ARCHAEOLOGICAL INVESTIGATIONS OF THE PROPOSED HAUL ROAD AND BORROW PIT ON THE ESPADA TRACT IN SOUTHEAST BEXAR COUNTY, TEXAS

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Management Summary:

In September 2017, The TJX Companies Inc., (CLIENT) contracted Raba Kistner Environmental, Inc. (RKEI) to perform an intensive cultural resources survey of a proposed 1.4-mile haul road and 12-acre borrow pit located within the Espada Tract in southeast Bexar County, Texas. The CLIENT proposes to extract carbonate rich deposits from the borrow pit location at the southeast corner of the tract, and transport them for use as construction base for a warehouse facility at the western half of the tract. The project is located on privately owned land within the extraterritorial jurisdiction of the City of San Antonio and is subject to review under the City of San Antonio (COSA) Unified Development Code (UDC). Accordingly, investigations were designed to satisfy the requirements of the COSA UDC (Article VI 35-360 to 35-364). Additionally, as the proposed undertaking may require a permit from the U.S. Army Corps of Engineers, investigations were also designed to comply with Section 106 of the National Historic Preservation Act (16 United States Code 470) and its implementing regulations (36 Code of Federal Regulations 800).

The purpose of the investigations was to identify any surface-exposed or buried cultural deposits within the Area of Potential Effect (APE) and, if feasible, access their significance and eligibility for inclusion in the National Register of Historic Places (NHRP) and for formal designation as State Antiquities Landmarks (SAL). Investigations included an intensive pedestrian survey coupled with shovel testing along the proposed haul road, and the excavation of backhoe trenching within the proposed borrow pit location. Pedestrian survey and shovel testing was conducted on September 25 and 27, 2017, while the backhoe trenching was conducted on October 2, 2017. Antonio E. Padilla served as Principal Investigator and Project Archaeologist for the duration of the project, and completed field work with the assistance of Chris Matthews and Kristi Borzea. All work was conducted in accordance with the Archeological Survey Standards for Texas as set forth by the Council of Texas Archeologists (CTA) and the Texas Historical Commission (THC).

Examination of the THC’s Texas Archaeological Sites Atlas (Atlas), an online database, revealed that the Espada Tract had been the subject of four different survey investigations. Investigations were conducted from 2014 to present. During three of the investigations, seven archaeological sites (41BX269, 41BX1796, 41BX2143, 41BX2144, 41BX2145, 41BX2146, and 41BX2148) were recorded. Of the seven archaeological sites, two sites (41BX269 and 41BX2148) were mapped within the vicinity of the APE. Site 41BX269, also known as the Espada Acequia, is mapped approximately 30 feet north of the haul road and is eligible for listing on the NRHP. Site 41BX2148 is a lithic scatter located approximately 435 feet north of the haul road, and was determined ineligible for listing on the NRHP. RKEI revisited site 41BX269 due to its proximity to the APE.

The pedestrian survey consisted of a visual inspection of the ground surface within the APE. The survey was conducted in a single transect for the 50-foot-wide corridor along the proposed haul road, and over several transects within the 12-acre borrow pit area. Exposures along creek banks and drainages were also examined for cultural materials. Disturbances comprised of two tract roads, agricultural activities, and borrow pit activities were observed. Twenty-three shovel tests (AP01–AP11, CM01–CM10, and
KB01–KB02) were excavated along the proposed haul road, and six backhoe trenches (BHT01–BHT06) were excavated within the borrow pit area. Shovel testing along the proposed haul road revealed intact soils containing high clay content; however, no cultural materials were encountered on the surface or within the shovel tests. Excavation of the backhoe trenches revealed that the area had been heavily impacted by past gravel pit activities and has no potential for yielding buried, intact cultural materials.

**RKEI** revisited a portion of site 41BX269 mapped within close proximity to the APE. Previous surveys conducted in 2014 and 2016 recorded the southernmost alignment of the *Espada Acequia* with very different results. The two investigations resulted in discrepancies in the projected alignment. While conducting the pedestrian survey of the APE, RKEI examined the southernmost *acequia* alignment as currently mapped on the Atlas. No evidence of a channel or scar was observed. Further examination of topographic maps identify the projection as natural drainage. Furthermore, elevations along the projected alignment increase from 505 feet to 555 feet above mean sea level. Based on the field observations and the significant changes in elevation, the Atlas projection of the Espada Acequia is inaccurate and, therefore, not within the APE. Based on the investigations site 41BX269 will not be affected by the proposed undertaking.

Due to the lack of significant cultural materials or cultural features encountered, **RKEI** recommends no further archaeological work within the APE. However, should changes be made to the APE, further work may be required.
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Chapter 1: Introduction and Area of Potential Effects

Raba Kistner Environmental, Inc. (RKEI) was contracted by The TJX Companies, Inc., (CLIENT) to conduct archaeological investigations for the construction of a proposed haul road and expansion of an abandoned gravel pit within the Espada Tract, located in southeast San Antonio, Bexar County Texas (Figure 1-1). The anticipated project will quarry carbonate rich deposits from the borrow pit location at the southeast corner of the property and transport them along the proposed haul road for use as a construction base for a warehouse facility at the western end of the tract. The proposed project is located on private property within the extraterritorial jurisdiction of the City of San Antonio (COSA). As such, the proposed undertaking is subject to review under the COSA Unified Development Code (UDC), per the Historic Preservation and Design Section (Article VI 35-360 to 35-364).

Investigations consisted of an intensive pedestrian survey coupled with shovel testing along the proposed haul road, a visual inspection of the proposed borrow pit area, and the excavation of backhoe trenches within the proposed borrow pit location. Investigations were designed to comply with the COSA UDC, as well as Section 106 of the National Historic Preservation Act (16 United States Code 470) and its implementing regulations (36 Code of Federal Regulations 800), should a U.S. Army Corps of Engineers permit may be required. The purpose of investigations was to identify any surface-exposed or buried cultural deposits within the limits of the proposed undertaking and, if possible, assess their significance and eligibility for inclusion in the National Register of Historic Places (NHRP) and as a State Antiquities Landmarks (SAL). All work was conducted in accordance with the Archeological Survey Standards for Texas as set forth by the Council of Texas Archeologists (CTA) and the Texas Historical Commission (THC). The intensive pedestrian survey of the proposed haul road and visual inspection of the proposed borrow pit area was conducted on September 25 and 27, 2017, while backhoe trenching investigations were conducted on October 2, 2017. Antonio E. Padilla served as Principal Investigator and Project Archaeologist, conducting field work with the assistance of Archaeologists Chris Matthews and Kristi Borzea.

This report summarizes the results of field investigations, and provides recommendations regarding the proposed project. Following this introduction and project description, Chapters 2 and 3 provide a background on the projects setting, its culture history, and previous archaeological investigations that have taken place in the vicinity of the project area. Chapter 4 outlines the field and laboratory methods employed during the project, and the Chapter 5 summarizes the results of the field investigations. Chapter 6 provides a summary of the investigations and recommendations regarding the planned project.
Figure 1-1. Location of the Project Area.
Project Area Description and Area of Potential Effect (APE)

The project is located in southeast San Antonio, Bexar County, Texas, and is situated within in a dissected upland setting. The eastern portion of the Area of Potential Effects (APE) consists of a knoll/narrow ridge encompassed by low-lying areas that transitions into an upland setting as it continues west for the remainder of the APE. The proposed undertaking consists of a 12-foot wide, 1.4-mile-long haul road and a 12-acre expansion of an abandoned gravel pit. For planning purposes, the APE is 14.4 acres. The APE is located on the Southton, Texas (2998-132) U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map (Figure 1-2).

The proposed area of expansion for the abandoned borrow pit will extend to the north, east, and west, encompassing a total of 12 acres (Figure 1-3). The northern portion of the borrow pit is approximately 600 feet south of the San Antonio River. The 12-acre area is overgrown by tall grasses, scrub brush, and mesquite trees. The southern edge of the borrow pit is intersected by a two-track road with an off-shoot two-track road that extends north and dead ends at northern pit boundary.

The proposed haul road begins at northwestern edge of the borrow pit and extends west for approximately 915 feet before redirecting southwest and continuing for approximately 500 feet into a low-lying area comprised of an agricultural field and undeveloped rural land (see Figure 1-3). The proposed road then continues southwest into an upland setting for approximately 3,545 along the southern boundary of the Espada Tract. The road then gradually progresses to the northwest for approximately 2,430 feet before terminating in an area of development.

A review of aerial photography and topographic maps from 1938 to present depicts the APE as mix of agricultural fields and undeveloped rural land divided by fences. Some areas of the APE are scared with access roads, some of which are still present today (Figure 1-4). Aerial photography from 1953 to 1959 depicts the location of the borrow pit as a contoured agricultural area; however in 1966, activities changed to scraping (Figures 1-5 and 1-6). Scraping of the area continued until 1985 (Figure 1-7). Designation of the area as a gravel pit is no longer illustrated in a 2013 topographic map (Figure 1-8).
Figure 1-2. APE shown on the Southton, Texas (2998-132) U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map.
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Chapter 2: Environmental Setting

Project Area Setting
The project area is located in the south-central Texas geographic region within the Blackland Prairie ecoregion. The Blackland Prairie is an area of low topographic relief and poor drainage, prone to frequent flooding (Collins 1995). The Blackland Prairie physiographic region is characterized by gently undulating topography and is generally defined as grasslands punctuated by riparian bands along creeks, rivers, and other drainages. Creation of the Blackland Prairies occurred during the late Tertiary, with the erosions of soils on the Edwards Plateau. These soils were deposited by eolian and colluvial processes across an existing, eroded parent material of the Gulf Coastal Plain, creating a mix of deep Tertiary and Quaternary calcareous clay soils (Black 1989a).

Geology
The APE is underlain by two distinct geological features: the Midway Group, undivided (PAmi), and Terrace deposits (QT) (Barnes 1983). The Midway Group, undivided, is a Tertiary-age formation that underlies the floodplain area of the APE. The Tertiary-age Midway Group, undivided, has a thickness ranging from 500 to 650 feet and is composed of beds of clay, sand, and silt. Rock types within the formation are comprised of limestone and mudstone. Terrace deposits are Holocene-age deposits of sand, clay, silt, and gravels. Gravels in deposits are found in older, higher terraces. Along streams the deposits are indurated with calcium carbonate (Barnes 1983).

Soils
Review of the National Resources Conservation Service (NRCS) datasets identify four soil types within the APE: Branyon clay (HtA, HtB), Heiden Ferris complex (HoD3), Loire clay loams (Fr), and Hilly Gravelly Land (HgD) (Figure 2-1). Branyon clay and Heiden-Ferris complex soils are characterized as well drained, deep to very deep, clay to clay loams that range in depth ranging from 178 to 264 centimeters (cm) with a majority reaching 203 cm (NRCS 2017). These soils commonly occur within the dissected plains of the Blackland Prairie and are derived from clayey residuum mudstone or calcareous loamy clayey to clayey alluvium (NRCS 2017). Due to the high percentage of clay content present in these soils, they are referred to as ultra-clay. These soil types are subject to “extreme disruption through soil processes (pedoturbation)” (Collins 2004:108).

In addition to the Branyon and clay and Heiden-Ferris complex soils in the west, Loire clay loams and Hilly Gravelly Land soils are present in the eastern most portion of the APE. Loire clays are described as very deep, well drained soils that formed in loamy alluvial sediments along nearly level flood plains. Hilly Gravelly Land is characterized as knolls and narrow ridges that contain beds of caliche and very gravely loamy alluvium that extend to a depth from 10 to 20 feet. These formations are typically used as pits and quarries (Taylor et al. 1966).
Figure 2-1. Soils encountered within the project area and vicinity.
**Flora and Fauna**

The APE is located near the juncture of the Balconian and Taumaulipan biotic provinces (Blair 1950). Because the project is situated at the ecotone of two biotic provinces, its’ floral and faunal resources consist of a mix of the two. Trees, plants, and grasses in this region include cedar (*Juniperus ashei*), live oak (*Quercus fusiformis*), Texas mountain laurel (*Sophora secundiflora*), mesquite (*Prosopis glandulosa*), prickly pear (*Opuntia* sp.), agarita (*Berberis trifoliolata*), cat claw (*Smilax bona-nox*), mustang grape (*Vitis mustangensis*), sotol (*Dasylirion texanum*), and Spanish dagger (*Yucca* sp.).

The fauna that inhabit the south-central Texas region includes at least 95 bird and 29 mammal species. The area also contains a wide array of reptiles, fish, and amphibians. Mammal species that were noted within the APE include white-tailed deer (*Odocoileus virginianus*), nine-banded armadillo (*Dasypus novemcinctus*), Virginia opossum (*Didelphis virgininana*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), cottontail rabbit (*Sylvilagus audubonii*), feral hog, domestic and feral cat, and squirrel.

**South Texas Climate**

The climate in south-central Texas is humid subtropical with hot and humid summers. From May through September, hot weather dominates with the cool season beginning around the first of November and extending through March. Winters are typically short and mild with little precipitation. San Antonio averages only 33 inches of rain per year (Southern Regional Climate Center 2017; based on monthly averages from 1980 to 2010). Monthly temperature averages range between 52°F in January to 85°F in August.
Chapter 3: Culture Chronology and Previous Archaeology

Culture Chronology

The cultural history of South Central Texas spans approximately 11,500 years. Archaeologists have divided the occupation of the region into four principal periods and several sub-periods: Paleoindian, Archaic, Late Prehistoric, and Historic. The periods are characterized by changes in climatic conditions, distinct vegetation types and structures, and concomitant adaptive changes by human populations in hunting and gathering technologies and strategies, general material culture, and at the tail end of the cultural sequence, the arrival of non-indigenous populations. The standard summaries of the culture chronologies of Central Texas accepted by many of the regional archaeologists were produced by Collins (1995, 2004) and Prewitt (1981). Below is a brief summary of the cultural sequence that has been reconstructed by archaeologists for the south-central part of the state.

Paleoindian

The oldest cultural materials found in the region date to the Paleoindian Period. The period spans roughly from 11,500–8,800 BP (Collins 1995, 2004). The Aubrey site in Denton County has one of the earliest occupations, with radiocarbon assays dating to between 11,542 ± 11 BP and 11,590 ± 93 BP (Bousman et al. 2004:48). Paleoclimatic proxy measures suggest that a cooler climate with increased precipitation was predominant during the Late Pleistocene (Mauldin and Nickels 2001; Toomey et al. 1993), the later portion of the period.

Initial reconstructions of Paleoindian adaptations typically viewed these hunter-gatherers as traversing extreme distances in pursuit of now extinct mega-fauna such as mammoth and mastodon. While these Paleoindians populations did exploit the Late Pleistocene mega-fauna when it was accessible, a number of faunal assemblages from an increasingly larger number of sites indicate that the Paleoindian diet was more varied and consisted of a wide range of resources, including small game and plants. The Lewisville (Winkler 1982) and the Aubrey sites (Ferring 2001) produced faunal assemblages that represented a wide range of taxa, including large, medium, and small species. Information on the consumption of plant resources during the Paleoindian Period is lacking. Bousman et al. (2004) reported that the late Paleoindian component at the Wilson-Leonard site reflected the exploitation of riparian, forest, and grassland species. Analysis of Paleoindian skeletal remains indicates that the diets of the Paleoindian and later Archaic hunter-gatherers may have been similar (Bousman et al. 2004; Powell and Steele 1994).

The early portion of the Paleoindian Period was characterized by the appearance of Clovis and Folsom fluted projectile points that were used for hunting mega-fauna. Typical projectile points produced at sites with occupations dating to the later portion of the Paleoindian Period included the Plainview, Dalton, Angostura, Golandrina, Meserve, and Scottsbluff types. Meltzer and Bever (1995) have identified 406 Clovis sites in Texas. One of the earliest, 41RB1, yielded radiocarbon assays that put the maximum age for the Paleoindian component at 11,415 ± 125 BP (Bousman et al. 2004:47).
Sites in Bexar County that contain Paleoindian components include St. Mary’s Hall (Hester 1978, 1990), Pavo Real (Collins et al. 2003), the Richard Beene site (Thoms et al. 1996; Thoms and Mandel 2006) and 41BX1396 (Tomka 2012). St. Mary’s Hall, 41BX229, was first encountered in 1972 during the construction of a house just outside the school’s property. The Pavo Real site, 41BX52, is located along Leon Creek in northwest Bexar County. The site first was documented in 1970 and has been investigated several times over the past 40 years (Collins et al. 2003). The Richard Beene site, 41BX831, is located along the Medina River in southern Bexar County (Thoms et al. 1996). Site 41BX1396 is located in Brackenridge Park in San Antonio, Texas, and was encountered during installations for lighting in 2010. Dating of organic samples indicated that occupation at the site occurred as early as 10,490–10,230 BP.

**Archaic Period**

The Archaic Period dates between ca. 8,800 to 1,200 BP. It is divided into three sub-periods: Early, Middle, and Late. During the Archaic, mobility strategies may have shifted to more frequent short-distance movements that allowed the exploitation of seasonal resource patches. The intermittent presence of bison in parts of Texas, combined with changes in climatic conditions and the primary productivity of the plant resources may have contributed to shifts in subsistence strategies and associated technological repertoire. When bison was not present in the region, hunting strategies focused on medium to small game along with continued foraging for plant resources. When bison was available, hunter-gatherers targeted the larger-bodied prey on a regular basis.

**Early Archaic**

Collins (1995, 2004) suggests that the Early Archaic spans from 8,800 to 6,000 BP. Projectile point styles characteristic of the Early Archaic include Angostura, Early Split Stem, Martindale, and Uvalde (Collins 1995, 2004). The Early Archaic climate was drier than the Paleoindian Period and witnessed a return to grasslands (Bousman 1998). Mega-fauna of the Paleoindian Period could not survive the new climate and ecosystems, therefore eventually dying out. Early Archaic exploitation of medium to small fauna intensified.

The Wilson-Leonard excavation produced a wealth of cultural materials representative of a lengthy period in regional prehistory. The projectile point assemblages from the site indicate that the lanceolate Paleoindian point forms continue from the Paleoindian into the Early Archaic (Angostura). However, relatively quickly during the Early Archaic, they are replaced by corner- and basally-notched and shouldered forms (Early Triangular, Andice, Bell) that quickly become the dominant points tipping the atlatl-thrown darts. In addition, the uses of small to medium hearths similar to the previous period were noted. The appearance of earth ovens suggests another shift in subsistence strategies. The earth ovens encountered at the Wilson-Leonard site were used to cook wild hyacinth along with aquatic and terrestrial resources (Collins et al. 1998). Analyses of Early Archaic human remains encountered in Kerr County (Bement 1991) reveal diets low in carbohydrates in comparison to the Early Archaic populations found in the Lower Pecos region. Within Bexar County, the excavations at 41BX1396 revealed an Early Archaic component, radiocarbon dated to Cal BP 8390 to 8180 (Tomka 2012).
Middle Archaic

The Middle Archaic sub-period spans from 6,000 to 4,000 BP (Collins 1995; Weir 1976). Archaeological data indicates that there appeared to be a population increase during this time. Climate was gradually drying leading to the onset of a long drought period. Changes to the demographics and cultural characteristics were likely in response to the warmer and more arid conditions. Projectile point styles characteristic of this sub-period include Bell, Andice, Calf Creek, Taylor, Nolan, and Travis.

Subsistence during the Middle Archaic saw an increased reliance on nuts and other products of riverine environments (Black 1989b). The increase of burned rock middens during the Middle Archaic represented the increased focus on the use of plant resources (Black 1989b; Johnson and Goode 1994). Little is known about burial practices during the Middle Archaic. An excavation in an Uvalde County sinkhole (41UV4) contained 25–50 individuals (Johnson and Goode 1994:28).

Late Archaic

The Late Archaic spans from 4,000 to 1,200 BP (Collins 1995, 2004). It is represented by the Bulverde, Pedernales, Kinney, Lange, Marshall, Williams, Marcos, Montell, Castroville, Ensor, Frio, Fairland, and Darl projectile points. The early part of the Late Archaic exhibited fluctuations in the temperature and rainfall. There appears to have been an increase in population at this time (Nickels et al. 1998).

Some researchers believe that the use of burned rock middens decreased during the Late Archaic. Some research has challenged this notion (Black and Creel 1997; Mauldin et al. 2003). Johnson and Goode (1994) discuss the role of burned rock middens in relation to acorn processing.

Human remains from burials related to the Late Archaic in Central and South Texas suggest the region saw an increase in population. This increase may have prompted the establishment of territorial boundaries, which resulted in boundary disputes (Story 1985). Human remains dating to this sub-period have been encountered near the Edward’s Plateau.

Late Prehistoric

The Late Prehistoric Period begins ca. 1,200 BP (Collins 1995; Collins 2004), and appears to continue until the beginning of the Protohistoric Period (ca. A.D. 1700). The term Late Prehistoric is used in Central and South Texas to designate the time following the end of the Archaic Period. A series of traits characterizes the shift from the Archaic to the Late Prehistoric Period. The main technological changes were the shift to the bow and arrow and the introduction of pottery. The Late Prehistoric Period is divided into two phases: the Austin Phase and the Toyah Phase.

At the beginning of this period, environmental conditions were deemed to be warm and dry. Moister conditions appear after 1,000 BP (Mauldin and Nickels 2001). Subsistence practices appeared similar to the Late Archaic. Projectile points associated with the Austin Phase include the Scallorn and Edwards types. The Toyah Phase is characterized by the prominence of the Perdiz point (Collins 1995, 2004).

Most researchers concur that the early portion of the Late Prehistoric Period saw a decrease in population density (Black 1989b:32). Radiocarbon dates from some sites have indicated that the
middens were utilized during the Late Prehistoric. Some archaeologists feel the peak of midden use was after A.D. 1 and into the Late Prehistoric (Black and Creel 1997:273). Radiocarbon dates from Camp Bowie middens provide evidence that supports Black and Creel’s arguments that burned rock middens were a primarily Late Prehistoric occurrence (Mauldin et al. 2003).

Beginning rather abruptly at about 650 BP, a shift in technology occurred. This shift is characterized by the introduction of blade technology, the first ceramics in Central Texas (bone-tempered plainwares), the appearance of Perdiz arrow points, and alternately beveled bifaces (Black 1989b:32; Huebner 1991:346). Prewitt (1981) suggests this technology originated in north-central Texas. Patterson (1988), however, notes that the Perdiz point was first seen in southeast Texas by about 1350 BP, and was introduced to west Texas some 600 to 700 years later.

Early ceramics in Central Texas (ca. A.D. 1250 to 1300) are associated with the Toyah Phase of the Late Prehistoric and are referred to as Leon Plain ware. The Leon Plain ceramic types are undecorated, bone-tempered bowls, jars, and ollas with oxidized, burnished and floated exterior surfaces (Ricklis 1995). There is notable variation within the type (Black 1986; Johnson 1994; Kalter et al. 2005). This variation can be attributed to differences in manufacturing techniques and cultural affiliation. Analysis of residues on ceramic sherds suggests that vessels were used to process bison bone grease/fat, mesquite bean/bison bone grease, and deer/bison bone grease (Quigg et al. 1993).

The return of bison to South and Central Texas during the Late Prehistoric resulted from a drier climate in the plains located to the north of Texas and increased grasses in the Cross-Timbers and Post Oak Savannah in north-central Texas (Huebner 1991). The increased grasses in the two biotas formed the “bison corridor” along the eastern edge of the Edwards Plateau and into the South Texas Plain (Huebner 1991:354–355). Rockshelter sites, such as Scorpion Cave in Medina County (Highley et al. 1978) and Classen Rock Shelter in northern Bexar County (Fox and Fox 1967), have indicated a shift in settlement strategies (Skinner 1981). Burials dating to this period often reveal evidence on conflict (Black 1989b:32).

Historic Period

The beginnings of San Antonio came about with the establishment of Mission San Antonio de Valero in 1718. Fray Antonio de San Buenaventura y Olivares had briefly visited the site several years prior, and petitioned to set up a mission at the headwaters of the San Antonio River to act as a waypoint in the journey to East Texas. The Marques de Valero, Viceroy of New Spain, granted Olivares’ request and granted him permission (de la Teja 1995). Mission Valero occupied at least two locations before it settled into its current spot. The final location was in use by 1724.

Five days after Mission Valero was founded, Presidio de Béxar was established. The presidio was to house the Spanish soldiers who had come along with the expedition to found the Mission. Typically, the families that followed the soldiers lived just outside the presidio.

Two years later, in 1720, Mission San José y San Miguel de Aguayo was established on the opposite bank of the San Antonio River, and to the south of Mission Valero and Presidio San Antonio de Béxar. This
mission was established to help serve native groups that did not want to reside at Mission Valero because they were not on friendly terms with groups already living there. The original location of Mission San José was along the east bank of the San Antonio River, approximately three leagues from Mission Valero. The mission was then moved to the opposite bank sometime between 1724 and 1729, and relocated to its present site during the 1740s due to an epidemic (Scurlock et al. 1976:222).

In 1722, just two years after Mission San José was founded, Mission San Francisco Xavier de Nájera was established. The mission was to serve a group of 50 Ervipiami families that came from the Brazos River area. Ivey (1984:13) argued that the closure of the mission was due to the natives’ lack of interest in entering mission life.

Within the next few years, three other missions were established within the San Antonio area. The remaining three missions were established in San Antonio within weeks of each other in 1731. These three missions, Mission Nuestra Señora de la Purísima Concepción, Mission San Juan de Capistrano, and Mission San Francisco de la Espada, were originally missions established in east Texas. When each failed along the eastern border, they were moved to San Antonio.

In addition to the five missions, the civilian community outside of the mission and presidio, Villa San Fernando de Béxar was established by the Canary Islanders. Prior to the establishment of Villa San Fernando, Villa de Béxar had been settled by 30 presidial soldiers, seven of whom were married and brought their families. Archival research indicates that upon arrival, the Canary Islanders immediately took over the land surrounding the garrison. This land was used as pasture and was originally property of Mission Valero. There had been a lack of cleared agricultural land at the time, leading Captain Juan Antonio Pérez de Almazán to allow the Canary Islanders use of the property (de la Teja 1995). The initial plan was for additional Canary Island settlers to be sent to San Antonio after the first group was established. Due to high costs to the Spanish Crown, no more groups were brought to Texas. The Canary Islanders launched a formal complaint against Mission Valero. In 1731, the Canary Islanders established their own villa, named San Fernando de Béxar, with their own church. The arrival of the Isleños resulted in the first clearly defined civilian settlement in San Antonio.

**Mission San Francisco de la Espada**

Mission San Francisco de la Espada is the southernmost link in the chain of missions in San Antonio, Texas. The mission was established in 1731 along the west bank of the San Antonio River. Prior to its establishment in San Antonio, the mission had two prior locations and names. The mission was originally founded in 1690 by Fray Damian Massenet in east Texas and named San Francisco de los Tejas. The 1690 mission was the first Spanish mission in Texas established to convert the local Native American groups to Christianity and citizenship. Due to an epidemic, the mission was moved approximately 10 miles east where five additional missions were founded to deter the French’s advancement into Texas from Louisiana. In 1719 the Spanish were eventually pushed out of East Texas; however, they returned in 1721 and renamed the mission San Francisco de los Neches. After a 10 year occupation of San Francisco de los Neches, the 1721 mission was moved and reestablished along the west bank of the San Antonio River and renamed San Francisco de la Espada (Meissner 1998).
Espada Acequia

With the establishment of the San Antonio Missions, the Spanish constructed a system of *acequias* (irrigation ditches) utilizing local springs and the San Antonio River to supply water for the agricultural fields of the missions, personal use, and household purposes (Cox 2005; Porter 2009). This system allowed the Spanish to sustain the large population of the Native Americans, settlers, and soldiers that occupied the area. Of all the irrigation ditches constructed within the San Antonio River Valley, the Espada Acequia (also known as the Espada Ditch), along with the Espada Dam and the Espada Aqueduct are the only functional remnants of the *acequia* system that exists today (Cox 2005; Porter 2009).

Although the exact date of the construction of the Espada Acequia is unknown, it is believed to have been constructed between 1731 (when the mission was established) and 1745 when the Espada Aqueduct was completed (Long 2017). The Espada Acequia begins on the western bank of the San Antonio River, between Mission San José and Mission San Juan Capistrano, near the Espada Dam. The *acequia* traverses south-southeast for approximately 1.49 miles before crossing over Piedras (Six-Mile) Creek via the Espada Aqueduct (Cox 2005). The acequia continues along the San Antonio River floodplain, past Mission Espada, before reentering the river at approximately 4.35 miles downstream from its headwaters.

Archival and Historical Research of the APE

Historic documents, including maps, deed records, newspapers, and city directory listings, provide insight into the history of the property. Documents indicate that the Espada tract has been primarily used for agricultural and ranching purposes for much of its history. The earliest mentions of the tract are associated with Mission Espada. Documents indicate that mission lands were once bounded by Minita Creek, running eastward towards the river (Davis 2010). The tract’s legacy as agricultural fields for the missions is seen in the remnants of the Espada Ditch (41BX269) which remains on the property.

The mission lands, *acequia*, and Minita Creek are depicted on the 1887 Rullman Map of Bexar County (Figure 3-1). The Two other prominent features are seen on the map within the vicinity of the project area – the Corpus Christi and Laredo Roads. The *Camino Real de los Tejas*, or Royal Road, is a network of trails and routes that connected Spanish towns, missions, and trade centers (TxDOT Nd.). This network connected Spanish interests in east and coastal Texas to San Antonio, and south into Mexico. The Laredo Road most likely represents the segment of roadway that connected San Antonio to Laredo. Roadway running southeast from San Antonio ended at Goliad. Instead, the Corpus Christi Road may represent a stage coach line. In 1884, bimonthly service was offered between the two cities to meet the growing demand for inland access to the coast (Stever 2012).
Figure 3-1. Juan Manuel Urriega Survey (No. 32) on the Rullman (1887) Map of Bexar County.

The earliest documentation of the project area is found in deed records from the 1830’s. In 1837, Juan Manuel Urriega appointed José Antonio de La Garza as his assignee to act on his behalf in all matters regarding his “one league and one labor” (Bexar County Deed Records [BCDR] A1:81). As a citizen of Texas, Urriega was entitled to a “headright.” It is likely that he had a family, as he was asking for one league and one labor, or 4,605.5 acres of land. At this time, single men were entitled to one-third of a league, or 1,476.1 acres (Lang and Long 2016).

Urriega may have appointed Garza as his assignee due to Garza’s social status in San Antonio. Garza was born in San Antonio in 1776 and became a prominent member of San Antonio society. In 1824, he received two leagues of land under Mexican title, which when combined with his other holdings, made him owner of most of Bexar County (Figure 3-2). His holdings included an 1834 purchase of the ranchlands south of the project area that extend to the San Antonio and Medina Rivers, and Mission Espada (Orozco 2010).
In 1895, Edward Trueheart (also documented as Truehart) and C. K. Crawford established the Bexar Irrigation and Canal Company (Engineering News Publishing Co. 1895:62). Trueheart and Crawford were cousins and descendants of José Antonio de la Garza (Gibson 2009). Trueheart’s mother, Petra Margarita de la Garza, married James L. Trueheart. The couple inherited Mission Espada land. He subdivided the property to several farmers and constructed an irrigation canal to supply them with water (Copeland 2010).

Deed records indicate that Mary Gage slowly purchased parcels of land from the Urriega survey, eventually piecing together the southernmost portions of the APE, along with portions of the Sandoval grant [BCDR 54:100; 50:412; 57:611; 32:216] (Figure 3-3). Several of the grants reference Josefa Garza as the inheritor of the land from José de la Garza estate. This includes the first deeds between Mary Gage and A. L. Walton. In 1883 and again in 1887, deeds reference two tracts of land, former Mission Espada fields, that were purchased by Helen Walton from the estate of Josefa de la Garza (BCDR 50:412-413).
Figure 3-3. The Gage property (Walton Ranch) on the 1897 Rullman Map of Bexar County.

Gage’s neighbor to the north was Anton Ripps (see Figure 3-3). In 1888, Ripps purchased 160 acres from Margarita Trueheart. The deed records indicate that it was part of the Urriega Survey No. 32, and a portion of the Corpus Christi Road ran through the property (BCDR 35:533). By 1915, Ripps granted a 300-acre lease to Westervelt and Herring, and the newspaper listing referenced Corpus Christi Road and Walton Ranch (BCDR 471:218; San Antonio Express 1915:18).

In 1903, an easement was granted to the COSA to create a sewage ditch on the Espada Tract. The survey identified a 50-foot-wide by 832-foot-long corridor along the Corpus Christi Road to move sewage to Mitchell Lake. Gage added several stipulations in the record, including that the ditch had to be at least 5,000 feet away from residential buildings and could not impact water sources (BCDR 5:20).

Mary Gage and A. L. Walton were primarily cattle ranchers. The earliest mention of the Gage and Walton interests in cattle breeds was published in 1886. The book, History of the Devon Cattle Breed,
mentions that A. Y. Walton, of San Antonio, and Mrs. Mary W. Gage, of Memphis, TN, had purchased a Devon bull and five heifers from Mr. Henry Terrell for their ranch (Sinclair 1893:268).

In 1906 William Cassin paid a $10,000.00 down payment for several parcels of land owned by Mary Gage and her husband. The deed lays out the details of the payment plan, as well as descriptions of each parcel. The first parcel described in the document was 1,461.19 acres out of the “lower portion of land” from the Juan Manuel Urriejas [sic] survey. The deed states that the land was bequeathed to Josefa M. Garza as part of the José Antonio de la Garza estate (BCDR 246:110-114). William Cassin was an Irish immigrant to San Antonio. He married Charlotte Newton and moved onto the property. In 1907, he placed a dam on Minita Creek to create a source of water to irrigate his land. Cassin paid in full for the land by 1915 and a release was issued (BCDR 459:301-302). Both deeds referenced water rights connected to the Espada Ditch, San Antonio River, and the COSA sewer ditch (BCDR 459:302). In addition, newspaper records indicated that he continued ranching activities on the property. In January of 1911, Cassin ran advertisements for the sale of “70 heads” of “graded Jersey cattle.” Interested parties could find the cattle at “Walton Ranch, Fourth Mission, San Antonio, TX” (San Antonio Daily Express 1911:14).

**Previous Archaeology**

Examination of the THC’s Atlas, an online database, revealed four cultural resources surveys have been conducted within the Espada Tract, three of which intersect portions of the APE (Figure 3-4). No previously recorded archaeological sites, NRHP Properties, cemeteries, or other historic properties are located within the APE. A survey conducted in 1978 for the Environmental Protection Agency is located on the western end of the Espada Tract and intersects the APE along a north/south axis. A second survey was conducted in 2014 by the University of Texas at San Antonio, Center for Archaeological Research (UTSA-CAR) during the REDUS Espada Tract Survey. Although the exact boundaries of the survey are not depicted on the Atlas, it is presumed that the survey intersects portions of the APE. The third survey was conducted in 2016 by SWCA Environmental Consultants (SWCA), along the central portion of the Espada Tract, paralleling Minita Creek and the western bank of the San Antonio River. The current boundaries of the APE are not intersected by the SWCA survey. The fourth survey was conducted in 2017 by RKEI and consisted of the survey of 200 acres of the western portion of the Espada Tract. The APE terminates in the southern end of the 200 acres surveyed by RKEI.

During the surveys conducted by UTSA-CAR and SWCA, seven archaeological sites (41BX269, 41BX1796, 41BX2143, 41BX2144, 41BX2145, 41BX2146, and 41BX2148) were documented (see Figure 3-4). The previously documented archaeological sites include two irrigation ditches (41BX269 [Espada Acequia] and 41BX1796), a multicomponent site (41BX2145), two prehistoric sites (41BX2143 and 41BX2148), and two historic sites (41BX2144 and 41BX2146). One of the acequias (41BX269) and one of the archaeological sites (41BX2148) are in proximity to the APE. Neither of the two resources will be impacted by the proposed project.
Site 41BX269, the Espada Acequia, is located approximately 0.25 mile north of the APE (see Figure 3-4). The site was first recorded by Scurlock in 1975 during the Mission Parkway Survey Project. At the time of the initial investigations, the feature was recorded as a single location point near the Espada Dam (41BX280), approximately 2.75 miles north of the APE. Subsequent revisits to the area by the UTSA-CAR in 2014, J and L Consulting in 2016 and SWCA in 2016; and the review of historic topographic maps have identified the feature as continuing south-southeast from this location. The feature measures approximately 4.35 miles long, beginning near the Espada Dam and continues south along the San Antonio River floodplain passing Mission Espada and reentering the San Antonio River 0.25 mile east of the APE (THC 2017).

In 2015 the United Nations Educational, Scientific and Cultural Organization listed the San Antonio Missions as the 23rd World Heritage Site. The components of the designation included, but are not limited to the missions, and their associated irrigation system. As a result, the Espada Acequia is a contributing element of the San Antonio Missions designation as a World Heritage Site (National Park Services 2016).

The current depiction of the acequia on Atlas is shown as continuing south from the main channel, crossing Minita Creek, and ending approximately 30 feet north of the proposed haul road. The alignment was recorded in 2014 and 2016; however, there is discrepancy with its projections. RKEI revisited the projected alignment to field verify the appropriate acequia alignment.

Site 41BX2148 is a lithic scatter located approximately 435 feet north of the APE. The site was recorded in 2014 during the REDUS Espada Tract Survey and contained cultural materials that included debitage, burned rock, and two lithic tools. The site has been judge as not eligible for listing on the NRHP and will not be affected by the proposed activities.
Figure 3-4. Previously conducted archaeological investigations and recorded archaeological sites within 1 km of the APE.
Chapter 4: Methods of Investigation

Field Methods

RKEI utilized a combination of visual inspection, shovel testing, and backhoe trench excavations within the proposed haul road and borrow pit areas. Shovel tests were excavated along the proposed 1.4-mile haul road, and backhoe trenching was conducted in the borrow pit area. Shovel testing was employed to assess surface and shallowly buried archaeological deposits. Shovel tests were conducted in areas judged to have the highest probabilities for cultural deposits and/or when surface visibility was below 30 percent. Backhoe trenching was employed to assess deeply buried archaeological deposits that may be impacted by borrow pit activities. All work complied with THC and CTA survey standards for Texas for the overall project area.

The archaeological survey consisted of a 100-percent pedestrian survey of the entire project APE. The survey involved visual inspection of the ground surface and included the examination of cut bank exposures along creeks and drainages within the APE. Archaeologists surveyed the haul road along a single transect within a 50-foot-wide survey corridor, while survey of the 12-acre borrow pit consisted of several transects across the area. The survey along the haul road was accompanied by the excavation of 23 shovel tests at an interval of one every 100 meters (m).

All shovel tests were approximately 30 cm in diameter and, unless prevented by obstacles or buried features, extended to a depth of 60 cm below surface (cmbs). Each shovel test was excavated in 10-cm intervals. All soil from each level was screened through ¼ inch hardware cloth. Any collected artifacts were to be labeled with appropriate provenience information for laboratory processing and analysis. A shovel test form was completed for each excavated shovel test. Data collected from the shovel test included the final excavation depth, a tally of all materials encountered from each 10-cm level, and a brief soil description (i.e., texture, consistency, Munsell color, inclusions). The location was recorded using a Garmin, hand-held, GPS unit. Shovel test locations were sketched onto a current aerial photograph of the APE as a backup to the GPS information. Any additional observation considered pertinent was included as comments on the standard shovel test excavation form.

Within the borrow pit area, RKEI excavated a total of six backhoe trenches. The backhoe trenches were located in accessible areas within the 12-acre area encompassing the existing borrow pit. Backhoe trenches measured 6 m in length and were excavated to depths ranging from 1.80 to 3.30 m. Spoils from the backhoe trench were examined to access the presence or absence of cultural material. During the excavation of the trenches, trenching was temporally stopped at a depth of 1.4 m so an archaeologist could safely get in to examine the profiles and document what was observed within the trenches. During the inspection of the trenches, the walls were scraped down to better identify strata changes, features, and artifacts. Once the trench was documented, excavations continued to assess the potential for deeply buried cultural deposits.

Excavation of the trenches were conducted by an experienced backhoe operator and monitored by an experienced archaeologist. Excavations were performed in accordance with Occupational Safety and
Health Administration (29 CFR Part 1926) and the Texas Trench Safety Act (H. B. 1569). After each trench was examined and documented, the backhoe operator backfilled and compacted the area, returning it, as much as possible, to its original state.

**Laboratory Methods**

No cultural materials were collected during the course of the survey. Since no permit was required for the cultural investigations, all project related documentation (field notes, field forms, photographs, and field drawings) collected during the survey will be housed at the **RKEI** Archaeological Laboratory in San Antonio. Upon review and acceptance of the final report, **RKEI** will submit two copies to the City of San Antonio Office of Historic Preservation (COSA-OHP).
Chapter 5: Results of Investigations

In September and October of 2017, RKEI conducted an intensive cultural resources survey of a proposed 1.4-mile long haul road and 12-acre borrow pit. As a result of the investigations, 23 shovel tests were excavated along the haul road and six backhoe trenches were excavated within the proposed borrow pit location (Figure 5-1). No cultural materials were observed on the surface within the APE nor were any cultural materials encountered during the subsurface testing of the APE. RKEI archaeologists also conducted an examination of an extension of the Espada Acequia (41BX269) that is depicted within the vicinity of the APE. No evidence of the Espada Acequia was observed within the survey corridor of the haul road.

The APE is situated within a dissected upland setting comprised of a knoll/narrow ridge to the west and lowlands at the eastern end of the APE. Vegetation across the APE varied from densely vegetated areas to open agricultural fields open areas with scattered stands of trees with surface visibility ranging from 0 to 30 percent. The borrow pit area, located on the eastern end of the APE contained dense vegetation of mesquite, oak trees, tall and short grasses, and scrub brush (Figure 5-2). Along the haul road, vegetation varied, consisting of mesquite trees, short and tall grasses, and scrub brush at the base of the knoll/narrow ridge (Figure 5-3). As the haul road progressed west, vegetation consisted of short grasses across an open agricultural field and transitioned into a densely wooded area along the fence line (Figure 5-4 and Figure 5-5). Vegetation in the western portion of the APE consisted of scattered stands of mesquite trees and tall grasses (Figure 5-6).

Several types of disturbance were observed throughout the APE, composed of both natural and artificial impacts. Natural disturbances consisted of erosion due to weathering along drainage and stream cuts. Artificial disturbances consisted several two-track roads that intersect APE (Figure 5-7), a cultivated agricultural field, fence installation, and scarring from gravel pit activities (Figure 5-8). Other disturbances observed included cattle grazing that occurs on a majority of the open area of the property. No cultural materials were encountered during the pedestrian survey of the APE.
Figure 5-1. Results of the cultural resources investigations.
Figure 5-2. Overview of the borrow pit area; facing east.

Figure 5-3. Overview of the area surrounding the base of the knoll/ridge at the eastern portion of the APE; facing west.
Figure 5-4. Overview of the APE as it progresses west within an open agricultural field; facing east.

Figure 5-5. Overview of the heavily wooded area within the APE at the edge of the open agricultural field; facing east.
Figure 5-6. Overview of the western half of the APE; facing east.

Figure 5-7. Two-track within the APE; facing east.
Shovel Tests

RKEI excavated 23 shovel tests along a single transect within the 50-foot-wide, 1.4-mile-long haul road survey corridor (see Figure 5-1). Shovel tests were excavated at an interval of 100 m to a depth of 60 cm below surface. Soils encountered during shovel testing varied from east to west due to topographical changes along the alignment. Four shovel tests (AP01, AP02, CM01, and CM02) were excavated along the west side of the knoll/narrow ridge within the lowland area (see Figure 5-1). The average soil profile for these shovel test consisted of a light brownish-gray (10YR 6/2) silty loam intermixed with gravels in the upper 25 cm, underlain by a pale brown (10YR 6/3) silty clay loam. Soils became more compact with depth and contained calcium carbonate nodules.

As the survey continued westward, soils became more clayey. The remaining 19 shovel tests (AP03–AP11, CM03–CM10, and KB01–KB02) were excavated within Branyon clay soils that contained few gravels throughout (see Figure 5-1). Soil profiles of the majority of these shovel tests were primarily uniform in profile. A typical shovel test profile exhibited a single strata of compact to hard, very dark gray (10YR 3/1) clay loam that became very hard with depth. No cultural materials were encountered within the shovel tests or observed on the surface within the survey corridor.

41BX269 Revisit

Site 41BX269 was first recorded by Scurlock in 1975 during the Mission Parkway Survey Project; however, portions of the acequia have subsequently been revisited in 2014, twice in 2016, and again in 2017. During the 2016 investigations for the Espada Trail Project, Ann Scott mapped the southern portion of the Espada Acequia and its associated laterals within the Espada Tract. Mapping was
conducted utilizing the 1953 USGS topographic map and ground verification, and provided a comprehensive illustration of the irrigation system within the tract. Data gathered from Scotts 2016 investigation was utilized during the 2016 SWCA investigations for the proposed Espada Trail. As a result, SWCA and submitted the shapefiles produced by Scott (2016) that identified the acequia system alignments.

In May 2017, RKEI conducted a survey of the western 200-acres of the Espada Tract. During the background review of the property, RKEI determined that the alignment of 41BX269 had altered from the alignment submitted during the 2016 investigations. The change to the acequia alignment was due to the submittal of shapefiles produced by the 2014 REDUS Espada Tract survey (Figure 5-9). The 2014 investigations reflected an extension of the acequia as extending south from the main channel and continuing across Minita Creek rather than returning to the San Antonio River. A few laterals identified by Scott (2016) were also included as part of the acequia alignment. The results of the 2014 alignment submission projected the Espada Acequia as potentially intersecting the proposed haul road within the APE.

RKEI examined the area where the extension of site 41BX269 was projected to intersect the haul road (see Figure 5-1). The area is situated within an abandoned agricultural field in an upland area. Vegetation of the area was sparse and consisted of short grasses with a few mesquite trees (Figure 5-10). Disturbances observed within the area consist of erosion, plowing, and areas of wallowing (Figure 5-11). No remnants of the ditch were observed during field investigations (Figure 5-12).

Further examination of topographic maps show that the extension of the 2014 acequia projection is actually an erosional drainage of Minita Creek that begins at an elevation of 505 feet, and extends southward, increasing in elevation to 555 feet (Figure 5-15). Typically, acequias and laterals are used to transport water from areas of higher elevations to areas of lower elevations. Flow of water is dependent on the use of gravity. Depths of these irrigation canals do vary across the alignment to account for topographical changes; however, the variation in channel depths only range a few feet. Due to the dramatic increase in elevation (50 feet indifference) and lack of a visible channel during field investigations, RKEI determined that the 2014 acequia projection depicted on Atlas is not a lateral or extension of the Espada Acequia, but rather an erosional drainage. Based on this information, site 41BX269 will not be affected by the proposed activities. A revised shapefile omitting the projection will be submitted to Atlas will be submitted to the THC as a result of these investigations.
Figure 5-9. Mapped alignments of the *Espada Acequia* in 2014 and 2016.
Figure 5-10. Overview of the area of the extended portion of the *Espada Acequia*; facing east.

Figure 5-11. Disturbances observed in the location of the *Espada Acequia* extension; facing northwest.
Figure 5-12. Location where the extension of the Espada Acequia was recorded in 2014; facing north.

Backhoe Trenches

The lithology of the proposed borrow pit area is mapped as glauconitic sands, silts, and clays of the Eocene age Midway Group (Bureau of Economic Geology 1974). Soils imprinted on these sediments belong to the Heiden, Ferris, and Olmos series (NRCS 2017a). Heiden and Ferris soils typically form on calcareous mudstones. They are Vertisols with cambic horizons featuring slickensides and weak Stage I carbonate morphologies (NRCS 2017b). Densic materials comprised of noncemented calcareous mudstones generally occur between 102 and 178 cmbs in Ferris and Heiden soils. Olmos soils generally form on ancient loamy alluvium. They are shallow Mollisols with petrocalcic horizons. The three soils, which form in upland settings display features that indicate long term surface stability, thus the settings in which they form have little to no potential for yielding buried archaeological materials save for those that are fortuitously buried through pedoturbation.

Despite having little to no potential for buried cultural materials, RKEI excavated six backhoe trenches (BHTs 01–06) within the 12-acre borrow pit area. Five of the six trenches (BHTs 01–05) were placed along the western side of the abandoned gravel pit, while one trench (BHT06) was excavated on the eastern side of the pit. Elevations along the western portion of the gravel pit area ranged from 540 to 545 feet above mean sea level (amsl), while the northeastern portion was at an elevation of 530 feet amsl, and the southeastern portion was at an elevation of 525 amsl. Depths of excavation ranged from 130 to 340 cmbs and were dependent on compactness and degree of induration of the underlying sediments.
Table 5-1. Summary of the backhoe trench excavations.

<table>
<thead>
<tr>
<th>Backhoe Trench</th>
<th>Orientation</th>
<th>Maximum Depth</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>300°</td>
<td>180 cm</td>
<td>Recent colluvial mantle (0-35 cm) over weathered bedrock.</td>
</tr>
<tr>
<td>2</td>
<td>337°</td>
<td>190 cm</td>
<td>Recent colluvial mantle (0-55 cm) over weathered bedrock.</td>
</tr>
<tr>
<td>3</td>
<td>330°</td>
<td>190 cm</td>
<td>Recent colluvial mantle (0-24 cm) over weathered bedrock.</td>
</tr>
<tr>
<td>4</td>
<td>0°</td>
<td>130 cm</td>
<td>Recent colluvial mantle (0-34 cm) over weathered bedrock.</td>
</tr>
<tr>
<td>5</td>
<td>355°</td>
<td>135 cm</td>
<td>Recent colluvial mantle (0-23 cm) over weathered bedrock.</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>340 cm</td>
<td>Recent colluvium and artificial fill (0-169 cm) over late Quaternary alluvium (169-340+ cm).</td>
</tr>
</tbody>
</table>

Prior to its use as a gravel quarry pit, the 12-acre area was use for agricultural practices based on a review of late 1950’s aerial. The quarry operations began in the early 1960s based on aerials and USGS 7.5-minute topographic quadrangle maps from that decade. Both activities extensively modified the landscape in and around the 12-acre area under investigation. These activities were reflected in the trench profiles. In all six trenches, nearly all or at least the upper portion of the soil mantle, typically the Ap, A, Bk, and Bkss soil horizons of the Ferris, Heiden, and Olmos soils, had been removed either by mechanical quarry excavation or soil erosion spurred by past agricultural and quarrying activities.

The soil stratigraphy of the trenches generally consists of a 23–55 cm thick mantle of dark yellowish brown (10YR 4/4) to brown (10YR 5/3) silt loam that exhibits little pedogenic alteration (Figure 5-16). It often contains detritus or clasts consisting of small pieces of crushed shells and small carbonate gravels. These features, along with its abrupt to very abrupt contact with the underlying sediments, suggest this mantle is very recent in age and most likely colluvial in origin though a portion of it could also consist of materials deposited by mechanical means.

Below this recent mantle of sediments are deposits of bedrock weathered to varying degrees and depths and imprinted with an ancient truncated soil, typically the CBdk and Cdk horizons of the Ferris and Heiden soils and the Bkm or petrocalcic horizons of the Olmos soils. These soil horizons based on trench profile observations generally consist of very pale brown (10YR 7/3 to 7/4), light yellowish-brown (10YR 6/4), and white (10YR 8/1) silt loams and silts with Stage II and IV carbonate morphologies and/or weathered and fragmented calcareous mudstones.
The lone exception to this is the profile of Backhoe Trench 6, which appears to represent a series of very recent deposits, given some of the very abrupt boundaries between contrasting zones of sediments, overlying a late Quaternary alluvium (Figure 5-17). Like the other profiles, a 26-cm-thick mantle of dark yellowish-brown (10YR 4/4 and 3/6) and yellow (10YR 7/6) gravelly silt loam colluvium and slope alluvium caps the profile. The deposits below this mantle consist of very pale brown (10YR 7/4) and light gray (10YR 7/2) silty sediment and appear to represent ancient truncated soils with Stage II to IV carbonate morphologies. Upon closer inspection, these deposits contain horizontal bedding features and structures that suggest they are not truncated soils, but rather sediments and clasts deposited through surface flow, colluvial processes, and even mechanical means. The base of these deposits at 116 cmbs is very abrupt and the nature of the underlying sediments are in sharp contrast to those above and below. Here, at 116–147 cmbs is a dark yellowish brown (10YR 3/4) silt loam with an estimated 5 percent gravel content. The gravels are poorly-sorted and angular to subangular. Another very abrupt boundary defines the base of this deposit at 147 cmbs under which is a light gray (10YR 7/2) silt loam with a 5 percent gravel content. Below this deposit, at 169–340+ cmbs, is a yellowish brown (10YR 5/6) silt loam. The base of this deposit was not encountered, but given its top elevation ca. 5 m above the floodplain of the San Antonio River to the east and ca. 7 m below the upland surface to the west, it is likely that this basal deposit represents a late Quaternary alluvial terrace wedged up against the valley wall.

In BHT06, the surface of this alluvial terrace was buried by a series of poorly-sorted deposits that appear to have been mechanically laid down based on the very abrupt boundaries at 116, 147, and 169 cmbs. These fill materials were possibly laid down for a road or they are somehow related to the 1960s gravel
pit operation. These fill materials were subsequently buried by calcareous sediments and clasts, materials most likely shed from the valley wall and adjacent upland surface, possibly entrained by the activities at the nearby gravel pit.

Figure 5-14. West profile of backhoe trench 6; facing west.

Overall, the backhoe trench excavations encountered weather bedrock mantled by recent colluvial deposits and slope alluvium in BHTs 01–05. None of these deposits have any potential for yielding buried and intact archeological materials given their age and gravelly nature. The profile of BHT06, east and downslope of the abandoned gravel pit revealed a different history. It consisted of a terrace of late Quaternary alluvium buried by artificial fill materials and recent colluvium and slope alluvium. Like the deposits encountered in the other trenches, BHT06 has no potential for yielding buried and intact prehistoric archeological materials save for the small chance that artifacts were present on the alluvial terrace prior to burial. The absence of artifacts at the contact between the alluvium and fill materials, however, suggests that this is not the case.
Chapter 6: Summary and Recommendations

The cultural resources investigations of the proposed 1.4-mile haul road and 12-acre borrow pit was conducted over the course of three days in September and October of 2017. Investigations included a pedestrian survey accompanied with shovel testing within a 50-foot-wide survey corridor along the proposed haul road, and backhoe trenching within the proposed borrow pit area of the APE. A background review of the project area revealed the Espada Tract has been intersected by four previously conducted cultural resources investigations. During three of the previously conducted investigations, seven archaeological sites were recorded within the Espada Tract. Of the seven sites recorded, two (41BX269 and 41BX2148) are located in the vicinity (within 500 feet) of the APE.

The background literature review also identified two archaeological sites within the vicinity (within 500 feet) to the APE: the Espada Ditch (41BX269) mapped approximately 30 feet north of the APE; and a lithic scatter (41BX2148) mapped approximately 435 feet north of the APE. Site 41BX2148 was located well outside the APE and will not be impacted by the proposed activities and was not revisited during investigations. Investigations did revisit site 41BX269 due to its proximity to the APE and projection discrepancies identified during the background literature review.

These disturbances observed within the APE during investigations consisted of two tract roads, agricultural activities, and borrow pit activities. RKIE excavated 23 shovel test along the proposed haul road and six backhoe trenches within the location of the proposed borrow pit. Shovel testing along the haul road revealed intact soils containing high clay content; however, no cultural materials were encountered on the surface or within the shovel tests. Excavation of the backhoe trenches within the borrow pit area revealed that the area had been heavily impacted by past gravel pit activities and has no potential for yielding buried and intact prehistoric archeological materials.

RKIE reexamined the portion of the Espada Acequia documented in 2014, adjacent to the APE. Investigations of the alignment consisted of walking along the projected area and an examination of topographic maps. No evidence of a channel was observed within the upland setting. The extension of the acequia is shown as a drainage on topographical maps with an elevation of 505 feet amsl near Minita Creek, progressing southward to an elevation to 555 feet amsl. Due to the lack of a channel and the dramatic change in elevation, the portion of the acequia extension is inaccurate, and therefore site 41BX269 will not be affected by the proposed undertaking.

Based on the investigations, RKIE has made a good faith effort in identifying cultural resources within the APE. Based on the results of the investigations, RKIE does not recommend any further archaeological investigations within the APE. However, should changes be made to the project APE, further work may be required.
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