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An Intensive Cultural Resources Investigation for the Redbud Pump Station Transmission Water Line Project Collin County, Texas

Karen Belvin

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An Intensive Cultural Resources Investigation for the Redbud Pump Station Transmission Water Line Project Collin County, Texas

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**AN INTENSIVE CULTURAL RESOURCES INVESTIGATION FOR THE
REDBUD PUMP STATION TRANSMISSION WATER LINE PROJECT
COLLIN COUNTY, TEXAS**

Prepared for:

CITY OF MCKINNEY



Prepared by:

BGE, Inc.
2595 Dallas Parkway
Suite 101
Frisco, Texas 75034



January 7, 2020

**AN INTENSIVE CULTURAL RESOURCES INVESTIGATION FOR THE
REDBUD PUMP STATION TRANSMISSION WATER LINE PROJECT
COLLIN COUNTY, TEXAS**

Prepared for:

City of McKinney
222 N. Tennessee Street
McKinney, Texas 75069

City Project No.: WA-4340

Prepared by:

BGE, Inc.
2595 Dallas Parkway
Suite 101
Frisco, Texas 75034

Principal Investigator:
J. Philip Washington, R.P.A.

Antiquities Permit: 8763

Report Author:
Karen Belvin, M.A., R.P.A

Contributions by:
Ernesto Maycotte, MBA, RPA
Lauren Miller
Lindsay Vermillion
Jonathan Welch, MA, RPA

January 7, 2020

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Management Summary

Project: Redbud Pump Station Transmission Water Line Project

Project Sponsor: City of McKinney

City Project No.: WA-4340

Project Description: The City of McKinney is proposing to construct 2.2 kilometers (km; 1.4 miles [mi]) of new 42-inch (in) water transmission line within a permanently maintained utility easement that ranges in width from 8 to 19 meters (m; 26 to 62 feet [ft]), in west-central Collin County, Texas. Improvements to the existing transmission network will enhance water conveyance operations and reduce maintenance costs for the City of McKinney.

Project Location: The project is situated in the northwestern extent of the City of McKinney. The area where the project is located is depicted on the 2016 *McKinney West, Texas-Collin County* USGS 7.5-Minute Topographic Quadrangle map at an average elevation of 642 ft above mean sea level. The project area is bounded by Bloomdale Road to the north, Justice Street to the south, Redbud Boulevard to the east, and an existing 30-in water transmission line northeast of South Hardin Boulevard, between County Road 164 and Bloomdale Road.

Project APE: The area of potential effect (APE) for this project encompasses 5.4 hectares (ha; 13.3 acres [ac]) inclusive of the transmission line permanent easement and temporary workspaces to accommodate excavators, equipment, personnel, bore pits, and tie-in connections for installation. Depth below ground surface is expected not to exceed 8 m (27 ft).

Dates of Field Effort: February 6-8, April 10, and November 17, 2019

Field Investigation: The City of McKinney contracted BGE, Inc. to conduct an intensive pedestrian survey augmented by shovel testing for the project. Under the supervision of Principal Investigator, Karen Belvin, the survey was led by Crew Chief, Lindsay Vermillion, with Ciara Bamsch-Robinson serving as supporting crew member. The field effort required 46 person-hours to complete. Current Principal Investigator for the project is J. Philip Washington.

Number of Sites: One new historic site (41COL324) was identified as a result of this field effort. Site 41COL324 appears to represent a historic-period refuse midden related to a late nineteenth or early twentieth century farmstead or other domestic occupation. It consists of a shallow subsurface deposit of historic artifacts, all excavated from one shovel test, as well as two discrete areas of sparse surface scatters of historic artifacts. Two wells are also located within the site. No standing structures remain. Archival research on the owners failed to associate the property with a person or family of historical significance.

Recommendations: BGE archeologists conclude that portions of 41COL324 within the proposed project lack potential for future study and does not meet any criteria for evaluation that would make it potentially eligible for listing on the NRHP. Therefore, BGE recommends that portions of 41COL324 within the proposed project be determined as Ineligible for inclusion in the NRHP, and the project be allowed to proceed without further consultation in the vicinity of 41COL324. Furthermore, because the two wells are located [REDACTED] [REDACTED] BGE recommends that the City avoids impacts to those two wells during construction activities, by placing high visibility construction fencing around them to avoid heavy equipment inadvertently tracking through the area and damaging the wells.

Definition of the Project

Introduction

The City of McKinney (City) is proposing to construct and maintain 2.2 kilometers (km; 1.4 miles [mi]) of 42-inch (in) water transmission line for the Redbud Pump Station Transmission Water Line Project (Project) located within the City of McKinney, in west-central Collin County, Texas (**Appendix A, Figure 1**). On behalf of the City, BGE, Inc. (BGE) conducted an intensive pedestrian survey augmented by shovel testing of the Project. Because the proposed project is being contracted by the City of McKinney, a political subdivision of the state of Texas, the project sponsor is required under the Texas Antiquities Code and the Texas Natural Resources Code Chapter 26 'Rules of Practice and Procedure for the Antiquities Code of Texas' to obtain a Texas Antiquities Permit to perform cultural resources investigations to assess whether cultural resources are present that may rise to the level of significance of State Antiquities Landmark (SAL) status. The Texas Historical Commission (THC) has assigned Antiquities Permit number 8763 to the Project. Furthermore, project construction designs minimize impacts to Waters of the United States (WOTUS) crossed by the project, not meeting the minimum threshold established under Section 404 of the Clean Water Act (CWA) for the requirement of a Pre-Construction Notification (PCN) to the United States Army Corps of Engineers (USACE).

Project Description

The Project consists of 2.2 km (1.4 mi) of new 42-in water transmission line installed within a permanently maintained utility easement that ranges in width from 8 to 19 meters (m; 26 to 62 feet [ft]), from the proposed Redbud Pump Station at the eastern end of the Project to an existing 30-in transmission main near the proposed City of McKinney's Hardin Boulevard and Bloomdale Road extension intersection at the western end of the Project. The Project also includes temporary workspaces that will parallel the permanently maintained utility easement on one side and will range in width from 10 to 15 m (33 to 49 ft). The temporary workspaces will be intermittently utilized during Project construction for temporary staging areas and for bore pit excavations for boring beneath roadways and the Collin County Soil and Water Conservation District (SWCD) Site 17 Reservoir. Together, the permanently maintained utility easement and the temporary workspaces constitute the Project's area of potential effects (APE) (**Appendix A, Figure 2**). The Project's APE encompasses an area of 5.4 hectares (ha; 13.3 acres [ac]). Maximum excavation depth below ground surface throughout the Project is not expected to exceed 8 m (27 ft). Construction design modes include straight grade auger bore or tunneling, and open cut trenching.

From Community Avenue to the Project's northwestern terminus, the APE is located immediately adjacent to an area that has been subjected to a previous archaeological investigation (**Appendix A, Figure 3**). This area was previously surveyed during May 2017 by archaeologists from Burns & McDonnell Engineering Company, as part of a cultural resources survey for the Bloomdale Road Extension project (Antiquities Permit No. 7946) (Fischbeck et al. 2017). The report documenting the results and recommendations from this survey has been submitted to and accepted by the THC. During that previous archaeological investigation, nine negative shovel tests (ST) were excavated. In addition, four backhoe trenches were excavated during exploratory ge archaeological trenching. Two trenches were investigated on each side of the SWCD Site 17

Reservoir, with no cultural material recovered. No newly recorded cultural resources were recorded within the APE of that previous investigation. The shovel tests and backhoe trenches from the investigation were excavated along a centerline that roughly parallels the current Project centerline at a distance of less than 25 m (82 ft). The Project's overlap along this area of the APE is 746 m (2,447 ft) long and covers an area of 1.9 ha (4.7 ac).

Project Location

The proposed easement will begin at the new Redbud Pump Station (33°14'06.06" N, 96°37'38.70" W) south of Bloomdale Road, west of Redbud Boulevard/CR 273 (previously McLarry Drive), and continue in a west, northwesterly direction to its terminus, southeast of County Road 164 (33°14'39.66" N, 96°38'16.921" W) (**Appendix B, Figures 1-12**). From the proposed Redbud Pump Station between Redbud Boulevard and Shawnee Drive, the line will extend east-west between Redbud Boulevard and James Pitts Drive (also CR 201), north of and parallel to Justice Road. At the intersection of Justice Road and James Pitts Drive (33°14'07.18' N, 96°38'06.18" W), the line will make an abrupt turn north, paralleling James Pitts Drive east, before angling to the northwest south of Bloomdale Road. From Community Avenue west (33°14'27.01" N, 96°38'16.921" W), the main runs in a northwesterly direction south of the Natural Resources Conservation Service (NRCS) dam and west of the associated Collin County SWCD Site 17 Reservoir to an existing 30-in water transmission line northeast of South Hardin Boulevard, between CR 164 and Bloomdale Road (**Appendix A, Figure 4**).

Research Design

Background Research

In anticipation of the Project, BGE conducted a background literature review of available data on the Texas Archeological Sites Atlas (TASA) to identify previous cultural resources investigations and previously recorded archeological and historic resource sites within an 805-m (0.5-mi) study area. Additionally, a search of the National Park Service (NPS) online database was undertaken to determine whether historic properties listed in, or eligible for listing in, the National Register of Historic Places (NRHP) are located within the study area. Moreover, BGE reviewed available records from the Texas General Land Office Archival Resources Online database, and historic United States Geological Survey (USGS) 1929, 1954, 1958, and 1960 topographic maps available online at USGS Historic Topographic Map Explorer and historic 1952, 1957, 1968 and 1995 orthorectified aerial photographic imagery from USGS Historic Archive Earth Explorer for historic resources. Finally, BGE examined literature on the geoarchaeology of north-central Texas and the potential for deeply buried cultural material in reasonable context, or the likelihood of possessing geoarcheological potential (Abbott 2011).

Survey Methodology

Abbott's (2011) maps for the potential for surface and deeply buried archeological sites within the Texas Department of Transportation's Dallas District (**Appendix A, Figures 5 and 6**) were used to help determine ST intervals within the APE. These maps show that the potential for deeply buried archaeological sites is low, except for a narrow section of moderate potential just southeast of Community Avenue, another section of moderate potential on each side of the SWCD Site 17 Reservoir, and a section of moderate potential on the northwest terminus of the APE. No areas of high potential for deeply buried archaeological sites exist within the APE. However, the map depicting the potential for surface archaeological sites does show significant portions of the APE within areas of moderate potential, as well as the area where the APE turns northwest, just south of Bloomdale Road, to be of high potential. Based on this map, the high potential area was shovel tested at 30 m (98 ft) intervals, while the moderate and low potential areas were shovel tested at 50 m (164 ft) intervals, along one transect located in the Project's centerline.

STs were excavated whenever there was less than 30 percent ground surface visibility, except on slopes greater than 20 percent, or placed at the discretion of the lead archeologist, to the bottom of Holocene deposits, whenever possible. Shovel tests measured 30 cm (12 in) on a side and were excavated in 10 cm (4 in) arbitrary levels with sediments screened through ¼-in mesh hardware cloth. Clay matrices that could not be screened were finely sorted by hand or troweled and visually inspected for cultural material. All areas of the easement that have undergone significant disturbance, as in asphalted surfaces, concrete streets, sidewalks, parking lots, and driveways, were not shovel tested but were thoroughly photo documented.

For each shovel test, the location, maximum depth, soil strata, color and texture of soil matrices, aided by Munsell Soil Color Book (Munsell Color Company 2000), and the absence or presence of cultural material were recorded on BGE shovel test forms. Positive shovel tests and surficial scatters of cultural material were considered potential sites. All positive shovel tests were subject to a program of site definition. Site definition

consisted of systematic shovel testing to determine the horizontal and vertical site extent. Typically, site boundaries are defined by a series of shovel tests along transects radiating in the four cardinal directions, or if more appropriate, along perceived major and minor axes. The first positive shovel test was utilized as datum with subsequent site shovel tests placed at 10-m (33-ft) intervals. Sites were mapped using a program of compass and tape, and a Samsung Galaxy Tab Active2 data collector and Trimble R1 GNSS Receiver. Site field forms included site shovel test (SST), site sketch maps, photographs accompanied by photo logs, and TexSite Archeological Site Form. All cultural material located on private land was recorded in the field but not collected.

The project will utilize straight grade auger bore or tunneling constriction methodology to bore under roads, water features, and existing pipelines. STs will be excavated at the location, or within a short distance, of the location where bore pits will be excavated. If these shovel tests were unable to reach deeper soils with potential to contain undisturbed archaeological deposits, a program of systematic deep prospection will be implemented. This program will follow proposed Council of Texas Archeologists (CTA) guidelines for mechanical prospection, and may include hand augering, mechanical augering, or mechanical trenching, as permitted by the local environment.

The field effort was executed by professional archeologists under the direction of the Principal Investigator to ensure effective implementation of established procedures. This investigation was performed in compliance with the NHPA, the procedures of the USACE 33 C.F.R. 325 Appendix C--Procedures for Protection of Historic Properties, Advisory Council on Historic Preservation (36 C.F.R. Part 800--Protection of Historic Properties), in conjunction with the guidelines set forth by the THC and the CTA.

Results

Records Review

The review of available data in the TASA indicated that no archaeological sites, historic properties, historic districts, buildings, or structures, included in, or eligible for inclusion in, the NRHP, Texas State Historical Markers, SALS, cemeteries, or museums were located within or immediately adjacent to the Project's APE. A review of historic topographic maps and aerial imagery was conducted to determine if structures were present within or adjacent to the APE. A 1952 USGS aerial photograph shows a set of structures abutting or partially inside the APE (**Appendix A, Figure 7**). The 1960 *McKinney West* USGS 15-Minute Topographic Quadrangle map (**Appendix A, Figure 8**) depicts the same structures, as well as other structures in close proximity to the APE. Finally, a 1968 USGS aerial photograph (**Appendix A, Figure 9**) still shows the structures observed on the 1952 aerial photograph, as well as several other structures outside the APE.

The TASA records revealed that there have been eight previous cultural resources surveys conducted within the study area (**Appendix A, Figure 10**), three of which are intersected by the APE (**Table 1**). Although no archeological sites have been recorded within the APE, two previously recorded historic-period sites (41COL278 and 41COL157), one cemetery, and one historical marker associated with the cemetery (Marker No. 6182) are located within the study area. Site 41COL278 is located approximately [REDACTED] and site 41COL157 is located approximately [REDACTED]. Site 41COL278 has been determined Ineligible for inclusion in the NRHP (THC & TARL 2019). Site 41COL157 is of Undetermined eligibility for inclusion in the NRHP (THC & TARL 2019). The historical marker located within the study area is associated with the McLarry Cemetery. The McLarry Cemetery is situated approximately [REDACTED].

Site 41COL278, also known as Redbud Cistern Site, was identified [REDACTED]

[REDACTED] As recorded by Davis (2017), the cistern was crafted from bedrock with natural shales providing enough seal to hold water to a depth of over 2 m (6.5 ft). Along the north edge of the cistern, a small concrete pad measuring 75 cm (29 in) in width by 97 cm (38 in) in length and 41 cm (16 in) thick paralleled the opening. The opening was described as "roundish" and measured 130 cm (51 in) north-south by 150 cm (59 in) east-west. Two handmade brick fragments served as the only cultural material remaining at the site (THC & TARL 2019).

Site 41COL157 is situated [REDACTED] and consisted of a 53-cm (21-in) circular, bell-shaped cistern constructed of dry-laid factory engineered brick with a depth of 9 m (29 ft) and surficial scatter of historic material culture. According to TASA, recorded cultural material included a marble, tobacco can, plate shard, bottle glass, ceramic china shards, and a condensed milk can. Collectively, the site measured roughly 15 m (49 ft) in length by 10 m (33 ft) in width (THC & TARL 2019). Due to residential development, this site is no longer extant.

The McLarry Cemetery, with its associated Historical Marker No. 6182, was initially used for a single burial of an infant in 1851. The land on which the cemetery is now situated was donated by Mary Virginia Dunn McLarry and her father Robert A. McLarry (THC & TARL 2019), as a public cemetery for the early pioneers of Peters Colony (1841-1859) and Wilmeth Settlement (1848-1918) (Texas General Land Office n.d.). Currently, the cemetery serves the descendants of the early settlers of central Collin County. When the Republic of Texas (1836-1846) was established, it assumed responsibility for its public domain lands and sought to attract settlers for the purpose of colonizing unappropriated and vacant lands of the Republic. The earliest regions to be occupied comprised the southeastern Gulf Coast, lower Colorado and Brazos river valleys and eastern piney woods. During the 5th Congress of the Republic of Texas, the legislature, in an effort to expand its tax base and promote settlement in North Texas, adopted the Empresario model used by Mexico, which authorized the establishment of the "Land and Colonization Law "of 1841 (Texas General Land Office n.d.). The Peters Colony was the earliest Empresario authorized under the law of 1841. The settlement of Wilmeth, named after J.B. Wilmeth, the first teacher to settle in the vicinity of the project, offered resident children classes in a log cabin school house that was located on land originally granted to Tola Dunn, a Peters Colony resident in 1843 (Texas General Land Office n.d.).

Table 1: Cultural Resources Investigations within 805 m (0.5 mi) Study Area

Atlas #	Description	Location	Survey Results	Reference
—	City of McKinney—Phase I survey augmented by deep trenching for the Bloomdale Road Extension (Permit Number 7946)	Parallel to and overlapping the northwesternmost section of the APE	No archeological resources identified; 5 non-archeological historic resources were recorded	Burns and McDonnell (2017)
8400000843	City of Irving—Phase I survey	Running east to west and intersecting the APE approximately 80 m (262 ft) south of Bloomdale Road	No resources identified	City of Irving (1999)
8500013129	TxDOT—Phase I survey for US 75 between Spur 399 and SH 121	North-south along North Central Expressway. Intersecting the APE close to its eastern terminus	No resources identified	Owen (2003)
8500080459	Lockwood, Andrews & Newman, Inc.—Phase I survey for the proposed Redbud Pump Station 794 PP Transmission Waterline ROW.	200 m (656 ft) east of the APE’s eastern terminus	No resources identified	Gilliland (2017)
8500012242	NRCS--Phase I survey for rehabilitation of floodwater retarding structure	215 m (705 ft) north of the APE	No resources identified	Sanders (2005)
8500015491	City of McKinney--Phase I for Bloomdale Road extension and scraping outside McLarry Cemetery	460 m (1,509 ft) north of the APE’s eastern terminus	No resources identified	Tine (2008)
8500080218	NTMWD--Phase I for North McKinney Pipeline	205 m (673 ft) east of the APE’s eastern terminus	No resources identified	Koszarek and Morgan (2017)
8500080008	City of McKinney--Phase I for Redbud Pump Station		41COL278 (85027801)	Davis (2016)

NOTE: Shaded rows indicate investigations that intersect the Project APE.

Field Investigation

Between February 6 and 7, and on April 10 and November 17, 2019, BGE conducted an intensive pedestrian survey augmented by shovel testing on the entire APE. BGE archeologists excavated 70 STs within the Project’s APE (**Appendix A, Figure 11**). BGE archaeologists also excavated five STs within a previously considered Project alignment, just south of Bloomdale Road. Five attempted shovel tests were not excavated due to heavy disturbance or inundation and were recorded as surface inspections. Shovel test were excavated to an average depth of 37.5 cm (12.6 in) and were terminated at sterile clays at depths up to 60 cm (24 in).

This investigation determined that there are no areas within the APE where shovel testing was an inadequate methodology to reach deeper soils with potential to contain undisturbed archaeological deposits. This

includes the areas where the bore pits will be excavated. Every ST reached sterile clays before reaching one meter in depth – the maximum depth reachable by a ST. This is further supported by the lack of areas of high potential for deeply buried archaeological sites (Abbott 2011) within the APE (**Appendix A, Figure 6**). In addition, as mentioned in the Project Description subsection above, from Community Avenue to the Project’s northwestern terminus, the APE is located immediately adjacent to an area that has been subjected to a previous archaeological investigation. In May 2017, Burns & McDonnell conducted a pedestrian survey augmented by shovel testing and deep testing for the City of McKinney under Antiquities Permit Number 7946. The survey was performed for the Bloomdale Road Extension Project, which will connect existing Bloomdale Road to County Road 164 (Fischbeck et al. 2017). During that previous archaeological investigation, four backhoe trenches were excavated during exploratory ge archaeological trenching. Two trenches were investigated on each side of the SWCD Site 17 Reservoir (**Appendix A, Figure 11-b**), with no cultural material recovered. Each trench was excavated to a depth of the maximum extent of the backhoe bucket arm; approximately 2.4 meters (m) (8 ft). Soils were predominantly silty clay and included redoximorphic features at depth. During excavation, trench back-dirt was visually inspected, and trench walls were examined for the presence of archeological deposits. Stratigraphic profiles were completed for each trench. Trenches 1 and 2 terminated in a 90-centimeter (cm) (35-in) thick layer of mottled clay with caliche inclusions. Trench 3 terminated in a layer of mottled clay approximately 40 cm (16 in) thick. Trench 4 terminated in a layer approximately 1 m (3 ft) thick of mottled clay. Ground water was encountered at the bottom of Trench 4 (Fischbeck et al. 2017). The report documenting the results and recommendations from this survey has been submitted to and accepted by the THC.

The backhoe trenches from the previous investigation were excavated along a centerline that roughly parallels the current Project centerline at a distance of 25 m (82 ft) on the northwest side of the Reservoir and at 12 m (39 ft) on the southeast side of the Reservoir. The bore pits that the current project will be excavating at each side of the Reservoir will be between 11 and 12 m (35 and 38 ft) deep, to accommodate for the straight grade auger bore or tunneling construction method.

The area around the Reservoir, including where the bore pits will be excavated, has been classified as having moderate to negligible potential for containing deeply buried archaeological deposits (Abbott 2011). The four trenches excavated by the previous archaeological investigation reached pre-Holocene sterile soils and were excavated to the maximum depth allowed by typical mechanical equipment used for archaeological trenching (Fischbeck et al. 2017). BGE believes that additional trenching in the area will not yield different results from the ones obtained during the previous archaeological investigation and that additional trenching is unnecessary. Therefore, BGE believes that portion of the Project has already been adequately investigated for deep deposits.

█ one ST was positive. This positive ST was delineated and assigned site number 41COL324. Outside from site 41COL324, all other STs were negative, and BGE archaeologists did not encounter any other archaeological features, standing structures, or historic sites during the pedestrian survey conducted across the entire APE.


Site Description

Site 41COL324 is situated

SST1 was positive with 11 historic artifacts. These consisted of five clear glass fragments, two of which exhibit a violet/amethyst tint, four ceramic fragments, one ceramic grate rim fragment, and one fragment of plastic material (**Appendix B, Figures 18-23**). All were excavated from the uppermost 35 centimeters below surface (cmbs). This positive ST was delineated by excavating two consecutive negative STs, at 10 m (33 ft) intervals, radiating in cardinal directions from the positive ST. To the north, south, and east, the two consecutive ST were excavated with negative results. To the west, only one negative ST was excavated (**Appendix A, Figure 14**). Two sparse surface scatters of solarized glass fragments were recorded just east of the centerline, along a two-track road. In addition, two wells were recorded, also east of the centerline along the two-track road. These wells were dug into the bedrock and a brick enclosure was constructed from ground level to the bedrock - approximately 30 cm (12 in) deep – to prevent soil infilling. Polyvinyl chloride (PVC) piping and fittings protrude from under the brick enclosure (**Appendix B, Figure 17**).

Two negative SSTs were excavated in every cardinal direction from the surface scatters and from the wells. In total, 26 SSTs were excavated in the vicinity of 41COL324. These SSTs were excavated to an average depth of 46 cmbs (18 in) through clay and clay loam soils. All were terminated at basal clay or at compact, manually unexcavatable clay (**Table 2**).

Table 2: SSTs Excavated at 41COL324

Fine = Fi Compact Clay = Cl Loam = Lo Sand = Sa Silty = Si  Positive Site Shovel Test							
SST	Reason for Termination	Soil Zone	Soil Color	Soil Texture	Arbitrary Level	Depth (cmbs)	Artifacts
SST1	Compact Clay Soil	1	10YR 5/4	Cl Lo	1-4	0-35	5 clear glass fragments 4 ceramic fragments 1 ceramic grate rim fragment 1 piece of plastic

Fine = Fi

Compact Clay = Cl

Loam = Lo

Sand = Sa

Silty = Si



Positive Site Shovel Test


SST	Reason for Termination	Soil Zone	Soil Color	Soil Texture	Arbitrary Level	Depth (cmbs)	Artifacts
		2	10YR 4/4	Cl	4-5	35-45	-
SST2	Compact Clay Soil	1	10YR 2/2	Cl Lo	1-3	0-30	-
		2	10YR 4/2	Cl	4	30-40	-
SST3	Compact Clay Soil	1	10YR 2/2	Cl Lo	1-2	0-15	-
		2	10YR 4/2	Cl	2-3	15-30	-
SST4	Compact Clay Soil	1	10YR 3/2	Cl Lo	1-4	0-40	-
		2	10YR 3/2	Cl	5	40-50	-
SST5	Compact Clay Soil with Gravel Inclusions	1	10YR 2/2	Si Cl Lo	1	0-10	-
		2	10YR 2/2	Cl Lo	2-3	10-30	-
		3	10YR 2/2	Cl	4	30-40	-
SST6	Compact Clay Soil with Gravel Inclusions	1	10YR 5/3	Cl Lo	1	0-10	-
		2	10YR 5/2	Cl Lo	2-4	10-40	-
		3	10YR 6/4	Cl	5	40-50	-
SST7	Compact Clay Soil	1	10YR 5/2	Cl Lo	1-3	0-25	-
		2	10YR 6/4	Cl	3-4	25-40	-
SST8	Compact Clay Soil	1	10YR 5/3	Cl Lo	1	0-5	-
		2	10YR 6/4	Cl	1-4	5-35	-
SST9	Basal Clay	1	10YR 5/4	Si Cl Lo	1-4	0-35	-
		2	10YR 4/4	Cl Lo	4-5	35-50	-
		3	10YR 6/3	Cl	6	50-60	-
SST10	Basal Clay	1	10YR 5/4	Si Cl Lo	1-3	0-30	-
		2	10YR 4/4	Cl Lo	3-5	30-45	-
		3	10YR 6/3	Cl	5-6	45-55	-
SST11	Basal Clay	1	10YR 5/4	Si Cl Lo	1-3	0-30	-
		2	10YR 4/4	Cl Lo	4	30-40	-
		3	10YR 6/3	Cl	5	40-50	-
SST12	Basal Clay	1	10YR 2/2	Si Cl Lo	1-4	0-35	-

Fine = Fi Compact Clay = Cl Loam = Lo Sand = Sa Silty = Si



Positive Site Shovel Test

SST	Reason for Termination	Soil Zone	Soil Color	Soil Texture	Arbitrary Level	Depth (cmbs)	Artifacts
		2	10YR 4/2	Cl Lo	4-5	35-50	-
		3	10YR 4/4	Cl	6	50-60	-
SST13	Basal Clay	1	10YR 2/2	Cl Lo	1-2	0-15	-
		2	10YR 4/2	Cl	2-3	15-30	-
		3	10YR 6/2	Cl	4	30-40	-
SST14	Basal Clay	1	10YR 2/2	Cl Lo	1-3	0-25	-
		2	10YR 4/2	Cl	3-4	25-35	-
		3	10YR 6/2	Cl	4-5	35-45	-
SST15	Basal Clay	1	10YR 2/2	Cl Lo	1	0-10	-
		2	10YR 4/2	Cl	2-3	10-25	-
		3	10YR 6/2	Cl	3-4	25-35	-
SST16	Basal Clay	1	10YR 3/2	Cl Lo	1-4	0-35	-
		2	10YR 3/2	Cl	4-5	35-45	-
		3	10YR 6/2	Cl	5-6	45-55	-
SST17	Basal Clay	1	10YR 2/2	Cl Lo	1-3	0-30	-
		2	10YR 4/2	Cl	4	30-40	-
		3	10YR 6/2	Cl	5	40-50	-
SST18	Basal Clay	1	10YR 2/2	Cl Lo	1	0-10	-
		2	10YR 4/2	Cl	2-3	10-25	-
		3	10YR 6/2	Cl	3-4	25-35	-
SST19	Basal Clay	1	10YR 2/2	Cl Lo	1	0-10	-
		2	10YR 4/2	Cl	2	10-20	-
		3	10YR 6/2	Cl	3	20-30	-
SST20	Basal Clay	1	10YR 2/2	Si Cl Lo	1	0-10	-
		2	10YR 4/2	Cl Lo	2-4	10-35	-
		3	10YR 6/2	Cl	4-5	35-45	-
		4	10YR 7/2	Cl	5-7	45-65	-
SST21		1	10YR 5/3	Cl Lo	1	0-5	-

Fine = Fi Compact Clay = Cl Loam = Lo Sand = Sa Silty = Si  Positive Site Shovel Test							
SST	Reason for Termination	Soil Zone	Soil Color	Soil Texture	Arbitrary Level	Depth (cmbs)	Artifacts
	Compacted, disturbed soil near road	2	10YR 6/4	Cl	1-5	5-45	-
SST22	Compacted, disturbed soil near road	1	10YR 5/3	Cl Lo	1	0-5	-
		2	10YR 6/4	Cl	1-5	5-45	-
SST23	Basal Clay	1	10YR 5/3	Cl Lo	1	0-10	-
		2	10YR 5/2	Cl Lo	2-4	10-35	-
		3	10YR 6/4	Cl	4-5	35-45	-
SST24	Compact Clay, Gravel	1	10YR 4/3	Cl Lo	1	0-5	-
		2	10YR 6/4	Cl	1-4	5-40	-
SST25	Basal Clay	1	10YR 4/4	Si Cl Lo	1-4	0-35	-
		2	10YR 5/4	Cl Lo	4-5	33-45	-
		3	10YR 6/3	Cl	5-6	45-60	-
SST26	Basal Clay	1	10YR 4/4	Cl Lo	1	0-10	-
		2	10YR 6/4	Cl	2-5	10-45	-

Artifact Analysis

Site 41COL324 is located [REDACTED] therefore all artifacts were documented in the field and not collected. Prior to photo documentation and recordation, artifacts were rinsed, sorted and preliminarily analyzed. Artifacts consist of clear glass fragments (n=5), three of which exhibited significant patination (weathering/decay) (Munsey 1970), while two reflected a violet/amethyst solarized hue (known also as sun-colored). Amethyst tinted glass is the result of the use of manganese as a decolorization agent; when exposed to sunlight, the manganese causes the glass to turn a distinctive shade of violet (Lockhart 2006). The next most frequent artifact type represented decorated, pale blue-green glazed whiteware (n=4), two shards of which fit together (Miller 2015; Stelle 2011). All ceramic shards were absent a makers-mark. Of the two remaining materials, there was a single ceramic grate rim fragment, possibly from a gas operated, cast iron Radiantfire fireplace burner (n=1) (Humphrey 2015) and a pearled, pale yellow colored cast resin fragment, possibly Bakelite (n=1) (Davidov and Redington 1988) (**Appendix B, Figures 18 – 23**). Although limited in number, the range of material suggests the site was a residential locus from the late 19th to the mid-20th century (**Table 3**).

Table 3: Artifacts from site 41COL324

Material	Count	Date Range	Discussion
Clear glass	5 fragments	Post 1889	Machine-made. Container body fragment. Vertical side mold seam. Iridescent patina. The date range presented herein is an estimate as there was an insufficient amount of the container to exact a more accurate date. Two fragments reflected a violet/amethyst solarized hue (known also as sun-colored), including One beaded-rim vase fragment.
Whiteware	4 shards (1 rim and 3 body)	Early to mid-19 th century; pale blue-green glaze on fiesta ware to 1940	Monochrome, pale blue-green glazed ceramic ware. Circular rim shard exhibits embossed basket weave pattern on interior saucer brim. Crackling present. All shards are most likely from the same vessel.
Ceramic	1 fragment	1901 – 1940's	Amber colored ceramic fragment, possibly a heater grate/panel rim fragment from a <i>Humphrey</i> , cast iron Radiantfire gas fireplace burner (heater).
Cast resin	1 fragment	1920's - 1940's	Cast resin fragment. Pearled surface, pale yellow in color with a flat (not shiny) cream underside. Possibly Bakelite. Color identified from the Bakelite Color Chart for "jewel" quality colors, 1924.

Archival Research

Chain of title research for the property where 41COL324 is located was conducted by the Land Surveying department at BGE, from official public records of Collin County, Texas. Table 4 shows the results of this research, listing the property owners from 1856 to 1983. BGE archaeologists conducted historical background research on each of the landowners with the purpose of determining if site 41COL324 can be potentially "associated with the lives of significant persons in our past", as per Criteria B of the National Register Criteria for Evaluation, set forth by the National Park Service (National Park Service 2002).

Table 4: Owners of Property where Site 41COL324 is Located

Property Owner	Years Owned
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]

Property Owner	Years Owned
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]

Title research for this property lists the original occupant as [REDACTED] who was granted the land in 1856 by Texas Governor Elisha M. Pease, following [REDACTED] military service during the Mexican-American War, from 1846 to 1849. [REDACTED] enlisted in 1846 and was immediately granted the position of First Lieutenant to lead companies composed of men primarily from Grayson and Collin County (Gough n.d.) The 1860 Census lists him and his family as farmers (USDC 2019). In 1863, the property was purchased by [REDACTED], a farmer (USDC 2019). Extensive research on the [REDACTED] surname indicates that [REDACTED] was a member of [REDACTED].

Approximately 3.7 km (2.3 mi) from the surveyed property still stands a [REDACTED] family house, constructed in 1925, unaltered aside from a renovation that occurred within a decade of the original construction (Michero 2019). The following landowners were [REDACTED] from November 1887 to June 1888, and [REDACTED] from June 1888 to September 1888. It can be assumed that these owners were investors or real estate agents due to the short period of time this property was under their possession. In September of 1888 the property was purchased by [REDACTED], who was a farmer, according to the 1900 census (USDC 2019) In 1905 the property was purchased by [REDACTED].

[REDACTED]

According to the 1910 Census he and his wife were farmers. He died in 1907, and records show that this property and all his belongings were willed to his wife, who later died in 1917, one year after she sold the property (USDC 2019). In 1916 the property was purchased by [REDACTED]. The 1930 Census lists [REDACTED] as a housewife and her husband, [REDACTED] as a physician (USDC 2019) In 1938 the property was purchased by [REDACTED], who was a railroad worker, according to the 1940 Census (USDC 2019) . In 1943 the property was purchased by [REDACTED] who was a WWI veteran, and a farmer. [REDACTED] was a WWI veteran as well, and also served as the county attorney in 1866.

[REDACTED] It is now known if this property was bought because of this affiliation (USDC 2019; Biographical Encyclopedia of Texas 1880). In 1958 the property was purchased by [REDACTED] who was a WWII veteran. He was the second-generation owner of [REDACTED], which was founded in 1918, following his late father and uncle. [REDACTED] also served as a chairman of the Dallas Planning Commission and was a past president of the Texas Heavy Municipal and Utility Chapter of the Associated General Contractors of America (The Dallas Morning News

2013). In 1968 the property was purchased by [REDACTED] and later sold in December of 1969. It is assumed that this was another real estate venture. In 1969 the property was purchased by [REDACTED] [REDACTED] who was a WWI veteran, retired lawyer, and genealogist that co-authored a book about his family lineage (The Dallas Morning News 1971). In June of 1969, [REDACTED]
[REDACTED]

In summary, this research did not result in information that indicates site 41COL324 is potentially “associated with the lives of significant persons in our past”, and as such does not meet Criteria B of the National Register Criteria for Evaluation. This research also did not result in information that indicates the property can be associated with a significant event and, therefore, does not meet Criterion A of the National Register Criteria for Evaluation.

Site 41COL324 appears to represent a historic-period refuse midden related to a late nineteenth or early twentieth century farmstead or other domestic occupation. Artifacts were restricted to the upper 35 cmbs (14 in) of soil, a depth that was commonly subjected to human disturbances, such as plowing. Due to the frequently flooded nature of the area, it is also possible that the artifacts were secondarily deposited. The location of the two wells indicate a structure was likely standing nearby at some point. Based on the artifacts encountered, the lack of standing structures, and the results of the chain of title research, BGE archeologists conclude that the portion of site 41COL324 within the Project’s APE lacks potential for future study and does not meet any criteria for evaluation that would make it potentially eligible for listing on the NRHP. Therefore, BGE recommends that 41COL324 be determined as *Ineligible* for inclusion in the NRHP, and the project be allowed to proceed without further consultation in the vicinity of 41COL324. Furthermore, because the two wells are located [REDACTED] BGE recommends that the City avoids impacts to those two wells during construction activities, by placing high visibility protecting fencing around them to avoid heavy equipment tracking through the area.

Summary and Management Recommendations

At the request of the City, BGE conducted an intensive pedestrian survey augmented by shovel testing of the Project. The intensive survey was conducted in support of the City's requirements under the Texas Antiquities Code and the Texas Natural Resources Code Chapter 26 'Rules of Practice and Procedure' for the Antiquities Code of Texas'.

The field investigation, which was conducted February 6-8, and April 10, 2019, was overseen by personnel meeting the Secretary of the Interior Professional Qualification Standards in Archaeology, and according to field and reporting standards established by the THC and the CTA. As such, the investigation involved both a pedestrian survey component, as well as a shovel testing protocol. As a result of the investigation, one new cultural resource site was identified, which was assigned trinomial 41COL324 by TARL.

Site 41COL324 appears to represent a historic-period refuse midden related to a late nineteenth or early twentieth century farmstead or other domestic occupation. It consists of a shallow subsurface deposit of historic artifacts, all excavated from one ST, as well as two discrete areas of sparse surface scatters of historic artifacts. Two wells are also located within the site. No standing structures remain. Archival research on the owners failed to associate the property with a person of historical significance. As a result, BGE archeologists conclude that 41COL324 lacks potential for future study and does not meet any criteria for evaluation that would make it potentially eligible for listing on the NRHP. Therefore, BGE recommends that portions of 41COL324 located within the Project's APE be determined as *Ineligible* for inclusion in the NRHP, and the project be allowed to proceed without further consultation in the vicinity of 41COL324. Furthermore, because the two wells are located [REDACTED] BGE recommends that the City avoids unintended impacts to these features during construction activities. BGE recommends placing high visibility protective fencing around them to ensure heavy equipment tracking through the area does not inadvertently impact these features.

Finally, if during construction, intact cultural resource deposits are inadvertently discovered during ground-disturbing activities, all activities at that location must cease immediately and the field supervisor contacted. The supervisor will then contact a professional archeologist that meets the Secretary of the Interior Professional Qualification Standards to assess the findings. Following assessment, the archeologist will then contact the THC pursuant to 36 C.F.R. Part 800.13-Post review discoveries:

If historic properties are discovered or unanticipated effects on historic properties found after the agency official has completed the Section 106 process without establishing a process under paragraph (a) of this section, the agency official shall make reasonable efforts to avoid, minimize or mitigate effects to such properties. (13(b)).

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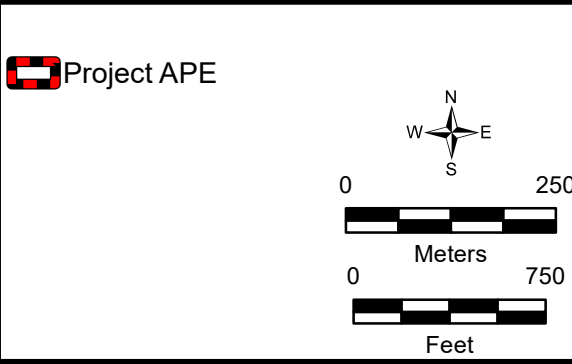
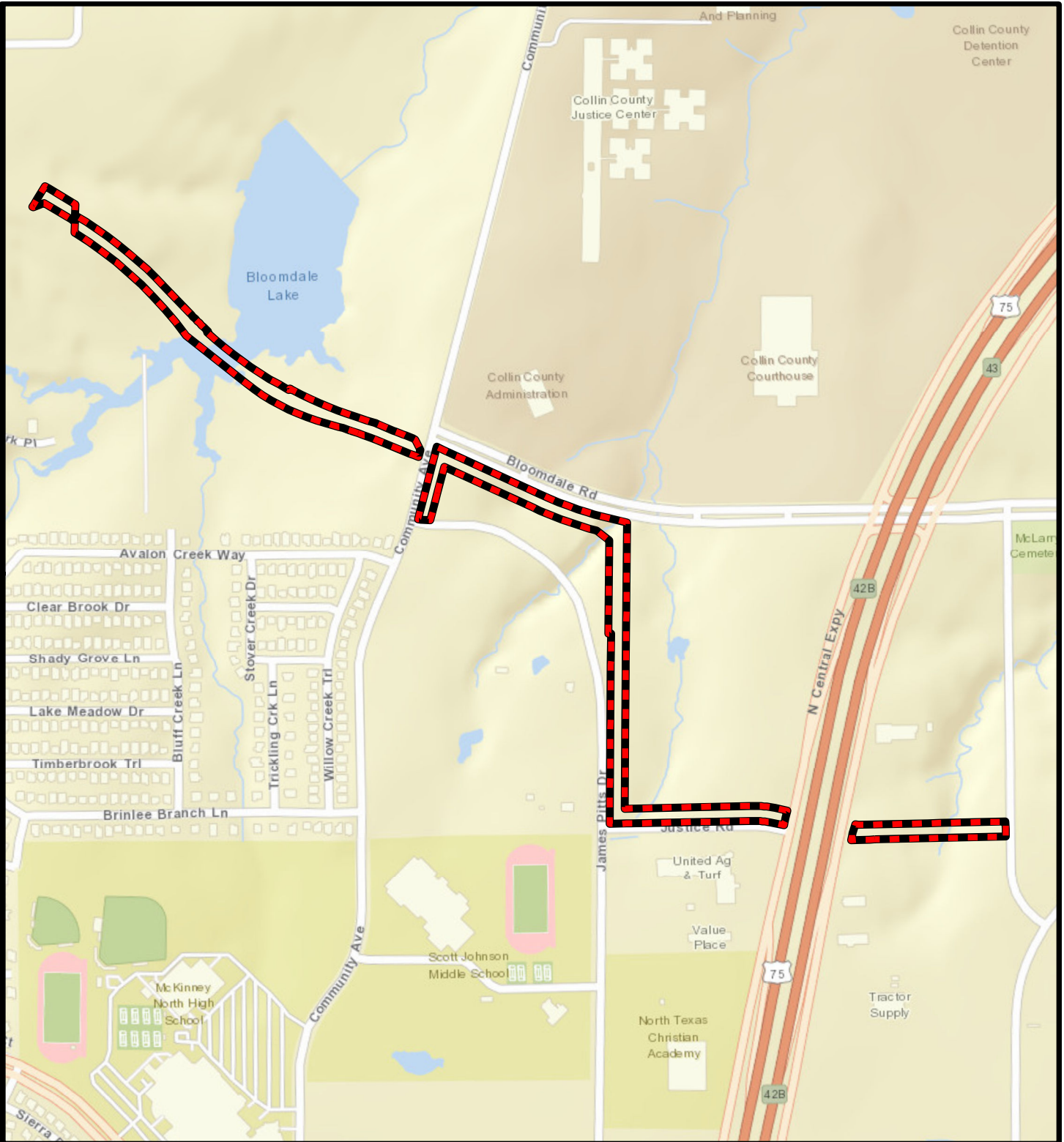
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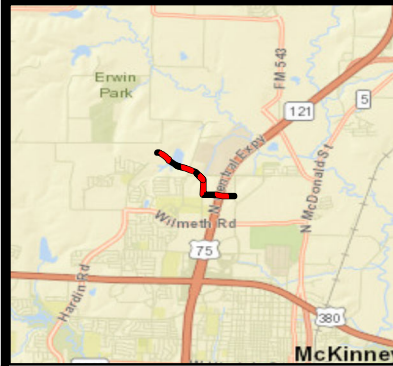
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



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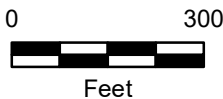
APPENDIX A
Project Maps



City of McKinney		
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REDBUD PUMP STATION TRANSMISSION WATER LINE COLLIN COUNTY, TEXAS		
Vicinity Map		
Date: Dec 2019	Proj. No: 4421-00	Figure No: 1



-  Centerline
-  Permanent Easement
-  Temporary Workspace
-  Project APE
-  Bore Pit



City of McKinney

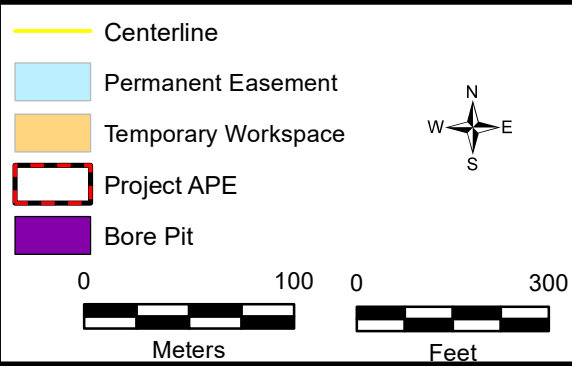
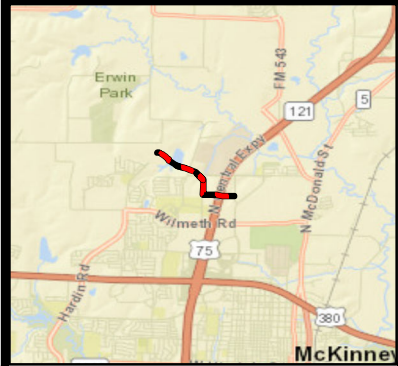
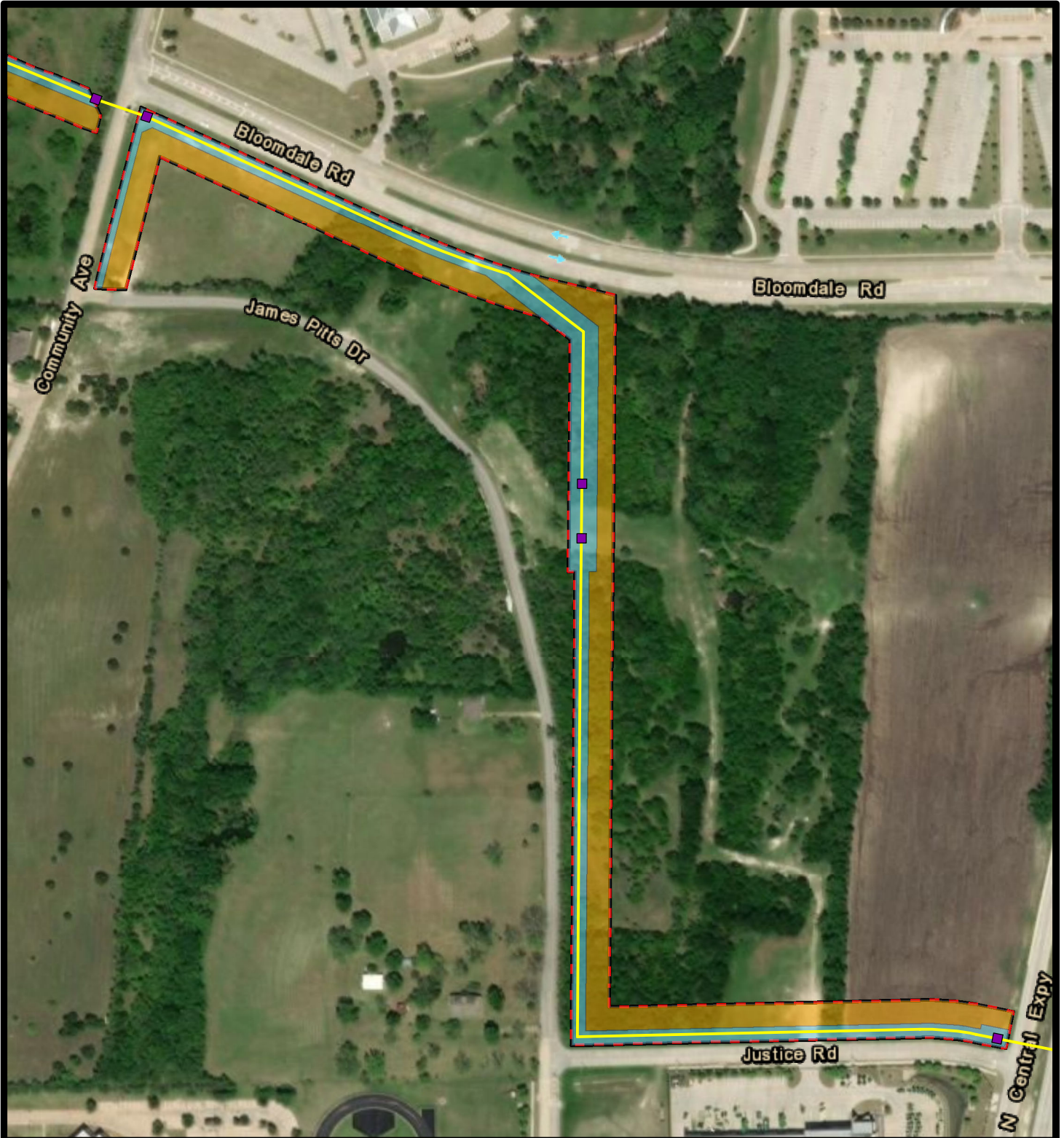



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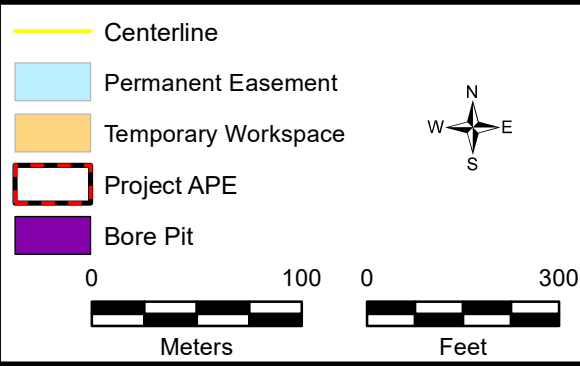
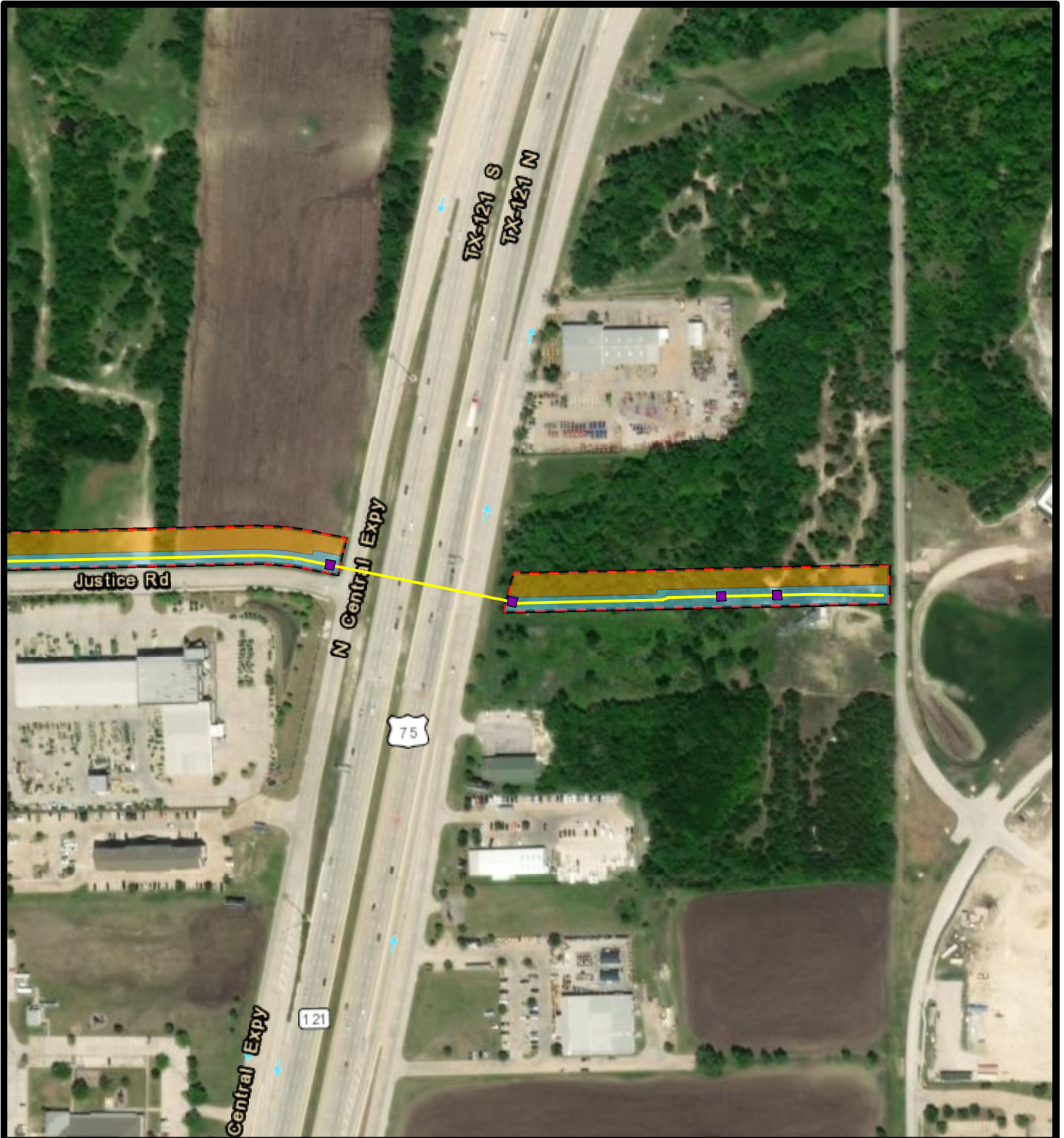
REDBUD PUMP STATION TRANSMISSION WATER LINE
 COLLIN COUNTY, TEXAS


Project Area Map

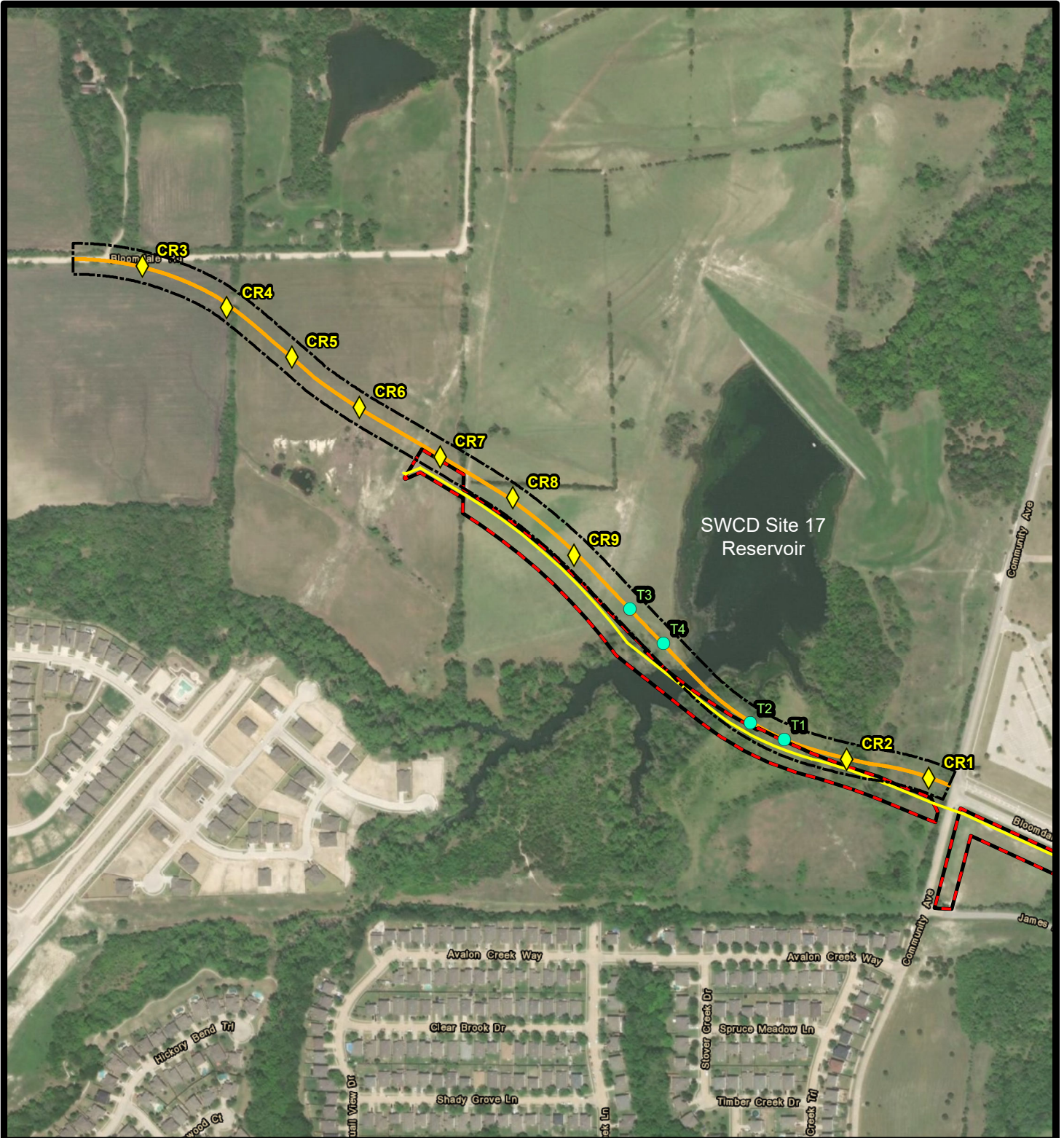
Date: Dec 2019	Proj. No: 4421-00	Figure No: 2-a
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City of McKinney		
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REDBUD PUMP STATION TRANSMISSION WATER LINE COLLIN COUNTY, TEXAS		
Project Area Map		
Date: Dec 2019	Proj. No: 4421-00	Figure No: 2-b

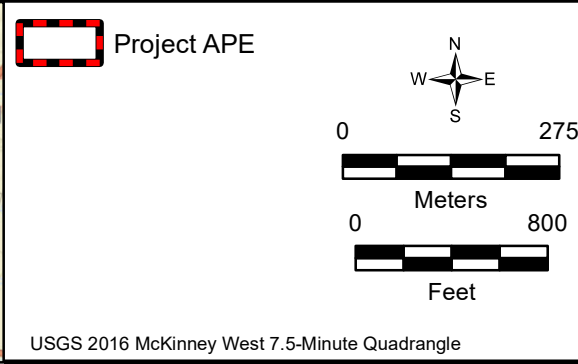
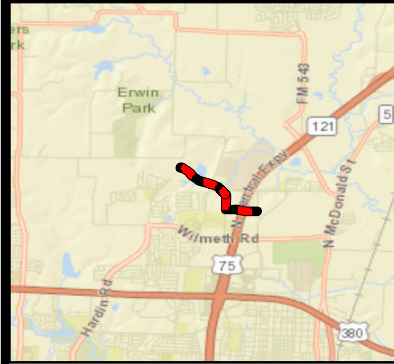
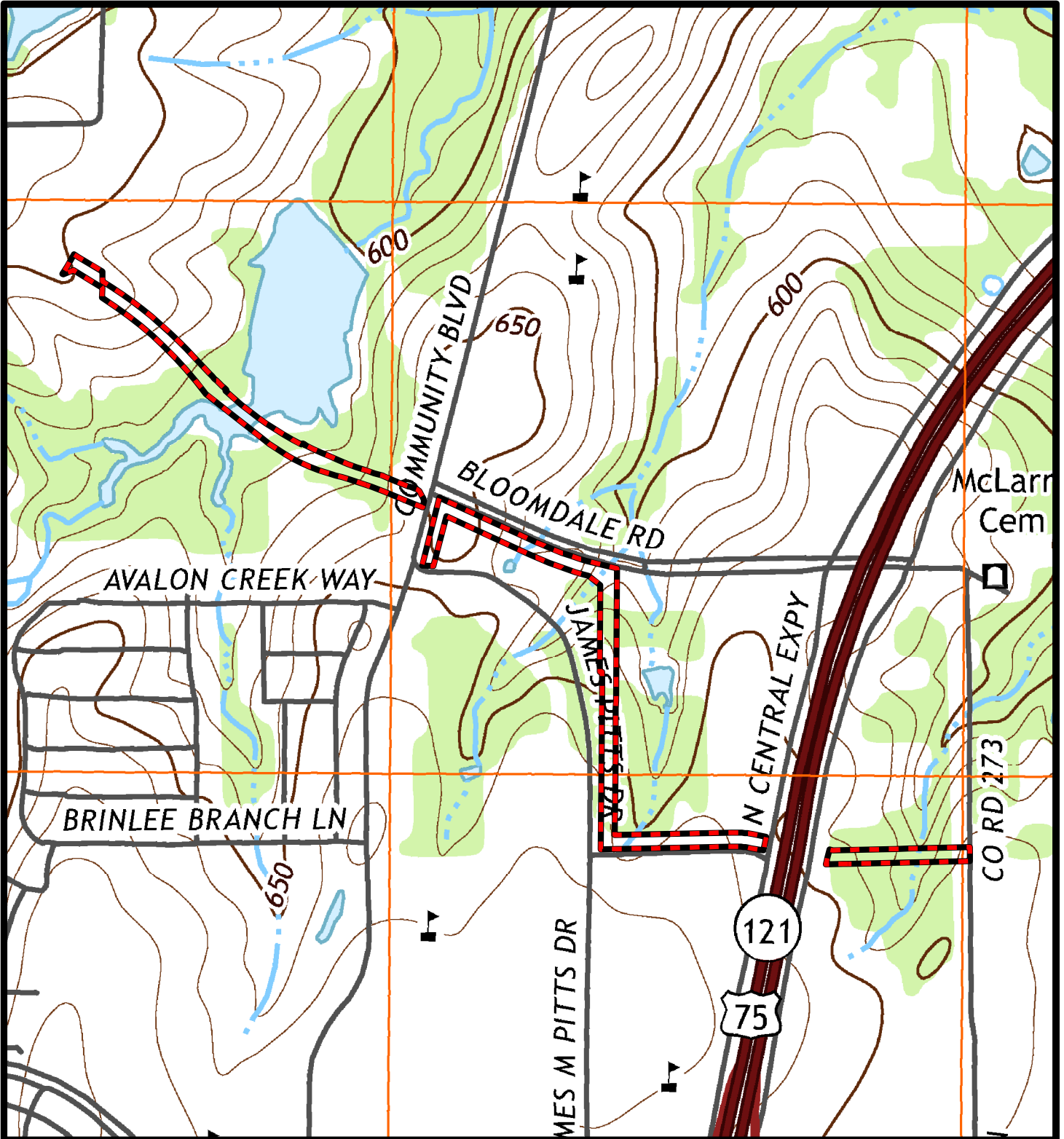



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REDBUD PUMP STATION TRANSMISSION WATER LINE COLLIN COUNTY, TEXAS		
Project Area Map		
Date: Dec 2019	Proj. No: 4421-00	Figure No: 2-c

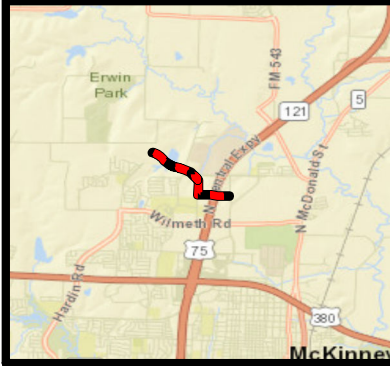
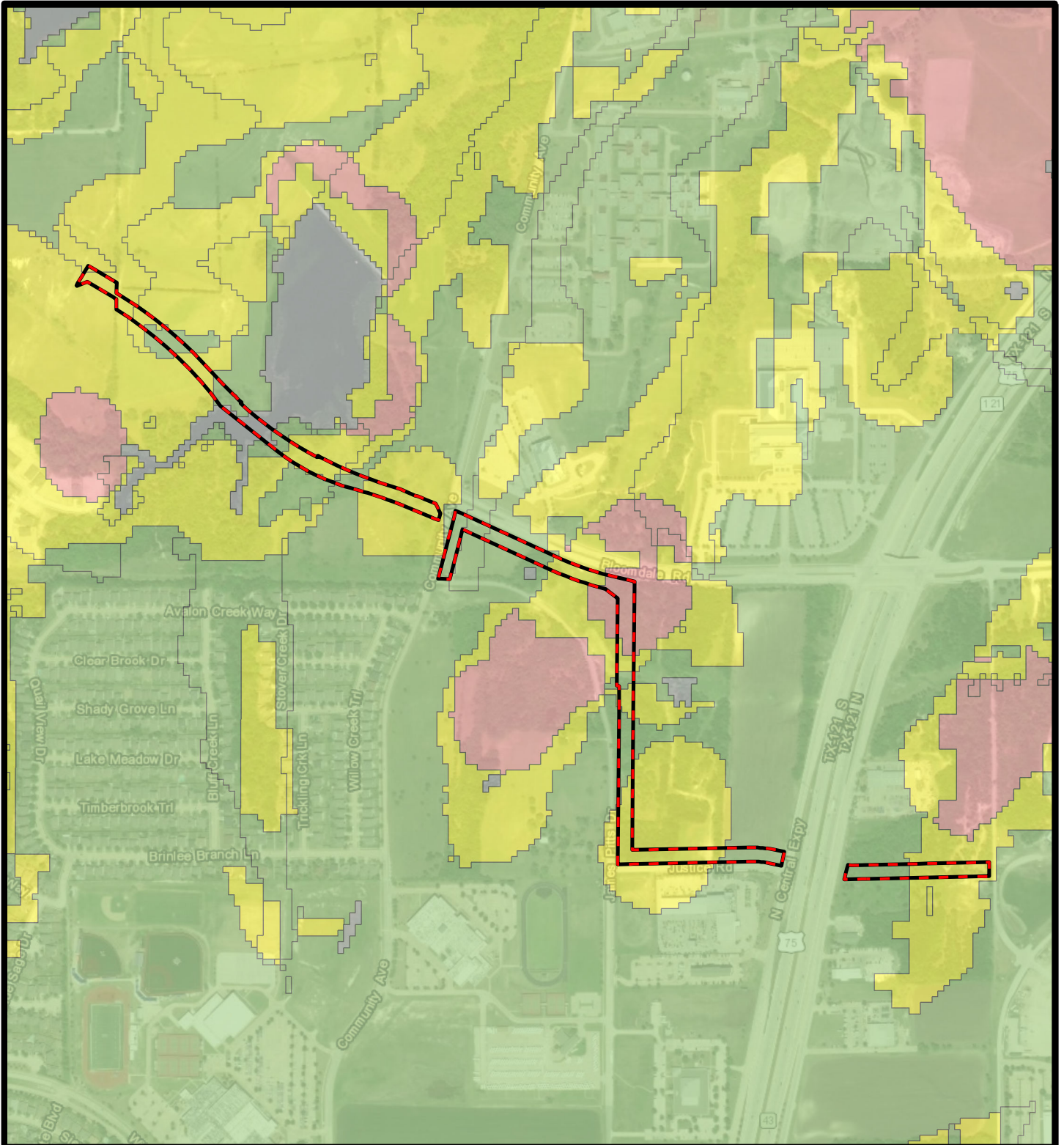


- Trench Location
- ◆ Shovel Test Location
- Bloomdale Road Extension Project Centerline
- Centerline
- Bloomdale Road Extension Project ROW/Direct APE
- Project APE

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REDBUD PUMP STATION TRANSMISSION WATER LINE COLLIN COUNTY, TEXAS		
Burns & McDonnell Survey Map		
Date:	Dec 2019	Proj. No: 4421-00
Figure No:	3	



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REDBUD PUMP STATION TRANSMISSION LINE COLLIN COUNTY, TEXAS		
USGS Topographic Map		
Date: Dec 2019	Proj. No: 4421-01	Figure No: 4



Potential for Surface Archeological Sites

- high
- moderate
- low
- negligible
- Project APE



0 275



Meters

0 800



Feet

City of McKinney

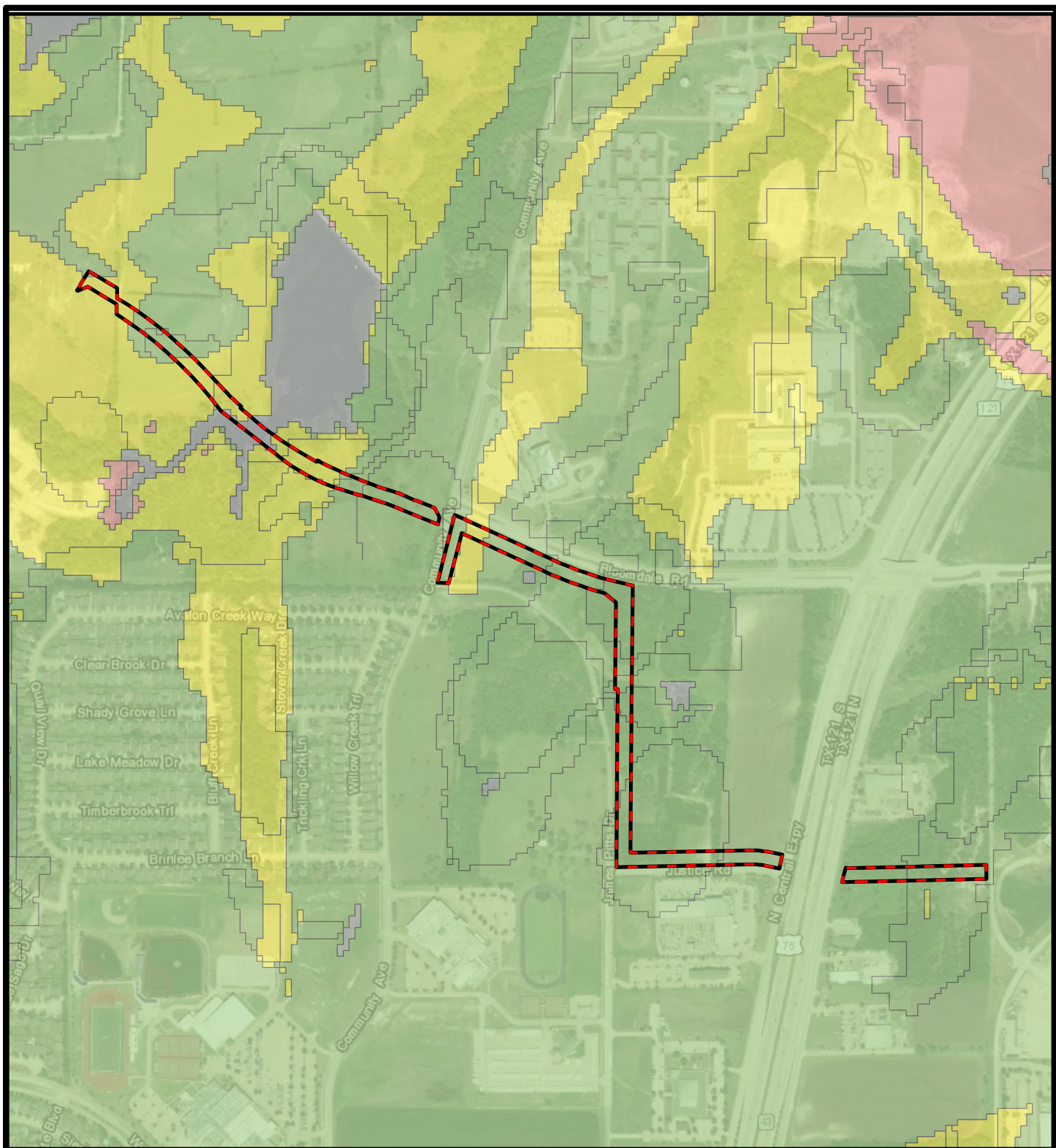


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REDBUD PUMP STATION TRANSMISSION WATER LINE
 COLLIN COUNTY, TEXAS

Aerial - Probability Map 1
 Source: TxDOT Dallas District HPALM

Date: Dec 2019 Proj. No: 4421-00 Figure No: 5



Potential for Deeply Buried Archeological Sites

- high
- moderate
- low
- negligible
- Project APE



0 275



Meters

0 800



Feet

City of McKinney

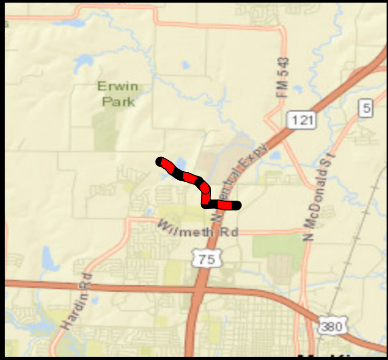





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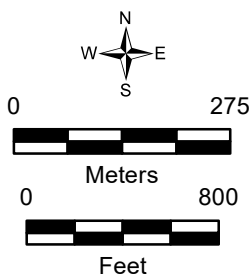
REDBUD PUMP STATION TRANSMISSION WATER LINE
 COLLIN COUNTY, TEXAS

Aerial - Probability Map 2
 Source: TxDOT Dallas District HPALM

Date: Dec 2019 Proj. No: 4421-00 Figure No: 6



-  Project APE
-  Structures
-  Cemetery



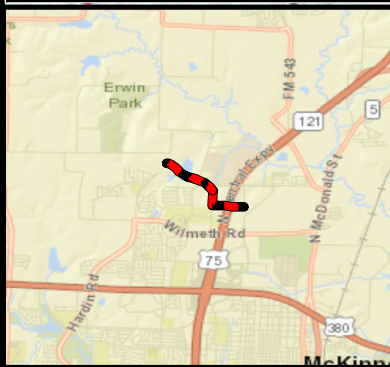
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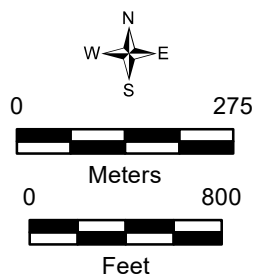
REDBUD PUMP STATION TRANSMISSION WATER LINE
COLLIN COUNTY, TEXAS

1952 USGS Aerial Photograph

Date:	Dec 2019	Proj. No:	4421-00	Figure No:	7
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-  Project APE
-  Structures
-  Cemetery



City of McKinney

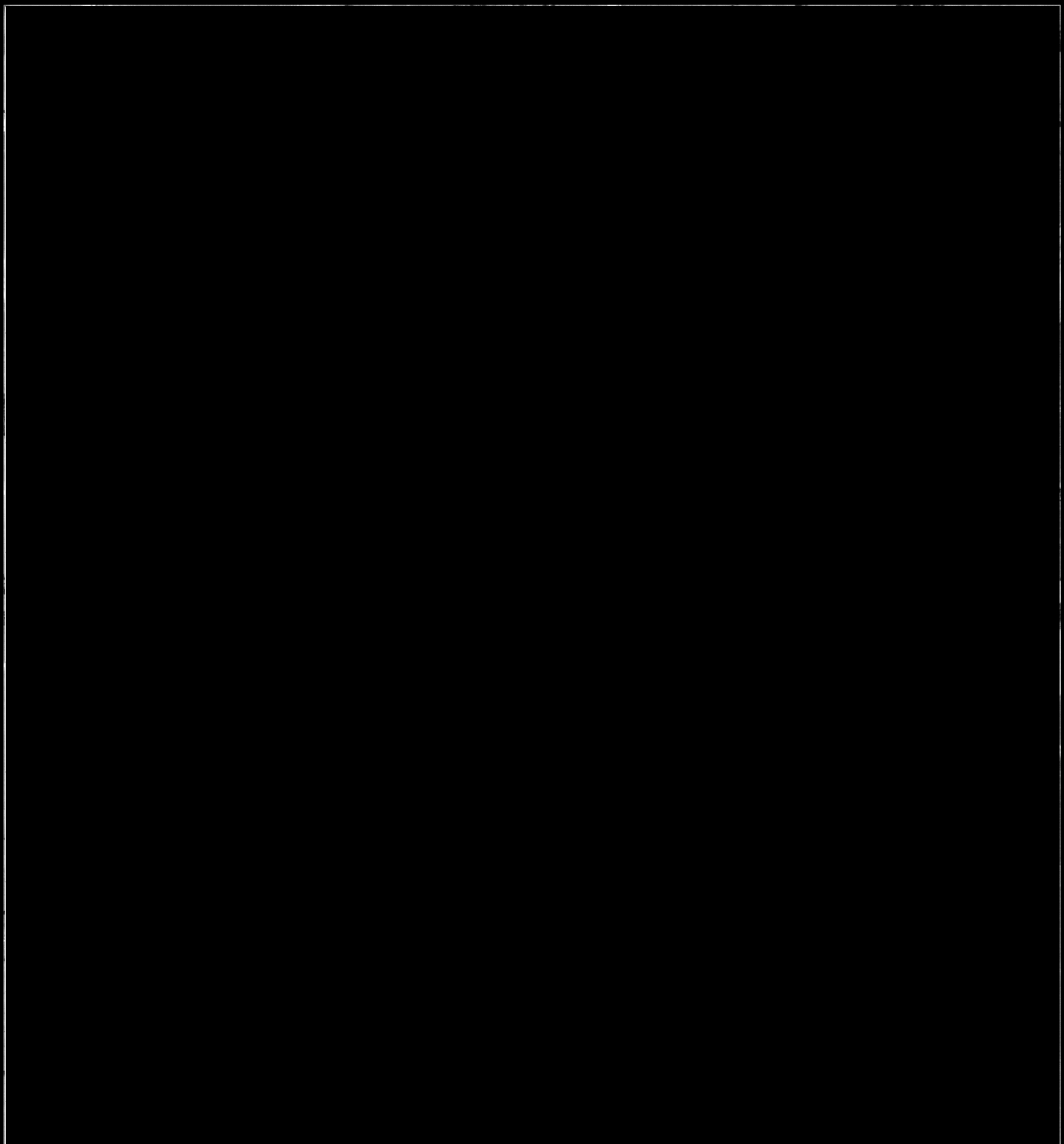





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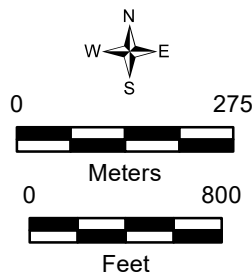
REDBUD PUMP STATION TRANSMISSION WATER LINE
 COLLIN COUNTY, TEXAS

1960 USGS Topographic Map

Date: Dec 2019	Proj. No: 4421-00	Figure No: 8
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-  Structures
-  Cemeteries
-  Project APE



City of McKinney

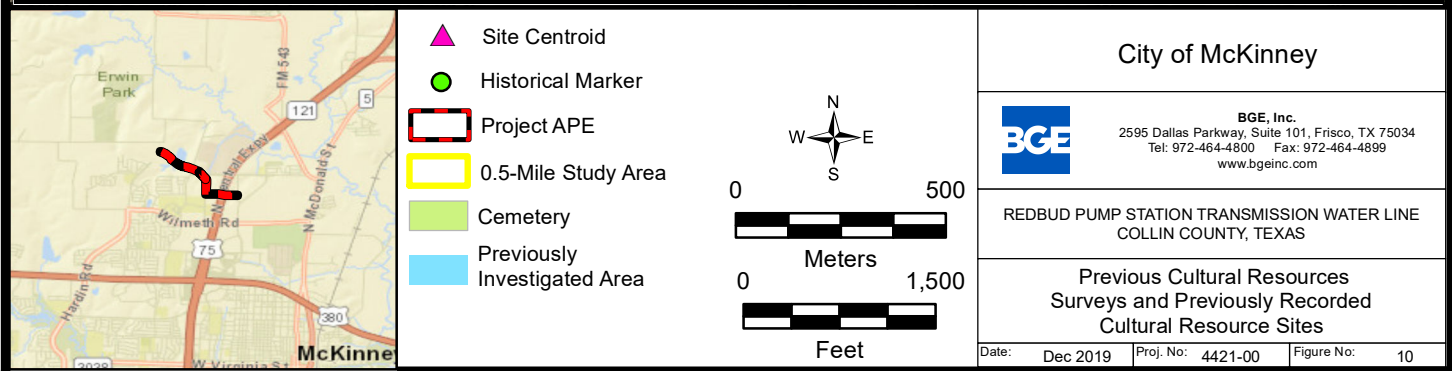
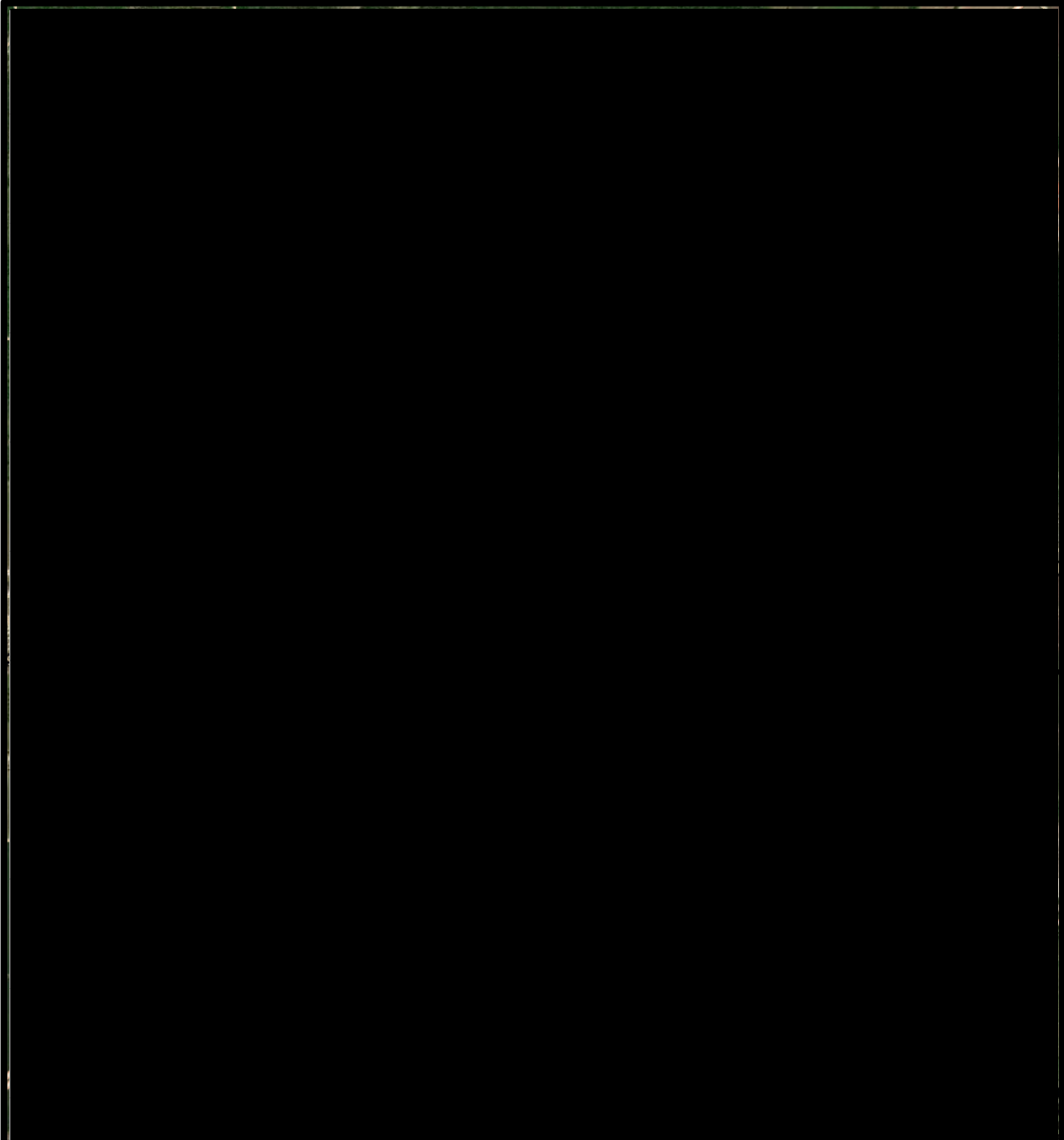


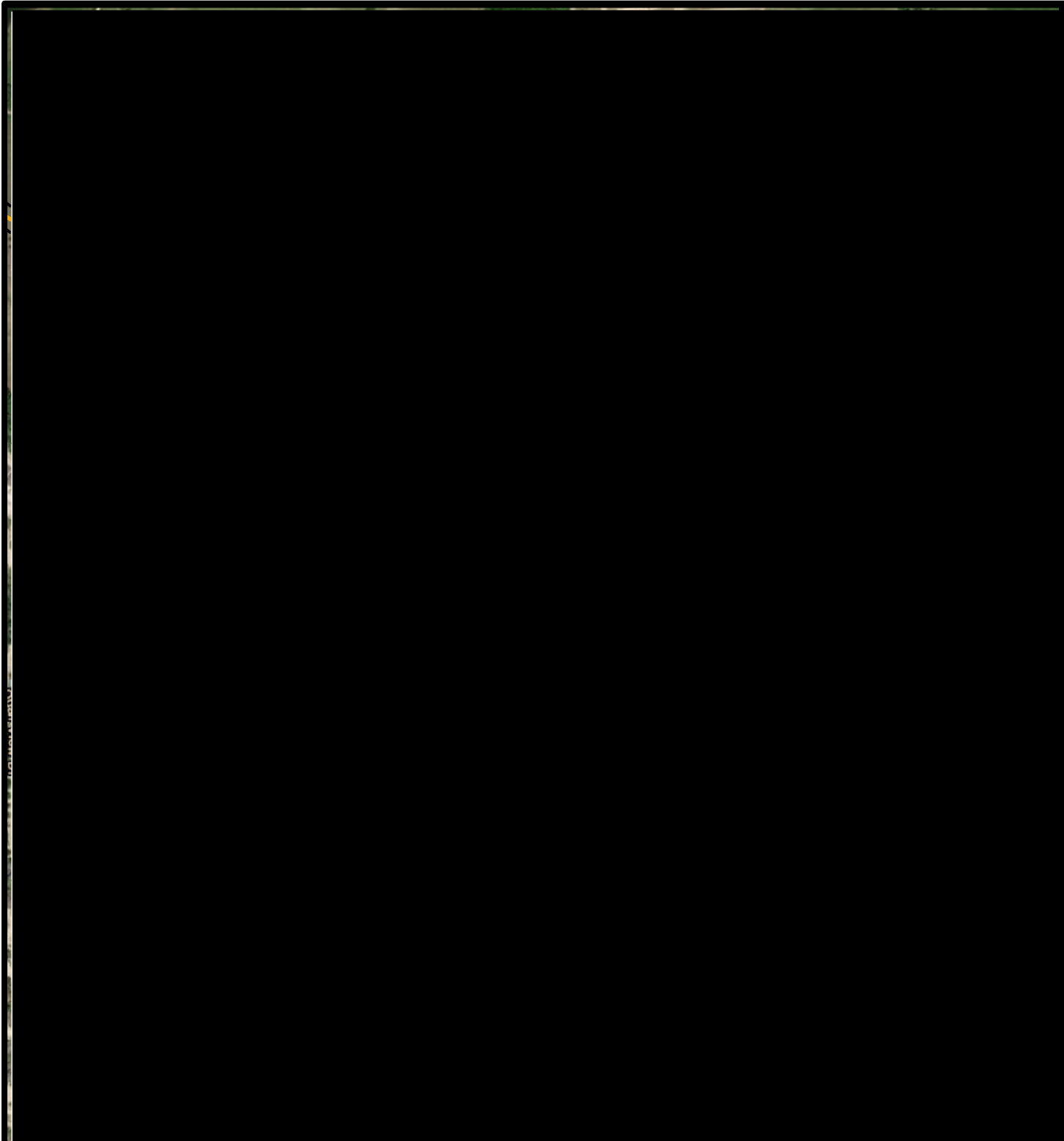
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REDBUD PUMP STATION TRANSMISSION WATER LINE
 COLLIN COUNTY, TEXAS

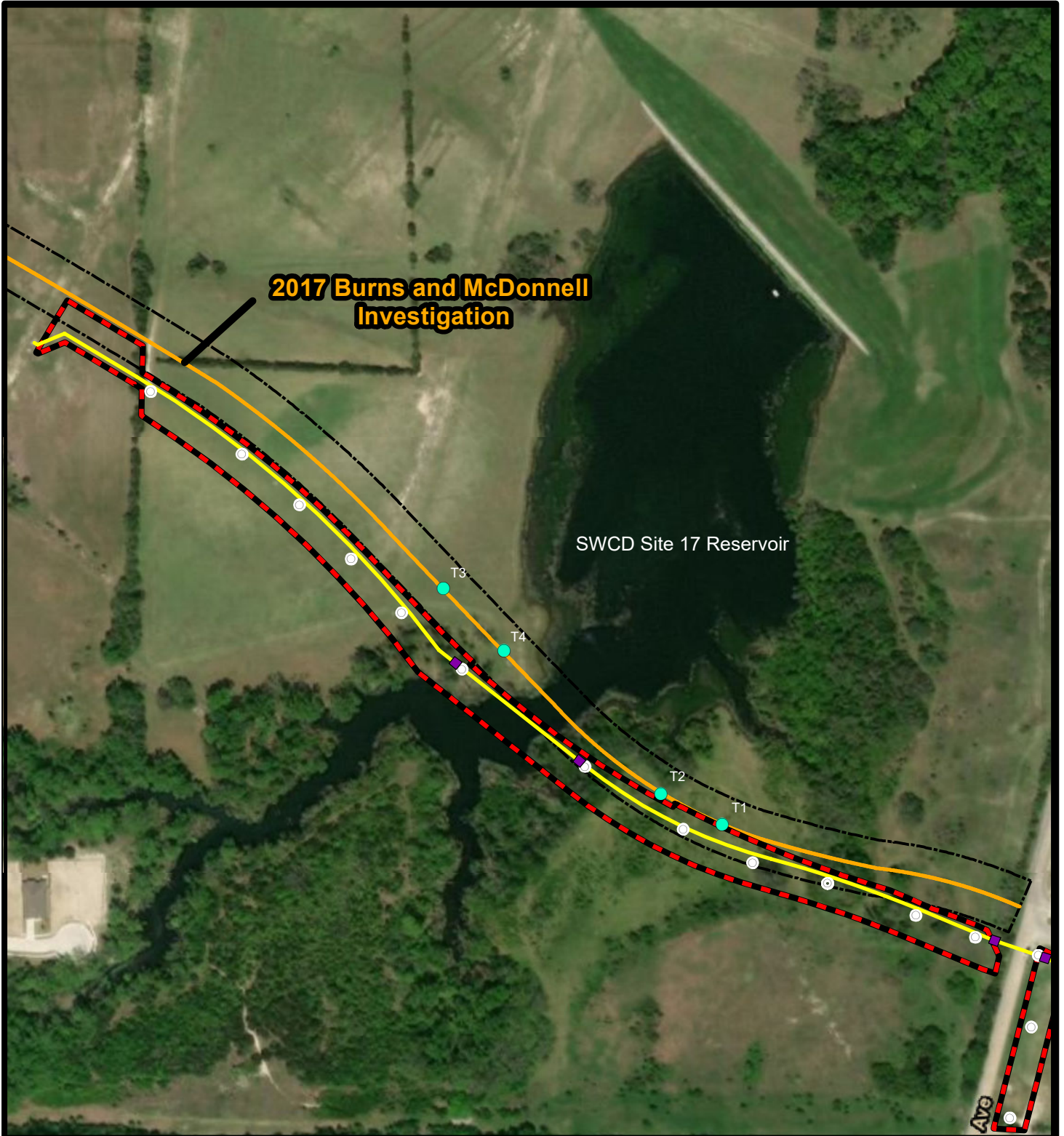
1968 USGS Aerial Photograph

Date:	Dec 2019	Proj. No:	4421-00	Figure No:	9
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	<ul style="list-style-type: none"> Positive Shovel Test Surface Inspection Trench Location 2017 B&M Project Centerline Project Centerline Bore Pit Project APE 		<p>City of McKinney</p>
			<p>BGE, Inc. 2595 Dallas Parkway, Suite 101, Frisco, TX 75034 Tel: 972-464-4800 Fax: 972-464-4899 www.bgeinc.com</p>
			<p>REDBUD PUMP STATION TRANSMISSION WATER LINE COLLIN COUNTY, TEXAS</p> <p>Field Investigation Results Map</p>
<p>Date: Dec 2019 Proj. No: 4421-00 Figure No: 11-a</p>			



2017 Burns and McDonnell Investigation

SWCD Site 17 Reservoir

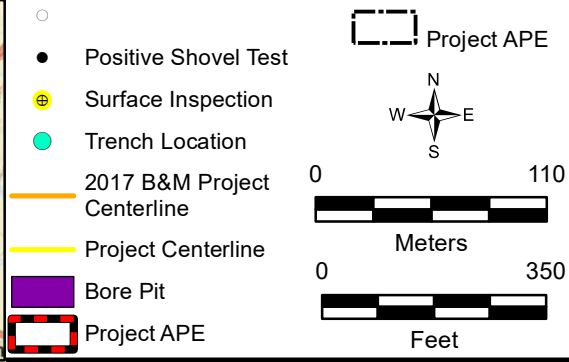
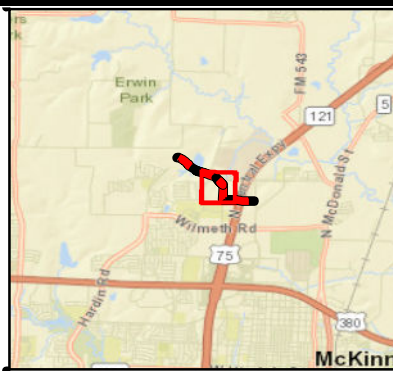


○ Negative Shovel Test	⊞ 2017 B&M Project APE
● Positive Shovel Test	
⊞ Surface Inspection	
● Trench Location	
— 2017 B&M Project Centerline	
— Project Centerline	
■ Bore Pit	
⊞ Project APE	

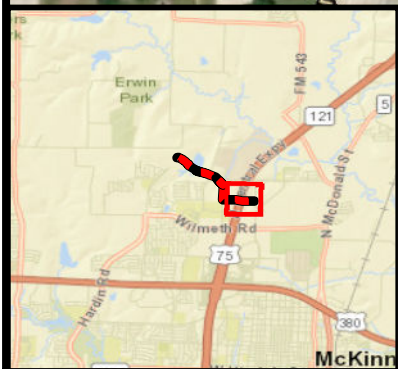
0 110
Meters

0 350
Feet

City of McKinney	
<p>BGE, Inc. 2595 Dallas Parkway, Suite 101, Frisco, TX 75034 Tel: 972-464-4800 Fax: 972-464-4899 www.bgeinc.com</p>	
REDBUD PUMP STATION TRANSMISSION WATER LINE COLLIN COUNTY, TEXAS	
Field Investigation Results Map	
Date: Dec 2019	Proj. No: 4421-00 Figure No: 11-b



City of McKinney		
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REDBUD PUMP STATION TRANSMISSION WATER LINE COLLIN COUNTY, TEXAS		
Field Investigation Results Map		
Date:	Dec 2019	Proj. No: 4421-00
Figure No:	11-c	



- Negative Shovel Test
- Positive Shovel Test
- ⊕ Surface Inspection
- Trench Location
- 2017 B&M Project Centerline
- Project Centerline
- Bore Pit
- ▭ Project APE

2017 B&M Project APE

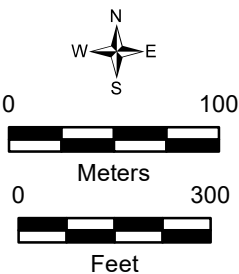
0 120
Meters

0 360
Feet

City of McKinney	
	BGE, Inc. 2595 Dallas Parkway, Suite 101, Frisco, TX 75034 Tel: 972-464-4800 Fax: 972-464-4899 www.bgeinc.com
REDBUD PUMP STATION TRANSMISSION WATER LINE COLLIN COUNTY, TEXAS	
Field Investigation Results Map	
Date: Dec 2019	Proj. No: 4421-00
Figure No: 11-d	



-  Project APE
-  Site 41COL324



City of McKinney

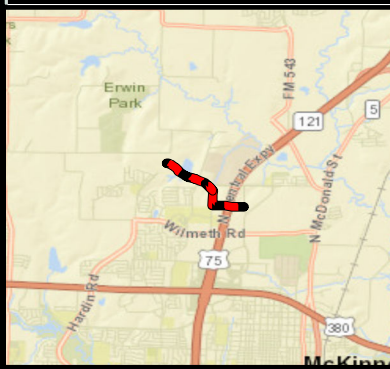
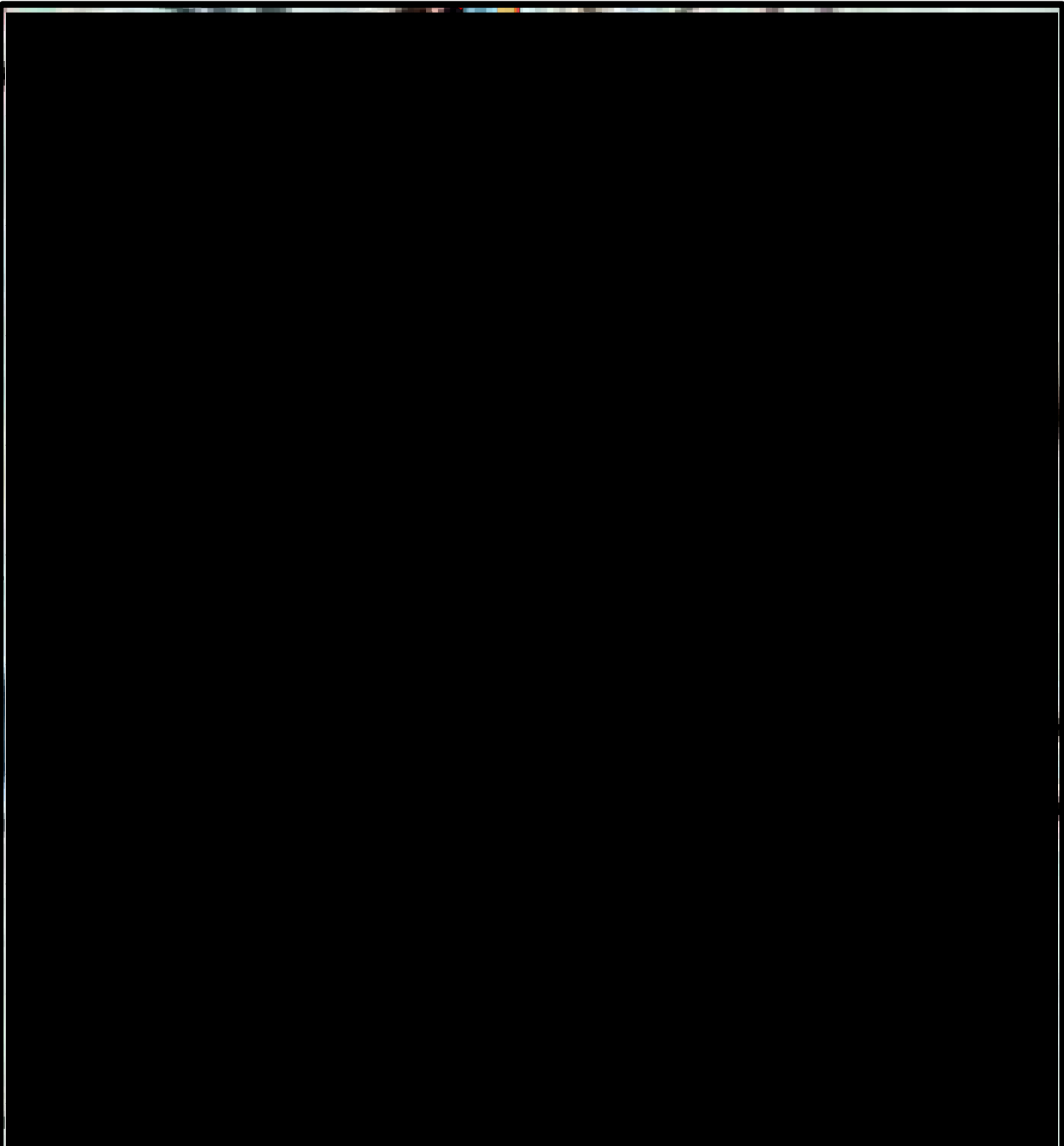






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REDBUD PUMP STATION TRANSMISSION WATER LINE
 COLLIN COUNTY, TEXAS


Newly Identified Historic Site 41COL324

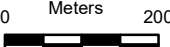
Date:	Dec 2019	Proj. No:	4421-00	Figure No:	12
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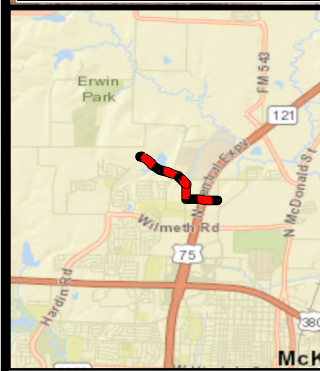
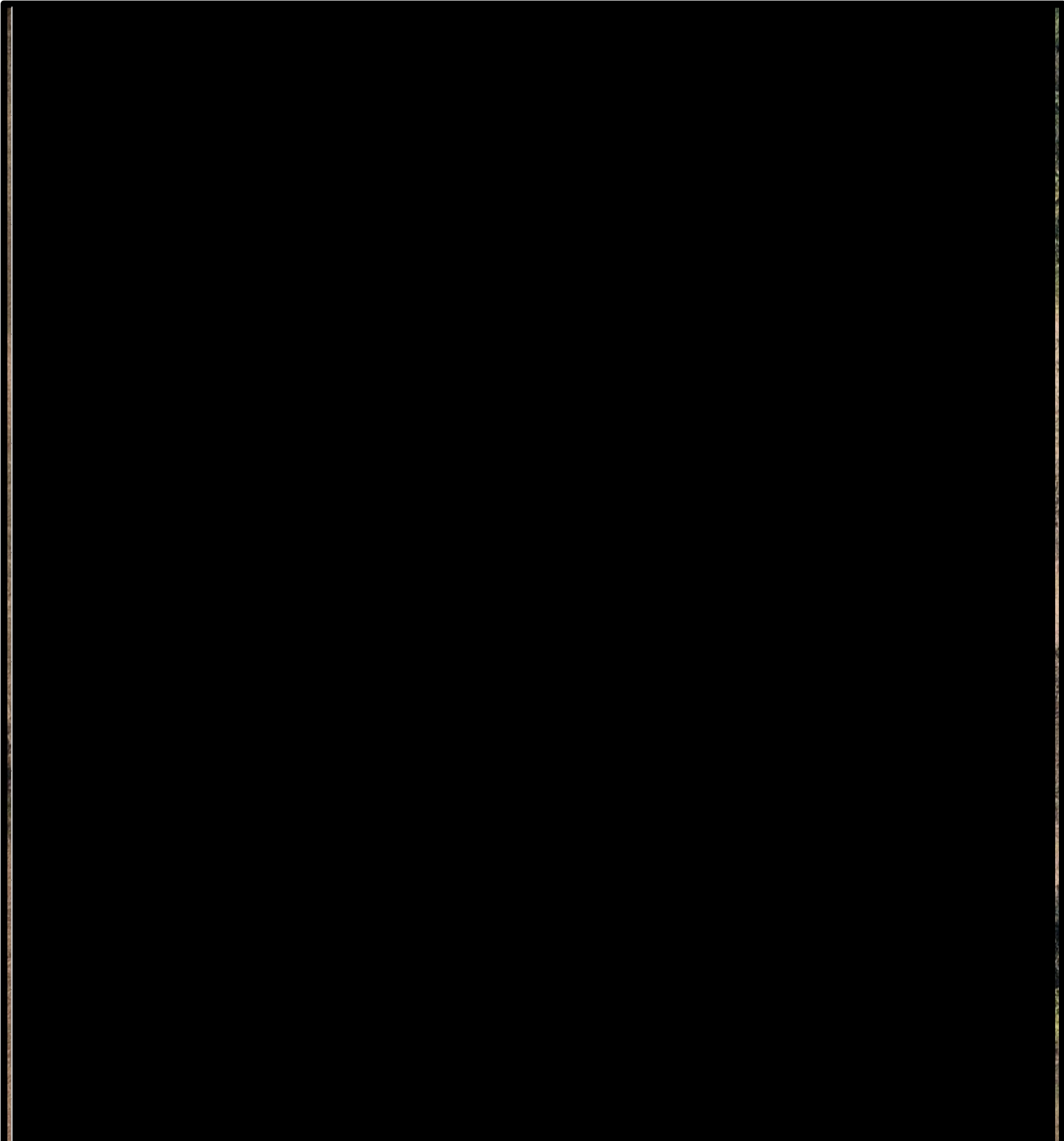
	Site 41COL324
	Project APE
	Permanent Easement
	Temporary Workspace







City of McKinney		
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REDBUD PUMP STATION TRANSMISSION WATER LINE COLLIN COUNTY, TEXAS		
Site 41COL324		
Date: Dec 2019	Proj. No: 4421-00	Figure No: 13



	Negative Shovel Test		Two-track road
	Positive Shovel Test		Protective Fencing
	Centerline		
	Well		
	Surface Scatter		
	Permanent Easement		
	Temporary Workspace		
	Project APE		

Meters

Feet

City of McKinney		
<div style="display: inline-block; vertical-align: middle; margin-left: 10px;"> <p>BGE, Inc. 2595 Dallas Parkway, Suite 101, Frisco, TX 75034 Tel: 972-464-4800 Fax: 972-464-4899 www.bgeinc.com</p> </div>		
REDBUD PUMP STATION TRANSMISSION WATER LINE COLLIN COUNTY, TEXAS		
41COL324 Vicinity Map		
Date: Dec 2019	Proj. No: 4421-00	Figure No: 14

APPENDIX B
Project Photographs



Figure 1. Location of proposed Redbud Pump Station west of Redbud Boulevard. Facing southwest.



Figure 2. Transmission line easement west of Redbud Boulevard/CR 273 . Facing west.



Figure 3. Transmission line easement west of N. Central Expressway and I-75. Facing west.



Figure 4. Transmission line easement north of Justice Road, east of James Pitts Drive, west of N. Central Expressway and I-75. Facing east.



Figure 5. Transmission line easement at intersection of James Pitts Drive and Justice Road. Facing south.



Figure 6. Transmission line easement east side of James Pitts Drive. Facing north.



Figure 7. Transmission line easement east side of James Pitts Drive at angle to the northwest. Facing northwest.



Figure 8. Transmission line easement north side of James Pitts Drive at angle to the northwest. Facing southeast.



Figure 9. Transmission line easement east side of Community Avenue. Facing southeast.



Figure 10. Transmission line easement crossing at intersection of Community Avenue and Bloomdale Road (foreground). Facing northwest.



Figure 11. Transmission line easement east side of NRCS earthen dam (right) and SWCD Site 17 reservoir. Facing northwest.



Figure12. Transmission line easement termination point west of SWCD Site 17 reservoir. Facing southeast.



Figure 13. Site 41COL324, overview. Facing north.



Figure 14. Site 41COL324, overview. Facing south.



Figure 15. Site 41COL324, overview. Facing east.



Figure 16. Site 41COL324, overview. Facing west.



Figure 17. Site 41COL324 well feature with PVC piping and fittings.



Figure 18. Historic artifacts from site 41COL324.

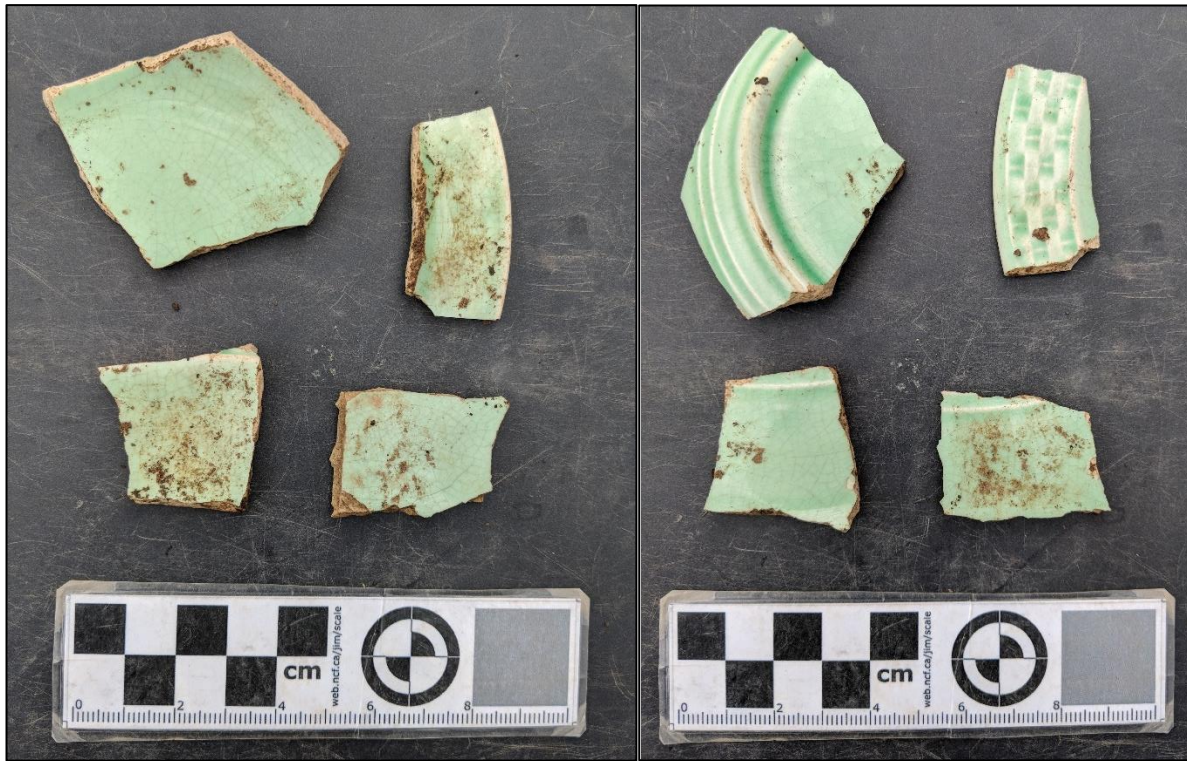


Figure 19 and 20. Site 41COL324 ceramic whiteware with monochrome, pale blue-green glaze.



Figure 21 and 22. Site 41COL324 ceramic, amber colored, possibly a heater grate/panel rim fragment from a gas fireplace burner (heater).



Figure 23. Site 41COL324 resin fragment. Possibly Bakelite. Pearled surface, pale yellow in color.