Volume 2014 Article 84

2014

Final Report On The Archeological Investigations Of The Jacob's Well Natural Area Hays County, Texas

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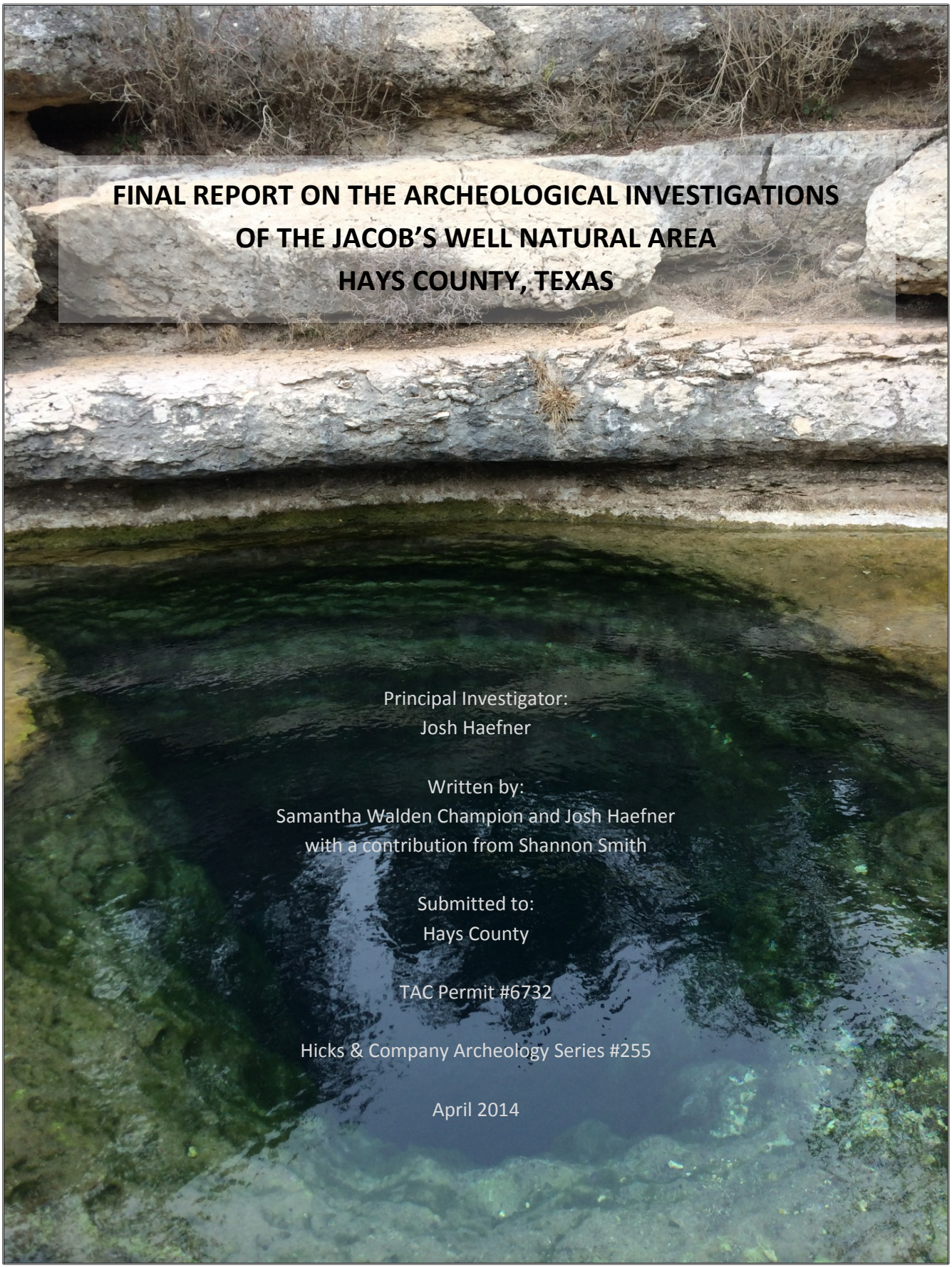

FINAL REPORT ON THE ARCHEOLOGICAL INVESTIGATIONS OF THE JACOB'S WELL NATURAL AREA HAYS COUNTY, TEXAS

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Submitted to:
Hays County

TAC Permit #6732

Hicks & Company Archeology Series #255

April 2014

ABSTRACT

In January 2014, Hicks & Company completed an intensive areal survey of the Jacob's Well Natural Area in Wimberley, Hays County, Texas. The survey was completed for Hays County under Texas Antiquities Permit #6732 in preparation for redevelopment of the 81.5-acre area as detailed in the *Jacob's Well Development Master Plan* finalized in July 2012. The improvements will be constructed on land that is owned and controlled by Hays County, a political subdivision of the State of Texas, and is therefore subject to the requirements of the Antiquities Code of Texas. Furthermore, since the proposed project is funded through an Outdoor Recreation Grant by the Texas Parks and Wildlife Department Recreation Grants Branch, and utilizing the federal Land and Water Conservation Fund, the project is also subject to Section 106 of the National Historic Preservation Act of 1966, as amended. Construction is anticipated to include a new visitor center, trails, interpretive areas, and other associated infrastructure throughout the site. The archeological investigations consisted of pedestrian survey supplemented by shovel testing (*n* = 79). No previously unrecorded archeological sites were encountered during the survey; however, archeologists revisited Site 41HY25 just south of Jacob's Well, originally recorded in 1963 as a site comprised of three burned rock middens. No clear indication of the three burned rock middens originally recorded was observed, and no artifacts or additional features were recorded during the current investigations. Regarding its boundaries within the survey area, the research value of Site 41HY25 is considered to be exhausted, and any of its components within the Jacobs Well Natural Area are considered ineligible for listing as a State Antiquities Landmark or for listing on the National Register of Historic Places. The remainder of the project area contained three intermittent trash scatters, most of which contained glass bottles, rusted metal car parts, and other discarded items. One of these scatters covered an approximately 30-meter by 40-meter area and contained modern (likely post-1980) discarded materials such as doors, windows, fencing, and a concrete sculpture within the prairie west of Camp Jacob. Two isolated finds, a broken biface and a primary flake, were noted on the surface of the uplands in the northern portion of the project area. Shovel testing and surface inspection surrounding these artifacts indicated that the area was devoid of additional artifacts or features. Hicks & Company recommends that the proposed project be allowed to proceed with no further cultural resource coordination. The survey followed a no-collection policy, and all artifacts were returned to their find location in the field. All project-related notes, forms, and photographs will be permanently curated at the Texas Archeological Research Laboratory in Austin, Texas.

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Appendix A Plates 1–3: Survey Results

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INTRODUCTION AND EXECUTIVE SUMMARY

On January 27 and 29, 2014, archeologists from Hicks & Company conducted a 100-percent intensive areal survey of the Jacob's Well Natural Area in Hays County, Texas. The proposed project consists of construction of a visitor center, trails, and associated infrastructure within the 81.5-acre area (see **Figure 1**), all of which is detailed in the *Jacob's Well Development Master Plan* finalized in July 2012 (RVi Planning et al.). The proposed project will be constructed on land that is owned and controlled by Hays County, a political subdivision of the State of Texas, and is therefore subject to the requirements of the Antiquities Code of Texas (ACT). Furthermore, the proposed project is funded through an Outdoor Recreation Grant by the Texas Parks and Wildlife Department (TPWD) Recreation Grants Branch, and utilizing the federal Land and Water Conservation Fund, and is therefore also subject to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended.

The intensive pedestrian survey took approximately 45 person-hours to complete and was supplemented by shovel testing (n = 79) in areas that did not exhibit exposed bedrock at the ground surface. During survey, a total of three trash scatters were recorded, one of which was dated to the mid-1990s, one that was determined to be modern (likely post-1980), and one that did not include any datable materials. Two isolated finds were also observed on the ground surface in the northern uplands portion of the project area and included a broken biface and one flake. No new archeological sites were recorded during the survey; however, archeologists revisited Site 41HY25, a burned rock midden site recorded in 1963 just south of Jacob's Well. Shovel testing in this area was negative for cultural materials, and the three burned rock middens originally recorded were not fully distinguishable from the rest of the surrounding area, likely due to extensive park use, utility and fence installation, and erosion over time. This survey followed a no-collection policy, and all artifacts were returned to their find location in the field.

Report production immediately followed the conclusion of fieldwork. Josh Haefner served as the Principal Investigator for the project, and Samantha Champion served as Project Archeologist. The Crew Chief for the survey was Shannon Smith. Samantha Champion, Josh Haefner, and Shannon Smith authored the report. Subsequent sections of this report include a project background, discussion of the environmental setting, cultural background, brief discussion of previous surveys and recorded sites, description of field methodology, and discussion of the results of field investigations. The report concludes with formal regulatory recommendations.

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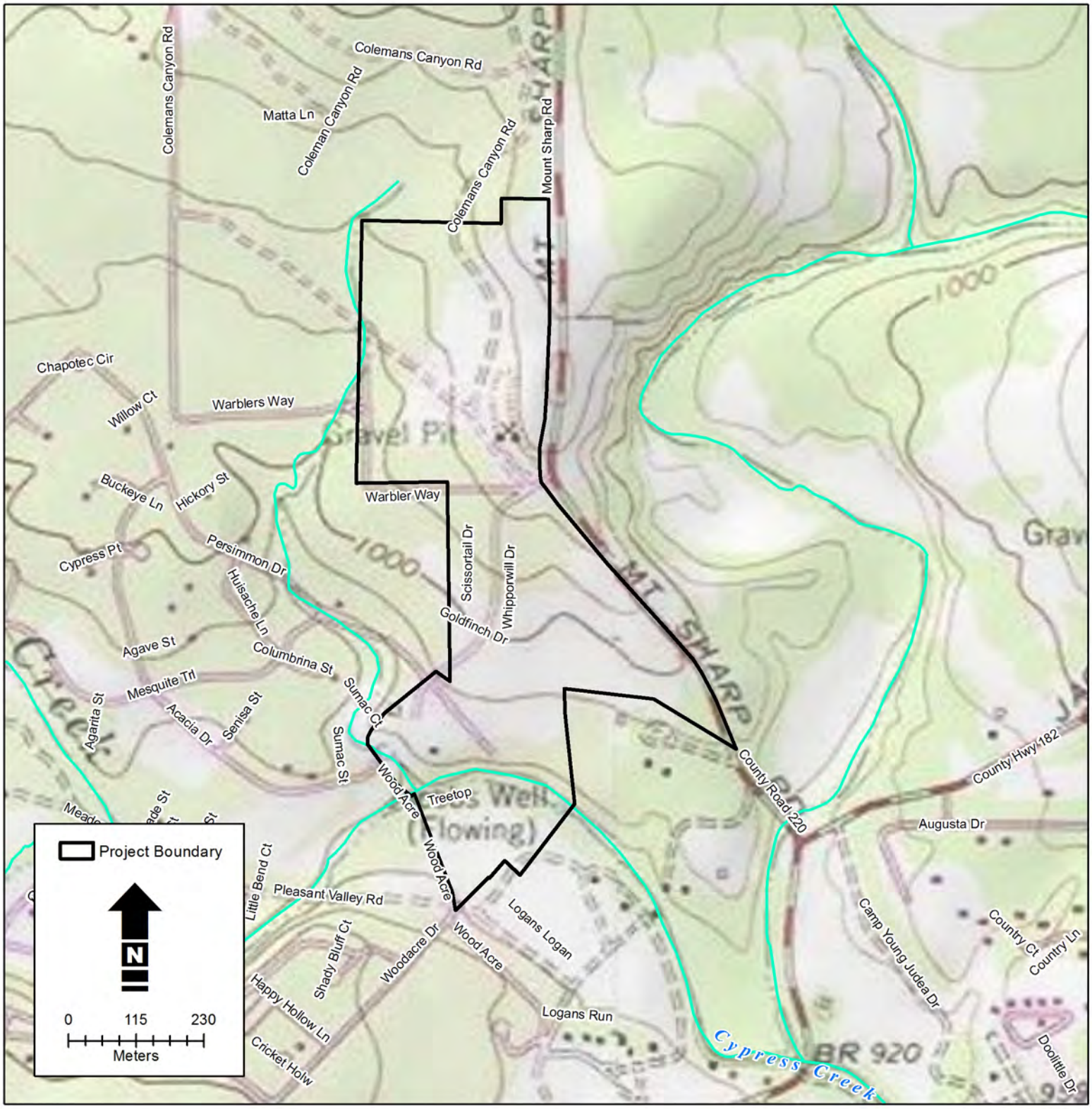

Figure 1
Project Location - Topographic

USGS 7.5-minute Topographic Quadrangles:
Rough Hollow and Driftwood, Tx

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PROJECT AREA BACKGROUND AND DEVELOPMENT

The Jacob's Well Natural Area is located north-northwest of the communities of Wimberley and Woodcreek. This 81.5-acre area includes Jacob's Well, an artesian spring with an extensive underground cave system linked to the Trinity Aquifer (see **Figure 2**). The Jacob's Well Natural Area was previously utilized as a mobile home community south of Warblers Way and a recreational vehicle (RV) campground on the uplands north of Cypress Creek near Camp Jacob. South of Cypress Creek, the area was utilized as a tennis and swimming center with office spaces on the open grassy area south of the creek. Construction in these areas occurred primarily during the 1970s. Restoration of the site to a more natural environment began when the Wimberley Valley Watershed Association (WVWA) initially obtained the property in the 1990s, and restoration has continued through the transition to Hays County ownership. Partial removal of concrete RV parking pads and demolition of the outdoor pool and sports courts has occurred, and land restoration is expected to continue. Structures remaining at the site include the former RV park office/recreation center, which is now used for site administration and educational activities (referred to as the Camp Jacob Environmental Education Center), and a small covered patio area adjacent to this structure (see **Figure 3**). The tennis and swimming center has been demolished. Near this structure was a small, privately owned condominium structure with eight units. This structure, along with an adjacent tennis court, has also been removed. Portions of the project area are encumbered by restrictions associated with two conservation easements. Development in these areas is restricted based on use. These restrictions were observed and adhered to during the development of the *Jacob's Well Development Master Plan*.

Figure 2: Jacob's Well cave system within Cypress Creek.

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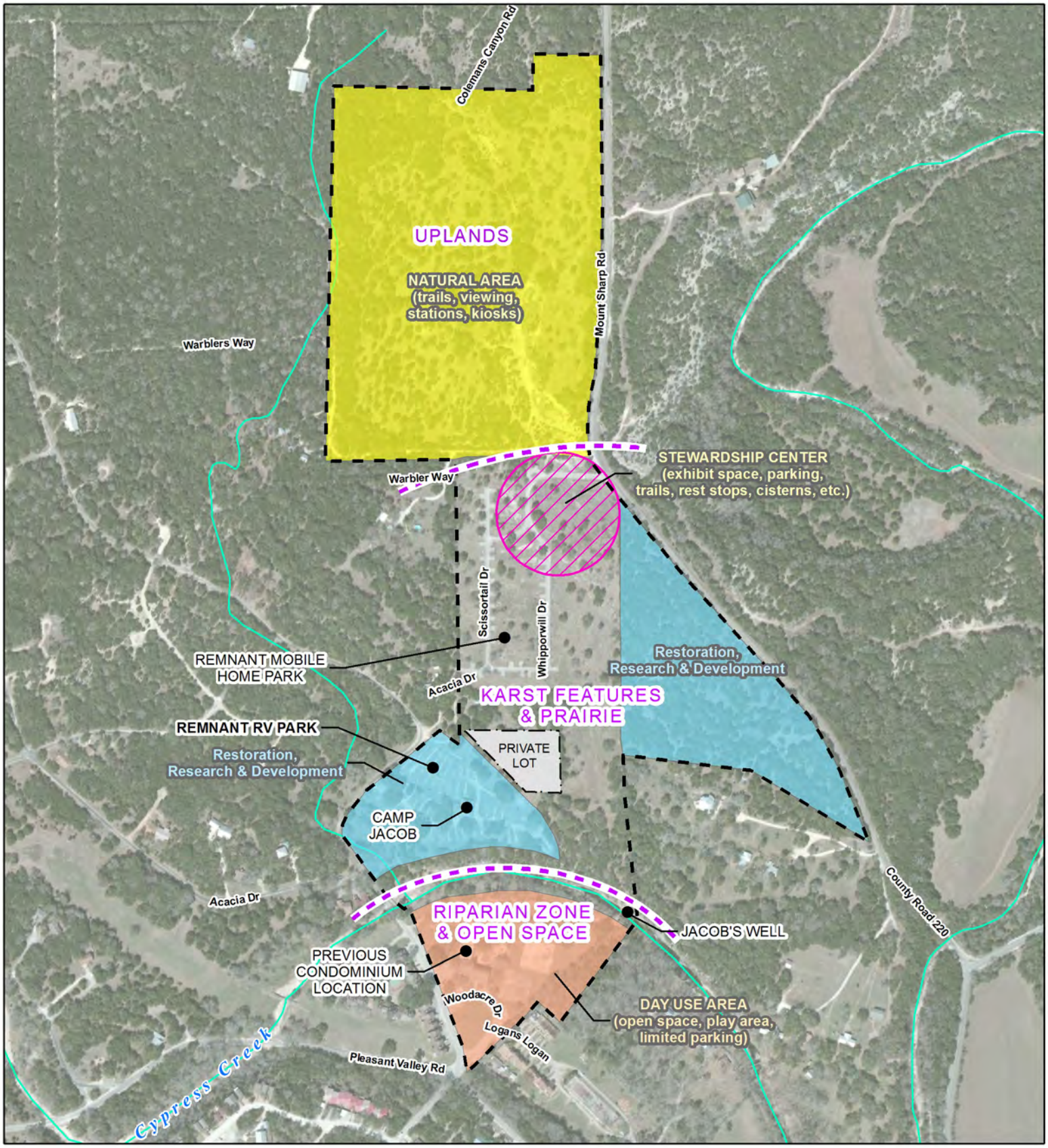

Figure 3

Project Area & Planned Improvements
Jacob's Well Archeological Survey

Key to Features

- Existing Disturbances or Features
- Riparian Zone
- Project Boundary

Planned Uses & Associated Improvements

- Day Use Area
- Natural Area
- Restoration, Research & Development Areas
- Stewardship Center

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Proposed Improvements

Improvements to the Jacob's Well Natural Area will be conducted within three areas as described in the *Jacob's Well Development Master Plan* (RVi Planning Associates 2012): the uplands portion of the park, which is relatively undisturbed; the karst features and prairies north of the Cypress Creek bluff, which includes remnants of two mobile home/RV communities; and a riparian zone with open space inside the floodplain south of Cypress Creek, which includes existing structures (including remnants of a condominium complex) and park infrastructure (see **Figure 3**). The majority of impacts associated with planned construction throughout the Jacob's Well Natural Area will not exceed a depth of 30 centimeters below the current ground surface (cmbs), with the exception of a planned stewardship center and cisterns.

Uplands

The uplands portion of the Jacob's Well Natural Area is the least disturbed portion of the project area (see **Figure 4**). Existing disturbances in this area include access roads on the south side of the uplands, along with activity associated with a gravel pit located in the southeastern corner of this area (see **Figure 5**).

Anticipated ground-disturbing activities in the uplands portion of the project area will include construction of bird blinds with interpretive signage, a viewing platform, mulch trail construction, and fencing. While the exact depths of impacts are not known at this time, it is anticipated that disturbance will not exceed 30 centimeters (cm).

Karst Features and Prairies North of Cypress Creek

The prairies north of Cypress Creek were previously occupied by a mobile home community and RV park with associated infrastructure, including paved and gravel roadways (see **Figure 6**). This area has also undergone extensive disturbance due to overhead and underground utility installation and building and parking lot construction, including within the Camp Jacob area. Overgrown vegetation is also intermittently dispersed throughout this portion of the project area, particularly within the eastern portion of the prairies.

This portion of the project area will include construction of decomposed granite trails, a 3,400-square-foot stewardship center, picnic areas, gardens, cisterns, and improved parking. The exact depths of impacts are not known at this time, though it is anticipated that the majority of construction will not exceed a depth of impacts beyond 30 cm. The only elements of construction that are anticipated to exceed this depth are the stewardship center and cisterns; however, these components are planned within areas that have previously undergone extensive disturbance (see **Figure 7**).

Figure 4: Uplands in the northern portion of the property, facing southeast.

Figure 5: Gravel pit in the southeastern portion of the uplands area, facing west

Figure 6: Demolished paved roadways and mobile home pads with construction equipment in background, facing south.

Figure 7: Mobile home pads and gravel roads just south of Camp Jacob on bluff above Cypress Creek, facing west.

Riparian Zone with Open Space

The riparian zone and open space, located within the floodplain of Cypress Creek (see **Figure 8**), has been extensively modified by the construction of a tennis and swimming area, a condominium complex, trails, parking lots, and associated roadways (see **Figure 9**). The riparian zone in this area is paralleled by an existing dirt road and underground utilities.

Construction within this riparian zone and open space will consist of open play fields, a cedar post and wire cattle fence, and decomposed granite trails. Development will be limited within this area, particularly on the eastern edge of the property where Jacob's Well is located. Depths of impacts in this area are not expected to exceed 30 cm.

Figure 8: Cypress Creek facing east, with bluff to left and riparian zone and open space to right.

Figure 9: Emergency access road and granite trail in open space south of Cypress Creek at original condominium location, facing south.

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ENVIRONMENTAL SETTING

Geology

The underlying geology of the proposed project area has been mapped as Glen Rose Limestone (Kgr) dating to the Lower Cretaceous period and quaternary alluvium (Qal) (see **Figure 10**). According to the Geological Atlas of Texas (GAT) Llano Sheet (1981), the Glen Rose Limestone formation is comprised of limestone, dolomite, and marl in alternating resistant and recessive beds which form a stairstep topography. This formation is divided into the Upper and Lower Glen Rose Limestone, the latter of which underlies the majority of project area. This portion of the formation is approximately 160 feet (49 meters) thick. This geologic formation predates the arrival of humans in the Americas; therefore, cultural deposits in the areas mapped as the Glen Rose Limestone formation would likely be close to the surface in overlying soils or on the surface itself. The far southern portion of the project area along Cypress Creek contains quaternary alluvium frequently found along streams. This alluvium contains sand, silt, clay, and gravel and occurs in varying thicknesses.

Pedology

Soil series in the project area (in descending order based on prominence in the area) include: Comfort-Rock outcrop complex, 1 to 8 percent slopes; Brackett-Rock outcrop-Comfort complex, 1 to 8 percent slopes; Anhalt clay, 1 to 3 percent slopes; Orif soils, 0 to 1 percent slopes, frequently flooded; and Gruene clay, 1 to 5 percent slopes. The Comfort-Rock outcrop complex, which encompasses the majority of the project area, consists of shallow, clayey soils and rock outcrop on side slopes, hilltops, and ridgetops on uplands. Comfort soils make up 70 percent of this complex and typically exhibit well drained, extremely stony clay residuum weathered from limestone to approximately 13 inches (33 cm), with bedrock occurring at approximately 13 inches (33 cm). Rock outcrop makes up 15 percent of this complex, with minor components comprising the remaining 15 percent. The Brackett-Rock outcrop-Comfort complex consists of 50 percent Brackett and similar soils, 20 percent rock outcrop, 15 percent Comfort and similar soils (described above), and 15 percent minor components. The Brackett soils in this complex typically occur on ridges and exhibit well drained, gravelly clay loam residuum weathered from limestone to approximately 17 inches (43 cm), with paralithic bedrock occurring at approximately 17 inches (43 cm). Anhalt clay occurs on plains within the southern portion of the project area and consists of clay residuum weathered from limestone to approximately 23 to 32 inches (58 to 81 cm, with paralithic bedrock occurring between 32 and 35 inches (81 and 89 inches). Orif soils, occurring in the project area within the floodplain of Cypress Creek, consists of gravelly loamy sand to 20 inches, extremely gravelly sand to 40 inches (102 cm), and course sand to 80 inches (203 cm). Finally, Gruene clay, which occurs on ridges in the southern and western portion of the project area, is made up of clay derived from Pleistocene-aged clayey alluvium and gravelly alluvium to approximately 13 inches (33 cm), with cemented materials occurring at approximately 13 to 22 inches (33 to 56 cm). At approximately 22 inches (56 cm), a stratified very gravelly loam occurs. Within these Gruene clay soils, a petrocalcic horizon occurs at approximately 7 to 16 inches (18 to 41 cm).

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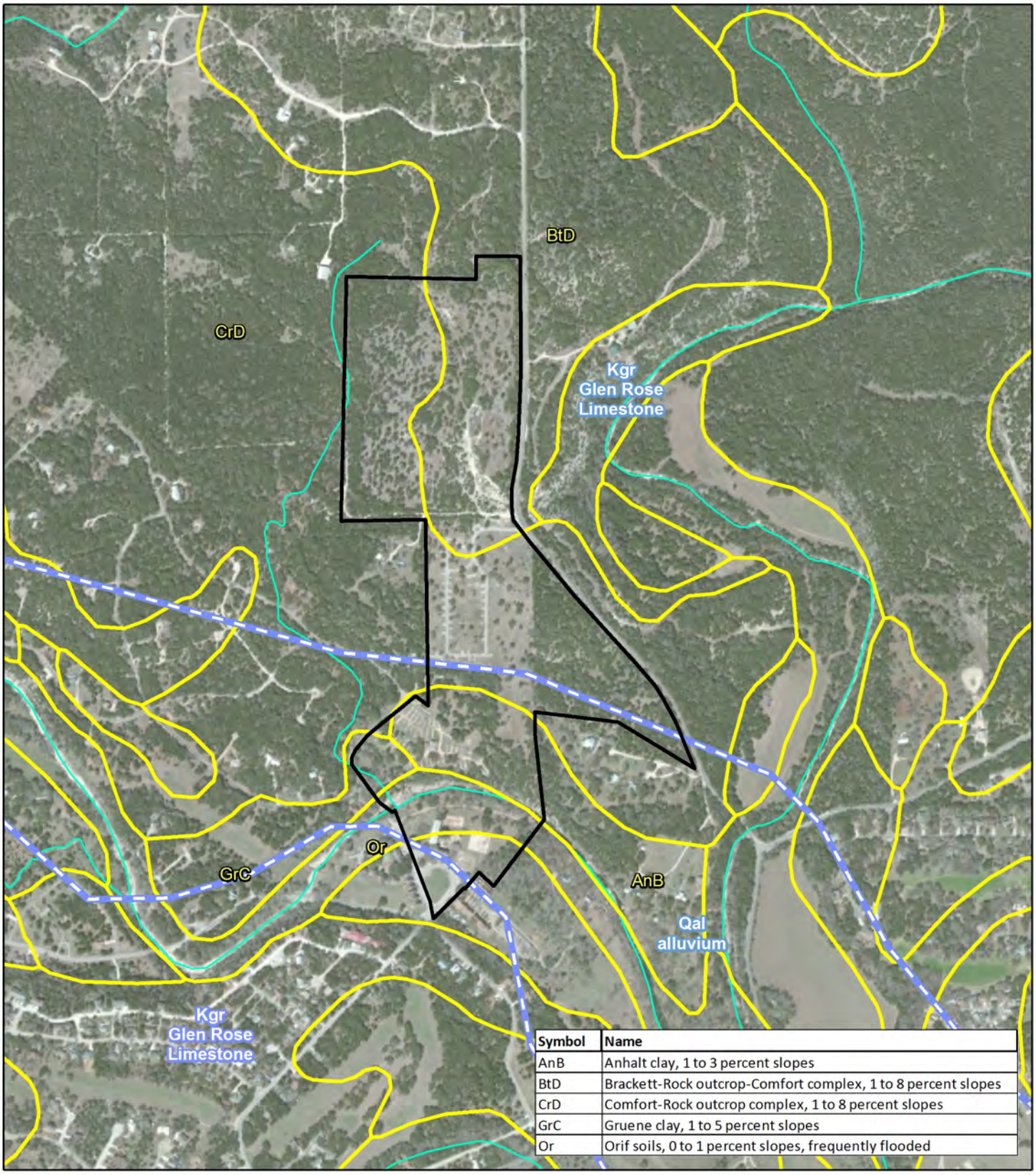

Symbol	Name
AnB	Anhalt clay, 1 to 3 percent slopes
BtD	Brackett-Rock outcrop-Comfort complex, 1 to 8 percent slopes
CrD	Comfort-Rock outcrop complex, 1 to 8 percent slopes
GrC	Gruene clay, 1 to 5 percent slopes
Or	Orif soils, 0 to 1 percent slopes, frequently flooded

N

0 125 250

Meters

1 inch = 250 meters

Figure 10
Project Area Soils & Geology

Jacob's Well Archeological Survey

USGS 7.5-minute Topographic Quadrangles:
Rough Hollow and Driftwood, Tx

Key to Features

- Project Boundary
- Geologic Types
- Soil Types

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Flora and Fauna

The project area is located within the Edwards Plateau Ecological Region of Texas just west of its interface with the Blackland Prairies. The Edwards Plateau Ecological Region is an uplifted and elevated region now categorized as brushland after continual overgrazing that encompasses nearly 24 million acres throughout Central Texas (Gould et al. 1960).

According to the Vegetation Types of Texas (McMahan et al. 1984), vegetation expected to occur in the project area and surrounding region includes Live Oak-Ashe Juniper Parks and Live Oak-Ashe Juniper Woods. Commonly associated species in this area include Texas oak (*Quercus texana*), plateau live oak (*Q. fusiformis*), shin oak (*Q, sinuata* var. *breviloba*), Ashe juniper (*Juniperus ashei*), cedar elm (*Ulmus crassifolia*), cedar sedge (*Carex planostachys*), Texas wintergrass (*Nassella leucotricha*), little bluestem (*Schizachyrium scoparium*), curly mesquite (*Hilaria belangeri*), and Texas grama (*Bouteloua rigidiseta*).

A high diversity of fish and wildlife is known to exist in Central Texas and Hays County. According to county records maintained by Texas A&M University (2009), amphibians and reptiles are represented by five species of salamanders, 21 species of frogs and toads, eight species of turtles, 11 different kinds of skinks and lizards, 27 different snakes and the American alligator. Texas Tech University (2008) has documented at least 60 species of mammals in this region, while 471 bird species have been documented within the oaks and prairies region that includes Hays County (TPWD 2012).

Commonly occurring mammal species that would be expected in the project area include but are not limited to: coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), Virginia opossum (*Didelphis virginiana*), fox squirrel (*Sciurus niger*), hispid cotton rat (*Sigmodon hispidus*), eastern cottontail (*Sylvilagus floridanus*), and raccoon (*Procyon lotor*). Common reptile species include the green anole (*Anolis carolinensis*), Mediterranean gecko (*Hemidactylus turcicus*), collared lizard (*Crotaphytus collaris*), checkered garter snake (*Thamnophis marcianus*), and water snakes (*Nerodia* spp.). Frequently encountered bird species would include northern mockingbird (*Mimus polyglottos*), northern cardinal (*Cardinalis cardinalis*), blue jay (*Cyanocitta cristata*), house sparrow (*Passer domesticus*), house finch (*Carpodacus mexicanus*), white-winged dove (*Zenaida asiatica*), mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), Cooper's hawk (*Accipiter cooperii*), great horned owl (*Bubo virginianus*), gray phase of the eastern screech owl (*Otus asio*), barred owl (*Strix varia*), great-tailed grackle (*Quiscalus mexicanus*), *turkey vulture (Cathartes aura*), and black vulture (*Coragyps atratus*).

The climate of the area is considered humid subtropical, characterized by hot summers and cool winters, with an average high temperature in August of 94 degrees Fahrenheit and an average low temperature in January of 39 degrees. Peak precipitation typically occurs in June, with an average monthly rainfall of around 5 inches (13 cm).

Hydrology

Jacob's Well feeds into Cypress Creek, forming the perennial section of the creek that flows downstream through Blue Hole Regional Park in Wimberley (see **Figure 11**). Cypress Creek rises approximately one mile west of Mount Sharp in western Hays County and extends southeast for a total distance of approximately 14.5 miles before emptying into the Blanco River (Handbook of Texas 2010), which provides recharge to both the Trinity and Edwards Aquifers (Cypress Creek Project 2012). During low flow conditions, the headwaters for Cypress Creek are formed by Jacob's Well, which ceased to flow for the first time in recorded history in July 2000 (Cypress Creek Project 2012).

Land Use

The Jacob's Well Natural Area has been used for drinking water, recreation, fishing and hunting, research, and wildlife viewing for generations (RVi Planning et al. 2012). Following acquisition of approximately 50 acres of the site, Hays County received approximately 31.5 acres from the WVWA. Hays County is in the process of redeveloping the Jacob's Well area in an effort to "maintain access to the public and researchers and emphasize environmental education as it pertains to water quality, groundwater infiltration and preservation for generations to come" (RVi Planning et al. 2010). The details of this redevelopment are discussed in the 2012 *Jacob's Well Development Master Plan*.

Currently, the northern portion of the project area is bounded to the east by Mount Sharp Road and includes some newly laid cedar mulch trails (see **Figure 12**). Older cedar mulch is visible throughout the uplands portion of the project area, obscuring visibility of the ground surface in some locations. An old gravel pit shown on the topographic map was noted at the southwestern corner of the uplands portion of the project area (see **Figure 5**). South of Warblers Road, evidence of a 1970s mobile home community is still visible (see **Figure 6**), along with intermittent fencing, additional segments of new cedar mulch trails, and faint foot paths. Camp Jacob is located among a remnant RV park in the southern portion of the project area and is currently utilized as the visitors' center for park visitors (see **Figure 7**). South of Cypress Creek and Jacob's Well is evidence of a demolished tennis and swimming center, along with park buildings situated near the original location of now-removed condominiums.

Existing utilities within the area include underground water and wastewater service, overhead and underground electrical lines, and overhead and underground telephone lines. These utilities are particularly concentrated along the banks of Cypress Creek.

Figure 11: Cypress Creek south of Jacob's Well, facing east.

Figure 12: Cedar mulch trail in the northern portion of the project area near Mount Sharp Road, facing south.

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CULTURAL BACKGROUND

Archeological Background

The project area is located within the Central Texas Archeological Region. Most of the recent chronologies for Central Texas are based on six distinct time periods, roughly representing a 12,000-year sequence of occupation. A synthesis of the culture-historical sequences provided by Collins (2004) and Johnson (1995) is as follows: Paleoindian (prior to 8800 BP), Early Archaic (8800–5800 BP), Middle Archaic (5800–4000 BP), Late Archaic (4000–1400 BP), Post-Archaic or Late Prehistoric (AD 600–1600), and Historic (AD 1600 to present). Although these divisions represent convenient temporal categories, they are also based in large part on perceived adaptations in subsistence and are reflected in changes in lithic and other technologies.

Paleoindian (prior to 8800 BP)

The Early Paleoindian culture in South and Central Texas is believed to be related to the well-known big game hunting tradition of the Great Plains (Hester 1980). Most of the well-documented Early Paleo-indian sites in Texas that are associated with extinct megafauna are located north and west of Central Texas on the Llano Estacado and adjacent areas of the Southern High Plains. In general, Early Paleoindian sites are scarce in Central Texas, or at least less visible than later sites. Conversely, later Paleoindian sites are much more numerous in South and Central Texas, although both are usually identified from only surface-collected artifacts (Black and McGraw 1985). Subsistence data from several Late Paleoindian sites does suggest, however, that small game was exploited in addition to extinct megafauna. This data supports the idea that a hunting and gathering lifestyle may have already been adopted across much of Central Texas prior to the Early Archaic period.

Paleoindian occupations in Central Texas have typically been associated with lanceolate projectile points such as Clovis, Folsom, Plainview, Golondrina, and Meserve and stemmed points such as Scottsbluff (Turner and Hester 1993). Recent investigations at the Wilson Leonard Site (41WM235) (Collins 2004) equate three styles of projectiles, Golondrina/Barber, St. Mary's Hall and Wilson, to the Late Paleoindian period. The Wilson component is dated at 10,000 to 9650 BP and is associated with features, artifacts, and a burial that are more Archaic-like in nature than Paleoindian (Collins 2004). The data from this site further suggests that the Archaic nature of the adaptation continues during the ensuing Golondrina/ Barber and St. Mary's Hall components. These are dated between 9500 and 8800 BP and may represent a transitional period between the Paleoindian and the Archaic.

Early Archaic (ca. 8800–5800 BP)

The Early Archaic period is subdivided into three projectile point style intervals: Angostura, Early Split Stem and Martindale/Uvalde, from 8800 to 6000 BP (Collins 2004). Generally, the shift from Paleoindian to Archaic subsistence strategies is measured by a change in technology focused on the use of burned rocks to process geophyte plant foods. This shift is traced back as early as 8800 BP at the Wilson-

Leonard Site and at roughly comparable ages at several other Central Texas sites (Decker et al. 1999; Thoms et al. 1996). At these sites, evidence for the use of earth ovens and burned rock technologies for processing plant foods is associated with lanceolate Angostura projectile points. Hence, the use of Angostura and Late Paleoindian lithic technologies may have continued into the Early Archaic period for a time but was gradually replaced by the bifurcate base split-stem and Martindale/Uvalde styles.

The Early Archaic period marks a shift to the use of burned limestone and other rocks in the form of scatters, hearths, middens and other features for the heated processing of plant foods. This represents the start of a long-lived Archaic cooking tradition, lasting from roughly 8800 to 1400 BP. This tradition was characterized by the repeated utilization of earth ovens and the resulting creation of burned rock middens at strategic places on the landscape. These new subsistence practices began with a distinctive cooking technology using layered arrangements of heated rocks in earth ovens, allowing for exploitation of a broad range of geophytes. These included upland xerophytic plants like sotol (*Dasylirion wheeleri*) and other species such as Lily family (Liliaceae) onion bulbs, which grow in wetter environments (Decker et al. 1999).

Some of the most recent climatic reconstructions for the period posit a moist and cool Late Pleistocene environment with early to mid-Holocene shifts to drier conditions that became most pronounced during the mid-Holocene (ca. 5000–7000 BP, Ricklis and Collins 1994). In contrast, Johnson (1995) suggests that the relatively mesic conditions of the eastern Edwards Plateau during the Pleistocene and early Holocene/Paleoindian period underwent a brief dry interval during Late Paleoindian times, later returning to more mesic conditions during the ensuing Early Archaic period (roughly 8000–5800 BP). Whether the Early Archaic climate reflects a gradual drying period (Ricklis and Collins 1994) or a more mesic interval within an overall, long-lived trend toward aridity along the eastern Edwards Plateau, it appears that the use of burned rock midden technologies for plant food and other types of subsistence related processing began during this period and continued for many thousands of years.

Overall, the bulk of the Central Texas archeological literature suggests that the Early Archaic occupations were generally small, widely distributed, and non-specialized (Black and McGraw 1985). Explanations for these characteristics support a generalized hunting-gathering strategy involving relatively high group mobility, poorly defined territories, and short-term occupations. Broad spectrum, well-adapted, highly mobile subsistence strategies are theorized.

Middle Archaic (ca. 5800–4000 BP)

The Middle Archaic marks an intensification of the use of burned rock technologies to process plants and other types of foods within an increasingly arid environment. Ricklis and Collins (1994) recognize a pronounced mid-Holocene drying event from 7000 to 5000 BP, though it may have lasted longer. Johnson (1995) posits the occurrence of a dry Edwards Interval along the eastern Edwards Plateau from roughly 5500 to 1400 BP. Evidence for this is seen in the cessation of significant overbank sediment aggradation at a number of Central Texas sites. Instead of deposition, arid conditions catalyzed extensive downcutting and erosion along many Central Texas streams. Hypothetically, dry conditions

would have promoted the spread of desert succulent xerophytic plants and fostered the increased use of burned rock middens. Drier conditions may also have engendered the return of the American bison (*Bison bison*) to the plateau during the Middle and Late Archaic periods. Furthermore, the proliferation of Bell/Andice/Calf Creek projectile point styles at the beginning of the Middle Archaic may have coincided with the return of bison to the Edwards Plateau and the adjacent Blackland Prairie; these broad bladed points have been associated with the exploitation of bison within archeological literature. Additional Middle Archaic projectile point styles include Early Triangular, La Jita, Nolan, and Travis.

Late Archaic (ca 4000–1400 BP)

Recent refinements in the Central Texas chronology divide the Late Archaic interval into two different subperiods (Johnson 1995). Late Archaic Subperiod I is marked by the appearance of Bulverde projectile points, which along with later forms (Pedernales, Castroville, Marshall and Montell) were used to hunt bison and other large game. Burned rock middens continued to proliferate during the Late Archaic I interval. The resources processed via burned rock technology may have included species of yucca (*Yucca* spp.), sotol, and perhaps *Agave lechuguilla*. Other middens may simply be dumps for kitchen-type debris, which contain sizeable quantities of animal bones, broken stone tools, and flint-knapping detritus (Johnson 1995). Pedernales peoples in particular may have been adept at both hunting and the processing of large volumes of plant food materials.

The Late Archaic II interval (ca. 600 BC-AD 600) may have been a time of increasingly mesic conditions for all but the western and southwestern portions of the Edwards Plateau (Johnson 1995). The onset of more mesic conditions may have resulted in decreased numbers of upland xerophytic plants and perhaps bison (Johnson 1995), which may have forced adjustments in prehistoric subsistence strategies. There appears to be a decrease in the number of burned rock middens that can be directly attributable to the Late Archaic II interval. The projectile points used at this time are smaller and are characterized by such styles as Ensor, Fairland, Frio and Darl. Evidence suggests the large projectiles well-adapted to bison hunting may have been gradually replaced. Also, it has been posited that the spread of Eastern Woodland religious cults may have had an influence on the Late Archaic II peoples of Central Texas (Johnson 1995).

Late Prehistoric (ca. AD 600–1600)

The Late Prehistoric or Post-Archaic (ca. AD 600–1600) (Johnson 1995) in Central Texas is initially marked by the replacement of the dart and atlatl with the bow and arrow, as reflected in the shift from dart points to smaller, thinner and lighter arrow points (Ricklis and Collins 1994). Despite the shift to the bow and arrow, there is strong indication that the broad based hunting-gathering economy of the Late Archaic persisted into and throughout most of the Late Prehistoric period in Central Texas. The latter part of this period is marked by the appearance of pottery and a distinctive complex of tools composed of contracting-stem Perdiz arrow points, an abundance of unifacial end scrapers, thin, alternately beveled bifacial knives, and drills or perforators made of flakes and blades. The Post-Archaic era again turned dry and somewhat arid toward the middle of the Late Prehistoric, during which a dramatic

increase in bison exploitation suggests it became an increasingly important economic activity during the later part of this period.

Historic Period (AD 1528–Present)

The most radical changes in the Native American history of Central Texas came during the historic era (Black 1989). The historic period in Texas begins with the arrival of Alvar Nunez Cabeza de Vaca and other survivors of the Navarez expedition on the Texas coast in 1528, although there may have been earlier landings (Cecil and Greene 2001). In any case, the influences of European colonization were not felt strongly in Texas until several centuries later. By the middle of the eighteenth century, though, the Spanish had established missions in East Texas and settlements in South Texas. This resulted in massive depopulation and cultural disintegration among Native American groups.

The horse was introduced into North America by Spanish settlers in the sixteenth century; nomadic groups, initially the Apaches and later the Comanches, adopted the horse and rapidly altered the aboriginal situation of Central Texas. These nomadic groups entered Central Texas from the plains and mountains to the north and west and within 150 years had forced most of the native peoples to flee. Most groups were destroyed by the combined effects of the nomadic raiders and the foreign diseases introduced by Europeans. Others moved south, entering Spanish missions and settlements, or eastward to join various agricultural groups such as the Wichita (Black 1989).

In 1856, William Carvin Winters built a gristmill on Cypress Creek, which was then purchased by John M. and Nancy Winters Cude in 1864. In 1874, Pleasant Wimberley of Blanco County purchased the mill, and the settlement became known as Wimberley's Mill. Six years later, a postmaster was appointed for the settlement, and the name of the town was simplified to Wimberley. Until its closure in 1925 (and subsequent demolition in 1934), the Wimberley mill served as a lumber mill, flour mill, shingle mill, molasses mill, gristmill, and cotton gin. By 1985, Wimberley had three schools, 11 churches, and 50 businesses, and eventually became known as a tourist destination and an attractive bedroom community for Austin and San Marcos (Kerbow 2010).

PREVIOUS INVESTIGATIONS

According to the Texas Historical Commission (THC) Sites Atlas (accessed on January 10, 2014), while no survey data is recorded within a one-kilometer area surrounding the Jacob's Well Natural Area, a total of three previously recorded archeological sites have been recorded within one kilometer of the project area. These include Sites 41HY25, 41HY114, and 41HY196 (also recorded as Site 41HY197).

Site 41HY25, recorded in 1963 by W.L. Richmond, is located on the south bank of Cypress Creek on a terrace above Jacob's Well. The site contains three burned rock middens covered by large trees. Debitage was noted at the time of surface inspection, but no further information is available. In 1976, E. Prewitt recorded a burned rock midden (Site 41HY114) during the Blanco River Project. The site is located within a fallow field adjacent to Cypress Creek and contains debitage south of the midden, with very little debitage within the midden itself. It is noted that this midden may be one of the three middens recorded within Site 41HY25 discussed above. Finally, Site 41HY196 (also recorded as Site 41HY197) was recorded in 1986 by Bement and S. Turpin within an overhang near Cypress Creek. This site is characterized as a rock shelter/overhang with burned rock and debitage washed and dispersed throughout. The site was recommended as ineligible for SAL or NRHP listing at the time of recordation. All of these sites were recorded as surficial in nature with no buried components noted.

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METHODOLOGY

Hicks & Company conducted a pedestrian survey supplemented by shovel testing in order to assess the proposed project's potential to impact archeological resources. Archeologists traversed the area in transects spaced no more than 30 meters apart, and shovel testing was conducted at a rate of no less than one subsurface test per every two acres, in accordance with the THC's minimum standards for intensive areal surveys. Investigators recorded their observations and the results of shovel tests through notes, standardized shovel test forms, and photographs. A total of 79 shovel tests were conducted throughout the project area, exceeding the THC's minimum standards for a project of this size. Most shovel tests terminated before 40 cmbs at limestone bedrock. Sediment from all shovel tests was screened through ¼-inch hardware cloth, and shovel test locations were recorded utilizing GPS technology. The survey followed a no-collection policy in which artifacts were recorded, identified, and quantified in the field but returned to their find location. Since the survey was conducted during the winter months when vegetation is less dense, ground surface visibility was relatively high in most locations, with exposed bedrock intermittently noted at the surface throughout the project area.

One archeological site was revisited during survey: Site 41HY25. Shovel tests in this area were conducted in locations assumed to be remnants of the burned rock middens originally recorded as contributing features of this site. The boundaries of Site 41HY25 could not be delineated due to the dilapidated nature of the area. This site revisit was recorded in accordance with the THC's standards for site investigations, and all site-related information will be submitted to TARL for inclusion in their records. All project-related materials will be permanently curated at TARL.

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RESULTS OF INVESTIGATIONS

The survey was divided into the three main areas referenced in the *Jacob's Well Development Master Plan* (RVi Planning Associates 2012): the uplands in the northern portion of the project area, the karst features and prairies in the center, and the riparian zone and open space to the south. The results of the survey are summarized by region below and are shown on **Plates 1–3** in **Appendix A**.

Uplands

The uplands portion of the project area is bounded to the east by Mount Sharp Road and to the west by a tributary to Cypress Creek. This area exhibits the least amount of disturbance, with development limited to intermittent fencing along the perimeter, newly laid cedar mulch trails, and older cedar mulch laid down in the mid-2000s. A total of 34 shovel tests were conducted in this area, all of which were negative for cultural materials (see **Table 1** and **Plate 1** in **Appendix A**).

Table 1. Shovel Test Results–Upland Area.

Shovel Test	Location	Depth (cmbs)	Munsell Color	Description	Cultural Material
SC1	Far northeast corner of project area, 50 meters west of Mt. Sharp Rd in cedar patch.	0–30	10YR 3/3	Moist clay loam with 60% fragmented limestone bedrock	None
SC2	50 meters west of SC2 10 meters east of property fence in clearing.	0–35	10YR 3/4	Loose clay loam with fragmented limestone and sandstone, *Rabdotus* snail shells along with a large root at 30 cmbs.	None
SC3	Near SC2 on surface on slight upland. Medium sparse grasses.	0–38	10YR 4/2	Silty loam with very little clay, limestone inclusions throughout with small 1–2 cm gravels.	None
SC4	80 meters west of Mt. Sharp on upland area.	0–20	10YR 4/2	Clay loam under detritus among high grasses; fragmented limestone bedrock throughout.	None
SC5	On 3323750 line in area of mostly exposed bedrock	0–10	10YR 3/4	Clay loam with limestone and sandstone fragments.	None
SC6	In thick cedar patch 10 meters east of western boundary just west of ravine headed south-southwest.	0–5	10YR 2/2	Humus atop bedrock; large roots of nearby oak/ huisache and cedar. Soil is a dry silty loam.	None
SC7	On bluff in clearing among oak and cedar.	0–32	10YR 2/1	Thick clay loam beneath cedar mulch to limestone.	None
SC8	25 meters west of Mt. Sharp Rd in mulched clearing	0–35	10YR 3/2	Clay loam to 35 cmbs.	None
		35–45	10YR 4/1	Thicker and higher clay content.	None
SC9	15 meters west of Mt. Sharp, 80 meters north of Warbler	0–5	10YR 3/3	Loam beneath 10 cm of mulch.	None
SC10	On the edge of a new mulch trail south of gravel pit.	0–5	10YR 5/4	Silty sand with heavy (50%) gravels	None
SC11	About 75 meters east of western boundary, southwest of gravel pit on gentle westward slope.	0–38	10YR 3/2	Clay loam under 3 cm of mulch; 7.5YR 3/2 mottles from root decomposition.	None
SS1	About 20 meters east of Mt. Sharp Rd	0–5	10YR 4/2	Gravel loam to bedrock	None
SS2	In a scrub brush mesquite area with exposed bedrock	0–5	10YR 4/2	Gravel loam to bedrock	None

Table 1. Shovel Test Results–Upland Area.					
Shovel Test	**Location**	**Depth (cmbs)**	**Munsell Color**	**Description**	**Cultural Material**
SS3	In a scrub brush mesquite area with exposed bedrock	0–10	10YR 4/2	Clay gravel loam with 5% degraded bedrock gravels.	None
SS8	North of shredded cedar mulch 2 track in a wooded area with exposed bedrock on the surface.	0–15	10YR 4/2	Clay gravel loam with 5% gravel and 1% rootlet inclusions.	None
SS9	West of a possible historic metal and glass trash pile.	0–10	10YR 4/2	Clay loam with 5% gravels to bedrock	None
SS10	On a grassy upland slope	0–15	10YR 4/2	Clay loam with 5% gravels to bedrock	None
SS11	Just west of Mt. Sharp Rd on upland; short to medium grass and the area looks as if it was recently cleared.	0–15	10YR 4/2	Clay loam with 3% roots and 5% gravels to bedrock	None
SS12	Just off of a shredded cedar mulch 2 track	0–5	10YR 4/2	Shallow loam- exposed bedrock	None
SS13	On rocky upland slope near dried river bed; the ground is covered in old cedar mulch	0–5	10YR 4/2	Clay loam- very little soil on top of bedrock	None
SS14	In a slightly cleared corridor with orange flogging tape- short to medium grass just north of a 2 track.	0–5	10YR 4/2	Clay loam- very little soil on top of bedrock	None
SS15	Just north of 2 track	0–5	10YR 4/2	Clay loam- very little soil on top of bedrock	None
SS16	Near the intersection of the cedar mulch 2 track and a regular dirt 2 track in a clearing.	0–5	10YR 4/2	Surface is mostly gravels – 5% gravels to bedrock which is shallow	None
SS17	On rocky gradual slope in cedar trees; exposed bedrock on the ground with a light scatter of modern trash.	0–3	10YR 4/2	Very shallow soil- exposed bedrock at the surface	None
SS18	North of fence line in cedar trees	0–15	10YR 4/2	Gravel clay loam to bedrock	None
JH1	On slight slope on 840 line, northwest corner of project area.	0–8	10YR 6/4	Sandy loam with limestone inclusions.	None
JH2	Tree line off of path.	0–12	10YR 4/2	Loam with roots.	None
JH3	Within tree thicket east of two track with heavy leaf litter.	0–4	10YR 4/4	Sandy loam	None
JH5	Mesquite thicket with high detritus	0–10	7.5YR 3/4	Sandy loam with high gravel content.	None
JH6	Mesquite thicket with high detritus	0–10	7.5YR 3/4	Sandy loam with high gravel content.	None
JH7	16 meters west of fence line	0–18	7.5YR 3/4	Sandy loam with about 10 % broken up bedrock.	None
JH8	On slight slope in cleared area	0–12	7.5YR 3/4	Fine sandy loam with about 10% broken up bedrock.	None
JH9	Near property/survey area west boundary in thick mesquite area.	0–25	7.5YR 3/2	Sandy loam with 40% bedrock gravel	None
JH10	Within tree line just above big drop/ slope to the west.	0–4	7.5YR 3/2	Sandy loam	None
JH11	At the southwest corner of map 1	0–20	7.5YR 3/1	Sandy clay loam	None

Very little sediment was present throughout the majority of the uplands, with much of the area exhibiting exposed limestone bedrock at the ground surface. Overall, the shovel tests in this area contained dark grayish brown (10YR 4/2) and very dark grayish brown (10YR 3/2) clay loam and dark yellowish brown (10YR 4/4) sandy loam with high gravel content and fragmented bedrock. Shovel tests did not exceed a depth of 45 cmbs, with most shovel tests terminating at bedrock at less than 20 cmbs.

Ground surface visibility in this area varied from zero to 100 percent depending on location. Instances of exposed limestone bedrock were noted, particularly in the northern and southern portions of the uplands as well as along the dry creek bed to the west of the project area. Other areas, particularly near the center of the uplands, exhibited very low ground surface visibility due to cedar mulch that had been laid down across much of the area during the mid-2000s. Very sparse grasses and thick stands of cedar populate most of the uplands area, with some intermittent patches of cacti within clearings.

Two isolated finds were documented in the uplands during survey: a biface fragment (see **Figures 13** and **14**) and one flake (see **Figures 15** and **16**). The biface fragment recorded during survey measured approximately 4 cm long and 3.5 cm wide with a thickness of approximately 0.5 cm. This biface is fractured at the distal and medial ends and is manufactured out of a bluish brown chert. A primary flake was recorded approximately 5 meters east of the biface fragment and measured approximately 3 cm long, 3 cm wide, and 1.5 cm thick. This flake consists of a similar bluish brown chert with more cortex present on one side than the other. Both of these artifacts were located on the ground surface within a clearing along a faint foot path near Shovel Test SC3 toward the northernmost portion of the project area. Given the absence of additional artifacts or features in the surrounding area, these materials were determined to be isolated finds that have likely been relocated from their original context and deposited along the foot trail.

Figure 13: Fragmented biface manufactured out of bluish brown chert near SC3.

Figure 14: Cross section of fragmented biface near SC3.

Figure 15: Flake found 5 meters east of SC3 with heavy cortex, side A.

Figure 16: Flake with bluish brown chert visible, side B.

In addition to isolated occurrences of modern-day trash items noted sporadically along the uplands in the northern portion of the project area, three trash piles were recorded during survey, two of which are located within the uplands and one of which is located in the prairies toward the south (discussed further below). The first is located near the northern extent of the project area within a mesquite thicket just north of a recently constructed foot-trail (see **Figure 17**). This scatter consists of large amounts of brown-colored glass beer bottles and shards, brown-colored glass Clorox bottles, broken window pane glass, numerous church-key and cut-around opened tin cans, white-ware ceramic tea cups and ointment jars, a few shards of blue medicine glass, and an oven. A Texas license plate located within the trash scatter bears a date of 1959, while the Clorox bottles are of a pre-1962, mid-century design. Two noted bottle marks further date this scatter to the mid-nineteenth century: a Hazel-Atlas manufacturer's mark in use from 1920–1964, and an Owens-Illinois mark which dates post-1954 (Lockhart 2014; Toulouse 1971) (**Figure 18**).

Figure 17: Overview of Trash Scatter 1 with glass, tin, and oven, facing north.

Figure 18: Hazel-Atlas and Owens-Illinois Manufacturer's Marks's noted at Trash Scatter 1.

Trash Scatter 2 is located near the center of the uplands parcel of the project area. This scatter consists of large amounts of rusted metal, including barrel drums, piping, bed-springs and a large number of car parts (see **Figure 19**). Other trash items noted at this location were sheet metal and concrete foundation fragments likely associated with signage. No discernible manufacturer's marks or datable diagnostics were observed.

Figure 19: Overview of Trash Scatter 2 with large amounts of metal debris, facing northeast.

Karst Features and Prairies

The karst features and prairies portion of the project area contains the remnants of a mobile home community utilized during the 1970s. A total of 17 shovel tests were conducted within and around the mobile home community, with the majority of shovel tests terminating at bedrock at less than 15 cmbs (see **Table 2** and **Plate 2** in **Appendix A**). Generally, these shovel tests contained dark grayish brown (10YR4/2) and black (10YR2/1) sandy clay and clay loam along with dark brown (7.5YR3/4 and 7.5YR3/2) sandy loam with up to 10 percent fragmented limestone bedrock. Much of the concrete infrastructure associated with the mobile home community has been removed, with small push piles of limestone and fragments of piping noted throughout the area (see **Figure 20**).

Visibility in this area ranged from zero to 95 percent surface visibility depending on location. Similar to the uplands area, exposed bedrock was noted at the surface in some locations, while other areas are covered in short grasses with interspersed scrub and small trees. Utilities have been installed throughout the area, with overhead telephone lines and piping segments noted in the area. At the time of survey, large construction equipment was parked in the northern portion of the community (see **Figure 6**). Additionally, small rock walls measuring approximately 40 cm high were noted within the open space among the mobile home pads. A slight ascent begins northeast of the mobile home community west of the tree line visible on aerial photography exhibits very high surface visibility and small push piles of limestone, some of which appeared to have been burned. These piles appear to have been constructed relatively recently and are assumed to be associated with mobile home use and previous construction activities in this area.

Table 2. Shovel Test Results–Mobile Home Community					
Shovel Test	**Location**	**Depth (cmbs)**	**Munsell Color**	**Description**	**Cultural Material**
SC12	North of north end of Scissor Trail at mobile home park south of Warbler Way at the bottom a downward slope.	0–12	2.5YR 5/3	Sandy clay to 12 cmbs.	None
		12–38	10YR 3/3	Clay loam to 38 cmbs; fragmented bedrock gravels throughout.	None
SC13	Immediately (10 meters) north of Scissor Trail.	0–25	10YR 4/4	Dry sandy clay with 7.5YR 3/3 mottles inclusions. 20% gravels and fill.	None
SC14	In north mobile home park between rows- short to medium grasses.	0–32	10YR 3/2	Concrete, limestone, woodblock, and asphalt in dry loose clay loam with fragmented bedrock.	None
SC15	Near east edge of mobile home park along east fence.	0–8	10YR 2/1	Clay loam with gravels and areas of exposed bedrock.	None
SC16	On upland about 100 meters south of Warbler Way.	0–15	10YR 2/1	Clay loam with gravels and areas of exposed bedrock.	None
SC19	Northeast corner of triangle off Mt. Sharp Road on upland along old fence line.	0–5	7.5YR 3/2	Silty loam on top of bedrock with limestone fragments throughout.	None
JH12	10 meters east of fence line.	0–15	7.5YR 3/4	Sandy loam with fine pebbled caliche and 2% bedrock gravels.	None
JH13	West end of project area in old mobile home park.	0–10	10YR 3/2	Loam with 10% bedrock gravels.	None
JH14	South end of mobile home park; area has manicured grasses and exposed bedrock.	0–10	7.5YR 4/4	Very sandy loam	None
JH15	On flat rise of Acacia; in mobile home park area.	0–5	7.5YR 3/4	Little soil	None
SS19	In between 2 tows of power lines in mobile home park.	0–5	10YR 4/2	Very shallow soil (clay loam) to bedrock	None
SS20	West of 2 track and power lines in the mobile home park.	0–3	10YR 4/2	Very shallow soil (clay loam) to bedrock	None
SS21	On a small grassy rocky rise east of mobile home park area.	0–5	10YR 4/2	5% gravels in shallow clay loam	None
SS22	Just South of entry driveway to mobile home park area on map 2	0–3	10YR 4/2	Exposed bedrock in very shallow soil	None
SS24	Southeast of entrance – west of the road in tall to medium, grass field.	0–10	10YR 4/2	3% medium limestone gravels in clay loam	None
SS25	Bottom of small ridge where the ground is covered in gravels.	0	10YR 4/2	There is not soil in the area, just degraded limestone gravels and bedrock. There is an old piece of rebar sticking out of the ground – in old RV park area.	None
SS26	10 meters west of barbed wire fence – in short to medium grasses with juniper, cedar, and oak trees.	0–10	10YR 4/2	5% medium (about 5 cm) limestone gravels- area looks to be under construction or is being cleared. In old RV park area.	None

Figure 20: Small push pile of dirt and limestone fragments noted adjacent to mobile home park, facing west.

In the triangular portion of the project area east of the mobile home community, a barbed wire fence along the tree line visible on aerial photography delineates the portion of the property that was formerly utilized by the WVWA. This heavily wooded area extends east to Mount Sharp Road and south toward an unnamed road leading to an octagonal house now used by the WVWA. A total of nine shovel tests were conducted in this area east of the treeline, all of which were negative (see **Table 3** and **Plate 2** in **Appendix A**). Only one of these shovel tests (SC23) exceed 10 cmbs, with all shovel tests terminating at limestone bedrock. Dark brown (7.5YR 3/2) silty loam and dark grayish brown (10YR 4/2) clay loam were noted along this slight upland area, with much of the surface exhibiting exposed bedrock.

Table 3. Shovel Test Results–East of Mobile Home Community					
Shovel Test	**Location**	**Depth (cmbs)**	**Munsell Color**	**Description**	**Cultural Material**
SC20	Within thick cedar thicket, exposed bedrock surrounding with deposits of soil.	0–5	7.5YR 3/2	Silty loam on top of bedrock with limestone fragments throughout.	None
SC21	In sink area 20 meters west of Mt. Sharp Rd; thick cactus, cedar, and high grasses.	0–8	7.5YR 3/2	Silty loam on top of bedrock with limestone fragments throughout	None
SC22	Abut southward slope approximately 15 meters west of Mt. Sharp.	0–8	10YR 3/3	Clay and clay loam, very sticky soil; between limestone outcrops.	None
SC23	About 30 meters north northwest of trash scatter	0–35	10YR 4/4	Sandy loam with heavy gravels	None
SS27	In a wooded area on a gradual slope	0–5	10YR 4/2	Very little soil on top of bedrock – clay loam	None
SS28	In a wooded area on a gradual southern slope; the ground is covered in river rocks mixed in with degraded limestone bedrock.	0–3	10YR 4/2	Very little soil on top of bedrock – clay loam	None
SS29	About 10 meters south of road (Mt. Sharp Rd) near a sink hole	0–5	10YR 4/2	Very little clay loam soil on top of bedrock	None
SS30	Near a rock path in a wooded area with patchy clearings; the ground is covered in river rocks mixed in with degraded limestone bedrock.	0–5	10YR 4/2	Very little gravel clay loam soil in top of bedrock	None
SS31	Near a modern fire pit in trash scatter area.	0–10	10YR 4/2	5% gravels in clay loam on top of bedrock	None

Two sinkholes were observed in this area approximately ten meters west of Mount Sharp Road (see **Figures 21** and **22**). Rock-lined trails lead south from these sinks toward the southern edge of the property, which, according to David Baker, Executive Director of the WVWA and owner of this property in the early 1990s, were constructed as part of an Eagle Scout project (personal communication with Baker 2014) (see **Figure 23**). These trails generally lead to an area containing a modern (likely post-1980) trash scatter (Trash Scatter 3) of fencing, a stack of doors and window, two fire rings, and other various discarded items, including bricks with Mexia and Abilene markings (see **Figures 24–26**). According to Mr. Baker, this site was used as a storage area and trash dump by nearby residents prior to his purchase of the property in the 1990s. He also indicated that this area has been used for retreats associated with the WVWA, including trips for youth groups, nature groups, and other organizations. In addition to use for retreats and occasional camping, this area was also utilized for tours along the Rain Drop Trail, which allowed community members to hike along the rock-lined trails in the area to view the

Figure 21: Larger sink just west of Mount Sharp Road, facing southwest.

Figure 22: Smaller sink facing approximately five meters north of larger sink, facing northwest.

Figure 23: Eagle Scout-constructed trail leading away from sinks, facing south.

Figure 24: Windows and doors stacked within Trash Scatter 3, facing northeast.

Figure 25: Fire ring within Trash Scatter 3, facing southwest.

Figure 26: Bricks with Mexia and Abilene markings located near center of Trash Scatter 3.

sinkholes at the northern edge of the property. Additional items within Trash Scatter 3 included a hand-painted tile dated 1981 (see **Figure 27**), likely associated with the youth camps which visited the area, as well as small fragments of glass, burned bottles, a large sculpture (see **Figure 28**), and ropes hanging from the large oak tree near the center of the scatter. No prehistoric or historic artifacts or features were recorded at this trash scatter or within the surrounding area.

Shovel testing was also conducted north of Cypress Creek around Camp Jacob near the remnant RV park (see **Table 4** and **Plate 2** in **Appendix A**). Improvements around Camp Jacob include a guard shack, gravel parking, and gardens around the Camp Jacob building. Both above- and below-ground utilities have been installed in this area. North of Camp Jacob is a private lot that was not included in the archeological survey. Fewer improvements have been made further east, and vegetation in this area is much denser. A granite trail lines the bluff above Cypress Creek, and two sets of stairs lead down to the creek and Jacob's Well (see **Figures 29** and **30**).

Shovel tests in the area north of Cypress Creek (SC24-26, JH18-19, and SS32-33) contained very dark grayish brown (10YR 3/2) loam and sandy loam, dark brown (10YR 3/3) clay loam, and yellowish brown (10YR 5/6) sandy gravel fill with the fragmented bedrock seen throughout the entire project area. These shovel tests reached a maximum depth of 35 cmbs and were negative for cultural materials.

Riparian Zone and Open Space

Approximately 10 meters south of the Cypress Creek bank is a granite trail that leads east toward Jacob's Well. South of here, remnants of a tennis and swimming area and a small garden are situated in the open space around the buildings off of Woodacre Drive. This area has been extensively disturbed by construction activities, likely including bulldozing for facility construction. According to Mr. Baker of the WVWA, there have been anecdotal accounts of a prehistoric campsite near the tennis court area; however, investigation of this highly disturbed area did not result in the identification of any cultural materials.

Shovel tests on the south bank of Cypress Creek were situated on the north and south sides of the trail leading east toward Jacob's Well (see **Table 5** and **Plate 3** in **Appendix A**). These shovel tests (SC17-18, SS23, and JH16) contained brown (10YR4/3) silty loam, dark brown (7.5YR 3/4) sandy loam, and dark grayish brown (10YR 4/2) clay loam and reached a maximum depth of 15 cmbs. Heavy roots and gravels were also noted within these shovel tests. Two shovel tests (JH17 and JH22) were conducted in the southernmost portion of the open space, both of which contained heavy bedrock inclusions at approximately 50 percent. The remaining shovel tests in this area (SC27-28, JH20-21, and SS34) were conducted during the revisit of Site 41HY25 and are discussed below.

Figure 27: Hand-painted tile within Trash Scatter 3, side A and B.

Figure 28: Concrete sculpture within Trash Scatter 3.

Table 4. Shovel Test Results–Camp Jacob Area					
Shovel Test	**Location**	**Depth (cmbs)**	**Munsell Color**	**Description**	**Cultural Material**
SC24	Near large oak off of drive north of Cypress Creek (15 meters)	0–35	10YR 3/3	Clay loam with sandstone gravels (large) to term at large root from nearby tree.	None
SC25	On bluff above Cypress Creek southeast of Camp Jacob.	0–4	10YR 4/2	Dry clay loam.	None
SC26	On bluff above creek along footpath.	0–30	7.5YR 3/3	Clay with decomposed leaves and less than 10% small gravels to term at very thick clay.	None
JH18	Within tree line northeast about 25 meters off of shuffleboard pad.	0–25	10YR 3/2	Loam with 2 rounded head nails near recent wood burn. Less that 1% gravels.	None
JH19	Two meters west of fence line in tree line; lots of leaf litter.	0–4	10YR 3/2	Sandy loam	None
SS32	Northeast of park office in a grassy area off 2 track	0–5	10YR 5/6	Sandy gravel fill (pathway gravels)	None
		5–10	10YR 4/2	5% limestone gravels to bedrock in sandy clay loam	
SS33	West of Cypress creek in a small clearing near an old camp site	0–30	10YR 4/2	3% gravels as well as 3% rootlets in gravel clay loam	None

Figure 29: Stairs leading to Cypress Creek, facing south.

Figure 30: Overhang just beneath bluff above Cypress Creek to left, facing east.

Table 5. Shovel Test Results–Riparian Zone and Open Space

Shovel Test	Location	Depth (cmbs)	Munsell Color	Description	Cultural Material
SC17	About 10 meters south creek of west edge of property.	0–12	10YR 4/3	Silty loam with small to medium (1–4 cm) gravels and roots.	None
SC18	5 meters south of creek near (about 10 meters) north of trail.	0–8	10YR 4/3	Silty loam with small to medium (1–4 cm) gravels and roots.	None
SC24	Near large oak off of drive north of Cypress Creek (15 meters)	0–35	10YR 3/3	Clay loam with sandstone gravels (large) to term at large root from nearby tree.	None
SC25	On bluff above Cypress Creek southeast of Camp Jacob.	0–4	10YR 4/2	Dry clay loam.	None
SC26	On bluff above creek along footpath.	0–30	7.5YR 3/3	Clay with decomposed leaves and less than 10% small gravels to term at very thick clay.	None
SC27	Within 41HY25; 5 meters east of path to the well and 10 meters southwest of a telephone pole.	0–5	10YR 4/2	Clay loam with small to medium gravels (1–4 cm) to term at dense gravel fill.	None
SC28	South of assumed 41HY25; 5 meters south of rock piles to the north and west; 12 meters west of fence line.	0–5	10YR 4/2	Clay loam with heavy (50%) gravels to term at bedrock.	None

Table 5. Shovel Test Results–Riparian Zone and Open Space					
Shovel Test	**Location**	**Depth (cmbs)**	**Munsell Color**	**Description**	**Cultural Material**
JH16	Between track and slope in manicured area, bank of drainage/Cypress Creek	0–3	7.5YR 3/4	Sandy loam with bedrock gravels.	None
JH17	Open area adjacent to tree line	0–15	10YR 3/2	50% bedrock matrix with gravel inclusions.	None
JH18	Within tree line northeast about 25 meters off of shuffleboard pad.	0–25	10YR 3/2	Loam with 2 rounded head nails near recent wood burn. Less than 1% gravels.	None
JH19	2 meters west of fence line in tree line; lots of leaf litter.	0–4	10YR 3/2	Sandy loam	None
JH20	Northwest of 41HY25 centroid in tree line; lots of leaf litter	0–12	10YR 3/2	Sandy loam with 10–20% bedrock gravels. Cigarette butt fabric found at 10 cmbs	None
JH21	On second northernmost rock pile at the north end of 41HY25	0–10	10YR 4/4	Rock matrix with gravel and sandy loam inclusions.	None
JH22	Within tree line; leaf litter on the ground, north of the center of 41HY25	0–10	10YR 3/2	Rocky bedrock matrix.	None
SS23	East of a creek	0–15	10YR 4/2	5% gravels in shallow clay loam	None
SS32	Northeast of park office in a grassy area off 2 track	0–5	10YR 5/6	Sandy gravel fill (pathway gravels)	None
		5–10	10YR 4/2	5% limestone gravels to bedrock in sandy clay loam	
SS33	West of Cypress creek in a small clearing near an old camp site	0–30	10YR 4/2	3% gravels as well as 3% rootlets in gravel clay loam	None
SS34	About 15 meters southwest of Jacob's Well near a game fence property boundary near 41HY25	0–25	10YR 4/2	5% medium degraded bedrock gravels in clay loam	None

Site 41HY25

During survey, investigators visited the mapped location of Site 41HY25. This site was recorded by W.L. Richmond in 1963 who noted that the site was comprised of three burned rock middens that were "fairly large in diameter but very thin" and a "few flint chips" across an area approximately 3,000-square-feet in size (THC 2014). Although this locale retains elements of the flora observed in 1963 (oak and pecan trees), the landscape of Site 41HY25 within the Jacob's Well Natural Area has been modified, manicured, and maintained throughout the years (see **Figures 31** and **32**). Clearing for trail installation, a park bench, and signage installation has occurred, and both underground and overhead utility lines run east to west, paralleling the trail and Cypress Creek (see **Figures 33** and **34**). A systematic surface inspection and shovel testing of the immediate area conducted during the current investigations revealed no intact middens or debitage within the project boundaries. Shovel tests (SC27, SC28, JH20, JH21, and SS34) noted minimal soil development above limestone bedrock and gravels at 5 to 10 cm in depth.

Figure 31: Overview of flora at Site 41HY25 area facing north from assumed southern boundary.

Figure 32: Overview of Jacob's Well visitor-use area at southern extent of Site 41HY25, facing north.

Figure 33: Overview of utility lines and trail at Site 41HY25 area facing east from assumed western site boundary.

Figure 34: Underground piping outlets located in western portion of area, facing west.

Five push piles of natural limestone rock and gravels were observed at the treeline where the trail through the area turns southward. These piles are arranged along a north-south axis and are spaced approximately one meter apart. With rusted metal fence posting still present along the same axis, these rock piles likely served as support and bracing for a now-removed fenceline (see **Figure 35**). Shovel Test JH21, conducted in the centermost pile, noted no burned or fire-cracked rock or charcoal elements. However, a single fire-cracked rock was observed on the surface adjacent to this rock pile (**Figure 36**). A few other fire-cracked and burned rocks were observed throughout the area, though given the small number and lack of consolidation of these rocks, a direct correlation as scattered elements of a once-intact midden cannot be made. It is possible that the middens observed by Richmond in 1963 lie east of the current survey area, beyond the property fenceline. If middens were indeed present within the survey area, clearing and maintenance has scattered or removed enough of the burned rock, disarticulating any once-discernible features.

Figure 35: Photo of rock pile (right of shovel) and metal fence post (left of shovel), facing west.

Figure 36: Fire-cracked rock observed on surface adjacent to push pile.

Camp Jacob

According to Section 106 of the NHPA, a historic property is defined as any property included in, or eligible for inclusion in, the NRHP (36 CFR 800.16). To be eligible for inclusion in the NRHP, a property must be at least 50 years old (except in cases of exceptional significance) and possess *significance* and *integrity.*

The former RV park office/recreation center situated north of Cypress Creek, now utilized for site administration and educational activities, is referred to as the Camp Jacob Environmental Education Center (see **Figure 37**). Although precise year-built data for this structure is not available from the Hays Central Appraisal District (CAD), an approximation of the structure's age can be estimated based on historic maps and contextual information. Camp Jacob is not included on the 1969 topographic map of the Driftwood quadrangle, but the structure does appear on the 1986 map of the quadrangle. Based on the available data, Camp Jacob is estimated to have been constructed in the 1970s. This estimate is consistent with the date of surrounding development in the area, and the style of the structure's architecture also suggests that it dates to 1970 or later. Therefore, Camp Jacob is not considered to be of historic age, and also does not possess exceptional significance to warrant eligibility as a structure less than 50 years old.

Figure 37: Overview of Camp Jacob, facing southeast.

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CONCLUSIONS AND RECOMMENDATIONS

On behalf of Hays County, Hicks & Company archeologists have completed a 100-percent intensive pedestrian survey of approximately 81.5 acres of the Jacob's Well Natural Area. The survey consisted of pedestrian survey supplemented by shovel testing (*n* = 79) throughout the entire project area. The survey area was found to contain very little sediment atop limestone bedrock, some of which was exposed at the ground surface. Three trash scatters were recorded during survey within the areas north of Cypress Creek. One of these is assumed to date to the mid-nineteenth century, while the second trash scatter did not contain any diagnostic materials. The largest of the three trash scatters is assumed to date to the late nineteenth century based on personal communication with the previous landowner and a dated tile located within the area. In addition, two isolated finds were recorded during survey: a fragmented biface and a primary flake. Both of these artifacts were recorded at the ground surface.

One site was revisited during the current investigations: Site 41HY25, a burned rock midden site originally recorded in 1963. Within the survey area, the research value of Site 41HY25 is considered to be exhausted, and any of its components within the Jacobs Well Natural Area are considered ineligible for listing as an SAL or for listing on the NRHP. However, given the location of the site and the future development plans for the Jacob's Well Natural Area, the area around the site would serve as an appropriate location for a potential interpretive area for park visitors, consistent with the *Jacob's Well Development Master Plan*.

Based on the results of shovel testing and surface inspection throughout the project area and at previously recorded Site 41HY25, regulatory clearance for the project is recommended to proceed with no further cultural resource coordination necessary. In the unlikely event that cultural materials are found during construction, all work in the area is recommended to cease until the THC can be contacted and a professional archeologist can assess the finding and make recommendations for any future action that may be required.

This report is offered in partial fulfillment of the requirements for ACT Permit #6732. All project-related materials will be curated at TARL in Austin, Texas.

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APPENDIX A

SURVEY RESULTS PLATES

Figure Removed Due to Sensitive Site Information