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Intensive Archeological Survey For Proposed Road And Utility Improvements At The Spaceport Business Park, Midland International Air & Space Port, Midland County, Texas

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Intensive Archeological Survey For Proposed Road And Utility Improvements At The Spaceport Business Park, Midland International Air & Space Port, Midland County, Texas

INTENSIVE ARCHEOLOGICAL SURVEY FOR PROPOSED ROAD AND UTILITY IMPROVEMENTS AT THE SPACEPORT BUSINESS PARK, MIDLAND INTERNATIONAL AIR & SPACE PORT, MIDLAND COUNTY, TEXAS

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For

Mead & Hunt
8217 Shoal Creek Blvd. #203
Austin, TX 78757

And

Midland International Air & Space Port
9506 La Force Blvd.
Midland, TX 79706

Under
Texas Antiquities Permit 7229

Cox|McLain Environmental Consulting, Inc. Archeological Report 94
(CMEC-AR-094)

COX | McLAIN
Environmental Consulting

July 15, 2015

Management Summary

In April 2015, an intensive archeological survey was completed in order to inventory and evaluate archeological resources within the footprint of proposed road and utility improvements at the Spaceport Business Park located on the southwest corner of the Midland International Air & Space Port. These improvements include construction of a new road approximately 0.476 mile (assuming 50-foot [ft] wide right-of-way) and 2.42 miles of new utilities (varying 15 to 50-ft wide right-of-way) within the Park. The road footprint is 4.8 acres (ac) or 1.9 hectares (ha) while the utilities corridors cover approximately 6.0 ac or 2.4 ha for a total of 10.8 ac or 4.3 ha. The work was carried out for the Midland International Air & Space Port under Texas Antiquities Permit 7229 by Chris Dayton and Melissa Green (Principal Investigator) of Cox|McLain Environmental Consulting, Inc. (CMEC), a subcontractor to Mead & Hunt.

Ground surfaces within the APE were moderately to highly visible (between 50 and 90 percent). Bedrock outcrops were encountered on the south side of the APE, illustrating the thinness of soil cover in this area. The APE has been subjected to extensive previous disturbance, including decades of airfield-related clearing and grading, railroad construction and maintenance, utility installation and maintenance, drainage modification, landscaping, and spreading of imported gravels. No suitable locations for productive shovel testing were found. No materials of archeological interest were found during pedestrian examination of the APE. The APE contains a historic-age railroad spur that follows approximately the orientation of the proposed roadway; the railroad is being assessed in a separate Mead & Hunt report regarding the built environment.

No artifacts, features, deposits, sites, or other cultural resources were encountered during the survey, so there are no artifacts to be curated. However, all notes, forms, and other project data will be made permanently available to future researchers at Texas Archeological Research Laboratory (TARL) at the University of Texas at Austin per TAC 26.16 and 26.17.

The Texas Historical Commission (THC) concurred with the findings and recommendations of this report on July 9, 2015.

INTENSIVE ARCHEOLOGICAL SURVEY FOR PROPOSED ROAD AND UTILITY IMPROVEMENTS AT THE SPACEPORT BUSINESS PARK, MIDLAND INTERNATIONAL AIR & SPACE PORT, MIDLAND COUNTY, TEXAS

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1.0 Introduction

Overview of the Project

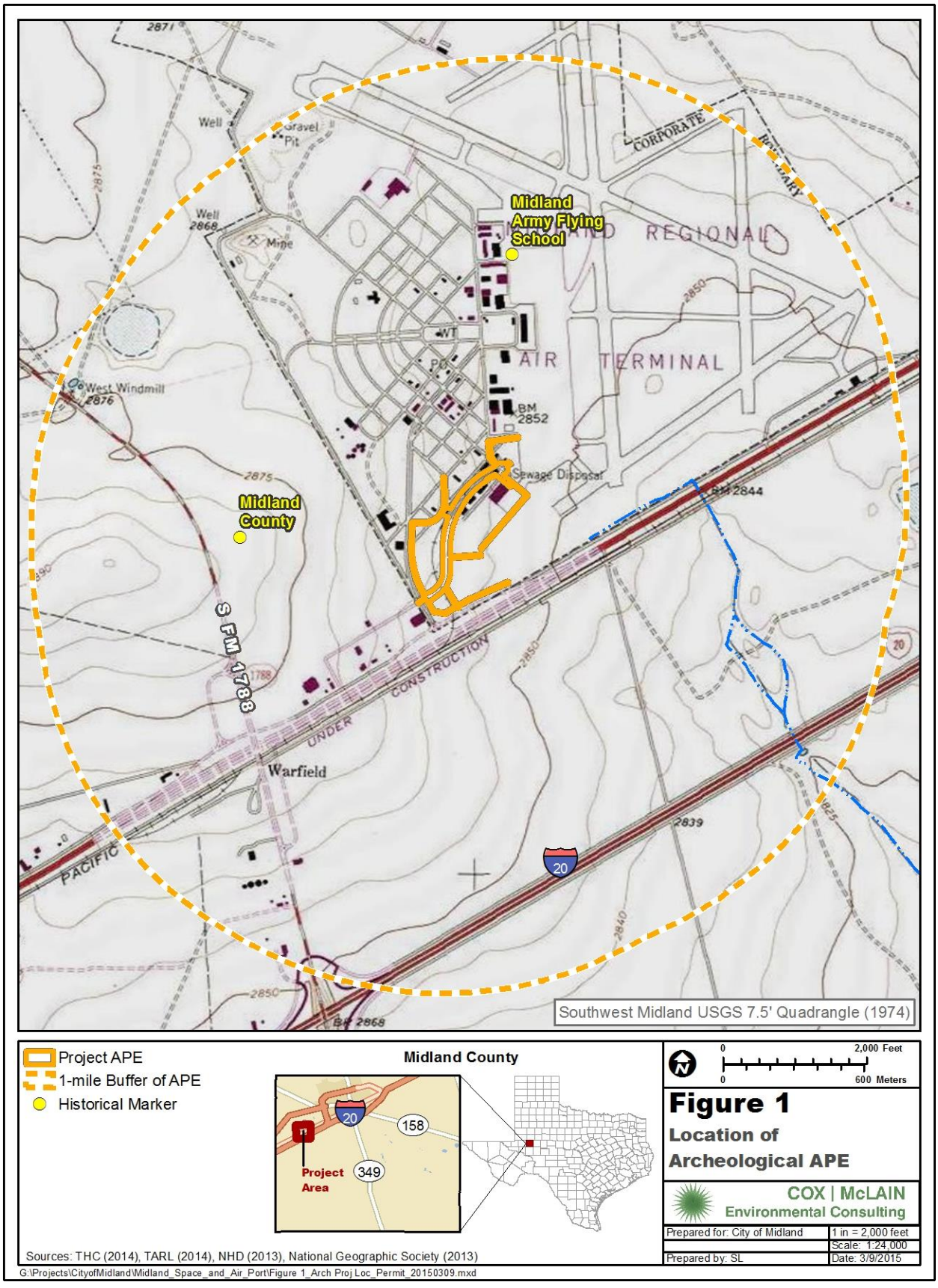
The Midland International Air & Space Port, a political subdivision of the State of Texas, has proposed road and utility improvements at the Spaceport Business Park in the southwest corner of the overall port property in the City of Midland, Midland County, Texas (**Figure 1**). The proposed improvements entail construction of a new road approximately 0.476 miles in length and 2.42 miles of new utilities (varying 15 to 50-ft wide right-of-way) within the Park. The road footprint is 4.8 acres (ac) or 1.9 hectares (ha) (assuming a 50-foot [ft] wide right-of-way), while the utilities corridors cover approximately 6.0 ac or 2.4 ha for a total of 10.8 ac or 4.3 ha.

The project is owned and funded by the Midland International Air & Space Port, a City of Midland facility, rendering the project subject to the Antiquities Code of Texas (9 TNRC 191) as well as triggering Section 106 of the National Historic Preservation Act (NHPA), as amended (16 USC 470; 36 CFR 800). All materials generated from this work will be permanently housed at the Center for Archaeological Studies (CAS) at Texas State University or the Texas Archeological Research Laboratory (TARL) at the University of Texas at Austin per TAC 26.27 and 26.5.

Chris Dayton of Cox|McLain Environmental Consulting, Inc., (CMEC) performed the fieldwork in April 2015 as a subcontractor to Mead and Hunt. Melissa M. Green served as Principal Investigator. A pedestrian survey was carried out based on guidelines established by the Council of Texas Archeologists (CTA) and approved by the Texas Historical Commission (THC). The methods employed during this study and relevant constraints are discussed further in Chapters Three and Four.

Structure of the Report

Following this introduction, Chapter Two presents environmental parameters, a brief cultural context, and a summary of previous archeological research near the APE; Chapter Three discusses research goals, relevant methods, and the underlying regulatory considerations; Chapter Four presents the results of the survey and summarizes the implications of the investigations, and references are in Chapter Five.


Midland Army Flying School
Midland County
S FM 1788
Warfield
PACIFIC
CONSTRUCTION
UNDER
AIR TERMINAL
REGIONAL
CORPORATE
Well
Gravel Pit
Mine
West Windmill
Sewage Disposal
BM 2852
BM 2844
BM 2868
Southwest Midland USGS 7.5' Quadrangle (1974)
Project APE
1-mile Buffer of APE
Historical Marker
Midland County
Project Area
20
158
349
0
2,000 Feet
600 Meters
Figure 1
Location of Archeological APE
COX | McLAIN Environmental Consulting
Prepared for: City of Midland
1 in = 2,000 feet
Scale: 1:24,000
Prepared by: SL
Date: 3/9/2015
Sources: THC (2014), TARL (2014), NHD (2013), National Geographic Society (2013)
G:\Projects\CityofMidland\Midland_Space_and_Air_Port\Figure 1_Arch Proj Loc_Permit_20150309.mxd

2.0 Environmental and Cultural Context

Topography, Land Use, Geology, and Soils

Midland County is in the middle of the Permian Basin, a Permian-age shallow sea that was located between central Texas and New Mexico. The Edwards Plateau is found in the southeastern third of Midland County and the remainder of the county, including the City of Midland, is on the Llano Estacado. The Llano Estacado is a very flat, arid plain found in western Texas and eastern New Mexico, with elevations of 2,776 to 2,830 ft (846 to 862.5 m) above mean sea level.

The 10.8-ac (4.3-ha) archeological area of potential effects (APE) is located at approximately 2,856 to 2,860 feet above mean sea level in the northwest corner of Midland County, Texas. The project footprint is located in the southwest corner of the airport property, surrounded by industrial development to the west, the frontage road for Business Interstate Highway (IH) 20 along the south, and airport facilities to the north and east.

The geology of the project area is mapped as Pleistocene-age windblown cover sand (BEG 1976), although outcrops of heavily eroded caliche were noted on the south side of the APE. According to Natural Resources Conservation Service (NRCS) data, three mapped soil units occur in the APE: Kimbrough loam, Stegall loam, and Slaughter loam on 0 to 1 percent slopes (NRCS 2015). Kimbrough soils are well drained, shallow, gravelly soils formed in fine textured eolian sediments. Stegall soils are well drained, moderately deep soils formed in loamy eolian sediments. Slaughter soils are well drained, shallow soils formed in loamy and clayey eolian sediments. All of these soils generally formed in sediments originating from the Blackwater Draw Formation.

Vegetation/Climate

The project is located in the southern portion of the High Plains ecoregion within the Llano Estacado (Griffith et al. 2007; BEG 1996). According to the TPWD's *Vegetation Types of Texas* map and accompanying descriptions, the APE is in an area (Type 44) mapped as cropland (McMahan et al. 1984). Permanent water sources are few, primarily consisting of playa basins that have been reduced in size. Average annual precipitation in both regions is reported to be less than 14 inches between 1981 and 2010 (SCAS 2000). Although rainfall likely fluctuated throughout prehistory, the region tends to be dry at present.

Archeological Chronology for the High Plains

The APE is at the southwestern corner of the Southern High Plains archeological region (Perttula 2004). Detailed descriptions of the archeological chronology will not be presented here; three recent reviews on the archeology of the Llano Estacado by Hofman et al. (1989) and Johnson and Holliday (1995; 2004) are excellent references for such details.

Table 1 presents the chronology of the Southern High Plains. Following Perttula (2004:9) **Table 1** combines the chronology of the Southern High Plains and the Panhandle into one region, simply known as the "High Plains". However, Johnson and Holliday (2004:294-295) note that the Late Quaternary paleoenvironmental records of the Southern Plains are well preserved in the draws, dunes, and lake basins, with draws providing the most complete and sensitive environmental record available. Likewise, the known archeological record provides a lengthy and rich heritage for the region with people living on and using the Southern Plains for at least 11,000 years and possibly longer due to the ample and varied natural resources available. Climate changes over the millennia determined the availability and

variety of resources, but the occupation of the Southern Plains generally consisted of small, mobile groups making repeated, short-duration seasonal visits to resource gathering and residential areas.

Table 1: Archeological Chronology for the High Plains in Texas*

Period	Years Before Present (BP)**
Early Paleoindian	11,500 – 10,500
Late Paleoindian	10,500 – 8.500
Archaic	8,500 – 2,000
Ceramic (Late Prehistoric)	2,000 – 1,000
Antelope Creek	1,000 – 500
Protohistoric	500 – 250

* After Perttula 2004: 9, Table 1.1
** Based on uncalibrated radiocarbon dates, which are typical in Texas archeology (see Perttula 2004:14, Note 1).

Historic Context

Midland, originally called Midway, was established in 1881 when the Texas and Pacific Railway placed a section house or Midway Station on its line halfway between Dallas and El Paso. The first permanent resident was Herman N. Garrett, who settled there with a herd of sheep in 1882. A post office was established in 1884 and the name changed to Midland as more ranchers moved into the area. By 1885 over 100 families lived in the area and Midland County was established with Midland as the county seat. A courthouse was built in 1886 with churches and a school following soon afterward. As the area had become an important cattle shipping center, the area prospered and the population grew into the early twentieth century, particularly with the Permian Basin oil boom which began in the 1920s (Leffler 2010).

The area suffered during the early part of the Depression as oil and gas production was greatly reduced and many workers were forced out of work. However, the oil and gas industry began to recover after the Railroad Commission began regulating oil and gas production across the state and tariffs on foreign oil were instituted. The Permian Basin oil production grew and Midland along with it. Midland also grew with the establishment of the Midland Army Air Force Base which operated the Army Air Force Bombardier School during World War II until it was closed in 1946 (Leffler 2010).

Since the end of World War II, with the exception of a short time during the 1960s and early 1970s, Midland and the surrounding area has continued to prosper due to oil and gas exploration and production, and the city has remained the financial and administrative center for the Permian Basin (Leffler 2010).

Previous Investiga tions and Previously Identified Resources

A search of the *Texas Archeological Sites Atlas* (Atlas) maintained by the Texas Historical Commission (THC) and the Texas Archeological Research Laboratory (TARL) was conducted in order to identify archeological sites, historical markers (Recorded Texas Historic Landmarks or RTHLs), properties or districts listed on the National Register of Historic Places (NRHP), State Antiquities Landmarks (SALs),

cemeteries, or other cultural resources that may have been previously recorded in or near the APE, as well as previous surveys undertaken in the area.

According to Atlas survey coverage data, the APE has not been subjected to an archeological survey, but there have been four archeological studies within a 1.6-kilometer (one-mile) study area. These include two surveys conducted by the State Department of Highway and Public Transportation (now Texas Department of Transportation or TxDOT); one in 1984 along a portion of Farm-to-Market (FM) 1788 where no resources were identified (Weir 1984), as well as a 1991 linear survey just west of the Midland Airport terminal (THC 2015). In addition, there was a 2003 linear survey at the intersection of the IH 20 frontage road (US 80) and FM 1788 by Sul Ross University on behalf of the United States Department of Agriculture, Rural Utilities Service (USDA-RUS) and a 2007 areal survey just west of the Midland Airport terminal for US Customs Service and Border Patrol.

There are no previously recorded archeological sites recorded within the APE and the nearest site (41MD39) is located just outside of the larger one-mile study area. Site 41MD39, located approximately 1.45 miles to the south-southwest, is one of six sites identified during the USDA-RUS survey but the only one located near this project. It is a sparse scatter of lithic materials that extended beyond the project's right-of-way (Young 2003) and THC considered its eligibility as "undetermined" in 2003 (THC 2015).

Also there are two historical markers within the study area surrounding the APE: one is a marker for Midland County and its significance and the other commemorates the Old Sloan Field, constructed in 1931, later the Midland Army Flying School for bombardier cadets and one of the largest military aviation training facilities in the country. Military use was phased out in 1947 and the commercial airfield opened in 1950 (THC 2015).

3.0 Research Goals and Methods

Purpose of the Research

The present study was carried out to accomplish three major goals:

1. To identify all historic and prehistoric archeological resources located within the APE defined in Chapter One;

2. To perform a preliminary evaluation of the identified resources' potential for inclusion in the NRHP and/or for designation as a SAL (typically performed concurrently); and

3. To make recommendations about the need for further research concerning the identified resources based on the preliminary NRHP/SAL evaluation and with guidance on methodology and ethics from the THC and CTA.

Section 106 of the National Historic Preservation Act

Section 106 of the NHPA of 1966, as amended (16 USC 470; 36 CFR 800), directs federal agencies and entities using federal funds to "take into account the effect of their undertakings on historic properties" (36 CFR 800.1a), with "historic property" defined as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places [NRHP] maintained by the Secretary of the Interior" (36 CFR 800.16).

In order to determine the presence of historic properties (with this phrase understood in its broad Section 106 sense) an APE is first delineated. The APE is the area in which direct impacts (and in a federal context, indirect impacts as well) to historic properties may occur. Within the APE, resources are evaluated to determine if they are eligible for inclusion in the NRHP, and to determine the presence of any properties that are already listed on the NRHP. To determine if a property is significant, cultural resource professionals and regulators evaluate the resource using these criteria:

> …The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, material, workmanship, feeling, and association and
>
> a. that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> b. that are associated with the lives of persons significant in our past; or
>
> c. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> d. that have yielded or may be likely to yield, information important in prehistory or history (36 CFR 60.4).

Note that significance and NRHP eligibility are determined by two primary components: integrity *and* one of the four types of association and data potential listed under 36 CFR 60.4(a-d). The criterion most often applied to archeological sites is the last—and arguably the broadest—of the four; its phrasing allows regulators to consider a broad range of research questions and analytical techniques that may be brought to bear (36 CFR 60.4[d]).

Occasionally, certain resources fall into categories which require further evaluation using one or more of the following Criteria Considerations. If a resource is identified and falls into one of these categories, the Criteria Considerations listed below may be applied in conjunction with one or more of the four National Register criteria listed above:

a. A religious property deriving primary significance from architectural or artistic distinction or historical importance, or

b. A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event, or

c. A birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his or her productive life, or

d. A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events, or

e. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived, or

f. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance, or

g. A property achieving significance within the past 50 years if it is of exceptional importance (36 CFR 60.4).

Resources that are listed in the NRHP or are recommended eligible are treated the same under Section 106, and are generally treated the same at the state level as well.

After cultural resources within the APE are identified and evaluated, effects evaluations are completed to determine if the proposed project has no effect, no adverse effect, or an adverse effect on these resources. Effects are determined by assessing the impacts that the proposed project will have on the characteristics that make the property eligible for listing in the NRHP as well as its integrity. Types of potential adverse effects considered include physical impacts, such as the destruction of all or part of a resource; property acquisitions that adversely impact the historic setting of a resource, even if built resources are not directly impacted; noise and vibration impacts evaluated according to accepted professional standards; changes to significant viewsheds; and cumulative effects that may occur later in time. If the project will have an adverse effect on cultural resources, measures can be taken to avoid, minimize, or mitigate this adverse effect. In some instances, changes to the proposed project can be made to avoid adverse effects. In other cases, adverse effects may be unavoidable, and mitigation to compensate for these impacts will be proposed and agreed upon by consulting parties.

The Antiquities Code of Texas

Because the project is currently owned and funded by the City of Midland, a political subdivision of the State of Texas, the project is subject to the Antiquities Code of Texas (9 TNRC 191), which requires consideration of effects on properties designated as—or eligible to be designated as—SALs, which are defined as:

> ...sites, objects, buildings, structures and historic shipwrecks, and locations of historical, archeological, educational, or scientific interest including, but not limited to, prehistoric American Indian or aboriginal campsites, dwellings, and habitation sites, aboriginal paintings, petroglyphs, and other marks or carvings on rock or elsewhere which pertain to early American Indian or other archeological sites of every character, treasure imbedded in the earth, sunken or abandoned ships and wrecks of the sea or any part of their contents, maps, records, documents, books, artifacts, and implements of culture in any way related to the inhabitants, prehistory, history, government, or culture in, on, or under any of the lands of the State of Texas, including the tidelands, submerged land, and the bed of the sea within the jurisdiction of the State of Texas. (13 TAC 26.2)

Guidelines for the evaluation of cultural resources as SALs and/or for listing on the NRHP, which is also explicitly referenced at the state level, are detailed in 13 TAC 26. An archeological site identified on lands owned or controlled by the State of Texas may be of sufficient significance to allow designation as a SAL if at least one of the following criteria applies:

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

For archeological resources, the state-level process requires securing and maintaining a valid Texas Antiquities Permit from the THC, the lead state agency for Antiquities Code compliance, throughout all stages of investigation, analysis, and reporting.

Survey Methods and Protocols

With the goals and guidelines above in mind, CMEC personnel conducted an intensive survey in April 2015, per category 6 under 13 TAC 26.15 and using the definitions in 13 TAC 26.3, searching for previously identified and unidentified archeological sites (**Figure 2**). Field methods complied with the coverage requirements of 13 TAC 26.15, as elaborated by the THC and CTA.

The shovel testing and collection protocols in the approved scope for Texas Antiquities Permit 7229 were moot; previous disturbance prevented shovel testing, and no archeological materials were observed or found.

No materials were collected during the investigation; therefore, this project generated no archeological materials to be curated. Project field notes, forms, and other data will be made available to future researchers at TARL per 13 TAC 26.16 and 26.17.

Project APE

0 500 Feet
0 150 Meters

Figure 2

Location of Archeological APE (Aerial Base)

COX | McLAIN Environmental Consulting

Prepared for: City of Midland	1 in = 500 feet
	Scale: 1:6,000
Prepared by: SL	Date: 4/24/2015

Sources: TARL (2014)
Aerial Source: NAIP (2014)

G:\Projects\CityofMidland\Midland_Space_and_Air_Port\Figure 2_Arch Proj Loc_Permit_Aerial_20150424.mxd

4.0 Results and Recommendations

Field Observations

In April 2014, CMEC personnel conducted an intensive survey of the 10.8-acre APE. Ground surface visibility was generally moderate to high, between 50 and 90 percent (see **Figures 2** and **3**).

Figure 3. View northwest across the APE. Note caliche fragments churned up from near-surface bedrock.

The survey began in the southwest corner of the APE, where recent landscaping has caused substantial disturbance, including a raised plant bed (**Figure 4**) surrounded by floodlights supplied by underground electrical lines (**Figure 5**), newly planted trees, and irrigation lines (**Figure 6**).

Figure 4. View north at recent landscaping in southwest corner of airport property. Note exposed caliche in drainage ditch in foreground.

Figure 5. View of typical floodlight surrounding recently landscaped area.

Figure 6. View north at recently planted trees with subsurface irrigation lines in southwest corner of airport property. Note caliche fragments from near-surface bedrock.

Continuing east and north, CMEC archeologists found further disturbances throughout the APE, including major utility crossings (**Figure 7**), previous road construction and use of unprepared surfaces as informal roads (**Figure 8**), and previous excavation/filling with imported materials (**Figure 9**). Gravel, concrete and asphalt fragments, and other construction/demolition debris were noted throughout the APE.

One historic-age feature, a short railroad spur associated with the former military airfield, was observed curving from the south side of the APE to the north and east, for a total length of approximately 0.4 miles (**Figures 10** and **11**). No historic-age archeological materials were found near the railroad. Given the fact that the tracks are no longer complete (see partial removal/demolition in **Figure 11**) and are no longer in context with other historic airfield infrastructure or buildings, modification/removal of the tracks would not constitute a direct or indirect effect on a significant resource. Historic buildings/structures issues are discussed further in a separate Mead & Hunt report to be submitted to the Historic Programs Division.

Figure 7. View northeast at utility crossing near center of APE.

Figure 8. View west along road along north side of APE, in proposed utility installation area.

Figure 9. View of typical imported gravels near center of APE.

Figure 10. View north along historic-age railroad tracks (addressed in separate buildings/structures report) running through APE.

Figure 11. View west from northeast end of APE, along proposed roadway route and current route of historic-age railroad track remnants. Note that rails are partially buried in the background and pulled up/misaligned in the foreground.

Recommendations

No evidence was found of preserved deposits with a high degree of integrity; associations with distinctive architectural and material culture styles; rare materials and assemblages; the potential to yield data important to the study of preservation techniques and the past in general; or potential attractiveness to relic hunters (13 TAC 26.10; 36 CFR 60.4).

Based on the intensity and variety of disturbances noted with the APE and the lack of evidence of significant cultural resources, no further work within the APE is recommended. If any unanticipated discoveries occur during construction, work should halt immediately and the Archeology Division of the THC should be contacted.

No archeological materials were collected, however, all notes, photos, forms, and other information generated from this work will be permanently housed at TARL at the University of Texas at Austin per TAC 26.27 and 26.5.

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Appendix A – Regulatory Correspondence

COX | McLAIN
Environmental Consulting

TRANSMITTAL MEMO	To: Tiffany Osburn – THC, Archeology
Cox|McLain Environmental Consulting, Inc. 600 E. John Carpenter Frwy, Suite 380 Irving, TX 75062 www.coxmclain.com (469) 647-4866	From: Missi Green – Cox|McLain
	Date: 4 June 2015
	RE: Draft Report: *Intensive Archeological Survey for Proposed Road and Utility Improvements at the Spaceport Business Park, Midland International Air & Space Port, Midland County, Texas*

Dear Tiffany,

Please find enclosed draft report summarizing the results of the archeological survey for utility and road improvements at the Spaceport Business Park on Midland International Air & Space Port in Midland, Texas. This survey was conducted under Antiquities Permit #7229. The area contained extensive disturbances and no archeological remains were encountered. I look forward to your comments. Please do not hesitate to call or email if you have any questions or comments.

Thank you!

Sincerely,

Missi Green

Melissa M. Green, RPA
missig@coxmclain.com
(469) 647-4866

Cc: Rick Mitchell – Mead & Hunt

NO HISTORIC
PROPERTIES AFFECTED
PROJECT MAY PROCEED
by William D. Martin
for Mark Wolfe
State Historic Preservation Officer
Date 7/9/15
Track#