

**Archaeological Monitoring for the San Pedro Acequia (41BX337)
and the U.S. Arsenal (41BX622) along South Main Avenue,
San Antonio, Bexar County, Texas**



by
Leonard Kemp and Bruce K. Moses

Texas Antiquities Permit No. 4991

Prepared for:
City Public Services
145 Navarro Street
San Antonio, Texas 78205



Prepared by:
Center for Archaeological Research
The University of Texas at San Antonio
Technical Report, No. 16

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Principal Investigator
Steve A. Tomka

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Abstract

In August and September of 2008, the Center for Archaeological Research carried out archaeological monitoring for CPS Energy along South Main Avenue between Durango Street and Arsenal Street. Two known sites are located within and adjacent to the project area. They are the San Pedro Acequia (41BX337) and the U.S. Arsenal (41BX622). Both sites are listed as City Historic Landmarks and are on the National Register of Historic Places. During the course of monitoring, two features were revealed. Feature 1 is the remnants of a limestone foundation. Based upon its location, it is likely to be part of the armory built in 1861. Feature 2 is also thought to be a limestone foundation of a structure built for the U.S. Arsenal. Both features were impacted by past construction. The features were documented with both plan and profile views, photographed and their locations recorded with a Trimble GeoXT. Feature 1 was also recorded with a Sokkia SET 6E TDS. All documents generated during the investigations are curated at the Center for Archaeological Research, University of Texas at San Antonio.

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Chapter 1: Introduction

Between August and September of 2008, the Center for Archaeological Research carried out archaeological monitoring during utilities installations in downtown San Antonio. The Area of Potential Effect (APE) was located along South Main Avenue between Durango Street to the north and Arsenal Street to the south. Figure 1-1 shows the project area on the San Antonio West USGS quadrangle map. The work was contracted by CPS Energy of San Antonio as part of utility

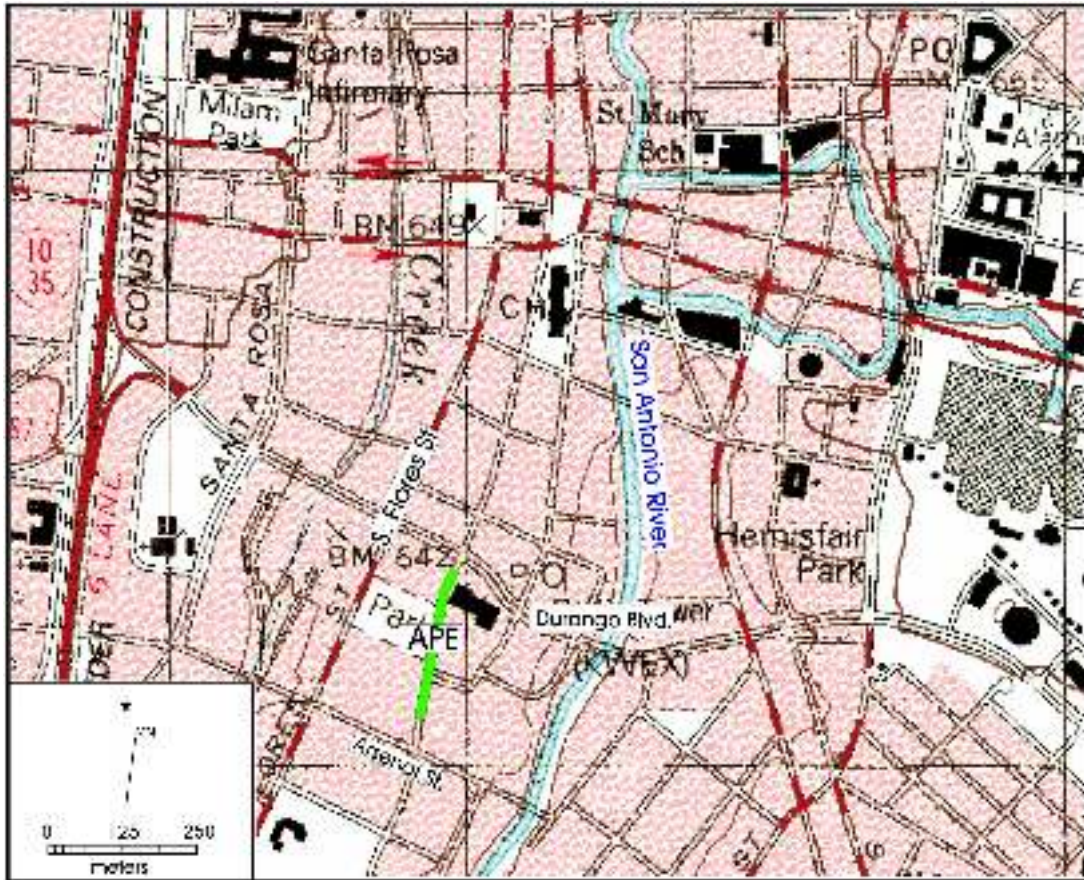


Figure 1-1. The Area of Potential Effect (APE) shown on the San Antonio East and San Antonio West USGS quadrangle maps.

upgrades to the H.E.B. headquarters along a two block portion of South Main Avenue. Figure 1-2 shows a portion of the project area prior to construction. The construction work included the excavation of three manholes and connecting trenches for two five-inch electrical conduits, extending a linear distance of approximately 250 meters. The archaeological monitoring during this construction was mandated by both Chapter 35 of the City of San Antonio's Unified Development Code and the Antiquities Code of Texas. Archaeological investigation was conducted under Texas Antiquities Permit No. 4991, with Steve A. Tomka serving as Principal Investigator.



Figure 1-2, *View of the APE looking north along South Main Avenue prior to construction.*

Chapter 2: Project Area Background

The project area is an urban environment located in downtown San Antonio. It is adjacent to the HEB headquarters, federal properties, and a city park. These properties encompass the former grounds of the U.S. Arsenal. The APE falls within the boundary of one NHRP site, the Arsenal (41BX662), and is adjacent to two others, the San Pedro Acequia (41BX337) and the Commander's House (41BX351). Commercial buildings, the San Antonio Riverwalk, and residences of the King William Historic District surround the project area. In addition, La Villita, Hemisphere Park and the historic Lavaca neighborhood are nearby. Selected historical and archaeological sites of significance include San Fernando Cathedral (41BX7), the Presidio de Béxar (41BX179), the Navarro House (41BX302), Guenther Upper Mill (41BX342), the Vollrath Blacksmith Shop (41BX786), the Gresser-Hayes House (41BX369), and the John Stewart McDonald House (41BX794). San Antonio has a rich and abundant record of prehistoric archaeological sites. However, the focus of this background section will be the historical development of San Antonio in the eighteenth and nineteenth centuries specific to the San Pedro Acequia and the U.S. Arsenal.

Historic Period

The Historic Period is marked by the arrival of Europeans to the area. In Texas, the earliest European contact comes with the arrival of Alva Nuñez Cabeza de Vaca and the remaining survivors of the Narvaez expedition in 1528. Between 1528 and the late 1600s, Spanish *entradas* began to cross the Texas territory strengthening Spanish claims to the region. Europeans did not begin to settle the territory until the beginning of the eighteenth century, and the inhabitants of the region were mostly Native Americans until the late 1700s.

The first settlement in San Antonio was Mission San Antonio de Valero established at the headwaters of San Pedro Creek in 1718. Presidio San Antonio de Béxar was created shortly thereafter to offer protection to the mission inhabitants and recruit Native American converts (Chipman 1992:117). Within the next fifteen years, the San Antonio River valley became the site for four other missions as well as the expansion of Spanish colonization with the arrival of the Canary Islanders and the establishment of San Fernando de Béxar (Ivey 2008). By the late 1700s, San Antonio was a provincial Spanish town, thriving in the midst of the harsh Texas frontier.

History of the Project Area

The project area was originally part of the *labor de abajo*, or lower farmlands, assigned initially to the San Antonio de Valero Mission and later distributed amongst the Canary Islands settlers. The project area, prior to 1859, remained farmland and pasture to the best of our knowledge. Past research has focused on two aspects of San Antonio's history within the vicinity of the APE. The first is the San Pedro Acequia. It provided irrigation and drinking water during the early settlement of San Antonio. The second is the U.S. Arsenal. It marked the logistical significance of San Antonio and southern Texas during the western expansion by the United States in the 19th century. The following briefly describes both of these landmarks and their significance.

The San Pedro Acequia

The San Pedro Acequia was one of the oldest and longest used of San Antonio's *acequias*, a system of canals and ditches introduced by the Spanish to irrigate the parched land of the American southwest. Spanish law and custom in the Americas was adapted to the realities and specifically the ecology of the New World environment (Cox 2005:7; Rivera 1998:5). The structure and role of the local government, or *civitas*, drew upon the *Law of the Indies* as a framework for the selection and administration of new settlements (Rivera 1998:5). *Civitas*, comprised of the citizens and magistrates of a town, served as the political and economic foundation for frontier communities like San Antonio de Béxar. The "community acequia" or "public acequia" was a tightly regulated part of this system and was shared and maintained by the owners of lands bordering the irrigation ditch (Hutchins 1928:261).

It is likely that the origin of the San Pedro Acequia dates to the initial establishment of the Presidio and Villa de Béxar in the vicinity of San Pedro Springs in 1718 (Ivey 2008). Entries in the diary of the Alarcón Expedition at the time of the founding of San Antonio de Béxar in 1718-19 describe construction of this irrigation channel:

On the 12th of the said month of January (1719), the governor gave orders to begin with all assuidity the construction of the canals for both the villa and the said mission of San Antonio de Balero. This work was continued the remainder of the said month, in which time they were built in good state and shape, so that this year a fine crop of corn, beans, and other grains which the governor ordered brought in from the outside is expected. (Hoffman 1967:86)

Although specific details of acequia construction in San Antonio were rarely written down, we can

look to acequia construction in New Mexico as a model. Both Cox (2005) and de la Teja (1995) describe the skill of Spanish *acequidores*, canal builders, who derived their engineering expertise from Roman and Moorish heritage. *Acequidores* utilized a number of sophisticated tools including the *diopter*, a similar device to the theodolite, that was used to achieve the gradient to make water flow, and the *groma*, a tool used to get horizontal angles (Cox 2005:3). Both human and oxen power was employed to excavate the ditches with shovels, picks, and plows. De la Teja (1995) indicates that local materials including timber, stone and earth were used to construct the *presas* (dams), *compuertas* (head gates), *sangías* (lateral ditches), and *canoas* (hollowed logs used to channel and control water) of the acequia and the *desagüe* (the field drainage ditch that returns surplus water to the stream).

By 1719, the Franciscans had opted to shift mission San Antonio de Valero to the east bank of the San Antonio River, thereby opening up a large area between San Pedro Creek and the San Antonio River for settlement. After a massive fire swept through the Presidio and Villa in December 1721, Governor Marqués de Aguayo selected a new site about 1¼ mile below the springs to reestablish the outpost (Ivey 2008). In February 1722 with a total population of about 200 persons, the new Presidio and Villa de Béxar was laid out in the area today known as Military Plaza. The land was soon cleared and construction of the presidio was undertaken. The new acequia was likely an extension of the first channel that was made to flow between the new settlement and the San Antonio River (Ivey 2008).

Under considerable pressure to block the French incursions into East Texas, as well as to lower the cost of maintaining permanent garrisons, Aguayo proposed the importation of Spanish subjects to settle the Texas frontier (de la Teja 1995:18). On March 29, 1731, 56 Canary Islanders arrived at Béxar to serve as the nucleus of a new villa. At that time, the plaza for the Villa de San Fernando de Béxar was planned and laid out in the “*campo*” or empty field immediately east of the existing presidio (Ivey 2008). Each of the Canary Islanders were given house lots facing the new plaza (today San Antonio’s Main Plaza) as well as portions of irrigable lands for crops south of the Villa (Ivey 2008).

The testimony of Captain Juan Antonio Pérez de Almazán, Commander of the Presidio de Béxar, makes it clear that “Acequia Madre”, as the San Pedro Acequia was then known, had already been extended well south of the settlement by the *presidiales* before the arrival of the families from the Canary Islands (de Almazán 1731; Ivey 2008). After meeting with the heads of households of the islander families, de Almazán, decided that “all the cultivated lands which had been cleared and

deforested by the *primeros pobladores* of the presidio” would be quickly distributed to the new settlers by lot in time for spring plowing and planting (de Almazán 1731; Ivey 2008).

By the spring of 1731, water diverted into the *compuerta*, or headgate of San Pedro Acequia just southeast of San Pedro Springs, flowed down the main channel and through the *presidiales*’ fields north of the settlements. As the channel passed through the plaza of the new Villa de San Fernando, drinking water was made available to the citizens and soldiers (Cox 2005:36). Continuing on another mile south of the plaza (de Almazán 1731), the Acequia Madre continued on to its final *desagüe* near the Nogalitos Crossing of San Pedro Creek (Ivey 2008). The total length of the main channel of this early San Pedro Acequia was approximately 2.8 miles.

The possession of water rights to the San Pedro Creek and its acequia south of the villa, as well as the distribution of rich farmland allowed the Canary Islanders to dominate the early economic and political fortunes of San Antonio until the 1740s (de La Teja 1995:47). The land given to the Islanders was divided into *suertes* (individual lots) with the *dula* (a prescribed water allowance measured in days) based on the size of land, and the amount of water available (Cox 2005). Field preparation probably began in early spring by plowing followed by soaking the fields to remove salts and calcium carbonates from the soil. An *alcade*, (irrigation manager) would schedule water usage with the *alcade* responsible for the repair and maintenance of the canal (Rivera 1998:7). The acequia was held in trust by a community of users. Associations were developed with a *comisión* (an elected or appointed governing body) to develop rules and regulations related to the use of the water, resolve disputes amongst users, and set fees and fines to enforce their rulings (Rivera 1998:228).

San Antonio reflected the urban development of many frontier communities with a central town core bordered by small agricultural family holdings that provided the subsistence bulk of the community (de la Teja 1995:48). Market value of land was tied to the amount of water allotted with the acequia, a vital component of the economic system and wealth of colonial San Antonio (de La Teja 1995:87). Figure 2-1 shows the San Pedro Acequia circa 1800 with major landmarks as well as references to early colonial land use.

After Texas independence from Mexico, the city government of San Antonio adopted the previous Spanish and Mexican ordinances for the maintenance of the acequia infrastructure with some modifications. In 1852, the city council mandated formal rules and regulations to improve the water system (Cox 2005:47). Between 1852 and 1878, numerous measures were undertaken



Figure 2-1. San Antonio circa 1800 showing the San Pedro Acequia and major town landmarks relative to the project area.

to renovate the system. This included the building of new ditches, lining the canals with stone, and placing covering on top of the open ditches (Cox 2005:49-59).

Beginning in the middle of the 19th century, San Antonio transitioned from a rural, agrarian based economy to an urban center. One of the pressing issues of the times was public sanitation. The acequias were the major source of drinking water and irrigation for the residents. Although unknown to citizens at the time, it was also a source of the many cholera epidemics that plagued San Antonio (Cox 2005:39). Various measures were enacted by the City Council to control the stench from the acequias with the hope to mitigate these epidemics (Cox 2005:39). While these measures improved the sanitation and water flow of the acequia the growing awareness of public health would eventually replace the acequias. In 1878, a private initiative to build a waterworks infrastructure began that would eventually replace the acequia system (Cox 2005:60). This factor,

coupled with San Antonio's shift toward a business and industrial economy, diminished the roll of acequias in San Antonio. In September 1912, the City Council ordered that the last of San Antonio's acequias, the San Pedro Acequia, be closed (Cox 2005:70).

The U.S. Arsenal

The founding of the U.S. Arsenal in 1859 was precipitated by the needs of the United States Army during the Mexican-American War (1846-1848), as well as western expansion that increased hostilities with Native Americans and Mexican nationals. The U.S. Arsenal was established at its permanent location in San Antonio in 1859. It served as the principal arsenal for U.S. Army troops in the Department of Texas, later known as the Eighth Army District. This priority shifted to a global perspective as the United States developed into a world power following the Spanish-American War. During both World War I and World War II, the infrastructure of the Arsenal grew to meet national needs and goals. Figure 2-2 shows the development of the Arsenal over time. Much of the following information is derived and synthesized from Garner's *Historic American Building Survey* published in 1968.

A supply depot was initially established at San Pedro Springs during the Mexican-American War (1846) and relocated to the Alamo after the close of the conflict. The increased presence of U.S. military units stationed in Texas after the war made San Antonio a logical choice for a permanent military garrison (Orchard 1936). In May, 1850, the U.S. Government leased land at the *Garita*, the Powder House built during the Spanish period, in order to store ordinance supplies (Orchard 1936). By November, 1852, all available storage space in San Antonio for arms and ammunition had been utilized and the search for a permanent arsenal location begun in earnest (Orchard 1936). Between 1852 and 1857, several tracts of land were put forward by the city as potential sites for an arsenal, and in 1858, Captain R.H.K. Whiteley of the U.S. Army selected the property on South Flores Street (Orchard 1936). The property, consisting of almost 15 acres, belonged to two prominent San Antonio residents, Dr. Gregory Devine and ex-governor Peter H. Bell. Dr. Devine's home initially served as construction headquarters for the new installation but was soon utilized as the commanding officer's residence. In 1859, construction was begun on three main buildings: the magazine, armory, and an administrative building. Utilizing locally quarried dressed limestone for the construction, only the administrative building was completed prior to the Civil War.

On February 1, 1861, Texas seceded from the Union and fifteen days later the U.S. Arsenal surrendered to Texas state forces. Under Confederate control, the magazine and armory were

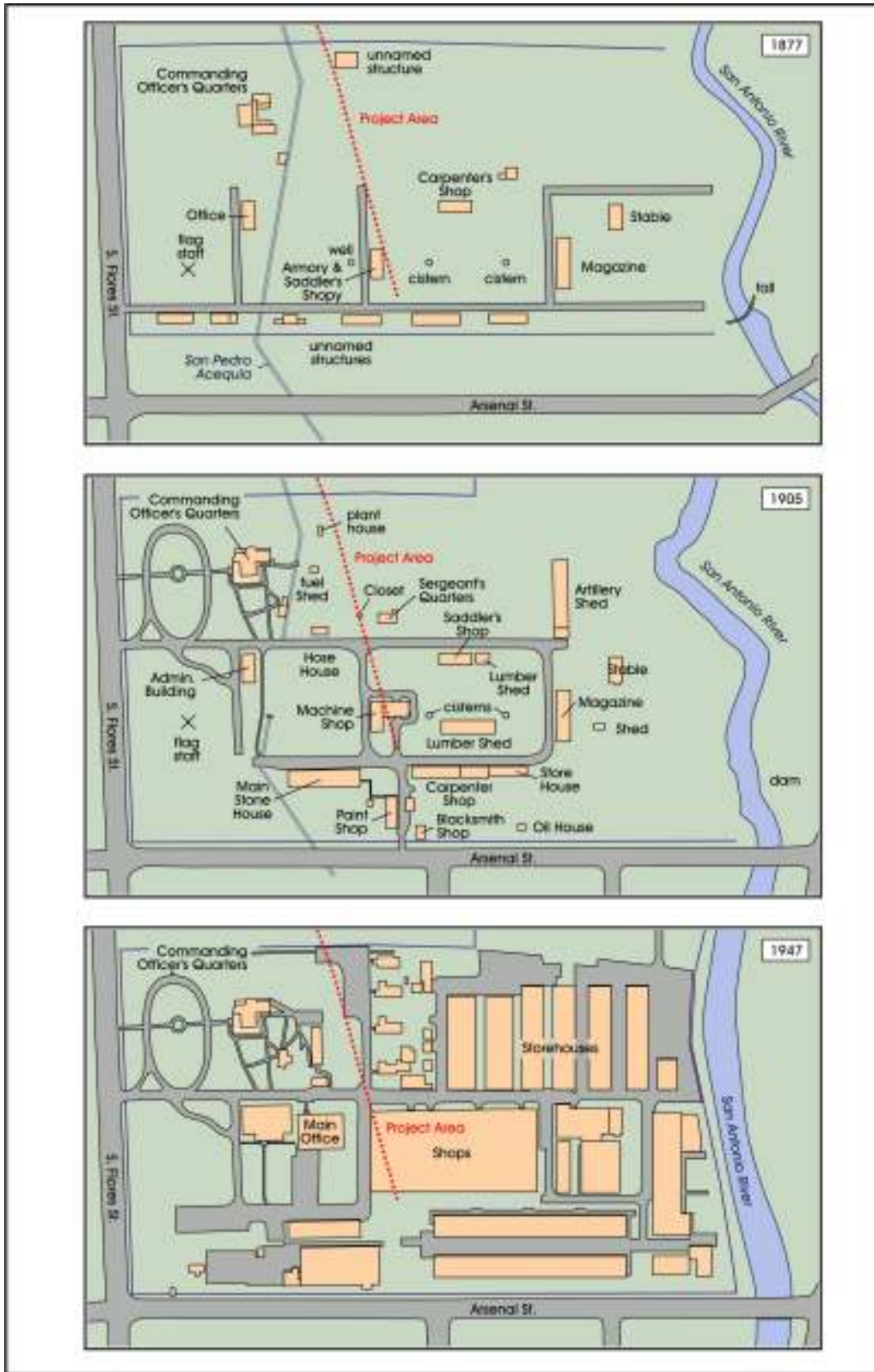


Figure 2-2. The development of the U. S. Arsenal over time. Project area indicated by red dashed line.

completed, although post-war reports noted the deteriorated condition of the structures. Requests were submitted to the national government for funds to repair and reconstruct as well as to build new structures.

In 1871, Congress authorized funds to repair the older structures and construct additional new buildings. Renovations and upgrades were made to the Devine home, the armory, magazine, and administrative building. The older stable was demolished and replaced with the present structure. In addition, a carpenter's shop and six store houses were also built. In 1881, the United States government bought additional property to the south adjacent to Arsenal Street.

Between 1916 and 1929, the Arsenal once again initiated various plans to build and modernize the facility. At its apex during World War II, the Arsenal was composed of approximately 44 building with 23,640 square feet of storage with an estimated value of \$25,000,000. After World War II, the military was downsized, and in conjunction with shifting logistical priorities the Arsenal was decommissioned.

The Arsenal was closed in 1947 following World War II with its mission and ordinance transferred to the Red River Arsenal in Texarkana, Texas. Between 1947 and 1971, the Arsenal was designated as the Federal Center in San Antonio with various federal and state agencies as tenants. It was administered by the General Services Administration (GSA).

Beginning in 1947 through the 1990s, several construction projects have impacted or threatened to impact the facility. In 1949, the City of San Antonio completed the construction of South Main Avenue through Arsenal property (Figure 2-3). During this construction, several buildings were modified and/or demolished. Between 1962 and 1970, the Arsenal was the subject of attempts by the GSA to develop the property (Fisher 1996). This proposed development included the demolition of several historic buildings. In 1962, the San Antonio Historic Conservation Society undertook efforts to protect these building, including the Commander's House. Their actions resulted in the placement of the Arsenal on to the National Register of Historic Places. In 1971, a portion of the property was transferred to the City of San Antonio in exchange for property on Durango Street. In 1982, a large part of the arsenal grounds were sold to H.E.B. Grocery Co. for use as its corporate headquarters (Fox 1986). H.E.B. renovated historic buildings, including the



Figure 2-3. Aerial photograph (top) of U. S. Arsenal in 1947 viewing south prior to construction of South Main Avenue in 1949. Projected path of construction (in red) based upon 1949 photograph published in *San Antonio Light*.

Arsenal's magazine, and stable, and modified other structures into office spaces. The Commander's House and the adjacent grounds were sold to the City and are presently administered by the City's Parks and Recreation Department.

Previous Archaeological Investigations at NCB 929

The APE is located within New City Block 929 (NCB 929). Several archaeological investigations have taken place in close proximity of the project area (Figure 2-1) (THC 2008).

One of the earliest studies was conducted by Anne A. Fox of the CAR. In 1977, she conducted archaeological testing for the San Pedro Acequia on the grounds of the Commander's House/ Devine Home (41BX351) (Fox 1978). The investigations helped delineate the course of the stone-lined acequia through the Arsenal grounds and documented the wooden lateral gates in front of the house. This excavation was conducted on the opposite side of the street from the current APE.

In 1986, Fox returned to the grounds of the Arsenal (NCB 929), to further investigate the location of laterals associated with the San Pedro Acequia (Fox 1986). During the course of investigation no laterals to the acequia were found.

In 1997, Patterson conducted a survey of the southwest portion of the Arsenal grounds remaining under GSA jurisdiction (Patterson 1997) and found remains of the acequia. Additionally in 1997, I. Wayne Cox of CAR, monitored construction activities in the same area. During monitoring, he found two sections of the limestone-faced acequia, both of which were mapped (Cox and Houk 1998).

Chapter 3: Archaeological Field and Laboratory

Methods

Monitoring Methods

Archaeological monitoring of the trench excavation for the installation of electrical utilities by CPS Energy was conducted by CAR between August and September of 2008. This excavation was subcontracted to H. B. Zachry who utilized a backhoe to excavate a trench approximately 250 m long by 0.75 m wide to a depth varying between 1.5 to 2.5 m. In addition, three larger holes were excavated for manholes. Figure 3-1 shows a portion of the APE and width of proposed excavation. During the course of the work, CAR personnel were present at all times with the following exceptions: when no excavation was planned or when excavation was done in areas known to be previously disturbed. Prior to the field monitoring, CAR reviewed historic aerials and maps of the project area, as well as previous archaeological reports to determine possible architectural features present along the APE.

One of the main goals of the monitoring was to document any remnants of the acequia that would be impacted by construction. In addition, archaeological monitoring was to document the location of features associated with the Arsenal or other historic structures. During the monitoring phase, two features were found and documented. The locations of these features were recorded with a



Figure 3-1. Photograph (left) shows main entrance to HFB headquarters and length of excavation in red. Photograph of project area along S. Main Avenue with the width of excavation trench (right).

Trimble GeoXT. They were photographed and documented with plan and profile sketches. Profile sketches included a brief soil description (texture, consistence, Munsell color, inclusions), as well as a detailed description of the feature. No artifacts were found in association with either of these features. Any additional observations considered pertinent were included on the profile sketches.

Laboratory Methods

All records obtained and/or generated during the project were prepared in accordance with federal regulation 36 CFR part 79, and THC requirements for State Held-in-Trust collections. Digital photographs were printed on acid-free paper, labeled with archivally appropriate materials, and placed in archival-quality sleeves. All documentation pertaining to the project is curated at the CAR facility.

Chapter 4: Results of Archaeological Monitoring

During the course of the project, two features were identified and documented. Figure 4-1 shows the locations of the excavations and the two identified features. Because the relatively narrow width of the trench limited exposure, some of the interpretations presented herein are tentative. These features will be described in full in the following section.

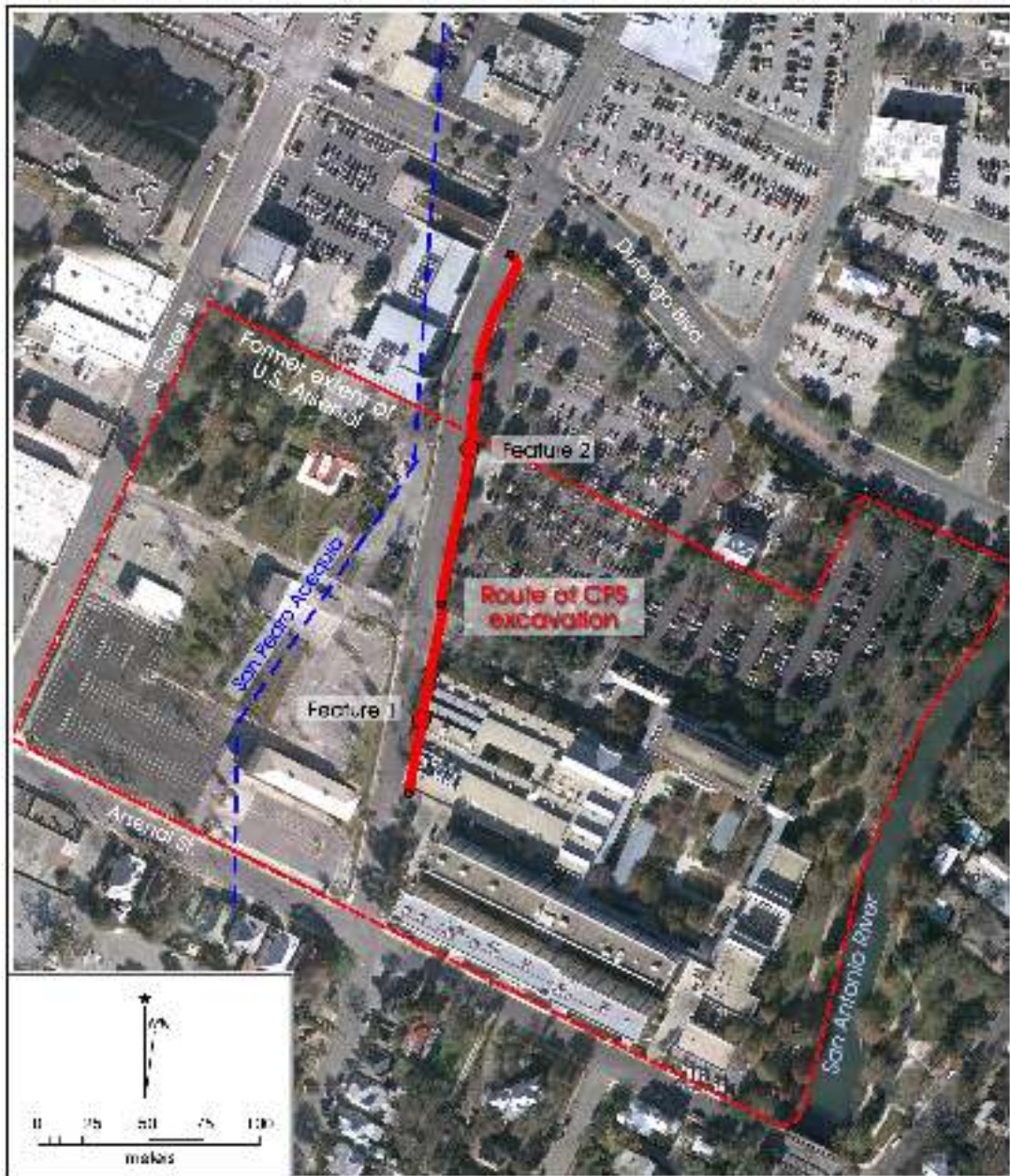


Figure 4-1. Aerial photograph showing the boundary of the U.S. Arsenal (41BX622), the course of the San Pedro Acequia (41BX337), the route of the CPS construction trench, and identified features within the APB.

Feature 1

Feature 1 was the remnant of a limestone foundation approximately 9 m long. Its location is at N548899.19 and E3254325.85 UTM (NAD 1927). Figure 4-2 shows the feature as it was discovered by the backhoe after encountering two concrete foundations believed to be part of the



Figure 4-2. Excavation trench showing concrete foundation of shop building built in the early 20th century (left). Photograph (right) of limestone foundation of armory building built 1861 relative to that concrete foundation.

building identified as the machine shop shown in the 1905 site plan (Figure 4-3). A number of sections of mortared limestone blocks were found several meters north of the concrete foundation below the sidewalk and a compacted gravel base. This feature was impacted by the construction of South Main in the late 1940s, as well as the Arsenal's construction phases referenced earlier. Disturbances included the presence of AT&T fiber optics line encased in concrete, rock fill and other concrete intrusions. Soils within the feature consisted of clayey loam with sand and gravels. North of the feature the soil changed to very dark brown clayey loam free of gravels. No cultural material was encountered during the excavation of the unit. Figure 4-4 shows the profile of the east wall with photographs of interest.

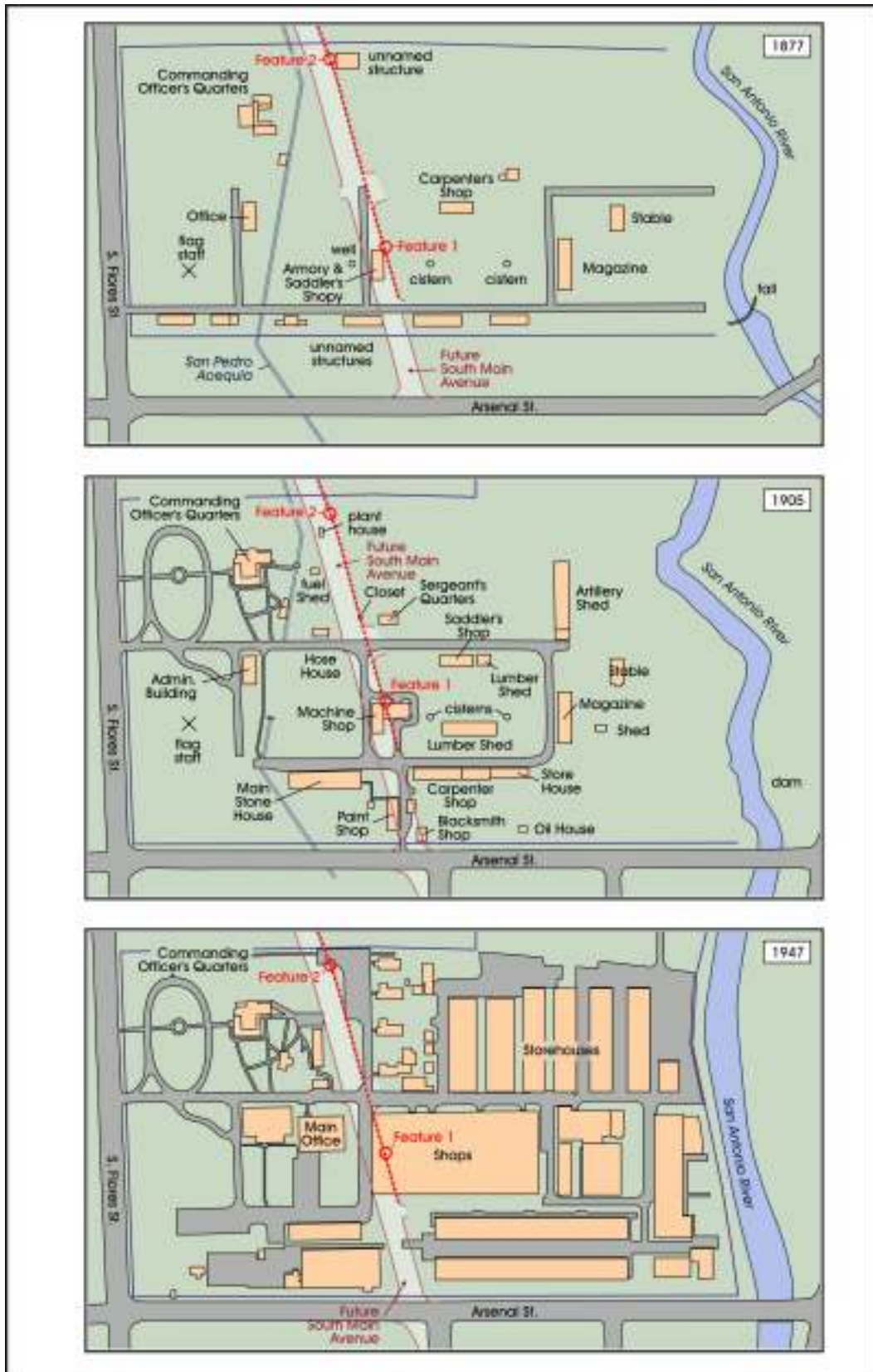


Figure 4-3. The development of the U. S. Arsenal over time showing the location of the APE (hatched red line) and identified features (red circles).

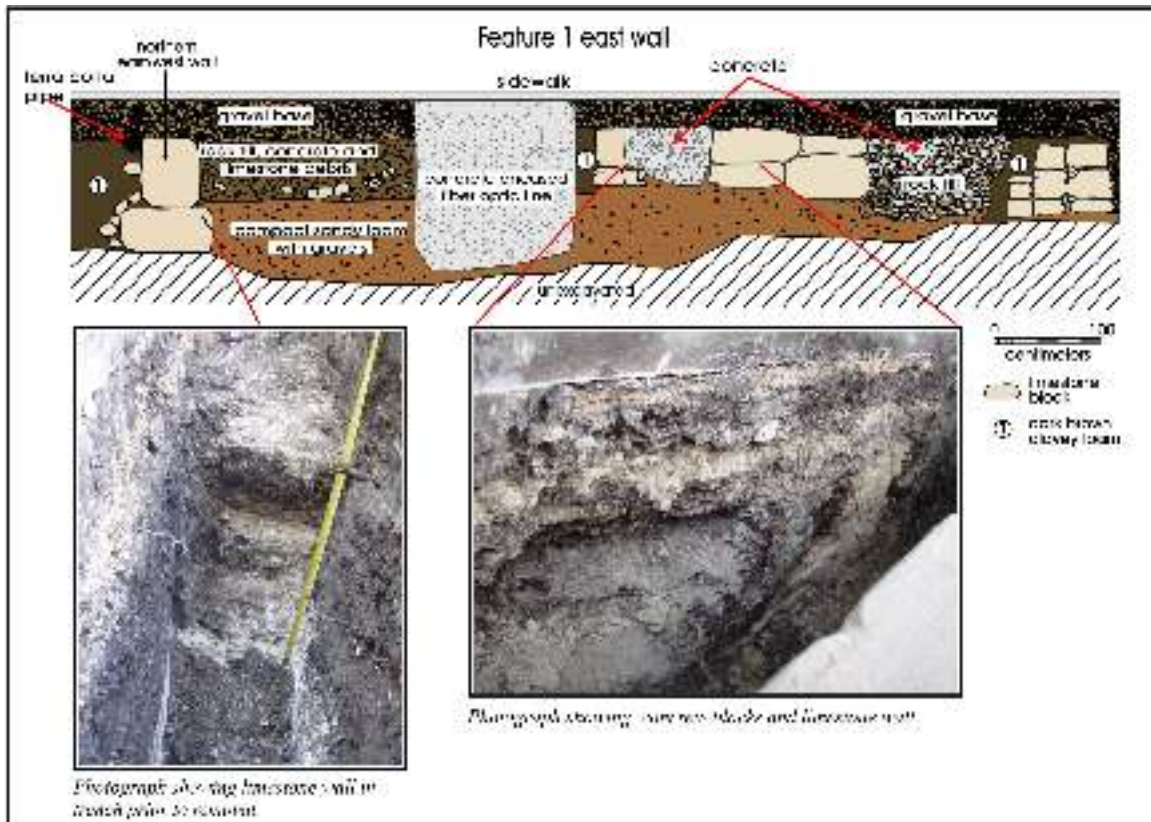


Figure 4-4. Profile and photographs of Feature 1.

We suggest, based upon multiple lines of evidence, that Feature 1 is the northeast corner foundation of the 1860 armory. A site map of the armory drawn in 1877 (see Figure 4-3) shows a building identified as the armory and saddler's shop in the approximate location of Feature 1. A map included in the 1881 deed transfer of the Beauregard property to the United States also shows the armory in this location (BCDR 2008). By 1905 (see Figure 4-3), the structure appears to have been modified with an addition on the northeast side and the structure is now identified as a machine shop.

In a survey map of the property dated 1947 (Figure 4-3), a much larger building labeled "shops" is shown to encompass the footprint of the earlier armory building. It is assumed that the construction of this later structure either incorporated or otherwise removed all visible aspects of the earlier armory building. The 1949 aerial photograph taken by the San Antonio Light (see Figure 2-3) suggests that this building was altered in preparation for the construction of South Main Avenue through the Arsenal property (Photographic Archive San Antonio Light ITC). Both the construction of the "shops" building and the subsequent construction of South Main Avenue likely accounted for the fragmented condition of the stone foundation.

Feature 2

Feature 2 was comprised of two parallel limestone walls running roughly perpendicular to the trench and a third running parallel to it along the trench's east side at 90 degrees to the other walls (Figure 4-5). The two parallel walls, approximately 1.5 m apart, were constructed of mortared limestone extending to a depth of approximately 90 cm and separated by a brown clay soil (Figure 4-6). No cultural materials were encountered during the excavation of this feature. The feature's location is at N548923.22 and E3254442.08 UTM (NAD 1927).



Figure 4-5. Photograph of the southern portion of Feature 2 showing a corner in the limestone foundation. View to the south.

Given the limited exposure of Feature 2, identification is tentative. The stratigraphy of the soils

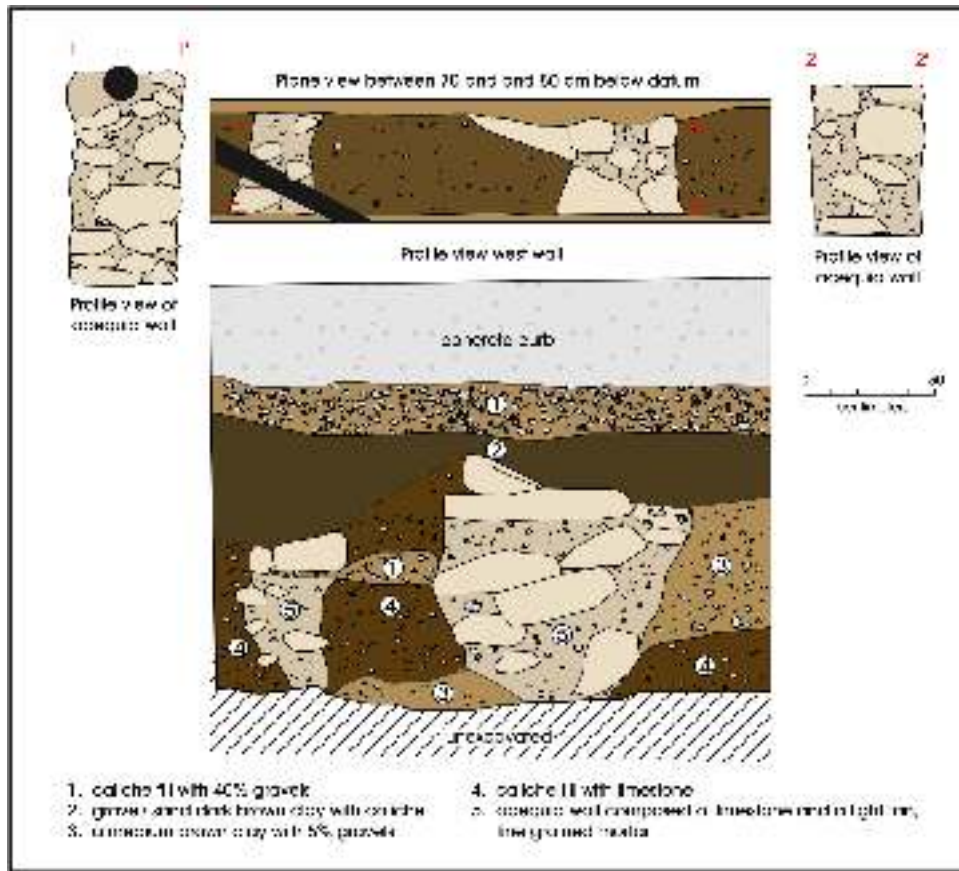


Figure 4-6. Plan and profile of Feature 2.

and the appearance and orientation of the walls indicate that Feature 2 was likely a small structure or a part of a larger structure built on the property between 1859 and 1947. Both the 1877 and 1905 maps of the property (see Figure 4-3) show structures near this location. Although an unnamed building depicted on the 1877 map appears very close to this plotted location, the size of the structure indicates a north/south dimension of approximately 10 m. A second building labeled “plant house” on the 1905 map (see Figure 4-3) and located about 10 m toward the south-southwest would also have had an overall north/south dimension greater than that observed in Feature 2.

Chapter 5: Discussion and Recommendations

In August and September of 2008, the Center for Archaeological Research carried out archaeological monitoring for CPS Energy on South Main Avenue between Durango Street and Arsenal Street to the south. Two known sites are located within and adjacent to the APE: the San Pedro Acequia (41BX337) and the U.S. Arsenal (41BX622). Both sites are on the list of City Historic Landmarks and the National Register of Historic Places. During the course of monitoring, two features were revealed. Feature 1 is the remnants of a limestone foundation and based upon its location is likely to be the original armory building. Feature 2 is also thought to be a limestone foundation of a structure built during the U.S. Arsenal period. Both features were impacted by past construction. The features were documented with both plan and profile views, photographed and their locations recorded with a Trimble GeoXT.

CAR recommends that additional work along South Main Avenue in the vicinity or within the current APE concentrate on more fully documenting the features found by this project and search for other architectural remnants of the Arsenal complex and the San Pedro acequia system.

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