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Archeological Resource Survey of the 2.9-mile USEDC 43-20 Pipeline Corridor on University Lands in Ward County, Texas

Joel Butler
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Archeological Resource Survey of the 2.9-mile USEDC 43-20 Pipeline Corridor on University Lands in Ward County, Texas

By Joel Butler, Principal Investigator for Salt Creek Midstream, LLC.

Texas Antiquities Permit Number: 9689

Cover Photograph: Typical view of the western Project Area with road and transmission lines, facing northeast.

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Abstract

At the request of Salt Creek Midstream (SCM), Flatrock Engineering and Environmental, LLC (Flatrock) conducted an intensive archeological resource survey of approximately 2.9 miles (15,312 feet) of the proposed USEDC 43-20 Pipeline corridor (Project) on University Lands in northern Ward County, Texas. Because the Project will take place on property owned by the University of Texas, a political subdivision of the State of Texas, it is subject to the Antiquities Code of Texas (Texas Natural Resources Code, Title 9, Chapter 191) and its associated regulations (13 TAC 26). The archeological survey was carried out under Antiquities Permit Number 9689.

A pedestrian field survey was conducted by Flatrock archeologist Joel Butler on November 17 and 18, 2020. A corridor 100 feet in width, encompassing 40.1 acres, was surveyed during fieldwork. Surface visibility ranged from 80 to 100-percent along the 100-foot survey corridor and revealed predominantly heavily disturbed or deflated surfaces. The entire corridor was 100-percent surface inspected and 22 shovel tests were excavated to locate and/or evaluate the potential for buried cultural deposits; all shovel tests were negative. No artifacts or archeological sites were identified during fieldwork and no historic structures were visible from the right-of-way.

Flatrock recommends that construction of the USEDC 43-20 pipeline be allowed to proceed as planned, with no further archeological investigations. However, it is recommended that if any cultural resources are encountered during construction, the Texas Historical Commission and University Lands should be notified, and a qualified archeologist should evaluate the findings.

No artifacts were collected or curated during this project; field records will be curated at the Center for Archaeological Studies (CAS) at Texas State University, San Marcos.
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Chapter 1

Introduction and Management Summary

At the request of Salt Creek Midstream (SCM), Flatrock Engineering and Environmental, LLC (Flatrock) conducted an archeological resource survey of a proposed 2.9-mile petroleum pipeline corridor on University Lands in northern Ward County, Texas. The proposed Oliphant pipeline corridor (Project) consists of a 2.9-mile (15,355 feet) gas line with a 0.45-mile (2,440 feet) crude line installed 30 to 100 feet to the west, parallel to the gas line at the western end of the Project (Figure 1). The depth of disturbance will be six feet throughout the Project. The proposed survey corridor is 100 feet surrounding both lines; therefore, the survey area varies from 100 to 200 feet in width and encompasses 40.1 acres.

Because the property is owned by University Lands, a political subdivision of the state, hence it is subject to compliance with the Antiquities Code of Texas (Texas Natural Resources Code, Title 9, Chapter 191) and its associated regulations (13 TAC 26). Therefore, Antiquities Permit number 9689 was obtained from the Texas Historical Commission (THC) to carry out field investigation.

The project will involve the installation of the 2.9-mile gas pipeline and parallel 0.45-mile crude oil pipeline through open-cut trenching. The depth of trenching will average six feet below grade throughout the project. Construction will take place within a 50-foot wide corridor which will be cleared and graded. This survey covered an area of 50 feet on each side of the centerline to account for any later minor design changes. Therefore, the area of potential effects (APE) for the project measures 100 feet in width along both pipelines to a depth of six feet. This investigation was conducted to identify and avoid or preserve any cultural resources eligible as a State Antiquities Landmark (SAL) within the project’s APE.

Joel Butler, serving as Principal Investigator and field director, surveyed the pipeline on November 17 and 18, 2020. Field conditions were fair and dry. The entire Project APE was inspected, and 22 shovel tests were excavated to identify artifacts and evaluate the potential for buried cultural deposits within the Project. All shovel tests were negative, and no archeological sites or isolated finds were identified during field investigations. Based on surface observations and shovel test results, potential for buried archeological deposits in the Project vicinity is very low. No artifacts were collected, and all field records will be permanently housed at the CAS at Texas State University in San Marcos.
Figure 1
Project Location
USEDC UL 43-20 Pipeline Corridor
Ward County, Texas

Prepared for: Salt Creek Midstream
Prepared By: Butler
Date: 11/19/2020
Path: C:\Users\joel.butler\Desktop\Projects\Salt Creek\USEDC\GIS\Fig 1 PL.mxd
Chapter 2

Environmental Background

Geographic Setting
The Project is located in the Chihuahuan Basins and Playas portion of the Trans-Pecos Chihuahuan Desert EPA ecoregion, an arid region of low rainfall and relatively low elevation (less than 3,500 feet) [Omernik and Griffith 2013]. The Project itself is in a near-level to gently sloping region of mesquite and creosote brush punctuated by incised arroyos and eroded and pedestaled landforms. Elevations within the Project Area range from 2,775 feet above mean sea level (AMSL) at the eastern terminus to 2,830 feet AMSL at the western terminus.

Geology and Soils
According to the Geologic Atlas of Texas, the proposed pipeline route is underlain by areas of Holocene windblown sand and Pleistocene evaporites (USGS 2007). Soils within the proposed pipeline corridor are mapped as shallow Delnorte and Sharvana Series and moderately deep to moderately deep Wickett and Pyote Series (Figure 2, USDA-NRCS; 2020). Archeological resources located within these contexts are typically limited to the ground surface or shallowly buried. In addition, archeological sites – particularly prehistoric-age sites – are often in fair to poor condition due to erosion and surface disturbances.

Vegetation and Climate
Arid Chihuahuan Desert vegetation typically includes grassland and shrub-land but can include conifer and hardwood forest flora at high elevations (Omernick and Griffith 2013). Vegetation common to the Chihuahuan Desert include creosote bush, tarbush, fourwing saltbush, blackbrush, gyp grama, alkali scaton, honey mesquite, red berry juniper, prickly pear cactus, ocotillo, stool, and other desert shrubs and cacti (Omernik and Griffith 2013; Stahl and McElvaney 2012). Vegetation observed within the Project Area included honey mesquite, creosote bush, prickly pear, Spanish dagger, broomweed, and various bunch grasses.

The majority of the precipitation in this area occurs in the summer months during brief thunderstorms (Omernik and Griffith 2013; Stahl and McElvaney 2012). The average annual rainfall is 12.3 inches. Temperatures range from an average low of 29.6° F in January to an average high of 97° F in July (University of Missouri 2020).
Figure 2
Soils on Recent Aerial Imagery
USEDC 43-20 Pipeline
Ward County, Texas

DE - Delnorte gravelly soils, undulating
PY - Pyote soils, undulating
SH - Sharvana soils, nearly level
WS - Wickett and Sharvana soils, gently undulating
Regional Chronology and Cultural Background

The Project is situated within the Trans-Pecos archeological region, characterized by its numerous natural rock shelters formed in limestone canyons and cliffs, as well as its ubiquitous raw lithic outcrops and isolated micro-environments near artesian springs. Offering protection from the elements, rockshelter localities were consistently attractive to hunter-gatherers, and from an archeological standpoint, they create ideal conditions for the preservation of burned rock middens, organic materials, burials, and petroglyphic and pictographic rock art. The region also contains many short term or single-use campfire hearths of fire-cracked rock. In the right conditions, these hearths may contain a wealth of datable carbon and/or floral and faunal remains, though frequently they are deflated and scattered by the largely erosional desert environment and contain no artifacts other than burned rocks.

Three major intervals or periods are identified in the Prehistoric stage: the Paleoindian, the Archaic, and the Late Prehistoric.

Paleoindian Period
The arrival of humans in the New World occurred between 16,000 and 14,500 years before present (BP; Gilbert et al. 2008, Pitblado 2011), and until recently, it was generally thought that the Paleoindian Period in Texas did not begin until around 12,000 BP (Perttula 2004). However, new evidence from the Debra Friedkin and Gault sites in Central Texas have begun to push the date of earliest occupation back to around 15,000 BP (Swaminathan 2014; Gault School 2016). Generally, there is a lack of radiocarbon dates from unambiguous Paleoindian contexts in Trans-Pecos. Therefore, the Paleoindian Period in the Trans-Pecos Region is currently estimated to range from 12,000 to 8,000 BP (Miller and Kenmotsu 2004).

As the Pleistocene ended, diagnostic Paleoindian materials in the form of Clovis, Folsom, and Plainview projectile points began to enter the archaeological record. These points were lanceolate-shaped and fluted for hafting to wooden spears. Using the launching momentum from atlatls (spear-throwers), large game such as mammoth, mastodons, bison, camel, and horse were frequently taken (Black 1989). In addition to large game, Paleoindian groups also harvested smaller prey including antelope, turtle, frogs, and other small to medium-sized game (Miller and Kenmotsu 2004). Stylistic changes in projectile point technology occurred during this later portion of the period, eventually shifting to Dalton, Scottsbluff, and Golondrina traditions. Environmental studies suggest that Late Pleistocene climates were wetter and cooler (Mauldin and Nickels 2001; Toomey et al. 1993), gradually shifting to drier and warmer conditions during the Early Holocene (Bousman 1998). The end of the Pleistocene was likely arid to semiarid, and prickly pear and agave populations were high (Bousman et al. 1990:94, 98). As megafauna gradually died off and the ranges of other large game changed during the shift to a warmer climate, subsistence patterns shifted toward smaller game and plant foraging. Intact Paleoindian occupations in the Trans-Pecos region are somewhat rare and consist mostly of kill sites found near rockshelters (Turpin 1995), or isolated projectile points within multicomponent scatters (Miller and Kenmotsu 2004).

Archaic Period
The Archaic Period exhibited a shift from more mobile hunting strategies to a heavier reliance on a broader spectrum of local plants and animals, and broadly dates to 8,000 to 1,800 BP (Miller and Kenmotsu 2004). During the Archaic the construction of pithouses and huts occurred in the western Trans-Pecos Region, and rockshelters were more intensively utilized everywhere, leading to an increase in rock art (Miller and Kenmotsu 2004). The Late Archaic in the Trans-Pecos is the best understood sequence, and
current data suggest that a population increase took place with a heavier reliance on specialized food processing and the introduction of small-scale agriculture in some locations (Miller and Kenmotsu 2004). Common site types of this period include large burned rock middens, which tend to be exposed on mesa tops overlooking canyons and water sources.


Late Prehistoric Period

The commonly held date for the beginning of this period is 1,800 BP with the transition to the bow and arrow (Hester 1980). This technology enabled prehistoric hunters to harvest prey from greater distances with a lesser need for brushless, wide open spaces required for atlatl maneuverability. The use of arrows is indicated by smaller-sized, triangular projectile points. Another turning point in the Late Prehistoric period is the first substantial presence of pottery (Miller and Kenmotsu 2004). Trans-Pecos sites dating to the Late Prehistoric suggest a continued reliance on rockshelters, but also show up in the form of tipi rings, cairn burials, and pit houses built along water source terraces (Miller and Kenmotsu 2004). Perdiz arrow points, groundstone implements, beveled bifacial knives, end-notched sinker stones, and ornamental beads add more diversity to the archaeological record during this interval.

It is also important to recognize temporal variation in the adoption of certain technologies and practices in the Late Prehistoric Period. Dates in the eastern Trans-Pecos show that the adoption of ceramics, small-scale agriculture, and architectural forms (e.g. pithouses, huts/wickiups) around 1,000 BP was significantly later than their development farther west (Miller and Kenmotsu 2004). Pueblo structures also developed earlier and were more common in the western Trans-Pecos. Ring middens, hearthfields, lithic scatters, and wickiup rings remained the most common site types in the eastern Trans-Pecos (Miller and Kenmotsu 2004).

Land Modifications and Historical Land Use

The Project was generally held property of the State of Texas until it was deeded in perpetuity to the University of Texas under the Permanent University Fund by 1883. Land use within the survey area has historically, and continues to, consist of cattle ranching and petroleum production. The resulting land modifications have included erosion from overgrazing and extensive deep disturbances from brush removal projects. Currently, regional land use is transitioning to a petroleum-based economy with many pipelines, drill pads, and supporting facilities throughout the upper Trans Pecos and the Permian Basin (University Lands 2020).

Previous Archeological Investigations

The Texas Archeological Sites Atlas (Atlas; THC 2020) was consulted to identify previous surveys and recorded cultural resources (Figure 3). According to the Atlas, in 2017, Lone Mountain Archeological Services conducted a large, gridded seismic survey that encompasses the entire Project area. A 2020
transmission line survey, conducted by AR Consultants for the Public Utilities Commission (PUC), crosses the Project twice. A 2020 survey for a Salt Creek gas line runs parallel to the Project, and a 2020 survey by Flatrock traces a previous route of the current Project that significantly overlaps the Enercon survey.

A large portion of the Project is located within a 200-foot wide cleared and bladed utility corridor that has already been partially developed.

No previously recorded archeological sites are recorded within one kilometer (km) of the Project, but seven sites are located within two km, all but one of which (41WK139) were recommended as eligible for listing in the National Register of Historic Places (NRHP, Figure 3). The Atlas makes no reference as to what these site types are other than 41WK139 (a small lithic scatter), though it is likely that, given the eligible recommendations, the sites mostly consist of open campsites with datable thermal features, retaining charcoal combined with other potential researachable materials (diagnostic artifacts, preserved plant materials, etc.).

**Archeological Site Potential**

Prehistoric sites within the Project area were most likely to consist of prehistoric lithic scatters and hearths/burned rock concentrations, likely limited to the surface or shallowly buried within larger coppice dunes. Historic-age sites were most likely to occur as isolated trash dumps. Based on historic aerial imagery and University of Texas’ ownership for over 100 years, no structural historic sites were anticipated within the Project (Figure 4).
Figure 4
Previously Recorded Cultural Resources
USEDC 43-20 Pipeline Project
Ward County, Texas

Prepared for: Salt Creek Midstream
Prepared By: Butler Date: 11/19/2020

Source: Copyright © 2013 National Geographic Society, i-cubed

Figure 4
Previously Recorded Cultural Resources
USEDC 43-20 Pipeline Project
Ward County, Texas

Prepared for: Salt Creek Midstream
Prepared By: Butler Date: 11/19/2020

Source: Copyright © 2013 National Geographic Society, i-cubed
Figure 4
1954 Aerial Photograph Overlay
USED C 43-20 Pipeline Corridor
Ward County, Texas

Prepared for: Salt Creek Midstream
Prepared By: Butler
Date: 11/19/2020

Source: USGS Earth Explorer
Chapter 3

Methodology

The archeological survey conformed to survey standards set forth by the Council of Texas Archeologists (CTA) and included 100-percent visual inspection of the entirety of the proposed survey corridor. Additionally, the survey followed the West Texas Survey Methodologies, as required by the THC (2019).

Shovel testing was carried out in 100-meter intervals in undeveloped portions of the Project to obtain a record of subsurface soil conditions, evaluate the potential for buried deposits, and locate subsurface artifacts. Within the developed portions of the Project, shovel tests were excavated 250 to 500 meters apart to evaluate the potential for any remaining cultural deposits.

Shovel tests measured 30 centimeters (cm) in diameter and extended to a maximum depth of 80 cm below surface (cmbs), sterile subsoil, or bedrock; whichever was encountered first. Shovel tests were excavated in 20-cm arbitrary levels and all soil was screened through ¼-inch hardware cloth. Shovel tests were digitally recorded using a GPS and ESRI Collector.

All Project notes, records, and photographs will be curated at the CAS at Texas State University in San Marcos. No artifacts were collected during the survey.
Chapter 4

Survey Results

Fieldwork was conducted on November 17 and 18, 2020 with Joel Butler serving as Principal Investigator and field director. Conditions were dry and temperatures were in the 60s and 70s during fieldwork with light west winds. A detailed depiction of the survey area with shovel test locations is provided in Figures 5-10 and shovel test results are presented in tabular form in Appendix A.

Vegetation observed within the Project Area consisted of clump grasses, miscellaneous desert forbs, mesquite, Spanish dagger, cholla, prickly pear, and creosote brush. The ground surface consisted of fine silty or sandy loams with exposed gravels scattered throughout the Project and decayed caliche soil in the western portion of the APE.

Disturbances in the APE
The entire east-west portion of the Project is located within the southern half of a 200-foot-wide existing pipeline corridor (Figures 5-10, Figures 11 and 12). The existing corridor had been previously cleared, trenched, and bladed flat as seen in previous fieldwork (Butler 2020) and on aerial imagery dating to 2019. At the time of the current survey, the corridor had 100-percent surface visibility, clearly defining areas where caliche deposits were near the surface, as seen in Figure 12. Throughout much of the cleared corridor, the surface appeared to have been cut as much as 40 cm into the landscape (Figure 11), thus displacing most native soils with potential to contain cultural deposits.

In addition to the existing pipeline corridor, the landscape surrounding the central portion of the Project (approximately 60 percent of the total length) had been heavily impacted by prior earthworks. Visible on aerial photographs as old as 1954, long circular terraces, one to two feet in height and spaced 60 to 70 feet apart, are seen over several square miles around the Project Area, as seen in Figure 4. These terraces contain large caliche cobbles turned up from the subsoil, indicating total disturbance in the vicinity.

The western portion of the Project crosses mostly undisturbed land with disturbances limited to cleared and bladed road and transmission line rights-of-way (ROW, Figures 10 and 13). Several clusters of animal burrows were also present in the western portion of the corridor, graphically demonstrating the shallow nature of soils (Figure 14).
Shovel Test
- Negative Shovel Test from Previous Survey (Permit 9355)

- USEDC 43-20 Gas Line
- Newly Constructed Transmission Line Corridor
- Previous Survey Footprint (Permit 9355)
- 100-foot Survey Corridor

Figure 5
Survey Results
USEDC 43-20 Pipeline Corridor
Ward County, Texas

Source: 1982 USGS Soda Lake NE, Texas
1:24000 Topographic Series Map

Prepared for: Salt Creek Midstream
Prepared By: Butler
Date: 11/19/2020

Path: C:\Users\joel.butler\Desktop\Projects\Salt Creek\USEDC\GIS\Fig 5-10 Results.mxd
Figure 6
Survey Results
USEDC 43-20 Pipeline Corridor
Ward County, Texas

Shovel Test
Negative Shovel Test from
Previous Survey (Permit 9355)

USEDC 43-20 Gas Line
Newly Constructed
Transmission Line Corridor
Previous Survey Footprint
(Permit 9355)
100-foot Survey Corridor

Source: 1982 USGS Soda Lake NE, Texas
1:24000 Topographic Series Map

Prepared for: Salt Creek Midstream
Prepared By: Butler
Date: 11/19/2020

Path: C:\Users\joel.butler\Desktop\Projects\Salt Creek\USEDC\GIS\Fig 5-10 Results.mxd
Figure 7
Survey Results
USED C 43-20 Pipeline Corridor
Ward County, Texas

Source: 1982 USGS Soda Lake NE, Texas
T-9400 Topographic Series Map

Prepared for: Salt Creek Midstream
Prepared By: Butler
Date: 11/19/2020

Distance Scale
0 50 100 200 Meters
0 200 400 800 Feet

- Shovel Test
  Negative Shovel Test from Previous Survey (Permit 9355)

- USED C 43-20 Gas Line

- Newly Constructed Transmission Line Corridor

- Previous Survey Footprint (Permit 9355)

- 100-foot Survey Corridor

Path: C:\Users\joel.butler\Desktop\Projects\Salt Creek\USED C GIS\Fig 7-10 Results.mxd
Figure 8
Survey Results
USEDC 43-20 Pipeline Corridor
Ward County, Texas

Shovel Test
Negative Shovel Test from Previous Survey ( Permit 9355)

USEDC 43-20 Gas Line
Newly Constructed Transmission Line Corridor

Previous Survey Footprint (Permit 9355)

100-foot Survey Corridor
Figure 9
Survey Results
USEDC 43-20 Pipeline Corridor
Ward County, Texas

Prepared for: Salt Creek Midstream
Prepared By: Butler
Date: 11/19/2020

Source: 1982 USGS Soda Lake NE, Texas 1:24000 Topographic Series Map
Figure 10
Survey Results
USEDC 43-20 Pipeline Corridor
Ward County, Texas

Source: 1982 USGS Soda Lake NE, Texas 1:24000 Topographic Series Map

Prepared for: Salt Creek Midstream
Prepared By: Butler  Date: 11/19/2020

Path: C:\Users\joel.butler\Desktop\Projects\Salt Creek\USEDC\GIS\Fig 5-10 Results.mxd
Figure 11. View of the Project centerline within the previously cleared ROW. Note the depth of cut below the native landscape, facing east.

Figure 12. View of recently re-bladed ROW, with exposed caliche subsoil.
Figure 13. Portion of the Project corridor disturbed by installation of a transmission line, facing southeast.
Surface Inspection
The entire survey corridor was examined during field surveys by meandering within a 50-foot transect on each side of the Project’s centerlines. Numerous gravels were present on the surface throughout the Project, mostly less than 5 cm in diameter, and consisting of mostly caliche fragments, with lesser amounts of chert and quartzite. None of the observed gravels showed signs of cultural alteration from knapping, pecking, or burning.

Shovel Testing
Shovel testing was carried out in 100-meter intervals throughout the undisturbed portions of the Project and 250 to 500 meters along the east-west existing utility corridor where extensive previous disturbances had occurred, to spot check the potential for archeological deposits.

Along the cleared and bladed existing utility corridor (Figures 5-9), ten shovel tests were excavated, which encountered light brown sandy clays or clay loams, frequently very compact with interspersed crushed caliche fragments. Tests along the utility corridor terminated in dense sandy clay or caliche gravel at depths of 10 to 20 cmbs. Tests were tightened to a 250-meter interval where previous work north of the current Project and visual inspection to the south showed numerous dunes and higher archeological potential. However, no artifacts were present and soil conditions were found to be similar to elsewhere along the cleared corridor with compact sandy clay or sandy silt with dense crushed caliche by 20 cmbs. None of the tests contained cultural materials and none was visible on the Project’s surface. This area has been extensively impacted by earthworks as well as recent ROW clearing and blading. No potential exists in this area for intact archeological deposits.
Twelve shovel tests were excavated within the less disturbed western portion of the Project, which overlapped with the previous Flatrock survey (Butler 2020). These tests encountered very light to light brown sandy silts with frequent caliche gravels (1 to 10 cm in diameter) occurring above compact silty clays or very dense caliche deposits. Tests in the western APE terminated at 10 to 30 cmbs at compact sandy clay or dense caliche gravels. One low coppice dune (less than 30 cm) was shovel tested (test 11). Shovel test 11 encountered loose aeolian sand to 30 cmbs, which was underlain by sandy silt and large caliche gravels. The surface of this portion of the Project was visibly deflated, with numerous “blow-out” areas, suspended roots, pedestaled vegetation clumps, and increased surface gravels (Figure 15).

While the western portion of the Project was largely undisturbed by previous construction activities, it has been impacted by deflation and erosion, common in the region. Soils are very shallow in the area and have little potential to contain intact archeological deposits.

No isolated artifacts or archeological sites were encountered on the surface or in shovel tests during fieldwork.

Figure 15. Deflated surface typical of the western Project area, facing northeast.
Chapter 5

Summary and Recommendations

On November 17 and 18, 2020, Flatrock archeologist Joel Butler carried out an intensive archeological survey of the entire 40.1-acre survey corridor along the proposed 2.9-mile (15,312 feet) USEDC 43-20 pipeline, located on University Lands in northern Ward County, Texas. Approximately 66 percent of the surveyed area had been disturbed by previous construction activities. Surface visibility varied from 80–100 percent within the APE. During the survey, 22 shovel tests were excavated to depths of 10–30 cmbs, all of which were negative. No standing historic structures were visible from the survey corridor. No isolated artifacts or archeological sites were discovered during fieldwork.

Flatrock recommends that no further work is necessary within the Project area prior to construction. It is advised that if any cultural resources are encountered during Project construction, the THC and University Lands should be notified, and finds should be examined and evaluated by a qualified archeologist.

All work was carried out to conform with CTA guidelines as well as THC staff’s recommended methods for archeological surveys in the West Texas region. Work was conducted under Texas Antiquities Permit number 9689. No artifacts were collected during this survey. All field records will be permanently housed at CAS in San Marcos.


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Perttula, T. K. (Editor)

Pitblado, B.L.

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Turpin, Solveig A.

United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS)

United States Geological Survey (USGS)

University Lands

University of Missouri
Appendix: Shovel Test Results
<table>
<thead>
<tr>
<th>Shovel Test</th>
<th>0-20 cmbs Soil Type</th>
<th>0-20 cmbs Soil Color</th>
<th>20-40 cmbs Soil Type</th>
<th>20-40 cmbs Soil Color</th>
<th>Easting</th>
<th>Northing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Silty loam with caliche gravel &gt; 5 cm</td>
<td>10YR 7/4</td>
<td>Sandy clay with caliche gravel at 30 cmbs</td>
<td>10YR 5/4</td>
<td>657405</td>
<td>3500837</td>
</tr>
<tr>
<td>2</td>
<td>Silty clay loam</td>
<td>10YR 5/4</td>
<td>Sandy clay loam</td>
<td>10YR 5/4</td>
<td>657312</td>
<td>3500886</td>
</tr>
<tr>
<td>3</td>
<td>Silty with caliche gravel, dense at 10 cmbs</td>
<td>10YR 7/4</td>
<td>Sandy clay with caliche gravel at 30 cmbs</td>
<td>10YR 5/4</td>
<td>657228</td>
<td>3500921</td>
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<td>4</td>
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<td>10YR 5/4</td>
<td>Sandy clay with caliche gravel at 30 cmbs</td>
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<td>5</td>
<td>Silty with caliche gravel, dense at 10 cmbs</td>
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<td>Sandy clay with caliche gravel at 30 cmbs</td>
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<td>Silty with caliche gravel, dense at 20 cmbs</td>
<td>10YR 5/4</td>
<td>Sandy clay with caliche gravel at 30 cmbs</td>
<td>10YR 5/4</td>
<td>657104</td>
<td>3501354</td>
</tr>
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<td>8</td>
<td>Loose silt with dense caliche gravel at 15 cmbs</td>
<td>10YR 6/4</td>
<td>Sandy clay with caliche gravel at 30 cmbs</td>
<td>10YR 6/4</td>
<td>657143</td>
<td>3501374</td>
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<td>9</td>
<td>Loose silt with dense caliche gravel at 15 cmbs</td>
<td>10YR 6/4</td>
<td>Sandy clay with caliche gravel at 30 cmbs</td>
<td>10YR 6/4</td>
<td>657137</td>
<td>3501303</td>
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<td>10</td>
<td>Loose silt with solid caliche gravel at 5 cmbs</td>
<td>10YR 6/4</td>
<td>Sandy clay with caliche gravel at 30 cmbs</td>
<td>10YR 6/4</td>
<td>657168</td>
<td>3501208</td>
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<td>11</td>
<td>Loose aeolian sand</td>
<td>10YR 5/4</td>
<td>Sand to silt and dense caliche at 30 cmbs</td>
<td>10YR 6/4</td>
<td>657204</td>
<td>3501113</td>
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<td>12</td>
<td>Silty with caliche gravel, dense at 10 cmbs</td>
<td>10YR 7/4</td>
<td>Sand to silt and dense caliche at 30 cmbs</td>
<td>10YR 6/4</td>
<td>657253</td>
<td>3500973</td>
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<td>13</td>
<td>Sandy silt with dense crushed caliche gravel at surface</td>
<td>10YR 6/4</td>
<td>Sand to silt and dense caliche at 30 cmbs</td>
<td>10YR 6/4</td>
<td>659066</td>
<td>3501123</td>
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<td>14</td>
<td>Sandy loam with mixed crushed gravel</td>
<td>10YR 6/4</td>
<td>Sand to silt and dense caliche at 30 cmbs</td>
<td>10YR 6/4</td>
<td>659561</td>
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<td>15</td>
<td>Sandy loam with mixed crushed gravel, compact at 20 cmbs</td>
<td>10YR 6/4</td>
<td>Sand to silt and dense caliche at 30 cmbs</td>
<td>10YR 6/4</td>
<td>660044</td>
<td>3501331</td>
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<td>16</td>
<td>Sandy silt loam with dense caliche gravel at 10 cmbs</td>
<td>10YR 5/4</td>
<td>Sand to silt and dense caliche at 30 cmbs</td>
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<td>660543</td>
<td>3501441</td>
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<td>17</td>
<td>Compact sandy clay with scattered caliche gravel</td>
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<td>Sand to silt and dense caliche at 30 cmbs</td>
<td>10YR 6/4</td>
<td>661070</td>
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<td>Sandy silt with dense gravel</td>
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<td>Sand to silt and dense caliche at 30 cmbs</td>
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<td>19</td>
<td>Sandy clay compact at 20 cmbs mixed caliche throughout</td>
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<td>Sand to silt and dense caliche at 30 cmbs</td>
<td>10YR 6/4</td>
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<td>Sand to silt and dense caliche at 30 cmbs</td>
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<td>Sand to silt and dense caliche at 30 cmbs</td>
<td>10YR 6/4</td>
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<td>Sand to silt and dense caliche at 30 cmbs</td>
<td>10YR 6/4</td>
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