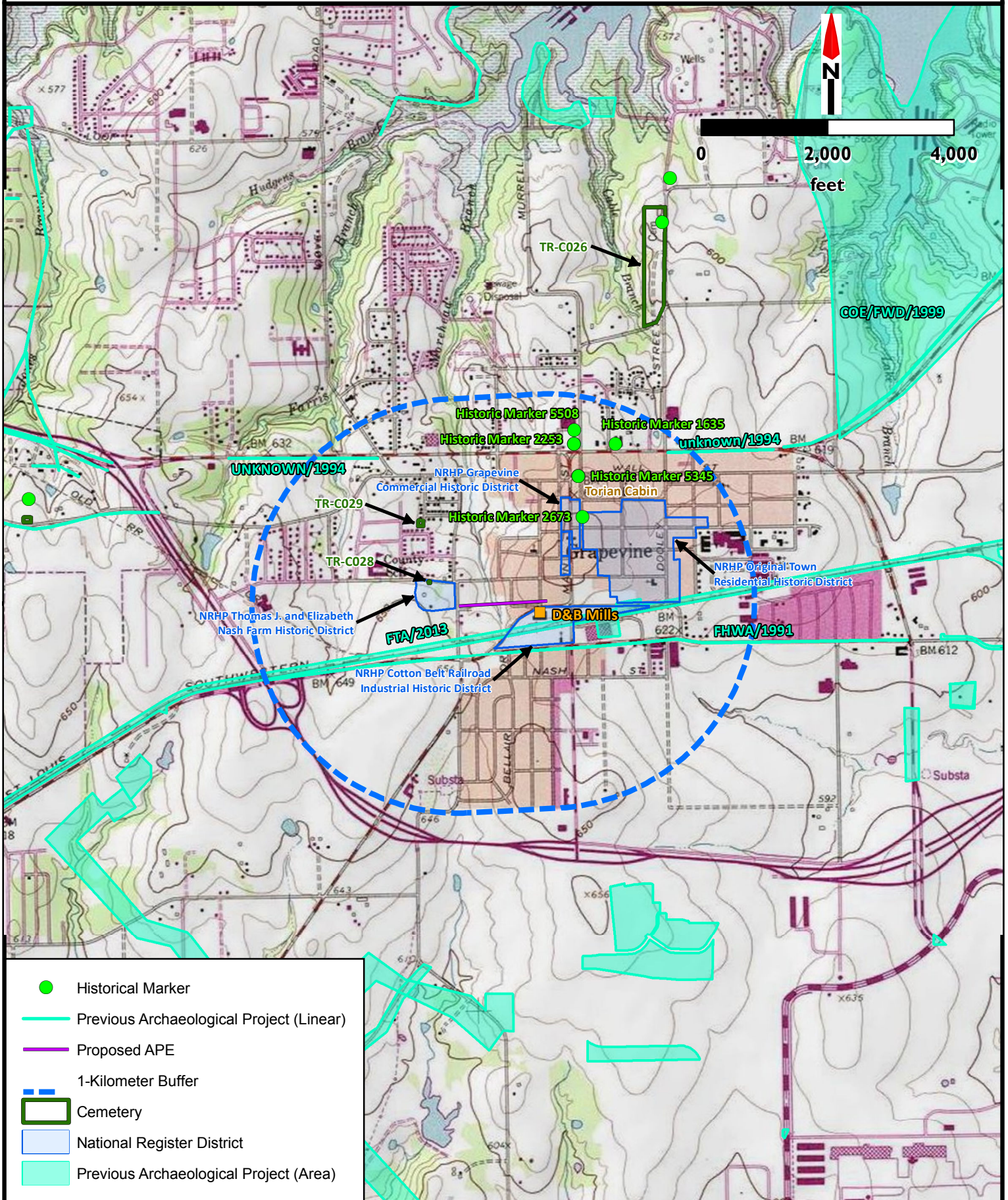


Table 1. Named Soil Unit within the APE and Its Characteristics*			
<i>Soil name</i>	<i>Type</i>	<i>Average depth of soil profile (horizon)</i>	<i>Description</i>
Navo, 0 to 8 percent slopes	clay loam	0-13 cm (Ap)	brown to dark brown clay loam
	clay	13-25 cm (B21t)	yellowish red clay
	clay	25-56 cm (B22t)	weak red and reddish brown clay
	clay	56-122 cm (B23t)	light brownish gray clay with reddish brown mottles
	clay	122-183 cm (B24t)	light yellowish brown clay with strong brown mottles
	clay	183-241 cm (B3)	yellow clay with gray mottles

* CSRL 2016

3. BACKGROUND REVIEW

A background review was completed for previously recorded sites, archaeological surveys, and National Register of Historic Places (NRHP) listings located within one kilometer (km) of the APE of the proposed project area. The Texas Archeological Sites Atlas (TASA) and Texas Historic Sites Atlas (THSA) online database were reviewed on 25 October 2016 and an update review was completed on 6 July 2017. Three previous archaeological surveys have been conducted within 1 km of the project area. In 1991, a linear survey was conducted for the Federal Highway Administration (FHWA) along West Dallas Road, 206 m south of the project APE. In 1994 a linear survey was conducted by an unknown surveyor along two parts of West Northwest Highway: 866 m northwest and 932 m northeast of the project APE. In 2013 a linear survey was conducted along the railroad corridor by URS Corporation for the Federal Transit Administration (FTA), 100 m south of the project APE (see Figure 1).

Eighteen properties and markers are located within one km of the project APE and are: three archaeological sites, two cemeteries, six NRHP districts, five historic markers, one National Register property, and one Registered Texas Historic Landmark (RTHL). The National Register property is the D&B Mills industrial complex and the RTHL is the Torian Log Cabin. The Torian Cabin was moved to its current location in downtown Grapevine in 1976 from its original location of four miles west of Grapevine. The Grapevine Jail (41TR264) was also moved to its current location in 1975. Locations of these properties and markers, in relation to the project APE, are depicted on Figure 1 and summary information is presented in Table 2.

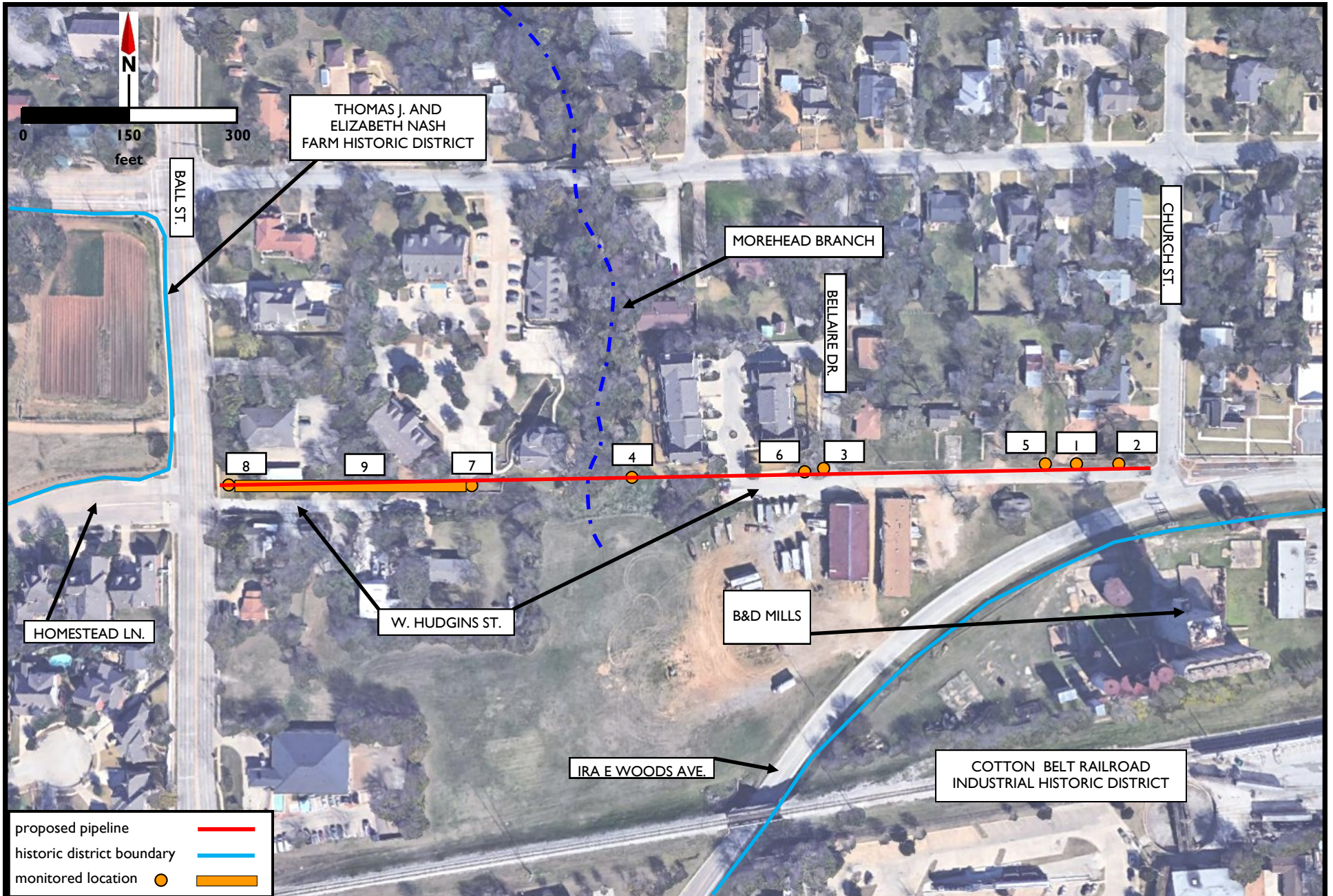


Figure 2. The proposed Atmos West Hudgins Street pipeline relocation project on an aerial photograph showing locations of monitored excavations.

Table 2. Recorded Cultural Resources Located within 1 km of the Proposed APE				
<i>TARL Resource ID</i>	<i>Resource</i>	<i>Recorder/date</i>	<i>NRHP Recommendations</i>	<i>Distance from APE</i>
41TR106	archaeological site	no data	no data	950 m northwest
41TR213	Nash Farmstead	Green/2006	listed 2010	7 m west
41TR264	Grapevine Jail	Moore/2013	none	240 m northeast
Historic marker 1635	First Baptist Church	THC/1984	n/a	834 m northeast
Historic marker 2253	City of Grapevine	THC/1979	n/a	776 m north
Historic marker 2673	J. E. Frost and Sons	THC/1981	n/a	450 m northeast
Historic marker 5345	The Grapevine Sun	THC/1980	none	632 m northeast
Historic marker 5508	Torian Log Cabin	THC/1978	none	772 m northeast
TR-CO28	Payne Family Cemetery	unknown	none	186 m northwest
TR-CO29	Ball Street Cemetery	unknown	none	440 m northwest
5439005508	RTHL Torian Log Cabin	THC/1976	listed RTHL	595 m northeast
98000736	Original Town Residential Historic District	Unknown/1996	listed	300 m northeast
92000097	NRHP Grapevine Commercial Historic District	Unknown/1992	listed 1992	245 m northeast
97000444	Grapevine Commercial Historic District Boundary Increase	Unknown/1992	listed 1992	300 m northeast
2001569	Grapevine Commercial Historic District Boundary Increase II	Unknown/1992	listed 1992	175 m northeast
NRS79-21982	Farmers and Merchants Milling Company/B&D Mills	Corbett/1981	listed 1979	23 m south
10000866	Thomas J. and Elizabeth Nash Farm Historic District	unknown	listed 2010	7 m west
97001109	Cotton Belt Railroad Industrial Historic District	unknown/1997	listed 1997	20 m south

Recent and historic maps for 1894, 1896, 1920, 1921, 1931, 1935, 1959, 1968, 1973, and 1981 of the project area were examined for current and former land-use patterns (HistoricAerials 2016; Sanborn Fire Insurance Company 1921, 1935; Street 1896; USDA 1920; USGS 1894, 1931, 1959, 1968, 1973, 1981). No specific structures or potential archaeological occupations were noted during the historic imagery review as occurring within the project APE. However, the

1896 map indicates the project APE is located immediately west of the original town limits of Grapevine that had been established by that time (Street 1896). Historic features related to the nineteenth century development of the City of Grapevine were assessed as potentially present within the project APE and may be encountered during project construction.

4. FIELD METHODOLOGY

In accordance with 13 TAC 26.15 and THC policy, RKEI performed monitoring of mechanical excavations for the replacement of 2-inch-diameter natural gas pipeline with 2-inch-diameter HDPE new pipeline located immediately west of downtown Grapevine. Excavations were conducted with a Caterpillar 302.7D mini-excavator with a 14-inch wide bucket operated by MasTec personnel, the installation contractor. Mechanical and hand excavations of bore pits, utility locate pits, and open-cut trenches were monitored. The primary objective of the monitoring was the examination of excavation walls and floors for undisturbed soil horizons and artifacts or pit features that may indicate the presence of *in situ* historic or prehistoric occupation within the project APE.

Field forms generated during this investigation were completed with pencil on acid-free paper and GPS coordinates were documented for pit and trench locations. Plan and profile maps were drawn for monitored excavation units. Wall profiles and plan maps were completed for eight excavation pits and one open-cut trench. Fieldwork was supervised by an archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for Archeology and the Professional Qualifications and requirements as defined in 13 TAC 26.4.

The project APE is located on an upland ridge on the watershed divide between Denton Creek and Big Bear Creek and follows the north ROW of West Hudgins Street. West Hudgins Street dead-ends into an undeveloped parcel where the upper end of Morehead Branch crosses the project APE. Prehistoric sites in the vicinity are typically located on sandy soils adjacent to major drainages or as buried sites discovered during backhoe trench prospecting of the Trinity River floodplain and its tributaries within valley settings. These landform types are not located within the project area. The project area and its immediate surroundings are urban developed land and no prehistoric sites have been recorded in these disturbed urban settings within Grapevine. The soils of the project area are Late Cretaceous-age deep clay deposits and are considered Low Probability Areas (LPAs) for prehistoric occupation. Prehistoric archaeological sites are not expected within the project APE; however, evidence of historic occupation associated with the early development of Grapevine may be expected.

5. RESULTS

Eight excavation pits and one open-cut trench, referenced as Monitored Locations (MLs), were examined during the installation of new Atmos gas lines during the Hudgins Street Replacement Project. These MLs were excavated for the placement of bore machinery, to locate buried utilities, or connect to existing gas lines and varied in size from a minimum of 40 cm wide to a maximum of 2.6 m wide. MLs were observed and numbered in sequence as they were excavated and plan and representative profile drawings were prepared in the field. Summary data for all MLs is presented in Table 3.

Table 3. Summary Data for Monitored Locations					
Monitored location	Dimensions N-S by E-W	Representative profile description	Depth	Disturbances noted	Photo number (Appendix A)
Monitored Location 1	186 cm by 40 cm	Strat I: 10YR4/2 dark grayish brown to 10 YR3/2 very dark grayish brown clay Strat II: 10YR4/2 brown clay	0-32 cm 32-105 cm	concrete chunk, railroad spike, fiber optic line, utility line at 36 cmbs, gas line at 94 cmbs no	A1a, A1b, A1c
Monitored Location 2	195 cm by 45 cm	Strat I: 10YR4/2 dark grayish brown to 10 YR3/2 very dark grayish brown clay Strat II: 10YR4/3 brown clay	0-30 cm 32-106 cm	fiber optic line, utility lines at 36 and 74 cmbs, gas line at 94 cmbs no	A2a
Monitored Location 3	117 cm by 260 cm	Strat I: mottled 5YR4/6 yellowish red and 7.5YR6/8 reddish yellow clayey sand to sandy clay	0-99 cm	fiber optic line, electric line, utility line, gas line at 90 cmbs	A2b
Monitored Location 4	218 cm by 119 cm	Strat I: mottled 7.5YR5/6 brown and, 7.5YR3/4 dark brown clay with 7.5YR6/8 reddish yellow sand to sandy clay (disturbed) Strat II: 10YR3/2 very dark grayish brown clay	0-145 cm 145-176 cm	mottled fill soil from previous sewer line trench along Morehead Creek no	A2c, A2d
Monitored Location 5	124 cm by 232 cm	Strat I: 10YR3/2 very dark grayish brown clay Strat II: 2.5YR4/8 red clayey sand Strat III: bedrock	0-45 cm 45-114 cm 114-133 cm	none noted	—
Monitored Location 6	83 cm by 175 cm	Strat I: concrete curb Strat II: 10YR3/2 very dark grayish brown clay Strat III: mottled 10YR4/2 dark grayish brown and 10YR3/2 very dark grayish brown clay (disturbed) Strat IV: 10YR5/8 yellow brown clayey sand	0-15 cm 15-33 cm 33-91 cm 91-112 cm	mottled fill soil ?	—
Monitored Location 7	135 to 152 cm by 190 cm	Strat I: 10YR4/2 dark grayish brown clay Strat II: 10YR3/2 very dark grayish brown clay Strat III: 7.5YR6/6 reddish yellow clayey sand	0-52 cm 52-133 cm 133-154 cm	no	—
Monitored Location 8	102 cm by 173 cm	Strat I: 7.5YR6/6 strong brown clay with large dark grayish brown and 10YR6/6 brownish yellow mottles of clay to clayey sand (disturbed) Strat II: 10YR6/6 brownish yellow clay	0-128 cm 128-139 cm	mottled fill soil no	—

Table 3 continued					
<i>Monitored location</i>	<i>Dimensions N-S by E-W</i>	<i>Representative profile description</i>	<i>Depth</i>	<i>Disturbances noted</i>	<i>Photo number (Appendix A)</i>
Monitored Location 9	35 cm by 86 m	This location is a trench cut between monitored locations 7 and 8 listed above. See Strat description for monitored location 7 for a representative profile of this trench.	0-52 cm 52-133 cm 133-154 cm	various utility lines in Strat 1	A3a, A3b

Some broad generalities can be stated for the soil stratigraphy documented in the monitored excavation units. Numerous utility lines were exposed during excavation and included water lines, gas lines, electric lines, and fiber optic cable lines that ranged in depth from 36 to 94 centimeters below surface (cmbs). These lines were typically confined to upper dark homogenous clay layers and trench features or trench outlines from the installation of these lines were not discernable in profile examinations (Figure 3). Extensive soil disturbance was noted in ML-1 Strat 1 (0-36 cm); ML-2 Strat 1 (0-30 cm); ML-3 Strat 1 (0-99 cm); ML-4 Strat 1 (0-145 cm); ML-6 Strat 3 (33-91 cm); and ML-8 Strat 1 (0-128 cm). Relatively undisturbed soil sequences are best represented at ML-5 and ML-7 and are similar, from a brown clay/red clayey sand/bedrock sequence at ML-5 to 133 cmbs to brown clay/brown clay/reddish yellow clayey sand at ML-7 to 154 cmbs. This data generally agrees with the CSRL data for upper soil sequences presented in Table 1.

6. Recommendations

This report documents the cultural resources monitoring of eight excavation pits and one open-cut trench for the replacement of natural gas lines along the north side ROW of West Hudgins Street in the city of Grapevine, Tarrant County. The primary objective of the monitoring was the examination of trench walls and floors for undisturbed soil horizons that may contain *in situ* evidence of prehistoric or historic occupation within the project APE. Mixed modern and historic debris was documented in one location: ML-1 Strat 1 (0-36 cm) and consisted of a railroad spike and a concrete chunk. No *in situ* historic or prehistoric artifacts or features were encountered during construction monitoring. No archaeological sites were recorded and no artifacts were collected.

It is recommended that no further cultural resources investigations for the Atmos Hudgins Street Relocation project are warranted. All field records will be curated in accordance with Texas Archeological Research Laboratory guidelines for permit closure.



Figure 3. Monitored Location views: (a) ML-2 foreground and ML-1 background, view west; (b) ML-3 profile, view south; (c) ML-4 profile, view southwest; and (d) ML-9, view east.

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1968 Grapevine, Tex. 7.5 minute topographic quadrangle. United States Geological Survey, Reston, Virginia.
1973 Grapevine, Tex. 7.5 minute topographic quadrangle. United States Geological Survey, Reston, Virginia.

1981 Grapevine, Tex. 7.5 minute topographic quadrangle. United States Geological Survey, Reston, Virginia.

APPENDIX A
PROJECT PHOTOS



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Figure A1. West wall profile of ML-1, view west (a); ML-1 location at southwest corner of Church and Hudgins streets, view west (b); and west wall profile of ML-1, view west (c).



Figure A2. ML-2 from Church and Hudgins streets, view west (a); south wall profile of ML-3, view south (b); southwest wall profile of ML-4, view southwest (c); and overview of ML-4, view east (d).



Figure A3. ML-9 from northeast corner of Ball and Hutchins streets, view east (a); and (b) ML-9 from southeast corner of Ball St., view east.