The 6th and Toole Project: Archaeological and Historical Investigations in the Tucson Warehouse Historic District

Edited by:
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Tierra Archaeological Research Series No. 3
ASM Accession No. 2006-17
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ABSTRACT

PROJECT TITLE:	The 6th & Toole Project: Archaeological and Historical Investigations in the Tucson Warehouse Historic District
LAND OWNERSHIP:	City of Tucson
AGENCIES:	City of Tucson, State Historic Preservation Office
SITE NUMBER:	AZ BB:13:781(ASM)
PROJECT DESCRIPTION:	Data recovery of a 0.92-acre portion of Block 82 in the Tucson Warehouse Historic District.
FIELDWORK DATES:	June 5–June 23, 2006
TIERRA PROJECT NUMBER:	6T0-023
TIERRA ARCHAEOLOGICAL RESEARCH SERIES NO.:	3
PERMIT NO.:	Arizona Antiquities Act Blanket Permit No. 2006-23bl
ASM ACCESSION NO.:	2006-17
LOCATION:	The investigated parcel is a 0.92-acre lot at the northeast corner of Sixth Avenue and Toole Avenue, south of the Union Pacific Railroad right-of-way and west of the restored Amtrak station in the SW ¼ of the SE ¼ of Section 12, Township 14 South, Range 13 East, Gila and Salt River Baseline and Meridian (G&SRB&M), on the Tucson, Arizona (1983), 7.5-minute U.S. Geological Survey (USGS) Quadrangle, in Tucson, Pima County, Arizona.
MANAGEMENT RECOMMENDATIONS:	The approved data recovery plan for the portion of Block 82 was implemented. All archaeological field tasks were completed as described in the data recovery plan. Therefore, Tierra recommended that archaeological clearance be granted for the property.

ACKNOWLEDGEMENTS

As with all large archaeological projects, the list of contributors grows with each passing month, clearly illustrating the collaborative nature of the endeavor. The authors of this report are indebted to a great number of people without whose concerted efforts the project could not have been successfully completed.

The 6th and Toole Project was sponsored by the City of Tucson and managed by Chapman Management Group. Marty McCune and Jonathan Mabry of the City of Tucson provided the primary agency oversight for the project.

The foundation of all archaeological projects is the team assembled to collect, manage, and analyze the data. Fieldwork was conducted under the able direction of Jeff Jones, with Tom Klimas serving as crew chief. Our field crew consisted of Raphael Ambeliz, Michael Margolis, Jennifer Hushour, Ria Tsinas, Justin Termarsch, and Caramia Williams.

Tierra's support staff is to be commended for performing their usual professional job in producing the final report. The GIS department, under the direction of Mary Burke, was responsible for both collection of field survey data and the production of the maps included in the report. Tyler Theriot collected the field data, which were processed by Tanya Owens, John Papageorgiou, and Tyler Theriot. Matthew Reynolds assisted greatly in the final compilation of GIS data. Mary Charlotte Thurtle and Fred Huntington were the managers of the project. Ms. Thurtle and Jennifer Hushour also oversaw the public involvement portion, including leading public tours, with assistance from Ria Tsinas.

The processing and cataloging of all artifacts and samples was expertly conducted under the direction of Jenna Hamlin, Tierra's laboratory director, with assistance from April Whitaker. Jenna and her team were also responsible for maintaining the database and supplying the field crew with forms and supplies. Direction of the analysts was led by Barbara Montgomery. Historical artifact analysis was conducted by Homer Thiel and April Whitaker. Jennifer Levstik carried out the preliminary archival research presented in the survey report. Native American ceramics were analyzed by Linda M. Gregonis. Faunal analysis was carried out by Michael Margolis.

We would also like to thank Old Pueblo Trolley, the Southern Arizona Transportation Museum, and the Arizona Historical Society for their assistance with archival research and interpretation of the area's history.

We extend our heartfelt appreciation to all of those associated with the project, and apologize to anyone we may have forgotten inadvertently.

CHAPTER 1
INTRODUCTION

Jennifer Hushour, M.Sc., and Eric Eugene Klucas, Ph.D.

This document presents the results of archaeological data recovery operations conducted by Tierra Right of Way Services, Ltd. (Tierra), on a portion of Block 82 of the Tucson Warehouse Historic District in Tucson, Arizona. The parcel, subsumed under a single site number (AZ BB:13:781[ASM]), is bounded to the south by Toole Avenue, to the north by the Union Pacific Railroad right-of-way, to the east by the restored Amtrak station, and to the west by 6th Avenue (Figure 1). Throughout the document, the current project area will be referred to simply as the 6th and Toole parcel.

PROJECT LOCATION AND ENVIRONMENTAL SETTING

The inspected parcel is a 0.92-acre vacant lot at the northeast corner of 6th Avenue and Toole Avenue, south of the Union Pacific Railroad right-of-way (ROW) and west of the restored Amtrak station in the SW ¼ of the SE ¼ of Section 12, Township 14 South, Range 13 East, Gila and Salt River Baseline and Meridian (G&SRB&M), on the Tucson, Arizona (1983), 7.5-minute 1:24,000 U.S. Geological Survey (USGS) Quadrangle (see Figure 1), in Tucson, Pima County, Arizona.

The project area is situated within the Basin and Range Physiographic Province at an average elevation of 2,400 feet above sea level. Soils in the area are weakly indurated Entisols associated with the Qt2 stream terrace within the floodplain of the Santa Cruz River. Surfaces are generally well preserved and lacking in erosional modification (McKittrick 1988:4, Map 10).

The native vegetation in the project vicinity would be typical of the Arizona Upland division of the Sonoran Desertscrub biotic province (Turner and Brown 1982), but the entire project area has been cleared and graded. Vegetation present during data recovery included only Russian thistle, Bermuda grass, and a few small palo verde trees.

PROJECT HISTORY AND PREVIOUS RESEARCH

The initial work for the current project began in September 2005, when Tierra archaeologists conducted a Class III cultural resources survey of the parcel (Levstik and Jones 2005). During this initial fieldwork, two concrete pads, a linear concrete structure, and sections of three concrete sidewalks were identified and documented. A preliminary examination of relevant historic documents, including historic-period maps, indicated that several commercial structures had been located on the property, including warehouse facilities, a bottling plant, an ice house, and buildings associated with the San Xavier Hotel.

Tierra conducted archaeological testing of the parcel between January 16 and January 24, 2006 (Jones 2006). The testing program included a physical investigation of the property and further examination of relevant historic documents. Nine backhoe trenches totaling 431.5 linear m were excavated across the property. A total of 55 buried cultural features were identified, including 26

pits, 10 post holes, 6 privies or possible privies, 2 outdoor surfaces, 1 structure, 1 railroad spur, and 9 additional miscellaneous features (Jones 2006). The data recovery plan (Hushour et al. 2006) was developed based on the results of testing.

Expanded archaeological data recovery operations were conducted June 5 through June 23, 2006 (Klucas et al. 2006). In total, 43 features were identified during data recovery operations. Of these, 34 were either sampled or completely excavated (see Chapter 3). Examples of these include foundation sections of the Adolf Bail Warehouse (Figure 2), a late nineteenth to early twentieth century bottling plant (Figure 3) (see discussion in Chapter 2), numerous pits, and trash deposits. In addition, two large privies that contained refuse from vastly different behavioral contexts were excavated. The first, Feature 27 (previously called Feature 27/67), was located near the center of the parcel and appears to have been associated with the industrial area of the site. The other privy, Feature 45, was located in the southeastern portion of the parcel near an area that the Sanborn maps identify as containing servant's quarters for the San Xavier Hotel. Although this assessment is based largely on the proximity of the privies to these two areas, materials from the features corroborate the idea and offer the opportunity to investigate the different activities associated with these two locales.

Historic Archaeology in Downtown Tucson

A culture history of the Tucson Basin is presented in Tierra's survey report (Levstik and Jones 2005). Until the arrival of the railroad in 1880, Tucson was a small agrarian town with only trails and stage coach routes connecting it to the outside world. The introduction of the railroad profoundly changed the face of Tucson—from small desert town to industrialized city. A more detailed history of Tucson will not be discussed here beyond the context of the current project. The reader is directed to "Tucson at the Turn of the Century" which was prepared by the Center for Desert Archaeology (Mabry et al. 1994) and which presents a thorough discussion of the subject.

Several projects have been conducted in downtown Tucson over the past few decades. Reports on Blocks 83, 180, 228, 94, 138, and a portion of the Tucson Convention Center were written by Mabry et. al. (1994), Ciolek-Torello and Swanson (1997), Ayres (1990), Thiel (1993), Thiel and Desruisseaux (1993), and Heidke and Masse (1988), respectively. Research questions addressed by these projects pertained to many areas including ethnicity, status, changing land use, transportation, the effects of the introduction of the railroad, and economic activity. A discussion of the most relevant of the investigated sites is presented in the data recovery plan (Hushour et al. 2006:8–9).

One similarity between many of the projects in downtown Tucson has been that, generally speaking, they have been primarily focused on these questions as reflected in the *residential* archaeological record. This stands to reason, as most of the excavated properties were residential. A unique aspect of this project is that the use of the property was primarily industrial and commercial in nature. There is also a residential aspect (the privy Feature 45 being related to both a hotel and the residence of its staff; there is also evidence that several of the industrial workers also lived in the warehouses on the property). This has allowed us to examine the aforementioned research issues from different perspectives using different types of data.

RESEARCH DESIGN REVISITED

The National Register of Historic Places (NRHP) Registration Form for the Tucson Warehouse Historic District (National Park Service 1999:11) states that the district is significant in the areas of Transportation, Commerce, and Industry because of its role in the economic development of the

Tucson region (Hushour et al. 2006). Tierra used these themes in formulating the research design for the project. These will be discussed at length in Chapter 8. Issues such as commerce, the economic viability of businesses in Tucson at the time of the railroad's arrival, working conditions, technology, and Tucson's emerging place in a larger national economy are discussed.

FIELD METHODS

Fieldwork was carried out as described in the Data Recovery Plan (Hushour et al. 2006). The four areas described in the plan were mechanically stripped, with the exceptions of a portion of Stripping Area 2 (which was covered by a railroad spur) and a small portion of area 3, which was not stripped in order to allow vehicle access to the site (Figure 4). The backhoe was unable to remove the spur line and so it was left in place. As per OSHA regulations, once excavations reached a depth of 5 feet, the surrounding area was mechanically stripped back to ensure safe working conditions.

The investigated features were either fully excavated or sampled through the hand excavation of 1-by-1-m or 1-by-2-m units, depending on the size of the feature. Features were excavated by hand, in natural or arbitrary 10-cm or 20-cm levels with all fill screened through ¼-inch hardware cloth. Artifacts were bagged by level and material type. The one exception was Feature 78, a large pit with a high density of glass bottles and bottle fragments. A sample of 150 bottle bases was collected from this feature. The fill from this feature was not screened. Several judgmental samples of diagnostic artifacts were collected during backhoe stripping. All available information, such as stripping area, was recorded for each judgmental sample.

Tierra personnel mapped the features and stripping areas using the permanent site datum (PSD, established during January 2006 testing), a Total Station theodolite, and AutoCad software. Absolute coordinates of the site datum were obtained using a handheld Global Positioning System (GPS) unit. In some cases, it was necessary to establish and use elevational site datums (ESD) for individual features. These ESD points were used to record all vertical measurements for a given feature and, generally, were used specifically for that feature alone. These individual datum points were recorded relative to the PSD, allowing measurements based on them to be tied in with the entire site. All horizontal and vertical datum points were assigned provenience designations.

REPORT ORGANIZATION

This report is divided into eight chapters. Following this introductory chapter, Chapter 2 presents a summary of archival research conducted prior to fieldwork. Chapter 3 presents the feature descriptions and results of fieldwork. Chapter 4 discusses the results of the analysis of historic period artifacts, excluding metal items, recovered from the excavations. An analysis and inventory of metal objects recovered during the project is presented in Chapter 5. Chapter 6 presents a discussion of the Native American ceramic materials collected from the site. Chapter 7 discusses faunal remains recovered from the parcel. The final chapter (Chapter 8) summarizes and synthesizes the current research on the 6th and Toole property. The results of analyses of macrobotanical remains are presented in Appendix A.

Figure 1. Map showing project location and boundaries of the Tucson Warehouse Historic District.

Figure 2. Portion of Feature 77, foundation of the Adolf Bail warehouse.

Figure 3. Feature 52, foundation of the bottling works.

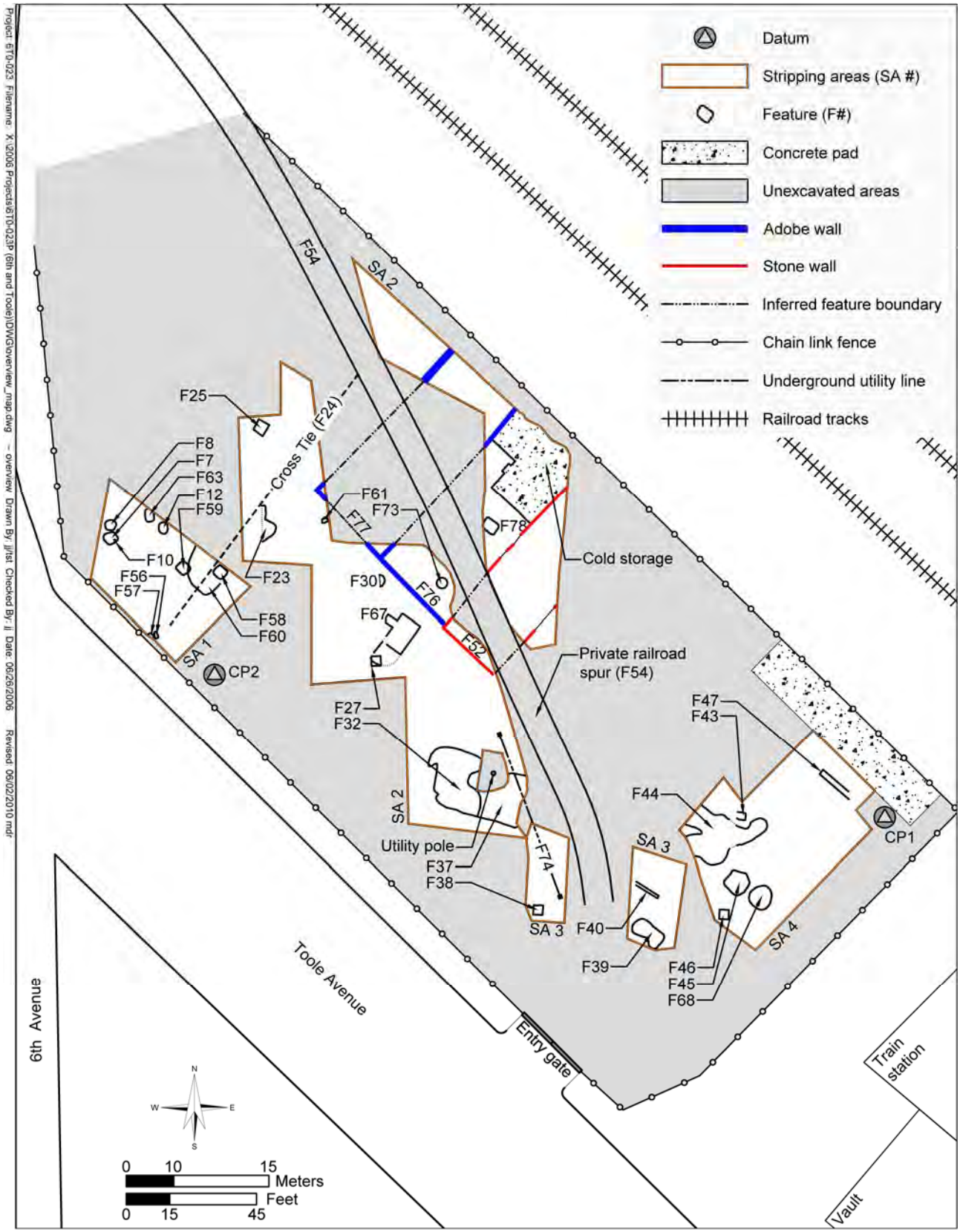


Figure 4. Investigated portion of AZ BB:13:871(ASM).

CHAPTER 2
SUMMARY OF ARCHIVAL RESEARCH

Jennifer Hushour, M.Sc.

DOCUMENTARY RESEARCH METHODS

Archival sources for this project included Sanborn Insurance Maps, Tucson City Directories, and historic photographs available at the Arizona Historical Society. Several books on the history of Tucson and the railroad's introduction, as well as the *Arizona Daily* (and *Weekly*) *Star* (listed individually in the references), were also consulted. Individuals, including members of Old Pueblo Trolley and the Southern Arizona Transportation Museum, who had knowledge of the specific aspects of interest to this project (and who keep the majority of the railroad's records from this time period) were approached for information. General searches of the University of Arizona Library and Special Collections were made for subjects relevant to the project. The City of Tucson provided some of the later aerial photographs.

Archival information in this chapter will be presented chronologically. Below are sections discussing the early history of the project area, the business locations and physical facilities that were constructed on the property, and the history and employees of each of the businesses that were present within the project area over a period of several years from 1880 through the early 1900s.

EARLY HISTORY OF THE PROJECT AREA

The earliest occupation of the site is unknown. The only evidence of prehistoric use of the site that was recovered during data recovery was ten prehistoric ceramic sherds that were not associated with any specific feature (see Chapter 6 for discussion). Block 82 was annexed within the first 2 square miles of the original City of Tucson, which was adopted by Common Council on June 26, 1872 (Figure 5). The tract book records of the O'Quinn Title and Abstract Company (O'Quinn Title and Abstract Company n.d.), which documented real estate transactions in Tucson from 1873 to 1931, indicate that at the time of the first official recording of land ownership in Tucson (in 1873, shortly after the official formation of the City), 10 of the 12 lots in Block 82 were owned by private citizens (Table 1). As this was the first official recording of land ownership, it is unknown exactly how long before 1873 the land was purchased.

A search for the 1873 owners of the lots of Block 82 was conducted in the earliest available Tucson City Directory (printed in 1881). The owner of Lot 1 was Sam Hughes (see Table 1), a wealthy and industrious pioneer of early Tucson. In the 1881 directory, he is listed as residing at 304 Main Street North. The owner of Lot 9, Ramon Pacheco, is listed in the same directory as a rancher residing at 7 Pearl Street. Sr. Pacheco was a blacksmith who owned property valued at $4,000 in 1870 and served on the Pima County Board of Supervisors in 1872 (Solliday 2002). The owner of Lot 3 is listed as "Chas A. Shibbel." Charles Alexander Shibbel is listed in the 1881 directory as residing at 257 Main Street South. He was the Sheriff of Pima County from 1877 to 1880, during which time he swore in Wyatt Earp as a Deputy (Pima County Sheriff's Department 2003). In 1888, he purchased the Palace

Hotel and was its proprietor; in that same year, he was elected Pima County Recorder, an office that he held for twenty years until his death. The owner of Lot 2, R. A. Wilbur, was not located in the city directory for 1881, but was located elsewhere in the archival record. He was the federal agent to the Tohono O'odham ("Papago," at that time) Indians and was reportedly responsible for the establishment of their first reservation at San Xavier in 1874 (Fontana 2004).

The name Aguirre (owner[s] of Lot 4) was likely associated with the Aguirre family who emigrated from northern Mexico to New Mexico territory in 1852. Sons of Don Pedro Aguirre, a Chihuahuan hacendado, all four brothers became partners in their father's freighting business. As their business expanded, they spent more and more time in southern Arizona and northern Sonora. Yjinio Aguirre and his brothers prospered as ranchers, freighters, and stage owners in the Tucson area and elsewhere. They were also related to Don Mariano Samaniego, a prominent local businessman and politician (Sheridan 1992:52). The name "A. Sosa" (owner of Lot 5) possibly refers to Antonio Campa Soza, a prominent rancher who eventually settled part of the San Pedro valley (Sheridan 1992:68).

No records have been located for the names Waltewatch (Lot 7), Wikins (Lot 10), or Duffield (Lot 11). The search for the remaining two names, Grijalba (Lot3) and Romero (Lot 8), yielded several results in each case, and it is not possible to determine which if any of the listings were associated with the owners of the lots in the project area.

Of the six land owners of Block 82 that have been identified, all were known to be wealthy or prominent figures in early Tucson. Ramon Pacheco, A. Sosa (possibly Antonio Campa Soza), and the Aguirre and Romero families were all involved in enterprises such as ranching, freighting, and real estate speculation (Sheridan 1992:39, 53, and 68). Charles Shibbel, Sam Hughes, and R. A. Wilbur were all also men of some prominence in the community. Based on this information, as well as the facts that the lots were vacant at the time (see below) and that their owners were listed as residing elsewhere, it might be concluded that these lots were purchased as investments rather than for private use. Block 82 was located just outside the "old city," or main area of Tucson, such as it was. It could be presumed that such an investment would have been viewed as profitable one, given the rapid growth Tucson was seeing at that time.

One interesting observation regarding the land ownership in 1873 is that half of the owners were Hispanic, and the other half had Anglo or European names. As with most other aspects of Tucson's history, land ownership was clearly not reserved for white residents and settlers. At this time, the Tucson area had only been officially part of the United States for fewer than 20 years (the Gadsden Purchase, which purchased the land from Mexico, was ratified in 1854). Prior to the coming of the railroad, the peso was still widely used, architecture and culture were reflective of the Mexican residents (much as they are today), and a large part of the population was Hispanic. In 1873, at least, wealthy Mexican families appear to have had as much prominence and power as their Anglo counterparts.

In 1878, the Southern Pacific Railroad track was being constructed and nearing Tucson. An article in the *Arizona Weekly Star* discussed the coming of the railroad: "There are two surveys leading into town, one going outside the city limits, and another passing through *vacant* city lots. Now, they ask that they be given right of way through the city lots in question" (*Arizona Weekly Star*, November 28, 1878; emphasis added). To implement the request for property, a special meeting was held in 1879 with the Common Council of Tucson and Colonel George Gray, chief engineer for the Southern

Pacific. In addition to right-of-way through the city, Gray "requested land for a passenger and freight depot as well as a site for roundhouses, repair shops, tanks, etc" (Devine 2002:4). These requests were unanimously approved, and the Council agreed to convey the property to the railroad "free of all charge" (Devine 2002:5).

The O'Quinn Title and Abstract Company records indicate that all lots in Block 82 were purchased by the city in 1879. An article in the *Daily Arizona Citizen* discusses: "…we are confident that it [the City] will be able to buy the ground for this purpose, from our townsmen, at the lowest market price" (May 10, 1879). No specific records regarding the actual amounts paid to the landowners were located. Although there is no direct evidence for such a claim, it is even possible that the landowners, all being men of prominence, had some influence on the placement of the railroad tracks through the city rather than the area outside the city limits, which led to the City purchasing their lots.

The O'Quinn records (O'Quinn Title and Abstract Company n.d.) indicate that on November 17, 1879, the City offered "part of Block 82" as a "dedication" to the public, which was in keeping with the City's agreement to provide the land to the railroad free of charge. Tracks were laid diagonally across the property in 1880 (Figure 6). After the railroad took possession of the land, Southern Pacific maintained all records pertaining to the development and use of the property from that point on. These records were stored in a vault on the property until the City once again purchased the land in 1998, at which time, the records were given to private citizens. One of these, Mr. Howard Greenseth, reportedly held the majority of these records. Unfortunately, according to Mr. Greenseth, none of the records in his possession date back to the time period in question, and he has not been able to identify any other information that might be of use. Tierra was not given permission to perform its own search of the records.

Subsequent to the arrival of the railroad, the only part of Block 82 to remain in the record of the O'Quinn Company was a portion of Lot 11, which is the small portion of the southwest corner of the Block that remained after the construction of Toole Avenue (see Figure 6). This triangular section of land is across Toole Avenue from the site of the current investigation, and it continued to be used as residential property for some time. At the time of this investigation, the land was being used as a parking lot.

POST-RAILROAD USE

This section of the chapter is divided chronologically. Several maps of the area, most of them Sanborn insurance maps, were used as starting points for archival research. These maps depict the buildings that were present on the property between 1883 and 1909 (at which point the area became a park), as well as business names and construction details. The maps used are from 1883, 1886, 1889, 1896, 1897, 1901, 1904, 1909, 1914, and 1927. The businesses themselves are discussed in the subsequent section.

Map Research

1883 Sanborn Map

The earliest available Sanborn fire insurance map is from 1883 and depicts several buildings on the parcel (Figure 7). One large warehouse in the northwest section of the parcel is labeled "Noble &

Hall Hardw. & Milling Machy," and "I. & Bast iron works." According to the Sanborn key, the building had a platform on either end and four windows on its southeast side.

A smaller warehouse, labeled "Wm. B. Hooper Ware ho[use]. No. 2, Oils," is depicted roughly in the central section of the parcel, along the northern edge near the railroad tracks, southeast of the iron works building (see Business section below for discussion). "Wm. B. Hooper & Co." is listed in the 1881 Tucson directory as being located at 12 Mesilla St., and in the 1883 directory as being located at Pennington and Meyer. No references to a warehouse on Toole are made, although it seems reasonable to assume that if the building was merely a storage facility, it would not be listed as a business address.

According to the Sanborn map key (see Figure 7), the Wm. B. Hooper warehouse itself was a one-story building with a metal cornice, three windows, a slate or tin roof, and a firewall constructed 12 inches above the roof.

Southeast of the Wm. B. Hooper warehouse is a building labeled "Soda fac[tory]" and "Ice ho[use]." This building was a single story with a wooden cornice and shingle roof. The buildings could not be associated with any business from the time period in question, although the icehouse may have been directly associated with the railroad. None of the information found regarding soda or ice businesses from this time (ie., names and addresses, etc.) is consistent with the soda factory or icehouse on the parcel.

Southeast of the soda factory and icehouse are two small buildings labeled "R.R. Section Ho[use]" and "Oil Ho[use]." They appear to have been single-story shingle-roofed buildings. The project area boundary runs through the center of the railroad section house and encompasses the oil house completely.

Just southeast of these (and just outside of the project area) is the Porter's Hotel, which later became the San Xavier Hotel. Myrick (1975:72–73) refers to the business as the Porter House, a railroad-owned hotel managed by A. A. Porter and his wife.

1886 Sanborn Map

The 1886 Sanborn map depicts few changes to the buildings on the parcel (Figure 8). An extension of the San Xavier Hotel (probably a yard) is shown extending into the southeast end of the project area, encompassing the area of the railroad section house and oil house discussed above (see Figure 7). This extension is not labeled, but according to the key, it contains an unnamed single-story shingle-roof building on the southwest side. The buildings labeled "Soda fac[tory]" and "Ice ho[use]" no longer appear on the map. All remaining buildings (Wm. B. Hooper, Noble & Hall, etc.) are labeled as they were on the 1883 Sanborn Map.

1889 Sanborn Map

The 1889 Sanborn map reflects name changes to some of the buildings on the parcel (Figure 9). The Wm. B. Hooper warehouse is now labeled "A. Goldschmidt & Co's Oil W. Ho. [Warehouse]" (this is consistent with the city directories from around this time, which from 1897 onward make no mention of Wm. B. Hooper & Co.). The Business section below discusses Adolph Goldschmidt in detail.

Several other changes can be noted on the 1889 Sanborn map. The name "I. Bast" no longer appears next to the name "Noble & Hall" on the northwestern-most building. An icehouse has reappeared between the Goldschmidt warehouse and the San Xavier yard, the name of which is illegible (possibly the Union Ice Co. icehouse; see discussion below). This is probably a new and different icehouse than the one pictured on the 1883 map, as it does not appear on the 1886 map, nor is it pictured with the associated soda factory. The unnamed building in the southwest of the San Xavier yard is now marked as a stable.

An 1889 photograph (Figure 10) depicts a portion of downtown Tucson including the project area. The visibility is poor, and the buildings in question are in the background (the San Xavier Hotel and Southern Pacific Stations are the uppermost buildings on the right). The buildings immediately to the left (northwest) of the hotel are presumably the warehouses and storage facilities of Goldschmidt and Noble & Hall. This is the only photographic overview of the buildings within the project area that was located. All other available photographs of the project area were taken after 1909, when the area was turned into a park (Figure 11, see discussion below).

1896 Sanborn Map

In 1896, another Sanborn map was created that differs considerably from that of 1889 (Figure 12). The business of Adolph Goldschmidt & Co. no longer uses the warehouse on the property, which is now labeled "Standard Oil Co's Oil Wareho." There is now a structure labeled "Oil Tank" with a subheading that reads "On Br. [illegible] 6' High" associated with this warehouse on the southeastern edge. The indicators for the firewall (slate or tin roof and metal cornice) that appeared on the Wm. B. Hooper/A. Goldschmidt warehouse are still visible on the Standard Oil warehouse, which would indicate that it is the same building.

The building labeled "Noble & Hall" (and its associated platforms) had apparently been destroyed or remodeled by this time. In the area where it stood is a larger warehouse complex, the largest building of which is labeled "Wieland Bottling Works" (see business discussion below). This complex of buildings was located during data recovery. They were labeled Features 52, 76, and 77 (see Chapter 3). The William Hooper/Adolph Goldschmidt/Standard Oil Warehouse was not located during testing despite trenching in the area where it was to have stood. It is presumed to have been removed entirely sometime after 1909 (the last year in which is was recorded on a Sanborn map).

Among the buildings associated with this warehouse were two structures labeled "storage shed" and one small "ice ho[use]." According to the Sanborn key, some of these buildings had shingle roofs and others had slate or tin. All were single story.

The icehouse that stood between the warehouse complex and the San Xavier Hotel is now labeled "Union Ice Co. Ice Ho[use]." The Union Ice Company is listed in the 1897–1898 City of Tucson Directory as being located at 291 Toole Avenue (which is directly between the addresses of the warehouse complex and the San Xavier Hotel). This address is consistent with the physical location of the icehouse, which is between the warehouse complex and the hotel. The building itself had a shingle roof and was one story.

Map of Tucson in 1897

A map produced as part of the Mexican Heritage Project depicts Tucson (and the project area) as it appeared in 1897 (Figure 13 [Sheridan 1986:123]). This map shows that in 1897, Hispanic settlements were located along the southern half of the parcel (75–100 percent occupancy). These settlements do not appear on any previous or subsequent maps.

It should be noted that the notion of "Mexican housing" on the property (discussed in Tierra's previous reports on the site; see Jones 2006 and Hushour et al. 2006) was derived solely from this map. Subsequent research has allowed us to determine that the map was created from information gathered during the Mexican Heritage Project, specifically from addresses listed in the 1897 directory, and depicted areas and densities of Mexican settlement in Tucson in 1897. Despite the map's indication of 75–100 percent occupancy of the area, a thorough search of the 1897 directory yielded only two individuals with addresses on the property. These two were listed as laborers with A. Bail & Co., one of the businesses on the property. No residential addresses were listed for these two individuals. This may be because they simply omitted the information, or that they lived in the warehouse in which they worked, as some of the employees of other businesses did (see discussion below). In either case, based on this new information, we can conclude that despite our previous suggestions to the contrary, there was no known separate "Mexican housing" on the property. We do know that the employees of some of the businesses did live there, but there are no known separate residential structures that would possibly have been observable in the archaeological record.

1901 Sanborn Map

On the Sanborn map from 1901 (Figure 14), the large warehouse complex has changed from the one pictured on the 1896 map. The name "Wieland" no longer appears, and a new building labeled "Warehouse, Adolf Bail & Co." is depicted in the center of the complex. This warehouse is depicted with a darkened perimeter that is marked "Iron Clad." One small section of the perimeter that is not labeled as "iron clad" (the southeast corner next to the cold storage room) has a firewall constructed 12 inches above the roof. Associated with the Adolf Bail warehouse were a stable, structures labeled "Bottling Wks. [Works]" (previously labeled "Wieland"), "Cold Storage" (with an associated "Ammonia Condenser on rf" [roof]), "Tank el. 10f" [elevation 10 feet], "Engine 10 HP," "Tank on rf," "Shed," and "Wareho." All these smaller buildings appear to have slate or tin roofs, with the exception of one small building in the center of the complex labeled "canvas roof." The function of this building is unknown. A listing for "A. Bail & Co." first appears in the 1897–1898 Tucson City Directory as being located at 24 West Congress. Another listing in the same directory reads "Bail, A. Agent for Wieland Beer, 275 Toole Ave," which is within the project area and likely corresponds directly with this warehouse. The Union Ice Company icehouse is now labeled simply "ice ho."

In the southeast end of the project area, the extension of San Xavier Hotel that appeared on the 1886 map now has smaller structures within it labeled "Servants Rms," "Ice Ho.," and "Lamp Rm."[1] These are single-story, shingle-roofed buildings that do not appear on any previous maps. The 1897–1898 Tucson City Directory lists the San Xavier Hotel as being located at 355 Toole Avenue.

1904 Sanborn Map

The 1904 revision of the 1901 map (Figure 15) depicts several more changes to the project area. The name on the large warehouse has changed from "Adolf Bail & Co." to "Bail-Heineman & Co."

[1] Several apparently unused oil lamp parts were recovered from Feature 45 in nearby Trench 8; see Chapter 5.

Aside from the change of name, the Bail-Heineman warehouse complex appears to be unchanged from the depiction on the original 1901 map.

The warehouse that had been labeled "Standard Oil Co's Wareho[use]" is now labeled simply "stge" (storage). The associated oil tank no longer appears on the map.

The San Xavier Hotel burned down on June 28, 1903 (*Arizona Daily Star,* June 30, 1903), and does not appear on the 1904 map. Only a few small sections of its buildings remained. Two of these remaining building sections, a small icehouse and a lamp room, were within the project area (as discussed above). The large building (or yard) that housed these smaller structures had been removed by this time, and a linear storage facility was built around them in its place. Two of the new structures were built on the northwest end of the small icehouse, placing them within the project area. One is labeled "Coal bin," and the title of the other is illegible.

The large icehouse that may have been associated with the Union Ice Co. no longer appears on the map and may have been located in the place where the building labeled "Coal bin" was later erected.

1909 Sanborn Map

The 1909 Sanborn map (Figure 16) depicts none of the aforementioned facilities; the area is labeled as a park.

1914 and 1919 Sanborn Maps

A 1914 revision of the 1909 Sanborn map reflects no changes to the area, which is still labeled as a park. Sometime between 1914 and 1919, a private railroad spur was constructed on the parcel. The spur appears on a 1919 Sanborn map (Figure 17; see Figure 11).

This spur (Feature 54) was used for parked private or business cars detached from or awaiting attachment to a passenger train (Robert H. Bohannan, current president of the Arizona Rail Passenger Association and former general manager of a short line railroad, email communication 2006). Mr. Bohannan wrote:

> During the "heyday" of passenger rail travel, it was the custom of wealthy industrialists and officers of major corporations to travel in custom rail cars owned by the corporation—deluxe RVs on rails, if you will. Since such cars were not owned by the railroad itself, they were referred to as "private." The railroads themselves maintained "business cars" which were similarly outfitted for the purpose of railroad executive travel (Bohannan 2006).

Tucson was a division point ("branch headquarters") of the Southern Pacific Railroad (SPRR) as well as a growing city and, as such, was often visited by business or rail executives who arrived in their private or business cars. These cars usually were attached to the ends of premier passenger trains such as the *Golden State* or the *Sunset Limited* for cross-country travel. Upon arrival in Tucson, the cars would be removed from the train and parked in the private spur. In some cases, these cars had their own electric generators; in other cases, they were plugged into electrical service at the depot. Water lines were also attached to the cars.

1927 SPRR Station Blueprint

A blueprint of the SPRR station from 1927 indicates that the parcel is still a park at this time and that concrete sidewalks have been added to the area (they do not appear on the 1919 Sanborn, although they may simply have been left off of that map). The private rail spur is still visible in the blueprint, and it appears that the sidewalks of the park were designed around the spur.

Sometime after the 1940s (based on aerial photographs, see Figure 11), the spur was abandoned, and the area remained a park until at least the early 1950s. It is unclear when exactly the park was turned into a parking lot, except that it was sometime after the early 1950s (based on available photographs). It remained a parking lot up to the time of the current investigation.

Businesses within the Project Area, 1883–1904

Wm. B. Hooper & Co.

William B. Hooper and Company's warehouse was depicted on the Sanborn maps from 1883 and 1886, and was listed in the 1881 Tucson City Directory as being located at 12 Mesilla Street (probably the retail location). According to one source, "the San Francisco firm William B. Hooper & Co. [was] one of the first wholesale liquor houses in Tucson. They operated under their own name in Tucson, Phoenix, and at Alexandra in Yavapai County" (Shillingberg 1999:118).

An advertisement from the 1881 Tucson City Directory (Figure 18) indicates that Wm. B. Hooper & Co. was established in 1852 and that the company was an agent for several companies, including W.H. Hardy's Celebrated Whiskies, J.A. Miller Chicken Cock Whiskey, Old Kentucky Log Cabin Whiskey, The Coronet Whiskey, Val Blatz's Milwaukee Beer, *Dr. Siegert's Genuine Angostura Bitters* (emphasis added, see below)., Damiana Bitters, Yerba Buena Bitters, Tolu Rock and Rye, and Kidnegen

During data recovery, a large pit (Feature 37) was discovered in Trench 6, which was adjacent to the location of this warehouse as depicted on the Sanborn maps. One of the artifacts recovered from this feature was a complete bitters bottle, embossed "Dr. JGB SIEGERT & HIJOS." As discussed above, Dr. Siegert's Bitters was one of the products distributed by Wm. B. Hooper & Co. Analysis of the bottle identified it as having been produced between 1880 and 1890 (Toulouse 1971:439), which is consistent with the dates of the warehouse.

In the 1881 Tucson City Directory, two individuals are noted as representing the firm, namely John S. Carr and James Auld. John S. Carr was not only the local representative for the San Francisco business, but was also the Mayor of the City of Tucson that year. Two more individuals, Thomas B. Patterson and Fr. B. Bowman, are listed as salesman and bookkeeper for the firm, respectively.

In the Tucson City Directory for 1883/1884, four individuals are listed as working for Wm. B. Hooper & Co., two of whom may have lived on the property:

> Peter Gantriand, Porter with Wm. B. Hooper & Co., res. at wholesale house near depot
> Andres Keen, with Wm. B. Hooper & Co., res. 617 Pennington
> Thos. P. Patterson, with Wm. B. Hooper, res. Pennington St.
> E.T. Taylor, Clerk with Wm. B. Hooper & Co., res. at warehouse near depot

It is interesting to note that two of them employees of this company, Peter Gantriand and E. T. Taylor, apparently lived in the warehouses in which they worked. This may be because they were unable to afford housing elsewhere or because of a temporary position with the company, although the fact that they were recorded in the directory may make this latter option unlikely.

A. Goldschmidt & Co. Warehouse.

The Adolph Goldschmidt Warehouse was depicted on the 1889 Sanborn Map. Adolph Goldschmidt (Figure 19) emigrated to the United States from Hamburg, Germany, in 1876 and was one of several siblings of the Goldschmidt family who lived in Tucson at this time. He arrived in Tucson in 1878 with his brother Leo Goldschmidt (the future owner of the Eagle Milling Company, which he ran with yet another brother, Alfred J. Goldschmidt). Upon his arrival in Tucson, Adolph worked as a clerk for L. Zeckendorf & Co. for two years (the Goldschmidt's were related to the Zeckendorf's by the marriage of Matilda Goldschmidt to Aaron Zeckendorf). He eventually bought an interest in the retail grocery business of Seligman & Co. and in 1887, became the sole proprietor, expanding the business to include wholesale as well as retail sales. The above information and following excerpt are taken from an 1890 article, possibly an advertisement, from an unknown source that is presently contained in the Southwest Jewish Archives:

> Thousands of pounds of freight…are received from their large ware-rooms at the depot…They have shipped from the storehouses and ware-rooms 26,000 pounds of freight in one day. A. Goldschmidt seldom buys less than a carload of anything, and many articles are also sold in carload lots. The following is a list of articles that are sold exclusively by the carload: Flour, coal oil, California canned fruit, California dried fruit, salt, barley, sugar, meals, lard, bacon, hams, corned beef, eastern vegetables, Eagle condensed milk, Winslow's canned corn, grain, eastern mineral water, Schlitz beer and Lone Star beer.…Five men are employed in this house, besides Mr. Goldschmidt the senior proprietor.…Besides their large wholesale business, they do a good retail business in the city and several of the small dealers receive their entire supplies from this establishment (Adolph Goldschmidt File, Box 4, Southwest Jewish Archives Manuscript Collection SJA 004, Special Collections, University of Arizona Library).

Adolph Goldschmidt was also the treasurer of the Tucson Turn Verin (a German athletic club) and a charter member of the Jewish Cemetery Association (Chanin 2003). As no city directories were available from the time the Goldschmidt business was on the property, no employee names were located. The business doesn't appear on the 1896 Sanborn map, and this is consistent with the Tucson City Directories (1897–1900), which indicate that he had apparently closed his own business and was at this time the secretary of the Eagle Milling Company, which was run by his brother Leo Goldschmidt.

Standard Oil Company

A Standard Oil Company warehouse is depicted on the 1896 and 1901 Sanborn maps and listed in the 1897/98 and 1899/1900 Tucson City Directories as being located at 281 Toole Avenue.

The Standard Oil Company warehouse was likely affiliated with John D. Rockefeller's oil giant of the same name. The worldwide company controlled a large share of the production, transport, refining, and marketing of petroleum products in the United States and many other countries. The

company lasted in this form until 1911 (not long after the Standard Oil Company warehouse on the parcel was removed), at which point it dissolved into several smaller companies, many retaining the same name. The fact that the warehouse was depicted before the breakup of the parent company suggests that it was associated with this national company and would therefore probably have been a distribution center rather than a local business. Also, the warehouse's proximity to the railroad tracks suggests that it may have been used for incoming shipments and distribution. No employee names were located in the 1897 or 1901 directories, and no further information about a Tucson distribution site was located.

Wieland Bottling Works/Adolph Bail & Co./Bail-Heinemann Co.

The Wieland Beer Depot/Bottling Works is depicted on the Sanborn Map from 1896.

Wieland's brewery of San Francisco was owned by John Wieland, an immigrant from Germany who came to the California gold fields in 1849. He recovered enough gold to move to San Francisco and open his own bakery. He then bought the Philadelphia Brewery, changed its name, and built it into "the most successful and largest business of its kind on the Pacific Coast" (Greenspun 2006). He died in a house fire in 1885, but his brewery continued to thrive until Prohibition was enacted in 1920. Despite exhaustive archival research and consultation with an individual who own records and memorabilia relating to the brewery (Dr. Tom Jacobs of San Francisco), no records of their distribution practices have been located. Therefore, the brewery could not be linked directly to the Tucson warehouse, but remains the most likely affiliation.

The same building is titled "Adolph Bail & Co." on the 1901 Sanborn Map. The company is also listed in the 1897 and 1899/1900 Tucson City Directories as "Agent for Wieland Beer" located at 275 Toole.

Although the 1896 Sanborn map does not mention Adolph Bail, the 1897 Tucson City Directory lists him as "Agent for Wieland Beer," located at 275 Toole Avenue, residence at 82 Alameda. An advertisement from the 1899/1900 Tucson City Directory (Figure 20) mentions Wieland as well as Schlitz as products which Bail distributed. According to the 1900 U.S. Census, Adolf Bail (44 years old and living in Tucson at that time) was born in Germany in 1856 and immigrated to the United States in 1873. He and his wife Ada had moved to Los Angeles by 1920, according to the census of that year. Little more is known about Bail himself; however, numerous individuals who were employed by the company are listed in the 1897/98 Tucson City Directory:

Francisco Campillo, laborer with A. Bail & Co.
Enrique Carrisosa, laborer 275 Toole, res. 367 Convent
Louis Cordera, laborer 275 Toole, res. 102 W. 6th St.
Carlos Gomez, laborer, 275 Toole, res 120 N. Main
Daniel Green, clerk with A. Bail & Co., res. 36 S. 5th Ave.
Jose Higuera, laborer, 275 Toole
Ricardo Petty, clerk with A. Bail & Co., res. elsewhere
Pasqual Rodriguez, laborer 275 Toole, res. N. 5th Ave.

All but two of these individuals are listed with separate residential addresses. Whether these two remaining people lived in the warehouse on the property, as some of the Wm. B. Hooper employees did, or whether their residential addresses were simply not listed, is unknown.

The 1897/1898 Tucson City Directory lists "A. Bail" as being located at 275 Toole Avenue. This same directory also lists "Heineman, S." as a cigar salesman on 11 East Congress. The 1904 Sanborn map depicts the warehouse not as "Adolf Bail" but "Bail-Heineman." This name change, resulting from the partnership around 1904, is consistent with the Tucson City Directories, which list the names and businesses of "Bail" and "Heineman" separately until the 1903/1904 edition, which states "BAIL, HEINEMAN CO. Bail, Heineman Co., A. Bail, pres. and treas.; S. Heineman, vice pres. and sec., agts. San Francisco Breweries, Ltd., Anheuser Busch Brewing Assn., Jos. Schlitz Brewing Co., W. J. Lemp Brewing Co., wholesale wines and liquors, 275 Tool Ave."

The Bail-Heineman Company existed until at least the early 1920s. According to the Tucson City Directories, the Bail-Heineman Company was located on Toole Avenue until 1908, at which point, they relocated to 424 North Stone, north of the railroad tracks and outside of the project area.

Union Ice Company

The Union Ice company icehouse is depicted on the Sanborn map from 1896 (see Figure 12) and is listed as being located at 291 Toole Avenue in the 1897 Tucson City Directory, and at 275 Toole in the 1899 and 1901 City Directories.

The Union Ice Company icehouse on the parcel may have been associated with a company of the same name based in San Francisco, California. The owners of six small ice companies met in San Francisco in 1882, "resulting in the formation of [the] Union Ice Company. At the time of its formation, Union Ice was a distributing company, but soon began to acquire its own harvesting and manufacturing facilities" (Pryor 1997:132). The Union Ice Company was officially incorporated in 1891 and distributed by rail "more ice…to points east and west than any other point between San Francisco and Omaha" (Coates 2007).

The 1897 Tucson City Directory lists one employee:

Emanuel Drachman, Agent Union Ice Co. res. 233 S. Main

Emanuel Drachman was one of the ten children of Philip and Rosa Drachman, a prominent Tucson family in the late nineteenth century. According to the memoirs of Roy P. Drachman Sr. (the son of Emanuel Drachman), Emanuel operated the Elysian Gardens, an outdoor performance center, which showcased Arizona's first moving picture. He married Millie Rogers in 1905 and had three sons—Roy, Frank, and Albert. He later operated the Opera House, which burned down on May 23, 1918. He was a local baseball player and later managed a local team. Despite a personal interview with one of his grandchildren, no further information about Emanuel's association with Union Ice Company was obtained.

The 1899/1900 Tucson City Directory lists two employees:

Carlos Salazar, employee, Union Ice Co.
R.A. Johnson, Agent, Union Ice Co.

No biographical information about these two individuals was located.

San Xavier Hotel, 355 Toole Avenue

The San Xavier Hotel was originally the Porter's Hotel, which opened next to the railroad depot shortly after its construction in the early 1880s. It became the San Xavier sometime between 1883

and 1886 (based on the Sanborn maps), and in addition to being home to several railroad employees, had an upscale restaurant and hall where formal events were held (Figure 21). On November 8, 1887, a celebratory reception was held there to honor the officers who "brought the Apache War to an end" (Dobson 2004). Sometime between 1896 and 1901, new servants' rooms were constructed on the northwest side of the hotel, just inside the current project area (see Figure 14). Feature 45, a privy, was located in this area and would have been adjacent to the servants' rooms. Artifacts from this feature include broken wine glasses and china and a 1901 coin. In addition to its location, the temporal and cultural implications of these artifacts indicate that the privy may well have been used by the servants of the San Xavier Hotel, possibly some of the employees named below.

Several employees, many of whom were also residents at the hotel, have been located within the Tucson City Directories:

1897/1998:

E.D. Rafferty, Barkeeper
Walter Rupert, Barkeeper and resident

1899/1900:

W.F. Rubert, bartender and resident
Thomas Bell, porter and resident
Sam Clark, porter and resident
W.M. Davis, employee and resident
H.S. Plummer, employee and resident
G.A. Thumm, manager and resident
J.H. Tevis, proprietor and resident

1901:

Joe Ellis, employee and resident
C.C. Lee, waiter, residency unknown
William Mattison, Chief Cook, resident
Vincent Musser, employee and resident
Miss Lena Norton, employee, non-resident
S.H. Brown, manager
Roger Weber, employee[?] "San Xavier Hotel, residence San Xavier Hotel"

1902:

Sam Adams, porter
J. Boise, clerk
Joseph Delany, Cook, res. elsewhere
Walter Delany, waiter, res. elsewhere
J.O. Everhart, porter
Ed Hamilton, cook
John Hartman, cook
J.B. Johnson, waiter, res. elsewhere
E. G. Messmore, bartender
Miss Beatrice McLaughlin, head waiter

C.O. Robertson, cook
H. Wade, cook
R.M. Woods, waiter, res. elsewhere

The San Xavier Hotel burned down on June 28, 1903 (*Arizona Daily Star,* 30 June, 1903), and was not rebuilt.

Noble & Hall

No listing for this business was found in the Tucson City Directory. It is depicted on Sanborn Maps from 1883, 1886 and 1889. One reference to Noble & Hall is listed in the Pennsylvania State Gazetteer and Business Directory (1882). They are listed as machinists, located at the corner of 3rd and Peach in Erie, Pennsylvania.

Noble & Hall was founded in Erie, Pennsylvania, in the 1870s. The company manufactured and/or distributed machinery, safes, pipe for gas, and water mains and was also associated with the Bay State Iron Works, also of Erie. This may be the source of the title "Bast Iron works" on the Sanborn maps, possibly an abbreviation (Bay State). Although not listed in the Tucson City Directories, Noble and Hall advertisements were located both in the *Weekly Arizona Citizen* and the *Arizona Weekly Star* from 1883 (Figure 22).

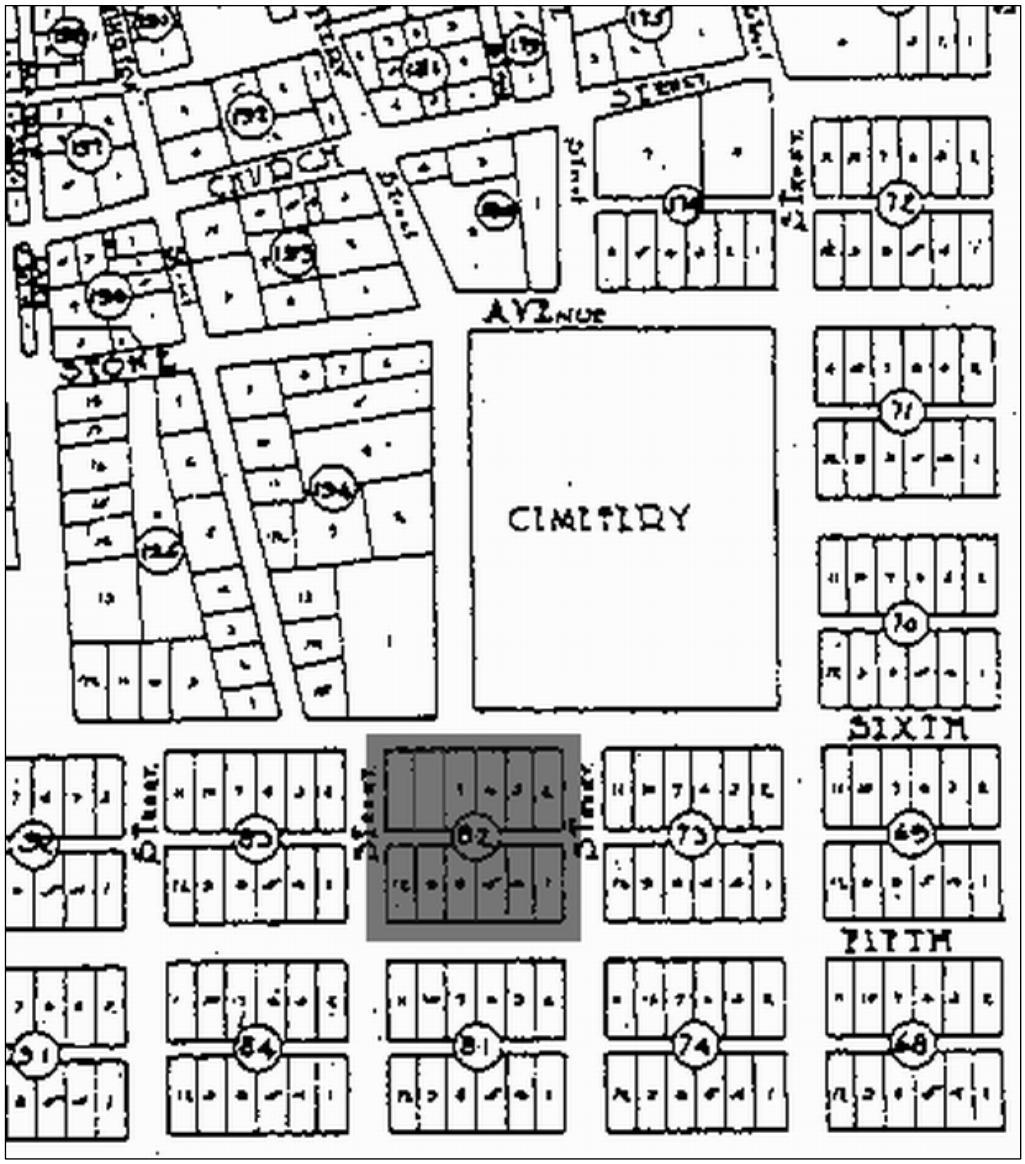


Figure 5. Portion of an 1872 map of Tucson by S. W. Foreman. Block 82, which contains the project area, is highlighted in gray. Maps and Records Section, Engineering Division, Department of Transportation, City of Tucson.

Figure 6. Portion of an 1880 map depicting the location of Block 82 after the construction of the railroad (Pattiani 1880). Block 82, which contains the project area, is highlighted in gray. (Map courtesy of the Arizona Historical Society/Tucson, Tucson (Ariz.) Maps, 1880.) http://arizonahistoricalsociety.org

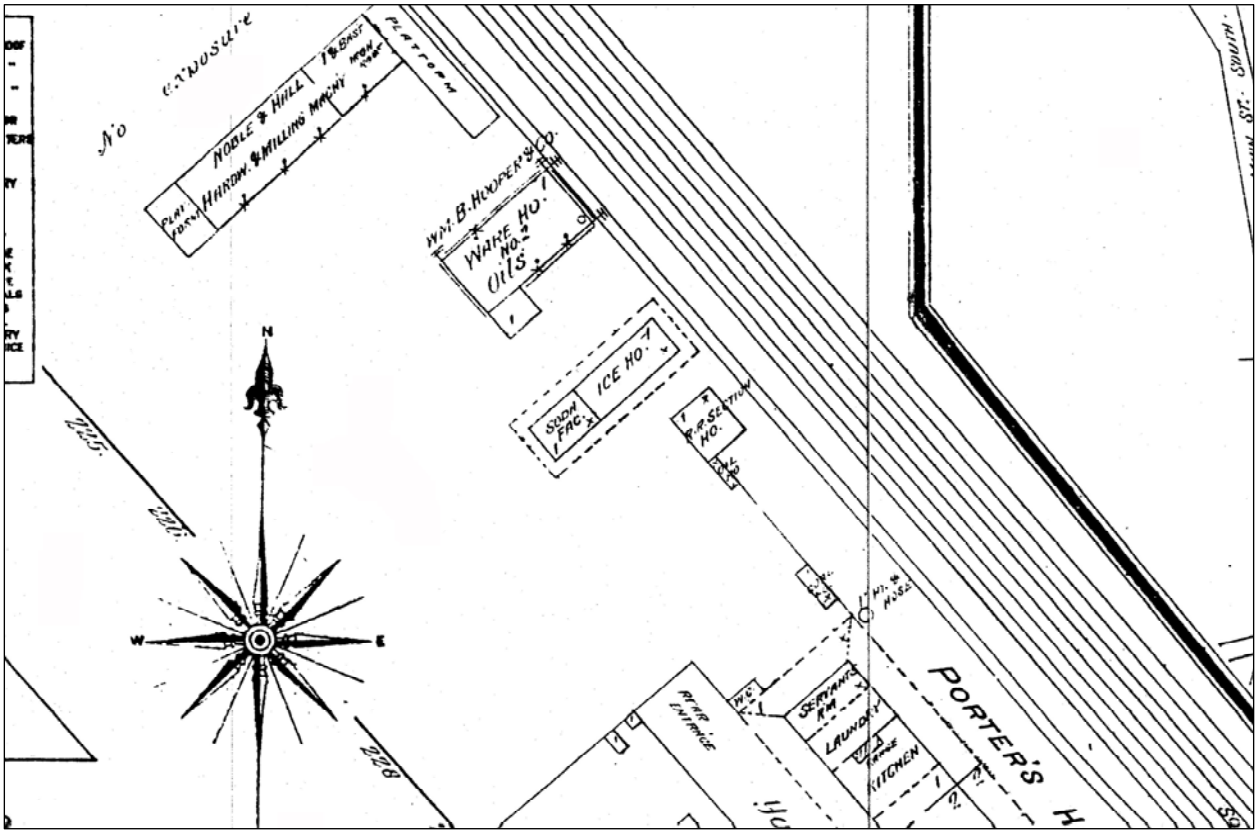


Figure 7. Portion of the 1883 Sanborn map (Sanborn Map Company 1883).

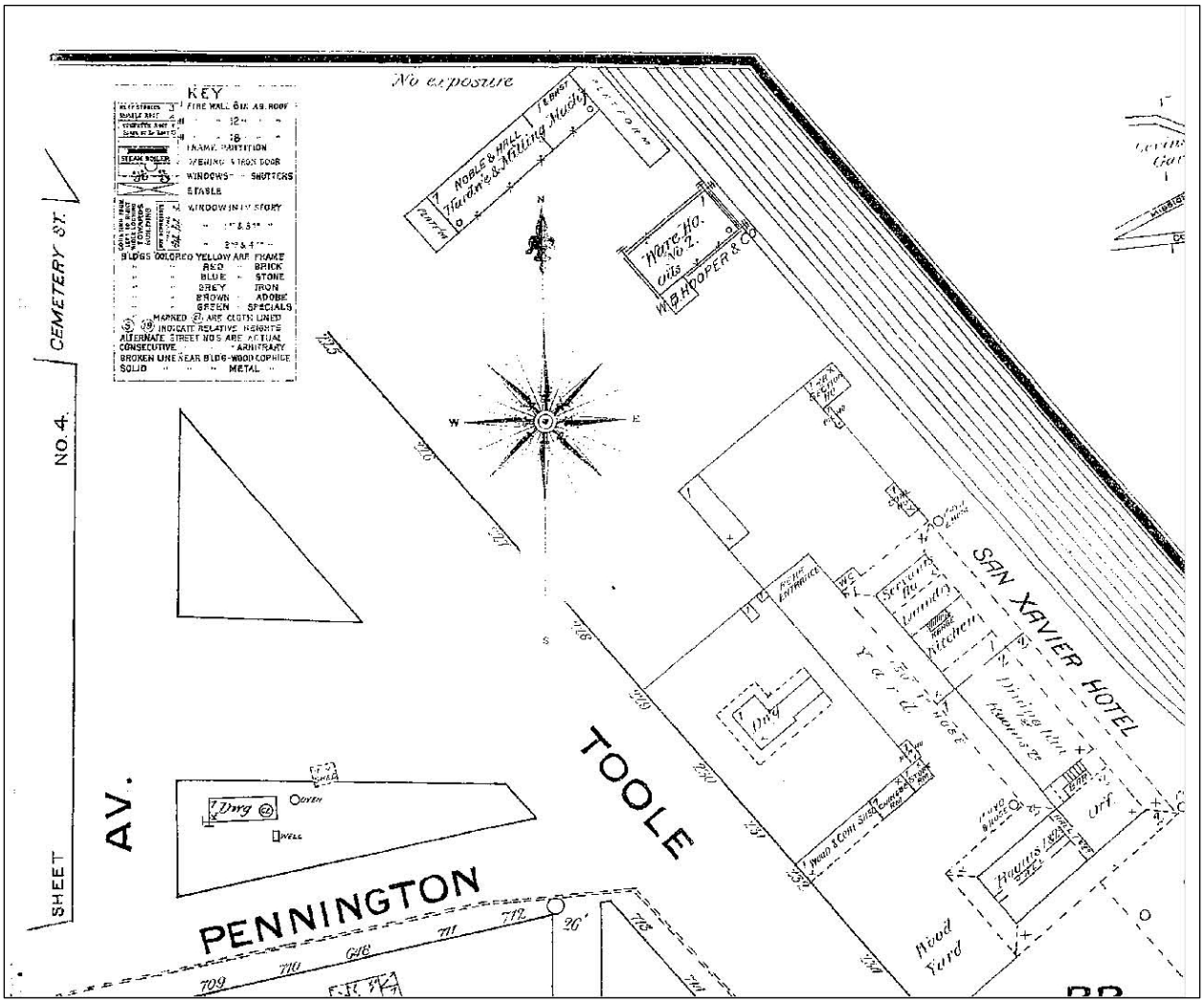


Figure 8. Portion of the 1886 Sanborn map (Sanborn Map Company 1886).

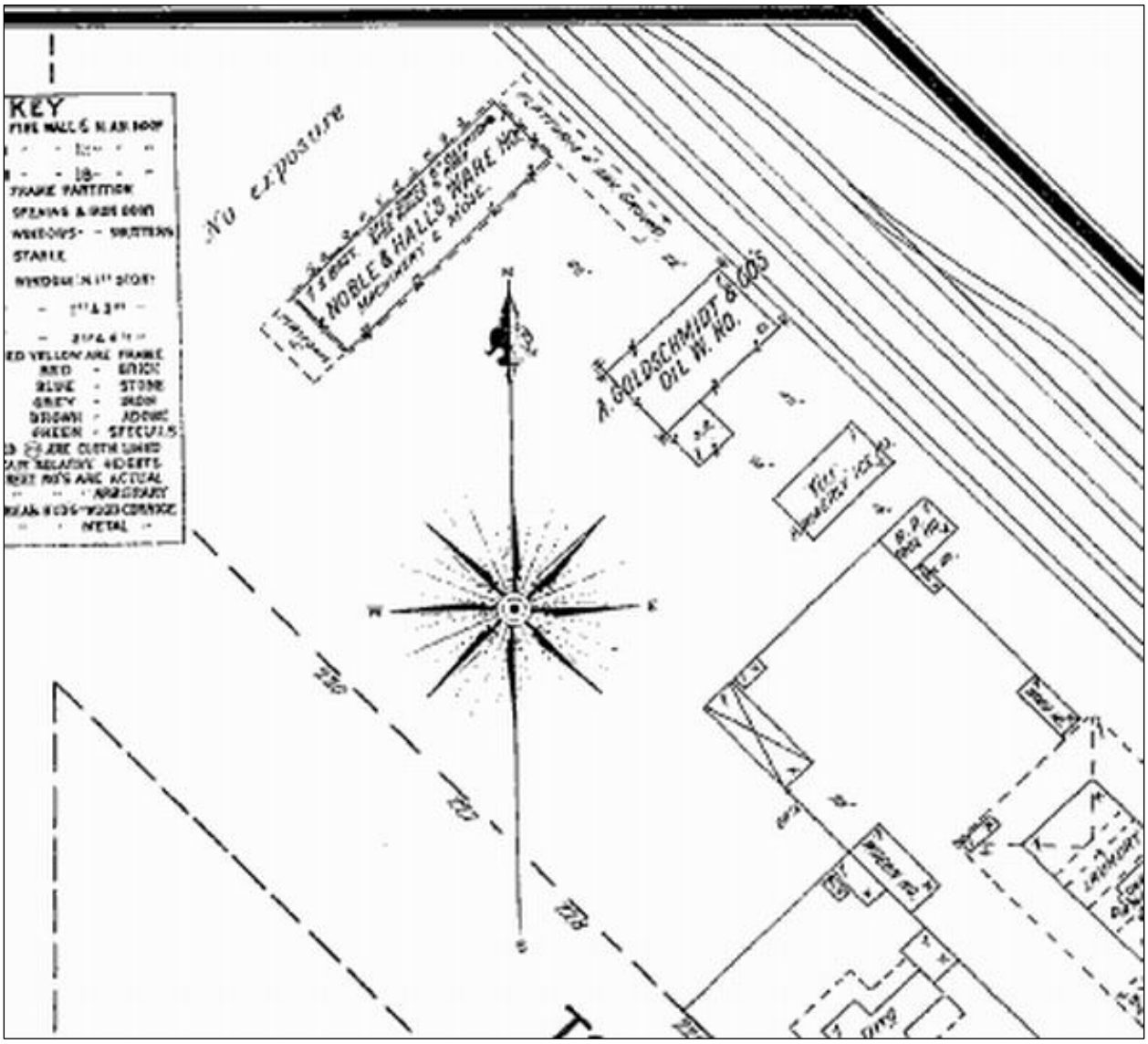


Figure 9. Portion of the 1889 Sanborn map (Sanborn Map Company 1889).

Figure 10. Aerial view of project area, ca. 1889 (portion of photograph, courtesy of the Arizona Historical Society/Tucson, Accession No. 2924). http://arizonahistoricalsociety.org

Figure 11. Detail of aerial photograph of downtown Tucson showing the project area as a park in the 1940s (courtesy of the Arizona Historical Society/Tucson, Accession No. 0003). http://arizonahistoricalsociety.org

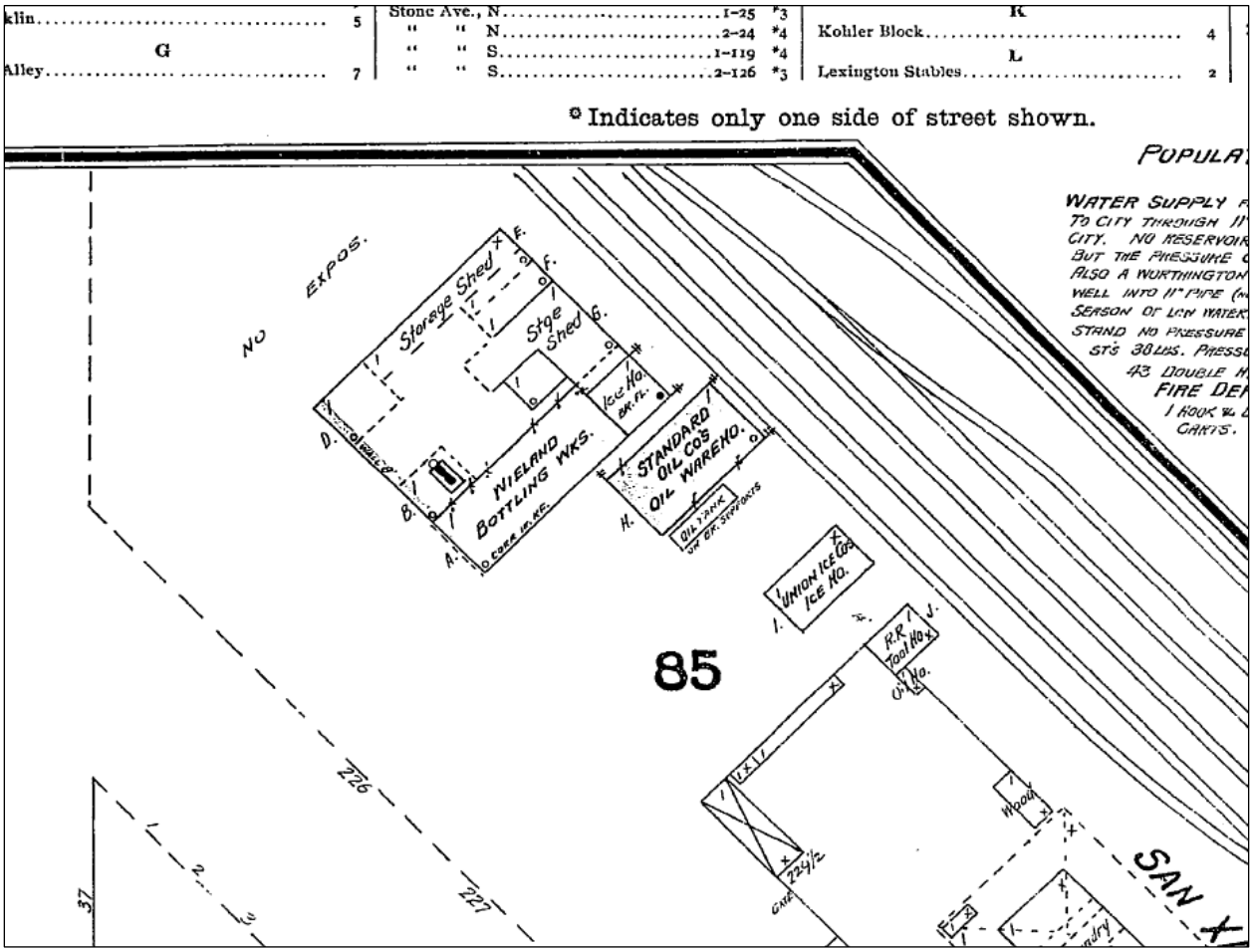


Figure 12. Portion of the 1896 Sanborn map (Sanborn Map Company 1896).

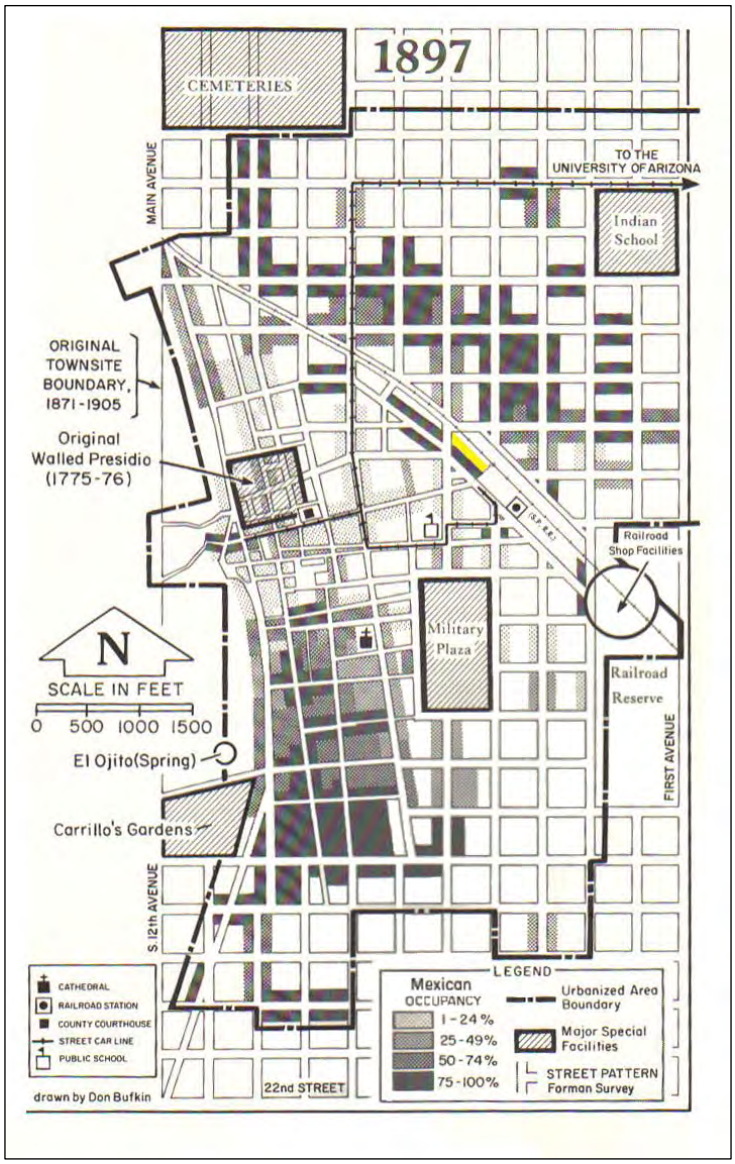


Figure 13. Map of Tucson in 1897. Produced as part of the Mexican Heritage Project and published in Sheridan (1986:123) (courtesy of the Arizona Historical Society/Tucson). http://arizonahistoricalsociety.org

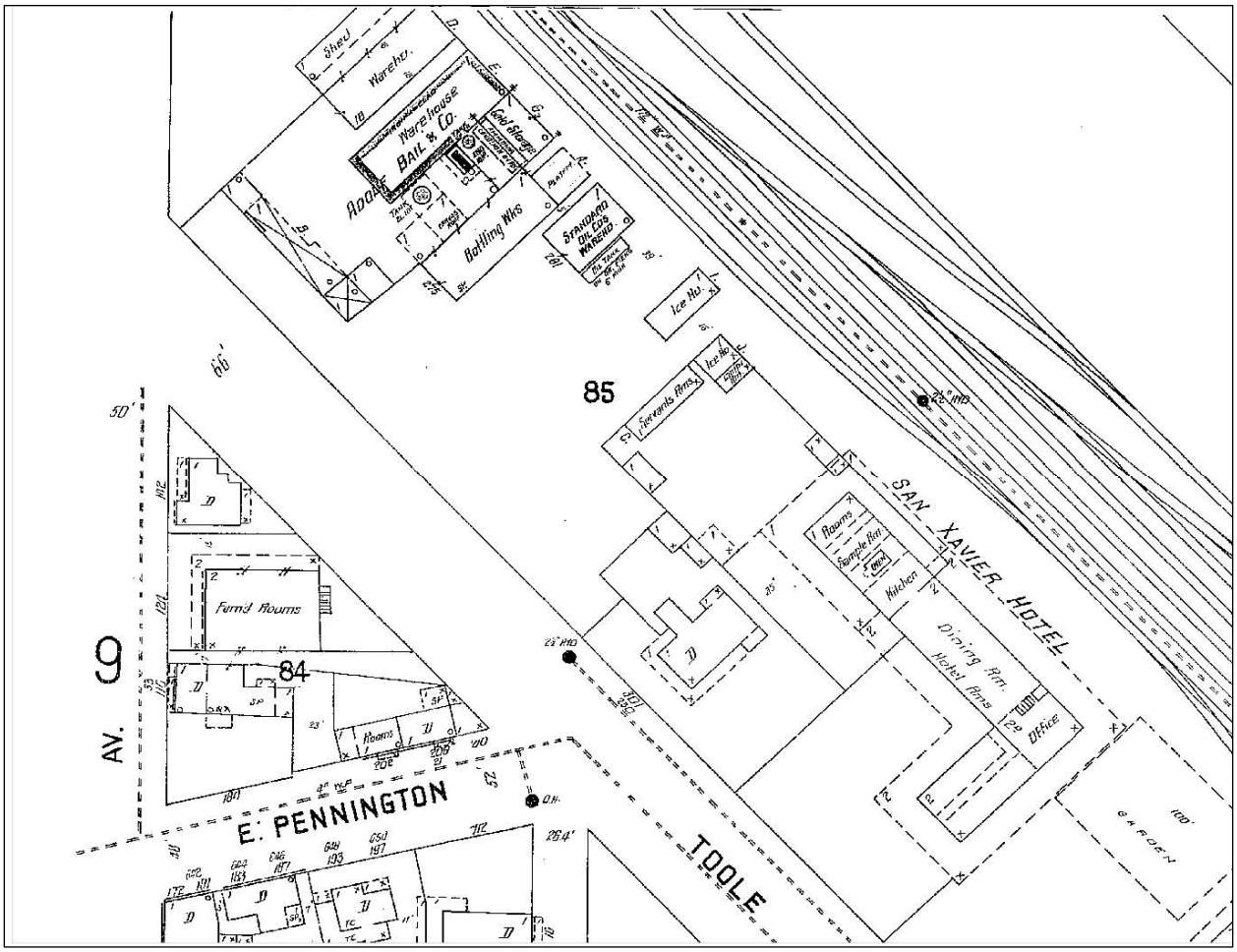


Figure 14. Portion of the 1901 Sanborn map (Sanborn Map Company 1901).

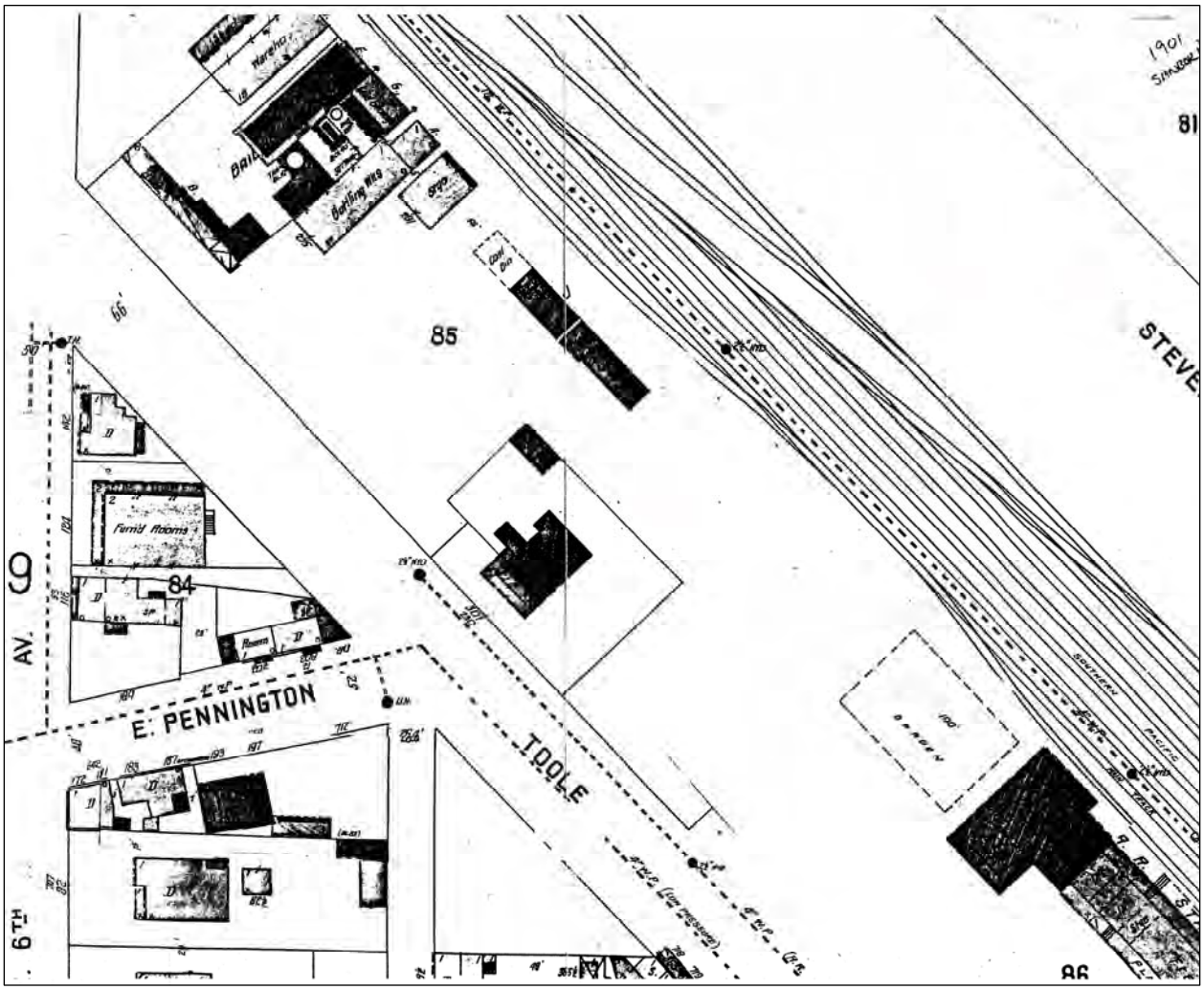


Figure 15. Portion of the 1904 revision of 1901 Sanborn map (Sanborn Map Company 1904).

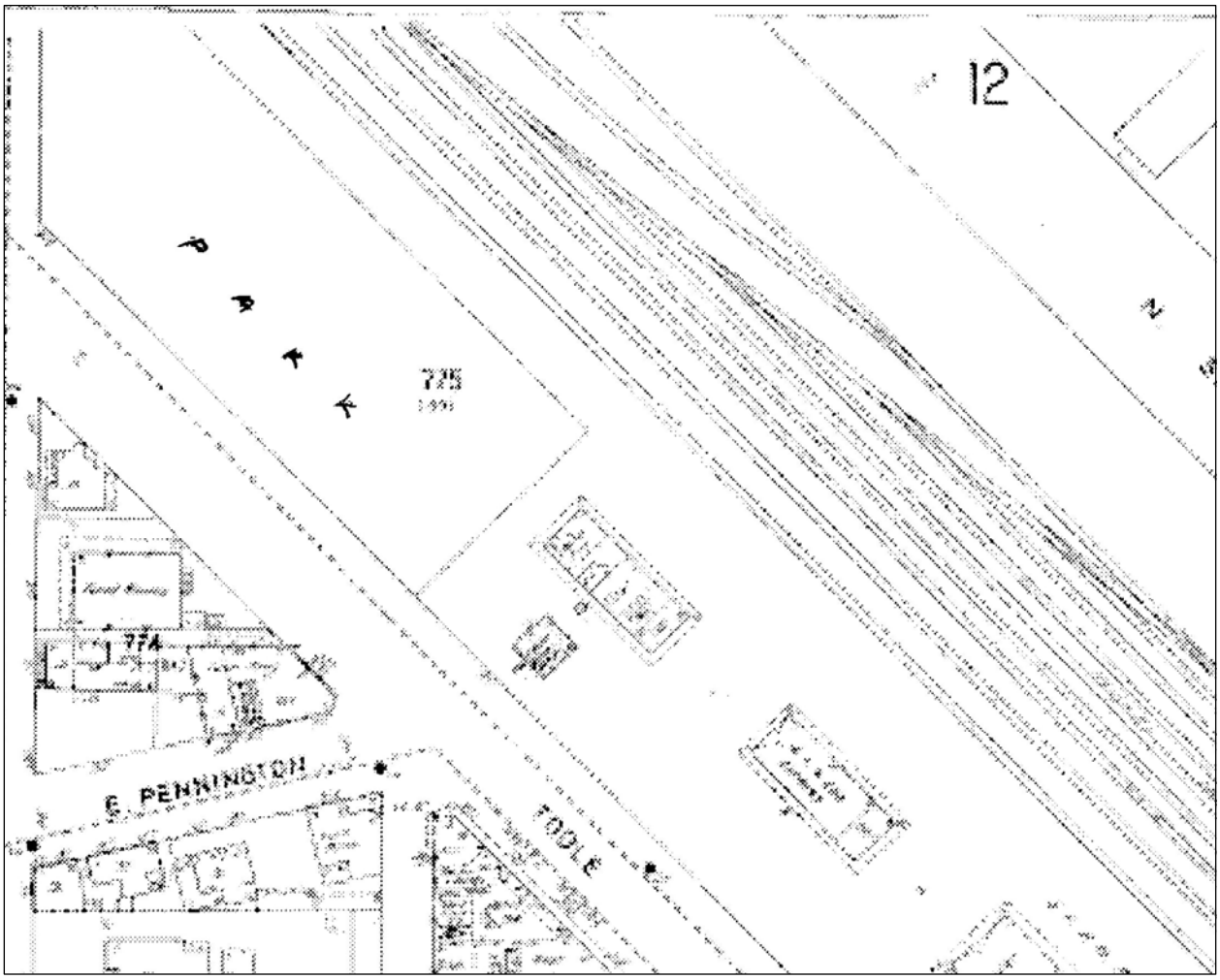


Figure 16. Portion of the 1909 Sanborn map (Sanborn Map Company 1909).

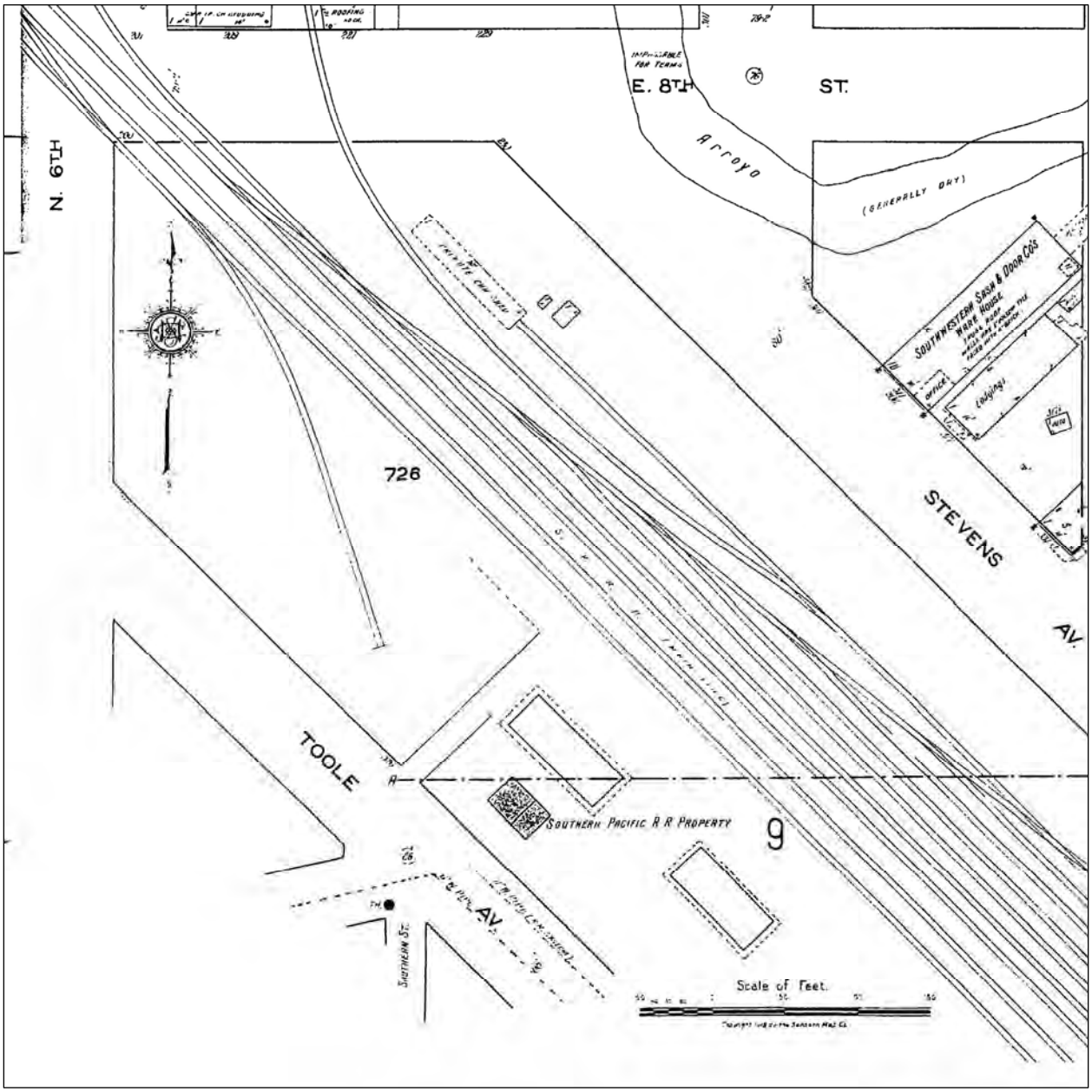
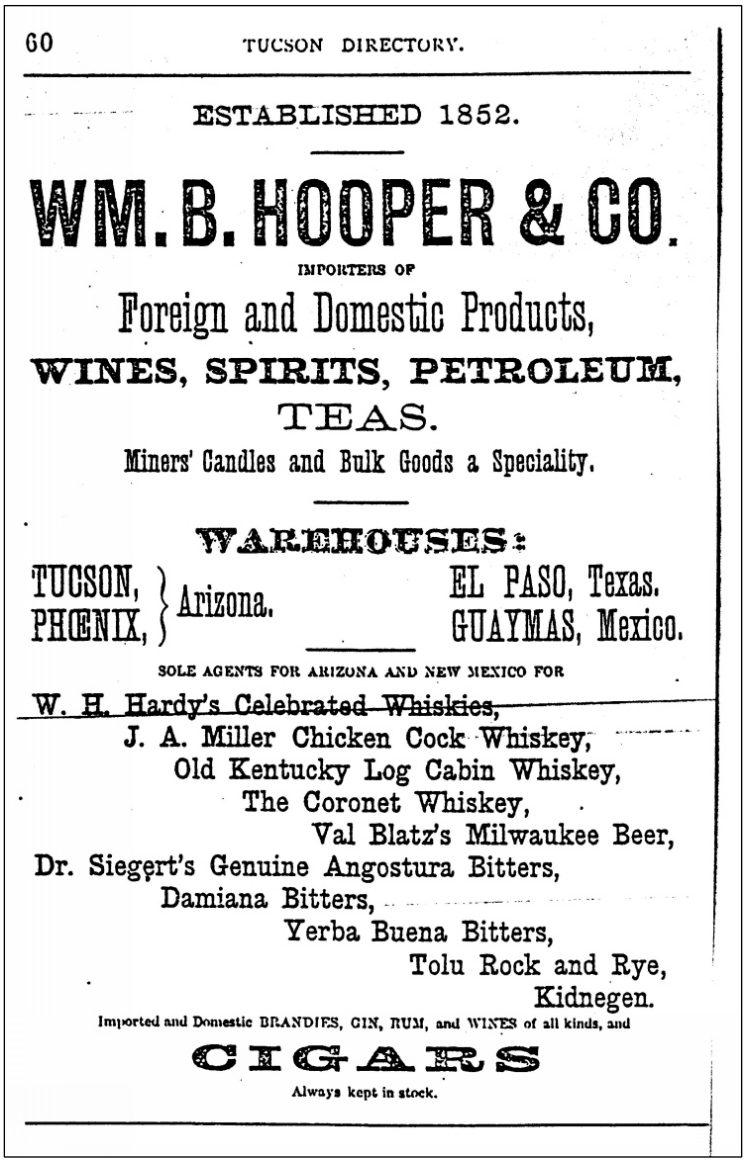


Figure 17. Portion of the 1919 Sanborn map (Sanborn Map Company 1919).



60 TUCSON DIRECTORY.

ESTABLISHED 1852.

WM. B. HOOPER & CO.

IMPORTERS OF

Foreign and Domestic Products,

WINES, SPIRITS, PETROLEUM,

TEAS.

Miners' Candles and Bulk Goods a Speciality.

WAREHOUSES:

TUCSON, PHŒNIX, } Arizona. EL PASO, Texas. GUAYMAS, Mexico.

SOLE AGENTS FOR ARIZONA AND NEW MEXICO FOR

W. H. Hardy's Celebrated Whiskies,
J. A. Miller Chicken Cock Whiskey,
Old Kentucky Log Cabin Whiskey,
The Coronet Whiskey,
Val Blatz's Milwaukee Beer,
Dr. Siegert's Genuine Angostura Bitters,
Damiana Bitters,
Yerba Buena Bitters,
Tolu Rock and Rye,
Kidnegen.

Imported and Domestic BRANDIES, GIN, RUM, and WINES of all kinds, and

CIGARS

Always kept in stock.

Figure 18. William B. Hooper advertisement from the 1881 Tucson City Directory.

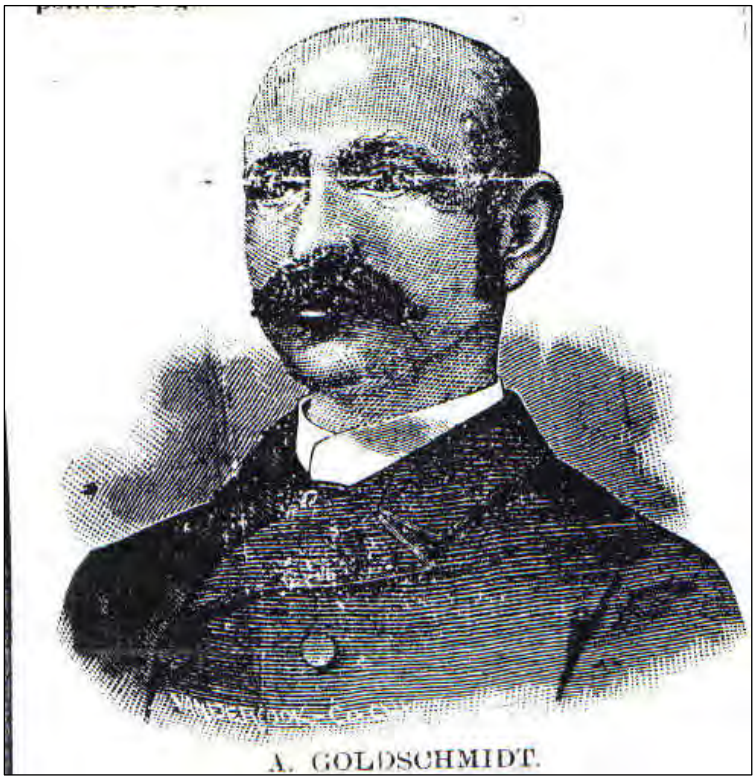


Figure 19. Depiction of Adolph Goldschmidt, from an 1890 article (original source unknown) (Adolph Goldschmidt File, Box 4, Southwest Jewish Archives Manuscript Collection SJA 004, Special Collections, University of Arizona Library).

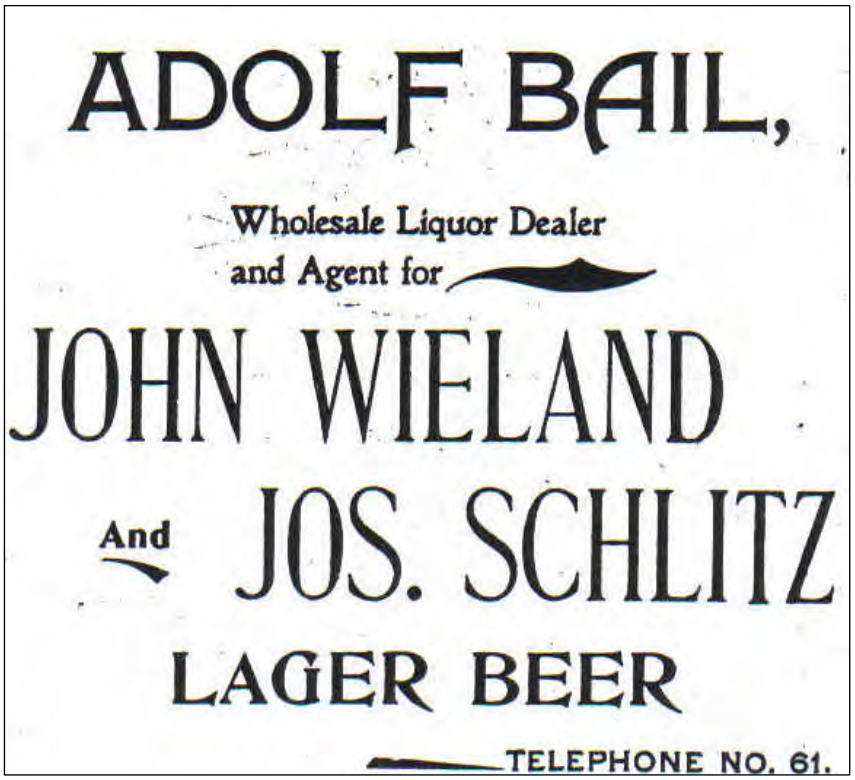


Figure 20. Adolf Bail advertisement from the 1899/1900 Tucson City Directory.

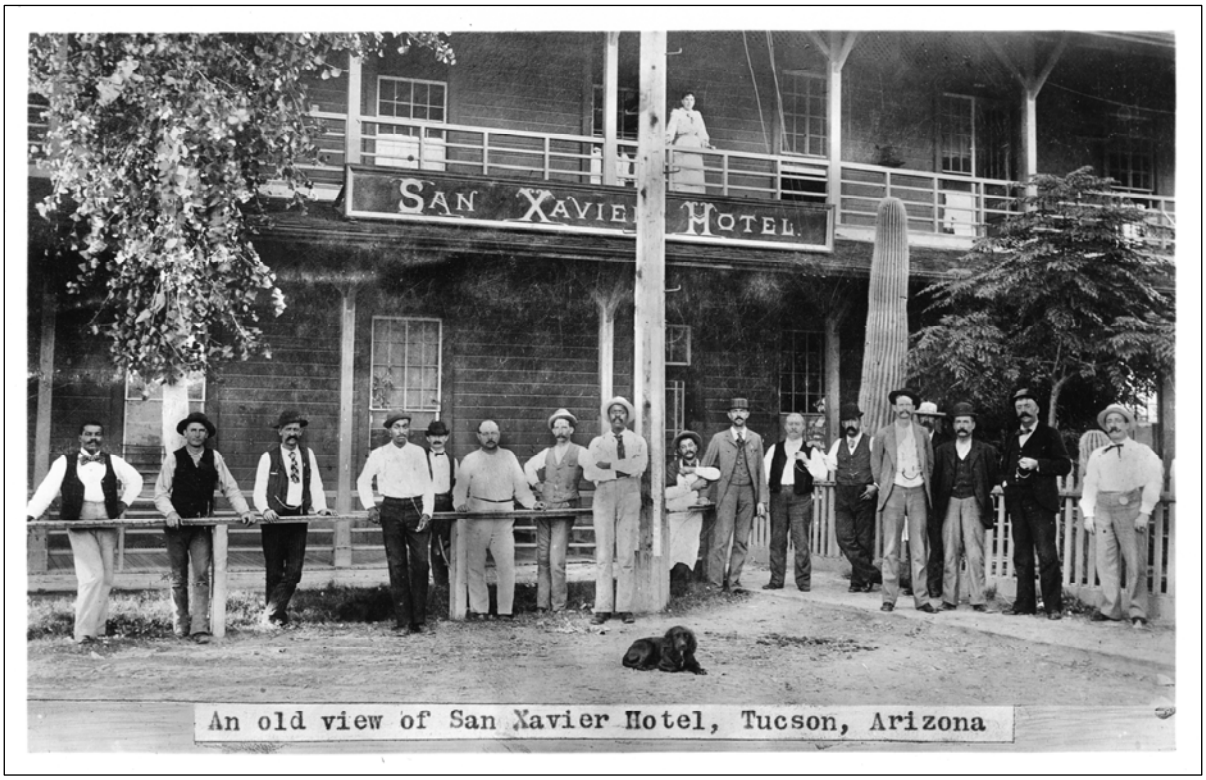


Figure 21. San Xavier Hotel, date unknown (courtesy of the Arizona Historical Society/Tucson, Accession No. 2871). http://arizonahistoricalsociety.org

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Figure 22. Noble & Hall advertisement from the *Arizona Weekly Star*, April 4, 1883.

Table 1. Owners of the Lots of Block 82 as of 1873

Lot No.	Owner(s)
1	Sam Hughes
2	R. A. Wilbur
3	Grijalba/Shibbel (both names listed)
4	Aguirre
5	A. Sosa
6	unknown
7	Waltewatch
8	Romero
9	Ramon Pacheco
10	Wikins
11	Duffield
12	unknown

CHAPTER 3
FEATURE DESCRIPTIONS

Jennifer Hushour, M.Sc., with contributions by Thomas Klimas

Little surficial evidence of the historical period occupation of the 6th and Toole Parcel has been preserved. As mentioned in Chapter 2, the parcel was a park until at least the early 1950s. It was leveled sometime thereafter, and has stood vacant since that time.

A total of 34 features were investigated during archaeological data recovery operations at the 6th and Toole parcel (either sampled or excavated completely). These include 3 architectural features (Features 52, 76, and 77), 2 privies (Features 27 and 45), 18 pits, and 11 miscellaneous features (see Figure 4).

Architectural Features

Based on the available archival data, including several editions of the Sanborn maps, the 6th and Toole parcel appears to have contained numerous buildings and a building complex that all changed in name over time. Despite the fact that a number of different businesses were housed in the few buildings on the parcel, the buildings themselves appear to have remained the same for the majority of the parcel's use. This makes sense given the relatively short-lived commercial use of the property (early 1880s through the early 1900s), as discussed in Chapter 2.

The railroad siding (identified as a private rail spur, Feature 54) that runs along a length of the project area through Stripping Area 2 (the location of the architectural features) was not removed, and, therefore, that portion of Stripping Area 2 was left unexposed (see Figure 2). However, a portion of the main complex of architectural features was still able to be located.

Features 52, 76, and 77 represent the features of the three buildings/areas in what we are terming the main building complex (Figures 23 and 24). Feature 77 appeared first, according to the Sanborn maps, followed by Features 52 and 76. Each feature is discussed individually below.

Feature 77: Warehouse

According to the Sanborn maps, this warehouse was established sometime between 1880 and 1883 and was, therefore, one of the first buildings on the property. It was labeled "Noble & Hall" (see Chapter 2 for discussion) on the 1883, 1886, and 1889 maps. By 1896, it is labeled "storage shed" and appears to have been subdivided internally (represented with dashed lines on the maps). By 1901, it is labeled the Adolf Bail Warehouse, and by 1904, it is labeled the Bail-Heineman Warehouse. It is unknown whether there was only one building present over the course of these years or if the building was demolished and reconstructed in the same location.

Methods

Three walls of this structure were discovered during mechanical stripping within Stripping Area 2. The walls were only partially uncovered, as they ran under the rail spur present on the property that

was not removed. The exposed portion of the structure measured 32.8 feet (10 m) in width and more than 68.9 feet (21 m) in length. Sediment over the walls was removed entirely by the backhoe. None of the overburden was screened. The walls were exposed, mapped, and photographed.

Description

Portions of three walls of the structure—the northwest, southwest, and southeast—were exposed during excavation. The fourth (northernmost) wall of the structure, if preserved, lies outside of the current parcel within the modern railroad right-of-way. Unfortunately, most of the structure's interior was located beneath the rail spur, and little of the building could be excavated beyond a definition of the structure's walls.

The structure shares a wall (the southeast wall) with the Cold Storage building (Feature 76) immediately to the southeast. The preserved portion of all three walls consists of a single course of adobe bricks (18 by 10 inches each) that were placed in a footer trench and likely represents the walls' foundations (see Figure 2). No other evidence for the remainder of the walls was discovered during excavation, although a large pit (Feature 15) was recorded during testing that contained the remains of a demolished building (mostly clay bricks). Feature 15 was located in what would have been the interior of Feature 77, and the debris it contained may have been the walls of said feature. Feature 15 was not excavated during data recovery because of safety concerns. As discussed in Chapter 2, Figure 10 depicts several buildings in the project area, including one which may be the warehouse in question.

Fill

Overburden removed above the walls of the structure consisted of an average of 1 m of fill. This overburden was a moderately compacted mix of sandy silt, railroad ballast, and construction debris, including bricks, adobe fragments, and stone. This fill was also capped by the asphalt surface of the modern parking lot.

Artifacts

No artifacts were collected from the fill above the structure walls. None of the artifacts found within the walls of the structure could be conclusively linked to the structure because of the amount of mixing and disturbance obvious in the overburden.

Interpretation

These wall foundations are the remnants of the Storage/Adolf Bail Warehouse depicted on the Sanborn maps of the project area. The map's depiction of the building suggests that the walls were "Iron Clad" at one point, but no evidence was found this during the current excavations. Another unknown is to what extent this building functioned with the other buildings in the complex that were eventually constructed adjacent to it. The 1896 Sanborn map (see Figure 12) may indicate that all three Features (52, 76, and 77) were part of one contiguous building or enclosed area, possibly used by only one company (as only one name—Wieland Bottling Works—appears on the entire complex that year). However, in the absence of official records of the building leases, this remains speculation.

Feature 52: The Bottling Works

Feature 52 is comprised of the remains of a structure identified as a bottling works on the 1896 and 1901 Sanborn maps of the project area (see Figure 23). Based on these maps, it was constructed

after 1889 but before 1896. The structure was the southeastern-most in the complex of buildings depicted on the maps (see Figures 12 and 14) that included the Adolf Bail warehouse (see Feature 77, above) and a cold storage facility/storage area (see Feature 76, below). All were aligned along the south side of the Southern Pacific railroad tracks. Based on the Sanborn maps, this building was constructed subsequent to Feature 77, but before the walls of Feature 76 (as Feature 76 apparently used the northwestern wall of Feature 52 as its southeastern wall).

Methods

Three remaining walls of this structure were exposed during mechanical stripping within Stripping Area 2. The walls were only partially uncovered, as they ran under the rail spur present on the property. Sediment over the walls was removed entirely by the backhoe. None of the overburden was screened. The walls were then exposed by hand, mapped, and photographed.

Description

The exposed foundation measured 24.6 feet (7.5 m) in width and more than 65.6 feet (20 m) in length. Portions of three walls of the structure—the west, south, and east walls—were exposed during excavation. The fourth (northernmost) wall of the structure, if preserved, lies outside of the current parcel within the modern railroad right-of-way. The structure shares one wall, the northwest wall, with the Cold Storage/storage area complex (Feature 76) immediately to the northwest. All of the visible foundations are constructed of native stone and concrete. No evidence of native stone walls was discovered in the pit containing the remains of the demolished warehouse(s), suggesting that the walls were made of some other material (brick or adobe). The structure had a processed lime floor and contained no visible associated subfeatures.

Fill

Overburden removed above the walls of the structure consisted of an average of 1 m of fill. The removed overburden was a moderately compacted mix of sandy silt; railroad ballast; and construction debris, including bricks, adobe fragments, and stone. This fill was capped by the asphalt surface of the modern parking lot.

Artifacts

No artifacts were collected from the fill above the structure walls. None of the artifacts found within the walls of the structure could be conclusively linked to the structure because of the amount of mixing obvious in the overburden.

Interpretation

As discussed above, this building was present on the property from at least 1896 (it does not appear on the 1889 map) to at least 1904. It was demolished sometime before 1909.

Features associated with Feature 52 include Features 76 (with which it shares a wall) and 27 (an adjacent privy). These are discussed individually below. The presence of the pits and privy containing mostly bottle glass appear to confirm the structure's use as a bottling works building. Feature 76 may have been directly associated with this Feature, even rented or used by the same business. As they had separate walls, however, and as no historical records could be located confirming this, they are treated as separate Features. Figure 25 depicts two of the walls of Feature 52.

Feature 76: Cold Storage Complex/Storage Area

Located in Stripping Area 2, Feature 76 is comprised of the remains of a structure that is situated between the Adolf Bail warehouse (Feature 77) and the bottling works (Feature 52). It is depicted on the 1896, 1901, and 1904 Sanborn maps, but may have been merely an open work area in between the two buildings for part or all of the commercial use of the property. The area included a cold storage section as well as numerous industrial machines including an ammonia condenser, an elevated tank, and a 10-horsepower engine (see Figures 23 and 24). The Feature was apparently subdivided into several smaller rooms, as indicated on the maps by dashed lines. It was not located during testing, and was discovered during data recovery as sections of an adobe wall with a large concrete slab at the northern end (Figures 26 and 27).

Methods

Three walls of this structure were discovered during mechanical stripping within Stripping Area 2. The walls were only partially uncovered, as they run under the railroad siding present on the property. Sediment over the walls was removed entirely by the backhoe. None of the overburden was screened. The walls and concrete slab were exposed, mapped, and photographed.

Description

Portions of three walls of the structure—the northwest, southwest, and southeast walls—were exposed during excavation. The fourth (northeastern) wall of the structure, if preserved, lies outside of the current parcel within the modern railroad right-of-way. The exposed portion of the structure measured 32.8 feet (10 meters) in width and more than 68.9 feet (21 m) in length. An area of concrete flooring, measuring 30.8 feet (9.40 m) in length and 27.2 feet (8.30 m) in width, was also discovered in the northernmost part of the structure (the area marked "Cold Storage" on the maps) within Stripping Area 2. During testing on the property, two small portions of a herringbone patterned brick floor were observed (Figure 28). This area was not stripped completely during data recovery because of the presence of the rail spur, and therefore, the recorded portions of brick flooring were not relocated. No other exposed portions of this feature contained brick flooring.

The northwestern wall of this Feature was also the southeastern wall of Feature 77, and the southeastern wall of this Feature was also the northwestern wall of Feature 52. The preserved portion of these walls (other than where shared with Feature 52) consists of a single course of adobe bricks placed in a footer trench; these likely represent the walls' foundations. In some areas of the walls, the southwestern wall in particular, small pieces of adobe brick from an upper course were preserved. No other evidence for the remainder of the walls was discovered during excavation.

The structure shares its southeastern wall with the Bottling Works (Feature 52) immediately to the southeast. Again, only the foundation of the wall remains, but it is made of stone and concrete rather than adobe (as are the rest of the foundation walls of Feature 52). No other evidence for the remainder of the walls was discovered during excavation. This would indicate that Feature 52 was constructed first and that the other wall enclosing Feature 76 (the southwestern) was added on later, using the existing northwest wall of Feature 52 as its southeast wall and the existing southeast wall of Feature 77 as its northwest wall.

Two pits, Features 73 and 78, were also discovered within the area described by the walls of this feature. It was unclear how these features related to the structure itself. The concrete flooring found in the northern area of the structure did not extend over either pit feature. Feature 78 (discussed

below) is a large pit containing mostly broken liquor and beer bottles and is obviously related to the bottling and storage complex. This, in concert with its location in relation to the subdivision of Feature 76 (implied in Figure 23), as well as its uniform shape, suggests that it was in use while the buildings were actively used. Artifacts from Feature 78 are discussed at length in Chapter 4.

Remnants of what may have been interior walls were visible in plan view in the northeastern end of the Feature (Figure 29). This area also contained several oil stains, pockets of metal trash, and possible utility trenches.

Fill

Overburden removed above the walls of the structure consisted of an average of 1 m of fill. This overburden was a moderately compacted mix of sandy silt; railroad ballast; and construction debris, including bricks, adobe fragments, and stone. This fill was also capped by the asphalt surface of the modern parking lot.

Artifacts

No artifacts were collected from the fill above the structure walls. None of the artifacts found within the walls of the structure could be conclusively linked to the structure because of the amount of mixing obvious in the overburden.

Interpretation

These wall foundations are the remnants of the Cold Storage complex depicted on the 1901 Sanborn map of the project area. Two features were contained within this feature (Features 73 and 78) that contained numerous bottle bases and other artifacts associated with the industrial use of the area (see discussion below). The concrete flooring in the northeastern portion of the feature appears to be associated with the "Cold Storage" area depicted on the 1901 Sanborn map. Whether this Feature was specifically associated with the bottling works to the south, or the warehouse to the north, is unclear, but it seems likely that they were all related in use and that it was associated with both of them. Feature 76 was most likely a work/equipment area between the two.

On later maps, these buildings appear to all be enclosed on the southern side by a wall and stables (according to the Sanborn map key).

Privies

Two large privies, Feature 27 and Feature 45, were identified within the 6th and Toole parcel. Based on proximity and different artifact types, Features 27 and 45 are presumed to be related to the bottling works and the San Xavier Hotel, respectively.

Feature 27

Feature Type: Privy
Location: Stripping Area 2, Backhoe Trench 4 (BHT 4)
Dimensions: Privy pit length unknown (maximum exposed length = 4.10 m), width unknown (maximum excavated width = 3.15 m, depth unknown (maximum excavated depth = 2.47 m)
Association: Bottling Works and Adolf Bail Warehouse (see Figure 23)

Methods

This privy was first identified during testing in the profile of BHT 4. During the data recovery phase of this project, the overburden above the fill of the feature was removed through mechanical stripping. A 1-m-by-1-m control unit (Control Unit 6) was excavated within the visible stain of Feature 27. The fill of Feature 27 within Control Unit 6 was excavated by hand in 0.20-m levels. Excavation within this unit ceased at a depth of 1.20 m below the stripped surface because of safety concerns.

A roughly rectangular stain was also discovered approximately 1 m to the northeast of Control Unit 6. This rectangular stain contained pieces of wooden beam visible on the stripped surface. The stain was designated Feature 67, and two units, Control Unit 8 (1 m by 1 m) and Control Unit 10 (1 m by 2 m), were excavated within its boundaries. The fill of Feature 67 within the units was excavated in 0.10-m and 0.20-m levels. Upon the excavation of the third level (PD 168) of fill in Control Unit 10, excavators realized that Feature 67 was actually part of the privy (Feature 27). One additional 0.20-m level (PD 171) was excavated to sample the fill of the privy within Control Unit 10 before excavation in this unit was ceased at a depth of 0.60 m below the stripped surface.

All three control units (Control Units 6, 8, and 10), as well as the visible outline of the stain originally designated as Feature 67, were mapped prior to a second mechanical stripping of the feature. An additional 1.27 m of privy fill was removed from the pit of Feature 27. At this point, a new 1-m-by-1-m unit (Control Unit 24) was excavated within the stripped area of Feature 27. Control Unit 24 was then excavated by hand in 0.20-m levels to a depth of 1.27 m below this second stripped surface. Excavation within Control Unit 24 was then halted because of safety concerns.

This privy (hereafter referred to only as Feature 27, which includes the original feature as well as Feature 67) was excavated to a total depth of 2.47 m below the original stripped surface of the feature. Although excavation ceased at this depth because of safety concerns, trash visible in the base of Control Unit 24 indicated that fill continued deeper within the feature. The maximum depth of the privy pit was unknown. Figure 30 depicts an excavated portion of this Feature.

Description

Feature 27 appears to be the pit and the remains of the superstructure of a single privy. The stain originally recorded as Feature 67 appeared to be a rectangular area bounded by wooden beams that measured 3.75 m long and 2.50 m wide. Also present on the western edge of this area was a small adobe platform or "step," which may have represented the entryway to the structure. This adobe platform measured 1.20 m long and 0.88 m wide. The wooden beams and adobe platform are located just above the fill of the privy pit and, if they did represent the superstructure, represented only the very base. The 1901 Sanborn map depicts an unlabeled small building in this area (see Figure 23) which may well be the same feature.

Only a portion of the edge of the privy pit was identified in the southwest corner of Control Unit 6. This edge, however, contained the remnants of a wooden beam similar to the beams seen around the possible superstructure. The privy pit wall exposed in Control Unit 6 was nearly vertical, unprepared, and did not appear to bell or slope. No other edges of the privy pit were identified. The maximum exposed length of the pit was 4.10 m and the maximum excavated width was 3.15 m. The fill of the privy pit was excavated to a depth of 2.47 m from the stripped surface, but the base of the pit was not reached.

Fill

Most of the fill above the possible superstructure was removed during mechanical stripping. The wooden beams encountered within the Control Units 8 and 10 were covered with less than 0.10 m of fill. Low densities of artifacts were recovered from the mottled sand, silty sand, and lime.

The fill within the privy pit itself consisted of discrete lenses and dumps of ash, charcoal, trash, nightsoil, lime, and relatively clean sandy silt fill. Artifact density was high to very high in these deposits, with some deposits composed entirely of glass bottles. These lenses and pockets ranged from loose to hard in compaction, and were indicative of repeated small depositional episodes, consistent with the stratigraphy typically seen in privy pits. This stratigraphy was present until a depth of 2.26 m below the stripped surface of the feature, where the fill transitioned to compacted, red silty sand containing construction debris and a low density of artifacts. The red silty sand continued to the maximum excavated depth of the feature, 2.47 m below the stripped surface of the feature.

Artifacts

Artifacts recovered from the fill above and around the privy's superstructure (originally recorded as Feature 67) in Control Units 8 and 10 included pieces of glass, metal, faunal bone, and historic ceramic. Density of all artifacts was low. Artifacts recovered from the lower fill of Control Units 8 and 10 (recorded as Feature 67, but within the fill of the privy pit [Feature 27]) included low to moderate densities of glass, metal, and faunal bone. One piece of shell and an unidentified stone object were also collected. Adobe and red fired clay bricks were also noted in the fill, but not collected.

Control Unit 6 also contained fill from the upper levels of the privy pit. Artifact density in this unit was high to very high. Artifacts recovered from the fill included pieces of glass, metal, faunal bone, and historic ceramics. Historic ceramics recovered from the fill included sherds from Papago Red ware vessels. Glass bottles and bottle fragments made up a significant portion of the feature fill below a depth of 0.60 m below the stripped surface of the feature.

Control Unit 24 sampled the lower levels of fill within the privy pit. Artifact density within this fill was also very high. Artifacts recovered from the fill included pieces of glass, metal, faunal bone, and historic ceramic. Artifact density did drop off in the lowest levels of Control Unit 24, at a depth of 2.26 m below the stripped surface, coinciding with the change in fill type.

Interpretation

Feature 27 appears to represent the pit and superstructure of a large privy. Based on its location near the bottling works and associated storage area, as well as the high concentration of broken bottle glass, it is likely related to the industrial use of the area, specifically that of the bottling works. Dates from these artifacts range from the 1880s to the early 1900s, which is consistent with the known industrial use of the site.

Feature 45

Feature Type: Privy
Location: Stripping Area 4, BHT 8
Dimensions: length = 2.50 m, width = 1.80 m, depth unknown (maximum excavated depth = 2.94 m)

Association: San Xavier Hotel Servants' Rooms (see Figure 23)

Methods

This privy was discovered in BHT 8 during the testing phase of the project. During data recovery, the overburden above the feature was mechanically stripped, and a control unit (Control Unit 18) was excavated by hand over the east half of the feature to a depth of 1.40 m. In compliance with OSHA regulations, hand excavation was halted, and the area around the feature was mechanically stripped to the level of hand excavation. Hand excavation of the feature then resumed, and continued an additional 1.40 m in depth. Excavation of the privy was discontinued at this point for safety reasons, but a small hand trench indicated that the fill of the privy continued for at least an additional 0.20 m in depth. Figure 31 depicts the excavated portion of this Feature.

Description

Although BHT 8 removed most of the western half of the feature, enough of the privy pit's walls remained to approximate the feature's dimensions at 2.50 m long and 1.80 m wide. The privy pit appeared to be sub-rectangular in shape, with roughly straight sides. As stated above, the privy pit could not be excavated to its base for safety reasons, but it was at least 2.94 m deep. Three major strata were present in the fill of the privy: an upper level of adobe construction debris; an intermediate level of mixed sediments and trash; and a lower level of mixed nightsoil, sediments, and trash.

Fill

The upper stratum of fill extended from the stripped surface of the feature to a depth of 0.60 m. It was composed almost entirely of compact, grayish white adobe fragments and melt. Small lenses of brown silty loam that contained ash and charcoal were present within the adobe matrix. All the artifacts recovered from the upper stratum of fill appeared to originate from these lenses, and artifact density was low.

Below a depth of 0.60 m, the fill of the feature transitioned to a dark brown, moderately compacted sandy silt that contained pea gravels and charcoal. This fill did not contain visible deposits of nightsoil. The adobe chunks and melt from the above stratum were still present in this level, but no longer constituted the majority of the fill. A deposit of fired clay bricks was present at an approximate depth of 1.40 m below the stripped surface of the feature and marked the transition to the third stratum of fill within the privy pit.

The third stratum was a mottled deposit of nightsoil, natural sediments, and trash. This stratum began almost immediately below the level of the fired clay bricks mentioned above. The fill within this portion of the privy pit consisted of mottled lenses suggestive of the repeated depositional episodes typical of this type of feature. Artifact density greatly increased in this stratum in comparison to the two strata above. This mottled deposit measured at least 1.50 m in depth.

The maximum excavated depth of this feature was 2.94 m below the stripped surface of the feature. Excavation was halted at this point because of safety concerns, but the fill of the privy pit continued down below this level.

Artifacts

Artifact density in the upper stratum of fill was low, with all of the artifacts appearing to originate in the small lenses of loam and ash present within the adobe construction debris. Artifacts recovered from the fill included pieces of metal, glass, historic ceramic, and faunal bone. Fragments of a green glass beaker or jar containing a green powdery substance were found in this stratum. The fragments of the beaker, as well as a sample of the green substance, were collected. This stratum also contained several fired clay bricks and brick fragments. None were complete enough to be diagnostic, so the bricks were noted, but not collected. A small fragment of one of the bricks was collected as a reference sample.

The artifact density of the second stratum was slightly higher than in the overlying deposit, but remained relatively low. Artifacts recovered from this stratum included pieces of metal (including a round lump of aluminum or lead), faunal bone, bottle and window glass, historic ceramic, and fragments of leather. The green powdery substance noted in the above level was also present in small amounts. Fragments of red, fired clay brick were noted in the fill but not collected. In addition, a deposit of these bricks was present at the base of this stratum, which marked the transition to the third stratum of fill—a mottled deposit of nightsoil, natural sediments, and trash.

Artifact density in this third stratum remained low to moderate, but was considerably higher than in the two strata above. The artifacts recovered were also curiously intact and did not represent the same use for general trash disposal as the other privy identified at the site. Possible reasons for this are discussed in the *Interpretation* section, below. Artifacts recovered from this stratum of fill included pieces of metal, faunal bone (including an entire catfish skeleton), window and bottle glass (including China and wine glasses), shell buttons, a pocket watch, two metal railroad badges, several whole glass "pumpkin seed" flasks, a 1901 United States "Liberty" silver dollar, and an 1890s United States nickel.

At least 26 kerosene lamp burners were recovered from this feature (15 found during testing and 11 during data recovery). They were stacked and appear to have been unused at the time of disposal. According to the 1901 Sanborn map, a "Lamp Room" was located near the servants' rooms at the San Xavier (see Figures 14 and 23). The lamp burners may have been discarded from the lamp room, perhaps when the hotel switched to electric lighting.

Interpretation

The stratification of fill within the pit of the privy suggests that it was used most heavily as a privy prior to the deposition of the layer of fired clay bricks at the base of the second stratum. After the bricks were deposited, the privy was not used intensively enough in its designed function to leave significant deposits of nightsoil that remained visible. This is probably because the privy was abandoned, as it was presumably no longer used after the hotel burned down in 1903. The coin dated 1901 found in the third stratum corroborates this notion. The adobe bricks and construction debris that capped the upper levels of fill may have been the privy superstructure that was pushed into the pit as a means of abandonment and filling (as opposed to a brick lining, as it was interpreted during testing).

There are several interesting things to note about this privy. The first is that the types of artifacts it contained were markedly different from the other privy on the site (Feature 27, the "industrial" privy). They were not simply broken bottles, but fine goods, mostly whole, that were obviously not

from the bottling plant but more likely from the hotel. There were more than one dozen whole glass flasks, which is particularly interesting, and one can envision a hotel employee sneaking off to the privy for a drink and disposing of the flask there. The artifact density was low compared to the other privy on the site, and this may be because there were other places for trash disposal in the vicinity of Feature 45. The privy was perhaps reserved for more private disposal of items such as accidentally broken wine glasses, stolen food, and the aforementioned flasks. The coins, pocket watch, and railroad badges were more than likely accidentally lost by someone while using the privy.

Pit Features

Methods

As discussed in Chapter 1, the investigated features were either fully excavated or sampled through the hand excavation of 1-m-by-1-m or 1-m-by-2-m control units, depending on the size of the feature. Features were excavated by hand, in natural or arbitrary 10- or 20-cm levels with all fill screened through ¼-inch hardware cloth. Artifacts were bagged by level and material type. The one exception was Feature 78, a large pit with a high density of glass bottles and bottle fragments. A sample of 150 bottle bases was collected from this feature. The fill from this feature was not screened.

Results

Table 2 lists all excavated or sampled pit features, their dimensions (if known), artifacts types recovered, and possible associations. Features were completely excavated unless otherwise noted in Table 2. Based on what is known of the use of the parcel, features were assigned to Hotel association, Industrial association, or neither (unknown). These assignments were based on the Feature's location and contents. Initially, Features 32 and 37 were thought to be a single feature but were shortly separated. Feature 62 was combined with Feature 23 (see Table 2).

The majority of the pit features could not be associated with a specific use. Four pits (Features 23, 30, 61, and 78) were strongly associated with Industrial use. Another four (39, 44, 46, and 68) were strongly associated with Hotel use. The remaining pits were of indeterminate association, although Feature 37, a large trash pit with a number of artifacts, appears to have been associated with both areas. It contained luxury items, as well as cattle head and foot bones, which are commonly associated with a traditional Mexican diet.

It is clear from these features that regardless of the source, people using the parcel at the end of the twentieth century did not travel far to dispose of their refuse, but rather simply dug a pit a few feet away and deposited it there.

Other Miscellaneous Features

Methods

As discussed in Chapter 1, the investigated features were either fully excavated or sampled through the hand excavation of 1-m-by-1-m or 1-m-by-2-m units, depending on the size of the feature. Features were excavated by hand, in natural or arbitrary 10- or 20-cm levels with all fill screened through ¼-inch hardware cloth. Artifacts were bagged by level and material type.

Results

Table 3 lists all excavated or sampled miscellaneous features, their dimensions (if known), artifact types recovered, and possible associations. Features were completely excavated unless otherwise noted in Table 3. None of these features could be positively associated with hotel or industrial use. Two of the miscellaneous features are discussed in greater detail below.

Feature 24

Feature 24 was a pair of bundles of wiring encased in 2½-inch galvanized steel conduit that were further protected by being placed inside a 3-inch hole bored lengthwise through 4¾-inch-by-4¾-inch timbers. The timbers (cross ties) were approximately 6 feet long and were joined with a mortise and tenon joint to form a continuous wooden conduit. The two wooden conduits were then laid side by side and covered with a 2-by-10-inch board before being buried. All three timbers were heavily coated with creosote to prevent rotting. The buried lines run from the railroad right-of-way southward into Tucson and may have provided telegraph or telephone service to businesses south of Toole Avenue. The wires themselves were made of copper and were paper-wrapped (Figures 32, 33, and 34).

Feature 54: Rail Spur

As discussed in Chapter 2, a private car rail spur was constructed on the parcel sometime between 1914 and 1919 and is labeled as such on a 1927 station blueprint (see Chapter 2). This spur was designated Feature 54 (see Figure 4). The remaining portions of the siding include an unprepared rail bed (unpacked, with no ballast) that is 2.3 m (7.5 feet) wide, with wooden cross-tie rail supports but no rails. An exposed 80-cm-wide section of the rail bed demonstrated that the cross-ties were still in place but had decomposed to the point that they crumbled when attempts were made to better define them (Figure 35).

Concrete structures ran parallel to either side of the rail bed. Each measured 0.6 m (2 feet) wide by approximately 0.6 m (2 feet) deep, with a 0.3-m-wide-by-0.46-m-deep (1-foot-wide-by-1.5-foot-deep) U-shaped channel or trough. Before the 1980s, effluent from passenger trains was flushed directly onto the roadbed. Troughs such as these ran parallel to the private spur for the purpose of either catching sewage from parked private or business cars, or supporting hoses that transported the effluent. The troughs may also have served as a repository for water hoses, electrical lines, and so forth, to keep them from being tripped over by rail workers and passengers or run over by the car itself upon being removed from the siding (Robert Bohannan, personal communication 2006).

North of and parallel to the spur are four iron pipelines. Two of these are 2-inch pipes that run through fired-clay pipes and are insulated with a fibrous material (Figure 36). These are likely low-pressure steam pipes that supplied heat to private and business cars. One of the remaining two pipes is a 1-inch line that probably carried water to the cars. The second is a ½-inch pipe of unknown function. Small-diameter pipe loses capacity rapidly with distance, so it is unlikely that this pipe carried water or natural gas. A ½-inch pipe uncovered nearby contained copper wiring for electricity. It is possible that the ½-inch pipe along the spur served a similar purpose and that its electrical wires were salvaged at some point.

Discussion

The tree wells (Features 25, 58, and 59) were most likely from the parcel's use as a park. The 1901 Sanborn map (see Figure 14) depicts an area along Toole Avenue that, according to the key, was a

corral. Features 10, 56, 17, and 18 were all post holes that would have been in the vicinity of this corral and were likely associated with it. Features 17 and 18 were observed during testing but were not investigated during data recovery.

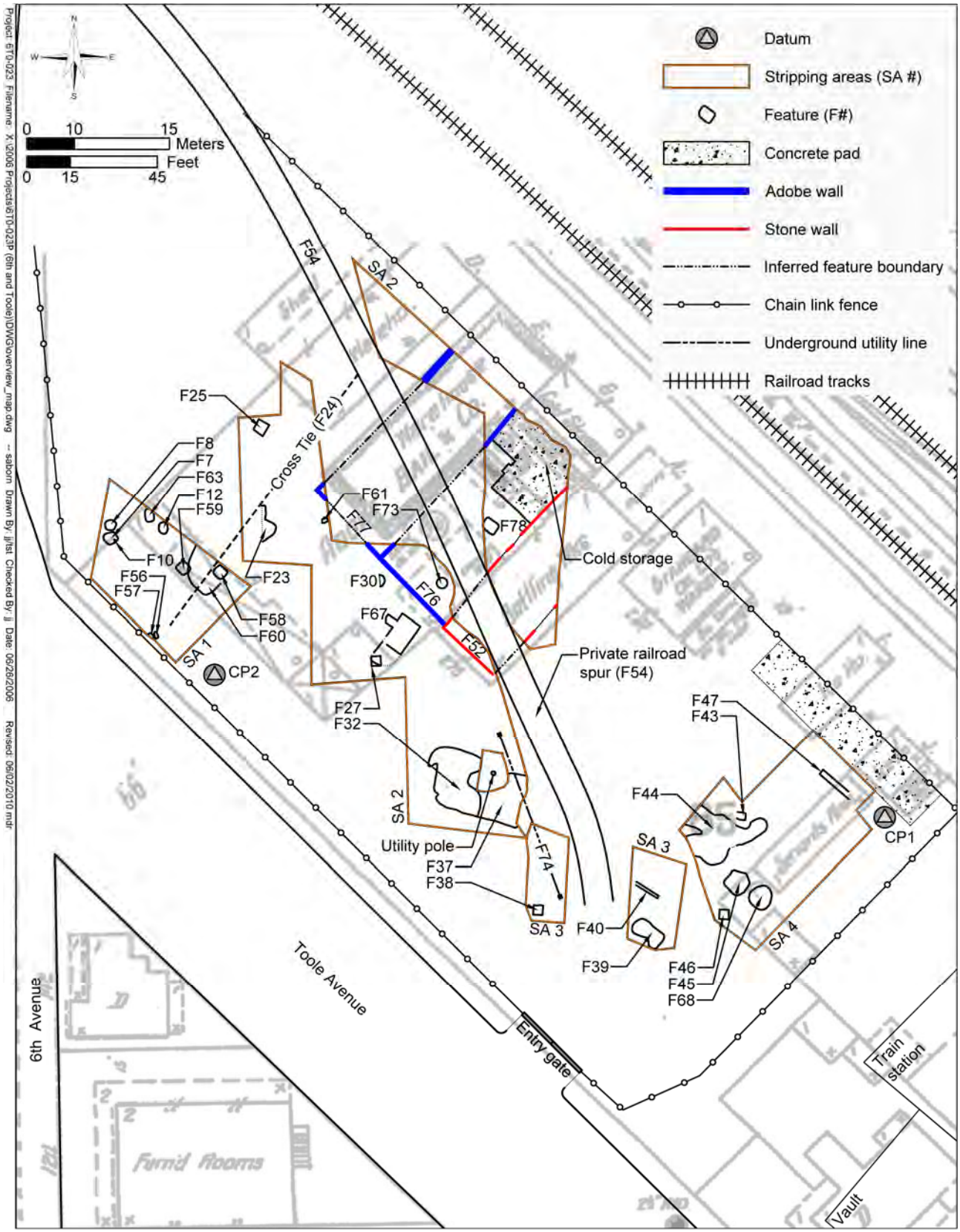

Figure 23. 1901 Sanborn map with the investigated features overlain.

PROJECT# 6T0-023
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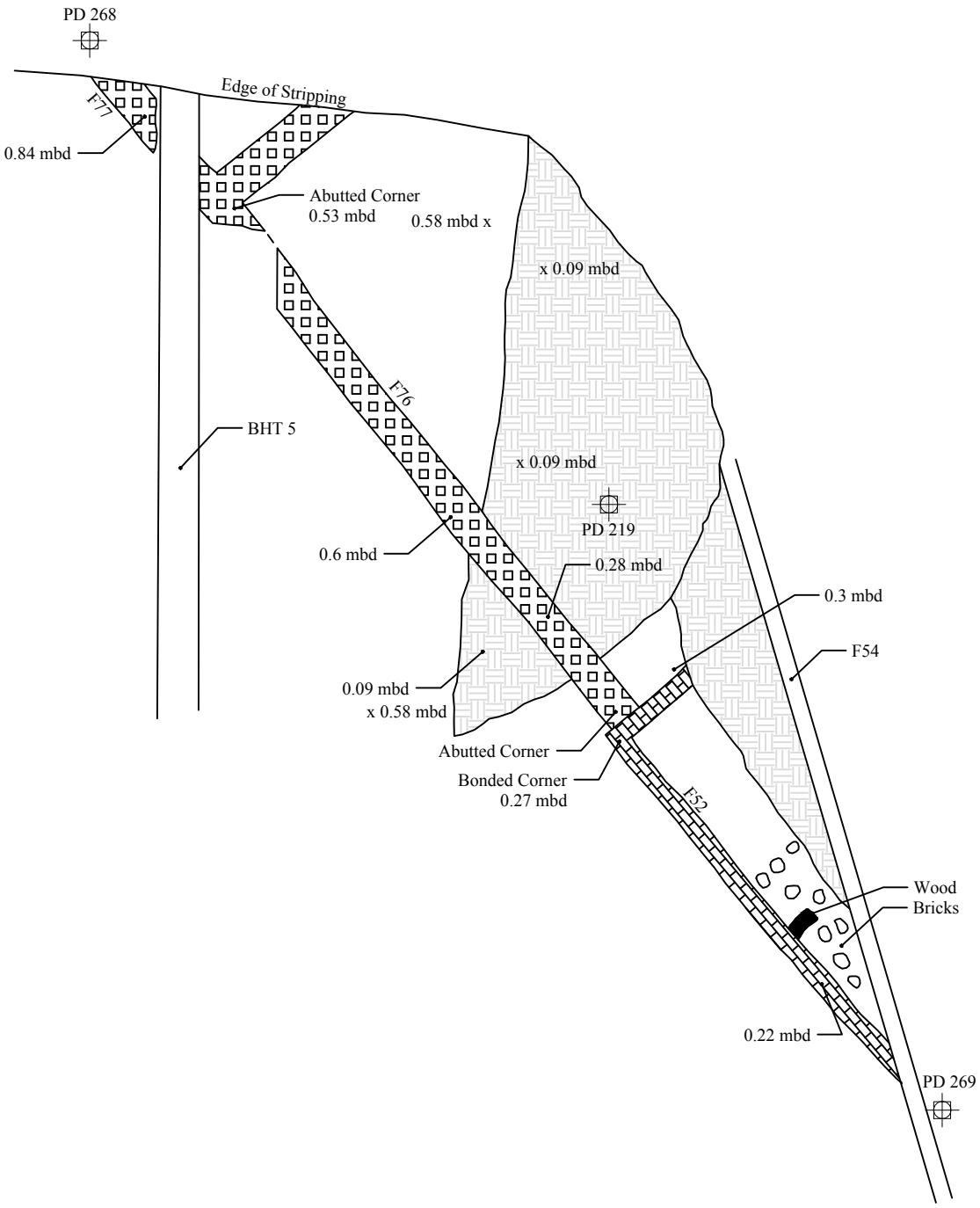
FIELD MAP BY: tk
DRAWN BY: mdr
CHK'D BY: jh
DATE: 05/20/2008
REVISED: 06/01/2009



N

0 METERS 1 2 3

0 FEET 4 8 12

Map Nails

Adobe Wall

Stone Wall

Unexcavated

x 0.58 mbd Elevations below PD 219

Project: 6T0-023 (6TH AND TOOLE)

CITY OF TUCSON

Tierra Right of Way Services

Figure 24. Detail of southwestern walls of Features 52, 76, and 77.

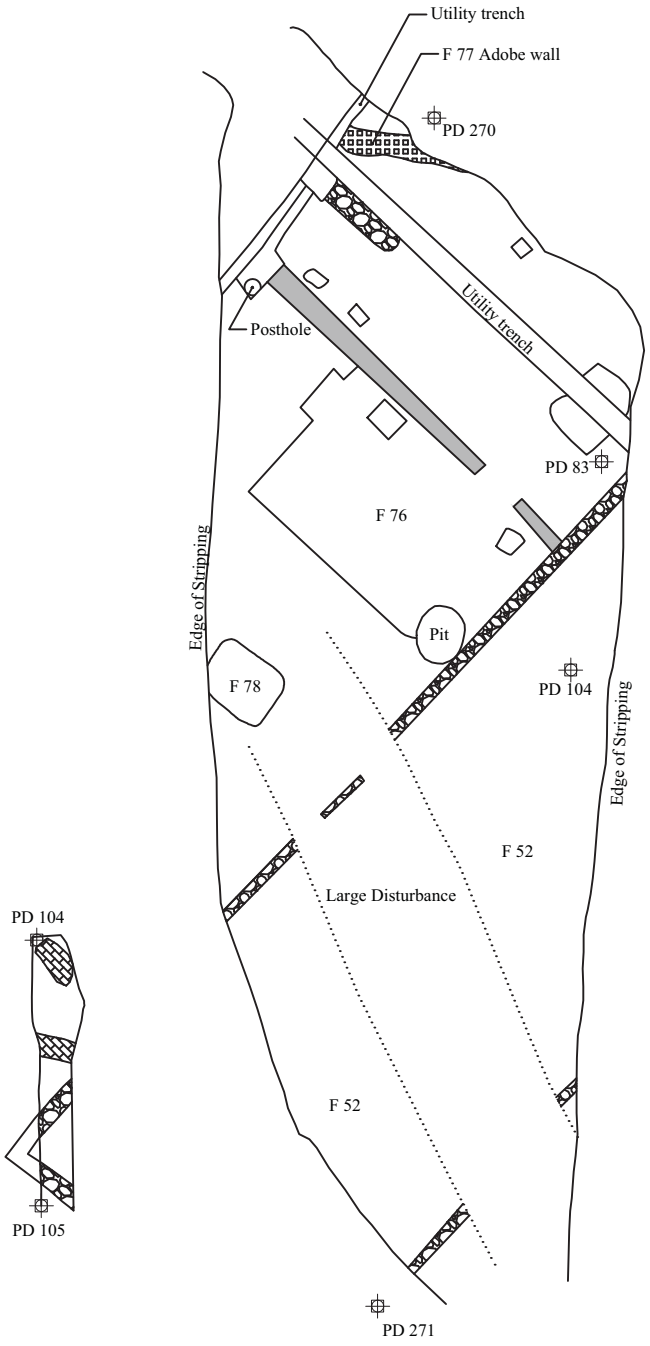
Figure 25. Southeast and northwest walls of Feature 52; view to the north. The concrete slab of Feature 76 is visible in the background.

Figure 26. Photograph of southwestern wall of Feature 76.

Figure 27. Northern portion of Feature 76, including concrete slab. The northwestern foundation wall of Feature 52 is visible on the right.

Figure 28. Testing trench exposing portion of brick floor within feature 76. View to the north. Foundation wall of Feature 52 is in the foreground.

PROJECT# 6T0-023 FILE PATH: X:\2006 Projects\6T0-023P (6th and Toole)\DWG\Post DR\Working_20080717.dwg FIELD MAP BY: cmw DRAWN BY: mdr CHK'D BY: jh DATE: 07/17/2008 REVISED: 06/01/2009



0 METERS 2 4 6

0 FEET 8 16 24

Map Nails
Adobe Wall
Stone Wall
Wall
Brick Floor

Project: 6T0-032 (6TH AND TOOLE)

CITY OF TUCSON

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Figure 29. Detail of northeastern end of Feature 76 & interior walls. Feature 52 foundation walls are also depicted.

Figure 30. Feature 27, privy; view is to the northeast.

Figure 31. Feature 45, privy; view is to the southeast.

Feature 32. Feature 24, with joints exposed.

Feature 33. Portion of Feature 24, with wiring exposed.

Feature 34. Exposed length of Feature 24.

Feature 35. Feature 54, exposed section of cross-tie rail supports.

Feature 36. Concrete trough, sidewalk, and insulated pipes associated with Feature 54.

Table 2. Pit Features Excavated during Data Recovery at the 6th and Toole Parcel

Feature No.	Feature Type	Dimensions (m)	Depth (m)	Artifacts Recovered	Association	Notes
7	small pit	1.12 × 1.1	0.57	low density glass and metal	unknown	–
8	small pit	1.0 × 0.43	0.55	low density glass, metal, and faunal	unknown	–
12	small pit	1.1 × 1.1	0.21	low density glass and metal	unknown	–
23	large pit	3.6 × 1.4	0.10	glass, metal, and cinders	industrial	shallow depression; combined with Feature 62
30	small pit	0.93 × 0.54	0.52	low density glass, metal, and faunal	industrial	just outside Feature 76
32	trash pit	6.5 × 5.5	0.96	ash, cinders, glass, metal, faunal, oyster shells, and ceramics	unclear	burned pit, used for dumping
37	trash pit	5.5 × 3.5	1.56+	ash, cinders, glass, metal, faunal, oyster shells, ceramics, and cattle remains (mostly head, hindshank, and foreshank)	unknown, possibly both industrial and hotel	possibly used by both areas, based on artifacts recovered; burned pit, used for dumping
38	large pit	2.1 × .55	0.24	light density glass, metal, and faunal	unknown	amorphous, poss. borrow pit later used for dumping
39	trash pit	unknown (sampled in two 1×1-m units)	0.77	metal, faunal, shell, ceramics, tooth powder container, buttons, small labeled bottles, and eggshell	hotel	some trash was burned prior to deposition.
43	large pit	1.8 × 1.3	0.60	cinders	unknown	oxidized walls, cinder disposal pit
44	possible adobe borrow pit, later used for dumping	unknown (extended beyond stripping area)	0.60	architectural debris	hotel	possibly from hotel servants quarters
46	small pit	unknown (sampled in 1×1-m unit)	0.40+	apothecary bottles, ash, ceramics, and metal	hotel	hotel-related trash pit
57	large pit	unknown (extended beyond stripping area) × 0.85	0.33	low density glass, metal, ceramics, and faunal bone	unknown	historic trash pit
61	small pit	0.57 × 0.56	0.36	liquor and beer bottles	industrial	industrial use, near bottling complex
62 [a]	see Feature 23	n/a	n/a	n/a	n/a	combined with Feature 23

Feature No.	Feature Type	Dimensions (m)	Depth (m)	Artifacts Recovered	Association	Notes
63	small pit	1.4 × 0.6	0.3	low density glass and metal	unknown	"corral" area (based on Sanborn map key, 1901)
68	trash pit	2.4 × 2.4	0.74	high density of historic (non-industrial) trash	hotel	inside boundaries of hotel servants rooms
73	small pit	1.15 × 1.4	0.33	cinders only	unknown	inside Feature 76 upper fill, possibly post-abandonment
78	large pit	1.74 × 1.0	0.73	broken beer and liquor bottles	industrial	inside Feature 76

[a] some chapters in this volume separate data for Features 23 and 62

Table 3. Miscellaneous Features Excavated During Data Recovery at the 6th and Toole Parcel

Feature No.	Feature Type	Dimensions (m)	Depth (m)	Artifacts Recovered	Notes/ Associations
10	post hole	0.25 × 0.15	0.26	cinders only	possibly from a corral post
24	wiring/ cross tie	see description	see description	see description	see description
25	tree well	1.25 × 1.15	0.20+	none	square pit
40	trench	unknown (extends beyond stripping area) × 0.3	0.1	historic trash deposits (non-diagnostic)	n/a
47	trench	4 × 0.63	0.3	cinders only	in vicinity of servants' rooms
54	private rail spur	see description	see description	see description	see description
56	post hole	0.69 × 0.41	0.23	wooden post fragments	possibly associated with corral
58	tree well	1.25 × 1.25	unknown (not completely excavated)	none	square pit
59	tree well	1.4 × 1.4	0.8	low density historic trash	round pit
60	sheet trash	4+ × 4+	0.23	saw-cut faunal, clam shells, glass, ceramics, and metal	area was the location of a corral based on 1901 Sanborn map, possibly later in-filled with trash
67	see Feature 27, Privy	n/a	n/a	n/a	superstructure of privy; combined with Feature 27
74	electrical boxes	0.81 × 0.81	0.76	n/a	two boxes connected by 3.5- inch pipe

CHAPTER 4
ANALYSIS OF HISTORIC ARTIFACTS

April Whitaker, M.A.

INTRODUCTION

Historic artifacts discussed in this chapter were collected during archaeological testing and data recovery. The purpose of this chapter is to provide a descriptive analysis of the historic artifacts including ceramics (non–Native American), glass, and other historic artifacts that do not fall into the aforementioned categories. Native American ceramics, historic metal items, and faunal remains are discussed separately in this report. The methods used in this analysis will be presented followed by a discussion of the historic material culture organized by functional category. All historic artifacts described in this chapter are listed in Appendix B.

METHODS

The artifactual data used in this chapter were recovered from the features exposed on the 6th and Toole Parcel. During data recovery, artifacts were recovered, collected, and grouped into general material classes that included ceramic, glass, faunal, metal, and historic other. Artifacts categorized as "historic other" were items that could not be assigned to a specific material group during excavation. These included, but were not limited to, textiles, wood, pigments, and rubber and early plastic. Items that were not attributed to a specific type or function were also placed in this category. Artifacts were processed in Tierra's laboratory. Faunal and metal artifacts were analyzed and reported separately. Native American ceramics were separated from the rest of the ceramics for independent analysis.

All historic ceramics and "historic other" items, with the exception of glass, were washed if considered to be non-fragile. Non–Native American ceramics were divided into categories based on glaze and paste, counted, and then entered into an Access database. For glass artifacts, identifiable glass items were separated from the undiagnostic glass. There were two episodes of glass discard for the undiagnostic glass fragments. First, all unidentifiable glass fragments were separated by color, then they were counted, weighed, and discarded; data about these items were then entered into an Excel spreadsheet. During this separation, items that were observed to have diagnostic attributes (e.g., base and bottle finish or embossing) were pulled aside for more detailed analysis. During analysis, any glass items initially considered diagnostic, but later deemed undiagnostic, were added to the counts and weights in the existing glass inventory spreadsheet and then discarded.

The ceramic and glass artifacts recovered were in fairly good condition; several ceramics and much of the bottle glass had identifiable maker's or product marks that provided date ranges. For historic ceramics, decorative techniques were easily noticeable, and vessel types could be identified for most of the sherds in the collection. All historic artifacts discussed in this chapter were analyzed by using a modified version of the East Liverpool, Ohio Urban Archaeology Project coding system (Ohio Department of Transportation 1991). The bag number and provenience designation number were

recorded for each item. Other attributes were recorded for each artifact include specimen count, material type, artifact type, color, form, function and sub-function categories, percentage present, manufacturing, and any comments. Maker's and product marks, as well as beginning and ending dates, were recorded for both ceramic and glass artifacts when applicable.

In this chapter, the historic artifact collection will be discussed based on functional category using the coding system discussed above. The functional categories used in this analysis include activities, architecture, clothing, furniture, kitchen, personal, and miscellaneous. The categories are listed below with examples:

Activities: Items grouped in this category are associated with communication, gardening, leisure, and recreation. Examples of artifacts in this category include slate pencils, ink bottles, chalkboard fragments, toys (dolls or marbles), flower pots, and tools.

Architecture: These artifacts are associated with buildings; such artifacts include window glass, roofing, and other construction and electrical-related materials, including insulators.

Clothing: These items are related to sewing, apparel making, repair and maintenance, and clothing attire. Artifacts include beads; rivets; straight pins; buttons; and maintenance items, such as shoe polish.

Furniture: These artifacts consist of or are associated with household maintenance, furnishings, and lighting. Items include lamp chimneys, knobs, hinges, and locks.

Kitchen: Artifacts in this category are associated with food storage, food preparation, and food service and include table- and kitchenware, such as utensils, tumblers, stemmed ware, pitchers, and wine bottles. For this project, all ceramic and glass artifacts related to food and beverage consumption were placed in this category. Although many of the glass bottles may be associated with one of the businesses on the parcel, they were placed in the beverage storage category strictly for organizational purposes.

Personal: These items are possessions that are related to an individual's health and hygiene. Artifacts in this group consist of toiletry items—such as perfume and cologne bottles and combs—and medicinal items—such as prescription bottles and syringes. Other artifacts that fall into the personal category include coins or money, tobacco pipes, and religious items.

Miscellaneous: Any artifacts that could not be placed into one of the categories discussed above were labeled as miscellaneous. Examples of artifacts in this category include pigments, unidentified rubber, pieces of hose, and indeterminate objects.

RESULTS

In total, 2,383 historic artifacts were analyzed; 23 pieces of glass were identified as bottle, but not further analyzed; and 22,869 pieces of undiagnostic glass were catalogued. The undiagnostic glass fragments that were recovered could not be attributed to a specific bottle or vessel form. Appendix C shows the distribution of the undiagnostic glass by feature and level. These included 4,851 aqua; 13,812 brown; 22 cobalt blue; 2,432 clear; 72 milk; 1,678 green; and 2 red glass fragments. The brown glass is likely from beer or liquor bottles. Aqua glass and clear glass had general and versatile

functions and were used for beverage and medicinal bottles. Milk glass was primarily used for cosmetics, food, and toiletry items. Red glass tended to be reserved for specialty objects. Olive-green colored glass may possibly belong to wine or champagne bottles; however, mineral water, ink, and medicinal items were sometimes bottled in this color.

A total of 23 unidentified bottle fragments could not be attributed to a specific function or sub-functional category. These fragments may have belonged to alcohol, beverage, or medicinal bottles. A few of the bottle fragments show evidence of embossing. One bottle fragment is marked "—ted [M]arch 10 1868" which could represent a patent date. Two glass pieces are marked "Herve & Car" and "Her[ve]." Other fragments are marked "—Carbon—" (n = 2) and "—yons Co. [San] Francisco" (n = 1). Another is embossed "GOODHART HARTMAN CO. CHICAGO." Searches in the literature and on the Internet did not reveal any additional information regarding this mark; we were not able to find information about the dates this glass was produced, who manufactured it, or the bottle's possible function.

RESULTS OF ANALYSIS

In total, 2,383 historic artifacts were analyzed. The following section presents the historic artifacts from the 6th and Toole Parcel based on functional category (Table 4). Artifacts categories are presented in alphabetical order, with the exception of miscellaneous items, which are presented last.

Activities

In total, 33 artifacts are associated with the activities group (Table 5; see Table 4). Twenty-five artifacts related to communication and writing were grouped into this category. Ink bottles dominated the activities group, making up 64 percent of the collection. None of the bottles appear to have maker's marks; however, a "3" was inscribed on one fragment and is possibly part of a mark. Another piece was marked "England." One other bottle fragment had traces of a paper label, of which, no writing could be deciphered. Most of the ink bottles were recovered from features associated with the San Xavier Hotel (see Table 5). Two slate pencils and a chalkboard fragment were recovered along with a metal ferrule to a pencil. Three toy items were recovered and include half of a domino with a single hole drilled in the center of the piece. Other artifacts include a pink bisque porcelain doll-head fragment and a small doll arm (Figure 37). Five coarse earthenware flowerpot fragments were also present and are indicative of gardening activities. All flowerpot fragments were undecorated and recovered from Feature 38, a large pit which may have been associated with the disposal of refuse from the San Xavier Hotel.

Architecture

A total of 690 artifacts were recovered that belong in the architecture group. Artifact types in the category were limited and include six terra-cotta roofing tiles; four brick fragments, one of which had plaster attached; four sewer pipe fragments; and six pieces of metal-based plaster. A partial, green, threaded Hemingray Company electric insulator was also found. Artifacts such as the sewer pipe fragments and the insulator are possibly the result of overhead and underground utilities; water and sewer lines have intersected the project area. Other architectural items recovered include 669 pieces of window glass. The window glass was recognized in the glass collection by its flat appearance. A substantial amount of window glass (n = 550) was recovered from two pits, Features 39 (n = 330) and 68 (n = 220), which appear to be associated with the San Xavier Hotel. Forty-nine glass fragments were recovered from Feature 27, 2 from Feature 44, 61 from Feature 45, 6 from Feature 46, and 1 from the judgmental sample.

Clothing Items

Twenty eight clothing-related items were collected, but most are buttons (n = 26). Buttons from the 6th and Toole Parcel collection come in variety of shapes, sizes, and designs. All are undecorated white milk-glass buttons. Four are holed with a recessed face, and one is a shanked, frosted-glass button; it was possibly associated with women's clothing. All complete four-hole (n = 24), sew-through, glass buttons were measured based on a classification established by the button industry. Buttons are measured in lines, or lignes, with 40 lines to the inch. Common button sizes are between 10 and 60 increments. The sizes and types of buttons suggest the style of garments worn by individuals.

Most of the buttons recovered from the parcel were between 12 and 28 lines (Table 6). Buttons this size generally belonged to girls' dresses and women's apparel, including shirts and trim. According to the 1897 Sears, Roebuck, and Company catalog (Israel 1968), these button sizes were commonly found on undergarments by the early 1900s. Eight buttons were greater than 20 lines, indicating that they belonged either to men's and women's jackets or coats or to women's dresses.

Only two other clothing-related artifacts were identified—one shoe polish bottle marked "REGISTERED COSMO SHINE TRADEMARK " and one yellow, faceted glass bead that may have belonged to a piece of jewelry or to an apparel item.

Furniture Items

Two glass and ceramic artifacts were associated with the furniture group—one lamp chimney glass fragment and one light bulb base (see Table 4).

Kitchen

Kitchen items (n = 1,519) dominated the collection from the 6th and Toole Parcel, making up approximately 64 percent of the collection (see Table 4). Of these, 1066 are food and beverage storage items, 14 are food preparation items, and 439 are food service items.

Food and Beverage Storage

In total, 1,066 food and beverage storage artifacts were collected. Artifacts include club sauce bottles, alcoholic and nonalcoholic beverage bottles, stoppers, corks, and jars. Alcoholic beverage bottles overwhelmingly dominate the items assigned to the food- and beverage-storage use category in the 6th and Toole collection (Table 7).

Alcoholic Beverage Bottles

In total, 837 glass and ceramic alcoholic beverage bottles were collected from the project area (Figure 38). Eighty-nine were whole or nearly whole (75–100 percent complete) bottles; these include 69 brown alcohol bottles, 14 whiskey flasks, and 6 wine or champagne bottles. The remaining bottle glass was fragmentary and was identified by either the bottle finish or base. The majority of the brown bottles had liquor or brandy finishes—that is, the upper portion of the finish is equal to or taller than it is wide and flares out from top to bottom (Lindsey 2006). A few brown bottle-glass fragments and whole bottles did have traces of paper labels; however, the paper labels had deteriorated. One paper bottle label has traces of the word "Lager" on it. Two miscellaneous paper label fragments were also recovered, but we could not identify the bottle. Other brown bottle fragments and nearly whole bottles (n = 5) were embossed "SAN ANTONIO BREWING ASS'N."

Two olive-green export-style beer bottles (see Figure38c) were found, as well as two olive-green export-style bottle finishes.

Other alcoholic beverage bottles recovered include 12 clear picnic flasks. Picnic flasks appeared during the late 1870s and were popular from about 1890 to the mid-1910s. The picnic flasks all have tooled (double ring) finishes, and all were mouth blown. One olive-green flask was recovered and appears to have a cracked or sheared off finish that is rough and uneven. Only two flasks had maker's marks. The olive-green flask had "C.V.G. Co. No 2" on the base, a marking that dates the bottle to between 1880 and 1881 (Toulouse 1971:151). One clear flask had "UNION MADE TRADEMARK" embossed (date unknown) on one side of the flask. One brown liquor flask had "half pint" embossed on the heel and "Federal Law Prohibits Sale or Reuse of This Bottle" on the bottle shoulder; the flask dates to between 1933 and 1964 (Munsey 1970:137). This bottle appears to be related to more-recent activities (Jones 2006). Nearly all of the flasks recovered were from Feature 45, a privy associated with the servants' quarters for the San Xavier Hotel.

Fifty-seven wine or champagne bottles and bottle fragments were identified within the bottle collection. The bottles all appear to be made from turn molds that created a seamless symmetrical body. Turn-mold bottles were produced from the 1880s to the 1920s. The base of a turn-mold bottle is usually indented to create a push-up or "kick-up" base (Jones and Sullivan 1989). Push-up bases were noted on all wine/champagne bottles from the parcel. Bottle finishes identified had applied champagne finishes. This type of finish is identified as a flat band of glass wrapped around the outside perimeter of the neck just below the bottle lip.

Six clear alcoholic-beverage-bottle fragments were recovered. Based on bottle finish, all were considered to be fragments of liquor bottles. All clear bottle fragments from the 6th and Toole Parcel have straight brandy finishes. Unlike tapered brandy finishes, the straight brandy finish has a straight width from the "lip" to the beginning of the neck portion of the bottle. The neck and finish of what appears to be a square spirit bottle was found. The neck of this type of bottle tends to have some decorative molding features, such as swirls or fluting or a bulged neck (Lindsey 2006); the bottle neck recovered from the parcel has a bulged neck that is molded in a swirl and extends from the body to the finish.

Some alcoholic beverages were bottled in stoneware containers. In total, 57 stoneware bottle fragments were recovered from the parcel (Figure 39). No complete stoneware bottles were recovered. One bottle fragment was marked "Midland Pottery Melling" and appears to be associated with an English pottery manufacturer. Partial maker's marks were found on two stoneware bottles, but they were not identifiable. The glazes on all of the stoneware bottles recovered are two toned with a clear and golden-tan glaze. Stoneware ale bottles date from 1880 to 1900 (Munsey 1970:137). Other stoneware ceramic alcoholic beverage bottles recovered include 10 fragments and 1 rim fragment from Chinese rice wine bottles (Figure 40). Ten fragments were recovered from Feature 68 and one fragment from Feature 45. Both of these features are possibly related to the occupation of the San Xavier Hotel.

A possible wine or champagne bottle cork was also found.

Nonalcoholic Beverage Bottles

Nonalcoholic beverage bottles and bottle fragments were also recovered (n = 194) (Figure 41). These bottles contained a variety of beverages including, soda, mineral water, and seltzer. Of this number, 38 were whole or nearly whole bottles, one of which still had its cork in place. The rest of the beverage collection consisted of bottle finishes and bases. Of the glass beverage bottles recovered, 147 were aqua and 38 were colorless (clear); 1 yellow bottle finish fragment was recovered, as well as 1 light-green bottle piece that was similar to the color of 7-Up bottles.

Of the beverage bottles recovered, three were round-bottom bottles (Figure 42). Two bottles are marked with "EHE CO" on their bases, which dates them to between 1893 and 1904 (see Table 4.6); the other round-bottom bottle is marked "ROSS'S BELFAST," which dates it to 1875–1890. The purpose of the round bottom bases was to make sure that the bottles would not stand upright during shipment. The bottles would lie on their side to ensure that the wired-down cork would not dry out and shrink, causing the beverage inside the bottle to lose carbonation or evaporate. The round-bottom bottles recovered from the parcel did have a small, flattened area in the middle of the base that would allow the bottles to stand upright. Round-bottom bottle glass was made relatively thick to withstand the pressure of soda, mineral water, and, in particular, seltzer. These bottles were made and imported from places including the United States, England, and Ireland, primarily Belfast. The majority of the round-bottom bottles date from the 1870s to the 1910s (Lindsey 2006).

Other glass beverage bottles from the 6th and Toole Parcel include an olive-green Apollinaris-style mineral-water bottle. This type of bottle was generally used from the 1880s to the 1910s. During the nineteenth century, some brands of German mineral water were bottled in stoneware jugs; after the turn of the century, most companies switched to glass bottles. Fragments of a stoneware mineral-water jug were recovered from the parcel. Part of the maker's mark was discernable and read "Georg Kreuzberg Ahrweiler Rheinpreussen Apollinaris-Brunnen, M-WO." The maker's mark also consisted of a boat sail mast that goes down into an anchor. This brand of mineral water was first manufactured in 1852 (Finewaters Media 2006).

Distribution of Bottle Glass

The majority of the glass alcohol and beverage bottles and bottle fragments were recovered from features associated with the industrial area of the site. The majority of glass was recovered from Feature 27, a large privy (Table 8). The short stack of bottle bases was recovered from Feature 78, a large pit, which also held a considerable amount of bottle glass. Both features appear to be associated with the industrial occupation of the site.

Bottle Marks

A total of 367 bottles and bottle fragments had discernable maker's marks (Table 9). Several bottles did have marks on their bases; however, information about the marks, including date range and manufacturer, was minimal or absent from the literature. The mark "M.J.H. & Co." was identified on two brown bottle bases. This type of bottle mark was also found at Fort Bowie (Herskovitz 1978), but Herskovitz did not identify the mark, and no literature has been found that would reveal dates or manufacturing information. The M.J.H. & Co. mark may refer to the filler of the bottle, possibly a brewery or soda bottler. The mark "S," which appears in a shield, has previously been recorded by bottle collectors. This mark may also represent a brewery or merchant filler rather than a manufacturing mark, or could belong to any company with an initial of "S" (Bill Lockhart, New Mexico State University, personal communication 2006). The "S.C. Herbst Milwaukee" mark

identified also has an unknown date range. An Internet search revealed that this company was a distillery that possibly operated from the late nineteenth century into the turn of the twentieth century (Reilly 2006). This company, along with other distilleries, was closed down during Prohibition (1920–1933). The "backwards J" (see Table 4.6) was harder to pinpoint. Bill Lockhart (personal communication 2006) suggests that this bottle mark may date to the 1920s.

Although bottle manufacturing marks give date ranges of production and time of use, other attributes of bottle production can also be analyzed to provide additional information on chronology (see Jones and Sullivan 1989). During the current project, the location and presence of mold seams on the bottles were examined, along with the method of finish and base manufacturing. The majority of the bottles from the 6th and Toole Parcel appear to be manufactured from two-part molds. These molds were most prevalent for late-nineteenth-century and early-twentieth-century bottles (Jones and Sullivan 1989). The base molds are typically post or cup bottom seams (Henry and Ritz 1983). Mold lines on these bottles run vertically from the base up the body and partially up the neck. For cup molds, the mold seams stopped above the heel of the bottle. The bottle finish was commonly done by hand. These types of molds were also used on machine-made bottles, although cup bottom molds were more frequently used.

Food Bottles and Jars

The remaining items in the food storage category consist primarily of food (sauce) bottles and food jars (see Table 7). The seven food bottles were identified as club sauce bottles (Figure 43). Of the seven bottles, four were marked "LEA & PERRINS" Worcestershire sauce bottles, and one was marked "The TA Snider Co. Cincinnati. O." A cathedral-shaped, paneled pepper-sauce bottle was found. The heel of the bottle was marked "CCO PAT, Sept 28, 1875." Six glass club sauce stoppers were recovered. The flat portion of the stopper will usually have a product mark. Of the four stoppers recovered, one stopper was marked "LEA & PERRINS."

Ceramic and glass jar fragments were also identified in the collection (see Table 7). Glass jars were few and included only eight clear, jar finish fragments with external threads and one brown jar base. The jar base is marked "HGW" and dates from 1880 to 1900 (Bill Lockhart, personal communication 2006; Toulouse 1971). Other food storage items include Mexican glazed wares (n = 8) that appear to be olive jar fragments (Figure 44). The ceramics identified as olive jars had an exterior olive-green glaze except for one fragment that had a bluish gray, almost gunmetal, glaze. Half of the jar sherds recovered had an exterior and interior glaze, whereas the other half had unglazed interiors. All olive-jar wares were recovered from Feature 37 or Feature 32/37. Five Chinese stoneware storage-jar fragments were recovered (Figure 45). The jar fragments had a brown glaze on their interior and exterior. These types of jars held many foodstuffs including soy sauce, black vinegar, peanut oil, beans, tofu, sugar, shrimp, cabbage, and other food items (Lister and Lister 1989; Thiel 1997). The jar fragments were recovered from two pits, Features 44 and 68. Both of these features appear to be associated with the occupation San Xavier Hotel.

Food Preparation

Artifacts associated with food preparation were recovered in small amounts. The ceramics identified as preparation vessels were mainly Mexican glazed wares (Figure 46). These lead-glazed wares are wheel-thrown vessels from Mexico and are either thick or thin walled; glaze colors are diverse and include olive green, brown, and orange. Most Mexican glazed wares have an interior and exterior

glaze and may have an additional design on the vessel exterior. These vessels were inexpensive, durable, and typically used for mixing, storing, and preparing foods (Thiel 2005).

During the current project, 14 pieces Mexican glazed ware vessels were recovered that were associated with either mixing or preparing foods. All of the food preparation ceramics were recovered from two pits, Features 32 and 37. Bowls were the most common vessel form recovered (n = 9). A few of the bowl fragments recovered had finger-impressed rims and would have belonged to lidded vessels. Although these lidded vessels were used for preparing or mixing foods, they may have also been used to carry food to meal service. The other five ceramic fragments had unidentifiable vessel forms. Most of the wares had a tan/brown glaze with an additional dark brown design on the vessel exterior. Glaze colors varied and included olive green, brown, and orange. Some vessels had exterior and interior glazes, whereas others had a glazed exterior and an unglazed interior. A few of these vessels had interior glazes close to the rim.

Food Service

Artifacts that comprise the food service group totaled 439 individual ceramic and glass fragments. Of the 439 artifacts in this category, 405 are ceramic fragments. The associated vessel forms for the ceramics in this category were identified and are listed in Table 10. The following section presents the ceramics associated with food service, followed by a discussion of the glassware.

Ceramics

Ceramics were the most common artifact in this category (Figure 47). Ceramic vessel forms identified include platters (n = 9), saucers (n = 12), serving plates (n = 59), serving bowls (n = 44), three fragments of a whole pitcher (Figure 48), fragments from a mug, and fragments from several cups (n = 9) were also recovered. In total, 265 unidentifiable vessel fragments were collected. The unidentified vessel pieces were categorized as food service based on decoration, shape, and size but could not be assigned a specific vessel form.

A substantial amount of the whiteware ceramics in the 6th and Toole Parcel collection are undecorated (n = 323). Both British and American potters manufactured these white, hard paste earthenwares during the nineteenth and into the twentieth centuries. These plain or sometimes green-banded ceramics were termed hotel ware by potters (Figure 49). These wares were simply decorated and relatively inexpensive. These ceramics were manufactured in a variety of vessel forms and were primarily used for meal serving and toiletry purposes. Undecorated whitewares made up 79.8 percent of the vessel forms identified in the food service collection (see Table 10). Most of the whiteware ceramics were recovered from Features 32, 37, 39, 44 (all pits) (Table 11). Whiteware dates from the 1830s to the present (University of Utah 2006).

The second most common ceramic type recovered from the 6th and Toole Parcel was Victorian Majolica (Figure 47c and 47f). These ceramics made up 10.4 percent of the ceramic types (see table 4.7). Victorian Majolica, which was popular from the 1850s to the turn of the twentieth century, is very different from Spanish Majolica. English potters introduced the ceramics as "Majolica" from the Renaissance Majolica that inspired it. Victorian Majolica has naturalistic relief or animal motifs with bright, bold colors and glazes. Vegetable, berry, leaf, fruit, and floral relief-molded patterns are commonly found on plates, bowls, pitchers, mugs, and other table vessels (Majolica International Society 2004). Colors on Victorian Majolica are bright and sometimes harsh. Green, brown, yellow, pink, light blue, and purple-blue are common colors found on this type of ceramic. During the

current project, 42 individual pieces of Victorian Majolica were recovered. Eight plate fragments and 12 bowl fragments were identified. The Victorian Majolica recovered had mainly ornate relief-molded floral and foliage designs. A few pieces had molded berries and leaves; other fragments had a dimple relief or basket weave patterns. Twenty-two of the 42 fragments were unidentifiable. The Victorian Majolica was recovered from Features 32, 37, 39 (pits), and 45 (privy); however, most of it came from Feature 37 (trash pit; Table 12).

English porcelain made up 4.4 percent of the ceramic types recovered. English porcelain has a soft paste and received a variety of surface treatments, including plain white, hand-painted underglaze, hand-painted overglaze, transfer printed, decal, and gilded. In total, 18 undecorated and decorated English porcelain fragments were identified (see Table 10). Undecorated porcelain fragments include a porcelain saucer rim, a plate rim, a plate base, as well as 10 fragments with unidentifiable vessel form. Three fragments of decorated porcelain were collected; however, vessel form was indeterminate. The design of the decoration was difficult to determine because the glaze had worn off, leaving only iridescent tracks on the ceramic. One fragment had a light-blue decoration, one sherd had a light-green and light-blue design, and the third piece appears to have a rust-orange and yellow decoration.

Twelve transfer-printed whiteware sherds were collected. Transfer designs are formed on ceramics by taking a thin piece of paper and then rubbing it onto an engraved copperplate. The paper then transfers the design onto the vessel. These patterns are detailed, with naturalistic, landscape, and historic scenes that cover most of the vessel. Transfer designs were produced in a variety of colors, including red, green, blue, brown, and purple. Five of the transfer-printed ceramics recovered from 6th and Toole Parcel have brown landscape and floral designs. Five have a green, abstract floral print; one sherd has a black floral and foliage pattern; and another appears to have a blue geometric pattern. All of the transfer-printed ceramics are either body or rim fragments. Based on shape and thickness of the sherds, the transfer-printed ceramics appear to be associated with serving plates. Transfer-printed ceramics are commonly found on sites that date from the 1850s to early 1900s in Tucson (Thiel 2005).

Chinese porcelain fragments were also recovered from the parcel and make up 1.7 percent of the ceramics associated with food service. Chinese porcelain is different from the European types in that it has a hard paste that is translucent in cross section, shows little to no difference between the body and the glaze, and is always hand painted. Seven pieces of celadon or wintergreen porcelain were identified. The wintergeen porcelain has a light-green exterior glaze and a lighter green interior glaze. The pieces identified include one base fragment of a rice bowl and two mendable base pieces to another rice bowl, as well as four unidentifiable vessel forms. All of the fragments were isolated in Feature 38, a large pit. A decorative Chinese marking was identified on a rice bowl base (Figure 50).

Other ceramics found include two decal-printed whiteware ceramics. One sherd is a possible teacup fragment; the other had an indeterminate vessel form. The cup had a scalloped rim and a portion of a relief-molded handle attached. Decal-printed ceramics typically have bright, multicolored polychrome and floral designs. The lines of decoration are sharper than those found on transfer-printed ceramics. Decal-printed ceramics, especially those with floral motifs, were popular during the 1890s and 1910s (Thiel 2005). Other food service–related ceramics collected include one sherd of undecorated yellowware. The vessel form of the yellowware sherd could not be identified.

Eleven complete and partial marker's marks were identified on the whiteware ceramics. A list of complete and partial maker's marks, vessel forms, and dates of manufacturing are shown in Table 13. Six of these marks were datable (Figure 51).

Glassware

Thirty-six individual glass fragments that are associated with food service were recovered from the 6th and Toole Parcel. Vessel forms were relatively limited and include cups (n = 3), serving bowls (n = 9), stemware (n = 5), tumblers (n = 7), and a decanter stopper (n = 1). A total of 11 fragments were unidentifiable (Table 14).

The unidentified glass was grouped with food service based on decorative attributes (molded, etched, or cut), thickness, and shape. Most of the collected glass tableware has decorative motifs that are commonly found on late-nineteenth-century glassware (Jones and Sullivan 1989). One vessel piece had what appeared to be asterisks (*) on the glass and could be a portion of a drinking glass or specialty item. Other miscellaneous glass fragments were decorative and had notches (a sequence of short nicks); these fragments could be part of a serving vessel, such as a bowl. However, these fragments were too small to determine vessel form and function (Jones and Sullivan 1989). Most tumbler and stemware fragments identified in the glass collection were undecorated. Two nearly complete stemware glasses were recovered; both were missing the stem and base (Figure 52). One stemware stem fragment had a molded faceted design. Another partial stemware base was also found. Four out of the five glass stemware fragments were recovered from features associated with the San Xavier Hotel. Seven tumblers were recovered; two tumbler fragments have pressed panels around the glass. Other vessels recorded include nine mendable serving bowl fragments. The rim had a sawtooth pattern (a series of pointed diamond-shaped bumps), and the rest of the vessel had a notched design. Three glass cup fragments were noted in the collection. One undecorated cup handle was identified, as well as a diamond-patterned cup body fragment with handle and rim. One decorative stopper, possibly for a decanter, was recovered. The stopper had a ground shank and had pressed glass facets on the finial (portion of the stopper that is grasped for removal).

Personal

The personal category included a total of 104 artifacts. Medicinal and hygiene bottles were most prevalent in the personal group (Figure 53). Other items identified in the personal group include three toothpaste jars, one pipe-stem fragment, five ceramic soap dish fragments, two pieces of a toothbrush holder, three plastic combs, and one possible manicure brush, which is discussed in Chapter 7.

Of the medicinal, bitters, and druggist bottles identified, 29 are complete. Some of the whole or nearly whole bottles are marked with a maker's or product mark (Table 15). A few of the bottles recovered are marked "HOMER'S BLEACHED JAMAICA GINGER BRANDY," "DAMIANA BITTERS," "PONDS EXTRACT," "ST. JAKOBS OEL", and "JAQUES' CHEMICAL WORKS CHICAGO." According to Wilson and Wilson (1971), St. Jakobs Oel was a very popular medicinal during the turn of the century that contained a "tincture of opium." The "oel" was marketed as a cure for many ailments, including rheumatism. This brand of bitter was primarily used as an aphrodisiac or to promote fertility in women. Other bottles recovered included aromatic bitters. Aromatic bitters consisted of mainly herbs, spices, fruits, and spirits. These were generally very bitter and typically added to a beverage. One bottle was marked "C.W. ABBOTT & Co. BALTIMORE." C. W. Abbott and Co. was a popular bitters company in the late nineteenth century, and its products

aided in indigestion. A bottle marked "DR. JGB SIEGERT & HIJOS" was found that also once contained aromatic bitters. Fragments from a bottle marked "CALIFORNIA FIG SYRUP" were also collected. The fig syrup was primarily used to treat constipation. A bottle marked "JOHN WYETH & BRO PHILA" was found, and its contents were also used to treat stomach ailments. The bottle base with the inscription "HUNYADI JANOS SAXLEHNERS BITTERQUELLE" would have contained a liquid that had laxative properties (Fike 1987). Even though bitterquelle had medicinal qualities, it was nonalcoholic and not considered a bitter; instead it was considered a "natural mineral water" (Lindsey 2006).

Other druggist bottles recovered include a bottle marked "H.P. WAKELEE & CO. SAN FRANCISCO CAL." and another bottle marked "FRED FLEISHMAN & CO DRUGGIST TUCSON." A bottle labeled "SALE AND SON" was also recovered. These bottles may have contained syrups, tablets, or other products. Twelve whole medicine bottles were also found that had no brand or manufacturer information. One bottle appears to have a paper label. Paper labels were common on bottles from the second half of the nineteenth century onward (Jones and Sullivan 1989).

Seven cosmetic and hygiene bottles were collected from the 6th and Toole Parcel. Some of the bottles were associated with either perfume or cologne. These consisted of a cologne bottle marked "HOYTS GERMAN COLOGNE" (see Figure 53h) and a bottle marked "ED PINAUD PARIS" (see Figure 53i). A fragment of a perfume bottle was also found marked "PARFUMEUR." One small, square bottle that possibly contained perfume was marked "WEN—PERIO—NEW YOR[K]." A bottle marked "PALMER" was also recovered. This brand produced cosmetic and hygiene items for both men and women that included lotions, perfumes, colognes, and "Florida Water" (Toulouse 1971). A bottle fragment embossed with "COLGATE & CO." was found and could have held a cosmetic product for hair, such as pomade, or possibly cologne.

The medicinal and hygiene bottles from the parcel are diverse in their shape, size, and color. The unidentifiable medicine-bottle fragments recovered primarily have paneled bodies, although some appear to be wide-mouthed prescription tablet bottles. Wide-mouthed bottle fragments are generally associated with ointments. Other bottle fragments had narrower necks and mouths, suggesting that they possibly contained syrups or other liquid contents. The narrower necks and finishes (lips) made it easier to pour out the contents. Fragments of what appears to be a medicine vial were also recovered.

Ten ceramic artifacts were found that belonged in the personal group. Dental hygiene is represented by three toothpaste or tooth powder jars. One tooth powder jar was recovered that still had the contents inside (Figure 54). The jar lid was marked "Formodenta An Elegant Preparation For Preserving & Whitening The Teeth Purifying & Perfuming the Breath." This powder was produced by a company called Hazard & Caswell of Newport, Rhode Island. Two toothpaste jar bases were also recovered without their lids. Very few smoking-related artifacts were recovered from the 6th and Toole Parcel; only one white kaolin pipe-stem fragment was found. The stem did have a maker's mark with an inscription of "Mc Dougal Glasgow" along the stem. Five whiteware soap dish fragments were also recovered, as well as a decal-printed porcelain toothbrush holder, which was identified by Homer Thiel (personal communication 2006).

Other items in the personal group include portions of three rubber or Bakelite hair combs. One of the combs was scalloped along the edge, which suggests a decorative hair comb for a woman. The

1897 Sears, Roebuck, and Company Catalog (Israel 1968) describes combs of this nature as originally designed to imitate tortoise shell. One hose fragment was also recovered that could be part of a medical apparatus. A possible manicure brush was recovered that was made of bone carved in a bamboo pattern; bristle holes are visible at one end, and a cuticle tool is on the other (see Chapter 7).

Miscellaneous Items

Seven items were identified that could not be attributed to any of the categories discussed above. These included three fragments of what appears to be burlap, or other cloth type; possible indigo pigment pieces; a plastic disk; and two unidentified artifacts. One item seems to be worked mica stone with a small metal attachment. The other item is an unidentified plaster object with a "3" written in pencil on one side. These items could not be associated with a specific type or function.

CONCLUSIONS

The artifacts identified in the collection clearly reflect the industrial and commercial nature of the property and contribute further to the understanding of Tucson society during the late nineteenth and early twentieth centuries. In total, 2,383 identifiable artifacts were recovered during data recovery efforts at the 6th and Toole Parcel. For the historic artifact analysis, artifacts (other than metal, faunal, and Native American ceramics) were assigned to specific functional categories in order to answer research themes outlined in the data recovery plan (Hushour et al. 2006). Research questions for the project focused on transportation, commerce, and industry associated with the Tucson Warehouse Historic District and the Southern Pacific Railroad. Research themes also focused on understanding the daily lives of those individuals who lived and worked in the area. The following discusses the ceramic and glass artifacts in association with the research questions.

One of the dominant research themes was system construction and operation, administration, and commerce associated with the Southern Pacific Railroad in Tucson. The abundance of outside products brought in for local distribution is seen in the types of artifacts recovered from the 6th and Toole Parcel. The identification of "DAMIANA BITTERS" and "DR. SIEGERT & HIJOS" bottles suggest that products were transported into Tucson and possibly stored and distributed by one of the businesses situated on the parcel. Wm. B. Hooper & Co. was an agent for these distributors, as well as others that originated outside of Tucson, and was in charge of distributing these products locally.

Further evidence of railroad-related commerce is indicated by the presence of features and artifacts that appear to be associated with the San Xavier Hotel's occupation of the property. Feature 45, a large privy, exposed a number of artifacts that appear to be associated with the servants' quarters of the hotel. The materials recovered suggest that the privy was in fact associated with the hotel staff. Artifacts recovered from the privy feature included whole, thick, white earthenwares that are usually associated with a commercial establishment. Abandonment of Feature 45 appears to have occurred around 1900. Most of the ceramics recovered were plain whitewares; however, the presence of transfer-printed whitewares (1850s–early 1900s), Victorian Majolica (1850s–early 1900s), and stoneware bottles (1880–1900) do suggest an abandonment date of around 1900. Feature 44 may also be related to the hotel. Ceramics including whiteware and transfer-printed wares were recovered from this feature. One beverage bottle had a mark that dates between 1905 and 1929 and could indicate that the feature was used later than Feature 45. Feature 68 may also be associated with the hotel. A "LEA & PERRINS" bottle that dates to 1880–1900, a mark taken from an alcoholic

beverage bottle that dates to 1895–1904, and a whiteware piece with a mark that dates to 1868–early 1900s further suggest that Feature 68 may have been abandoned by the early 1900s. Feature 39 is another trash-filled pit associated with the hotel. This feature appears to date earlier than Features 44, 45, and 68 and may have been in use longer (Table 16). Items from the pit include Victorian Majolicas, transfer-printed whiteware, plain whitewares, stoneware, porcelain, a tooth powder jar, cologne and shoe polish bottles, soap dish fragments, medicine bottles, and clothing buttons. The pit appears to have been abandoned by around 1900, which is consistent with the burning down of the hotel in 1903.

One major theme of the research design focused on the day-to-day lives of the people who worked or lived near the railroad and emphasized the social history of Tucson. Factors such as ethnicity, gender, and economic status are not always reflected in the historical record. Artifacts can therefore provide an opportunity to study these social factors that are absent or rarely presented in historical documents. In regard to ethnicity, only a few artifacts were recovered that could possibly be attributed to Chinese or Mexican individuals. Chinese-related items recovered include rice wine bottle pieces, a storage jar, and fragments of rice bowls. Although these were recovered in relatively low amounts, the items may point to a Chinese presence on the site. All of the Chinese jar and rice wine bottle fragments were recovered from features associated with the servants' quarters of the San Xavier Hotel. This may imply that Chinese workers were employed at the hotel establishment or that Chinese individuals (possibly railroad workers) were staying at or near the hotel. Relatively low amounts of Mexican glazed ceramics were also found. All of the Mexican glazed ceramics were isolated in Features 32 and 37. These features were located in the warehouse complex and this correlates with the fact that Mexicans/Mexican Americans were known to have worked and lived there over time. The low number of Mexican ceramics could suggest that individuals may have abandoned traditional material culture and used the readily available and less expensive wares produced in Europe and the United States at this time, or it may simply be that since this was a workplace and not a residence (in some cases), personal items used by various ethnic groups may not have been present on the site, but rather at the homes of these individuals. The property businesses were owned and run by Euroamericans, and this is consistent with the prevalence of Euroamerican whiteware ceramics and Victorian Majolica also recovered from Features 32 and 37.

Features 39, 44, 45, and 68 appear to have contained both commercial and domestic trash, suggesting that there was variability of use in this portion of the parcel.

Most of the artifacts appear to be related to the industrial occupation of the parcel. Substantial amounts of bottle glass were recovered from Features 27 (privy) and 78 (pit). Both appear to be associated with the industrial area of the site and are likely related to the bottling plant. Feature 61 (small pit) also contained bottle glass. Although this feature did not have the large quantity of glass that was present in Features 27 and 78, the proximity of Feature 61 to the industrial area of the site further suggests that it was also associated with one of the businesses. Bottle dates plus the manufacturing attributes observed from the bottles suggest that the privies and pits were used from the 1880s until the early 1900s. This corresponds with the known period of occupation for the businesses on the property discussed in Chapter 2.

Further analysis of the bottles from the 6th and Toole Parcel suggests the presence of possible bottle breakage areas that are likely associated with the bottling business. Bottles recovered from Features 27 and 78 had either the neck and/or finish broken off or had just the base missing. The majority of the bottles with this type of breakage were brown colored. Several others, mostly with

the neck and finish missing, were blue and clear colored bottles. In one instance, three short stacks of brown bottle bases were recovered from a feature (Feature 78) (Figure 55). The breakage patterns on the bottles could be the result of several factors. Although glass color may contribute to the breakage patterns (because of the different mineral composition of the glass), the breakage is mostly the result of tempering of the glass and the design of the individual bottle. Handling and case damage frequently cause heel bruises or breaks (at the curved area at the bottom of the bottle that joins the body to the resting point) that would knock off the base but leave the body intact. Late-nineteenth-century and early-twentieth-century filling equipment could contribute to much of the damage (to both the bottle finish and base). The location of these bottles on-site could represent a "breaker storage area"—a specific on-site disposal of broken bottle glass (Bill Lockhart, personal communication 2006). The location of the features and the amount of bottle glass found suggest that the central warehouse area is associated with the bottling works. The amount of broken bottles in one area could suggest a problem with the bottling equipment or bottle quality.

Another facet of research focused on identifying gender-related items. Artifacts associated with gender usually include personal and clothing items. For instance, the decorative hair comb, the frosted-glass shank button, and the perfume bottle can be attributed to the presence of women. Based on the size of the buttons recovered, they could be divided into categories such as men's coats or jackets and women's or girls' dresses. A few of the hygiene items, including cologne bottles and the tobacco pipe stem, are indicative of the presence of men who may have worked and resided near the railroad. Children's toys, such as doll parts and a gaming domino piece, suggest that children lived on or visited the property.

Artifacts associated with economic status were identified in the collection. Clothing and personal items were used to analyze the economic status of the people present in the project area. These artifacts are mainly associated with personal appearance and upkeep. Artifacts include buttons, shoe polish, perfume, cologne, and a manicure brush. The importance of maintaining one's health and daily personal care is evidenced by the prevalence of medicinal and druggist bottles, combs, soap dish fragments, and a toothbrush holder and tooth powder.

Ceramics can also be suggestive of economic status. However, it was difficult to analyze the ceramics from the 6th and Toole Parcel and their association with economic status because many of the ceramics were from mixed commercial and domestic deposits. Celadon or wintergreen porcelain was one of the more expensive vessel designs (Thiel 1997) recovered from the site. There was a substantial amount of plain whitewares from the site. This supports the fact that by the 1900s, plain whitewares were most dominant compared to decorative wares primarily because they were inexpensive and readily available to the public. In Tucson's archaeological record, the percentage of decorative vessels recovered declines dramatically in archaeological contexts that date to 1890–1910 (Thiel 2005). The occurrence of European Majolica does suggest that people were aware of and purchased fashionable tablewares that were popular at the time, although they may have been more expensive. Tentative interpretations regarding socio-economic status suggest that individuals were using less expensive wares because that is what they could afford.

Generally, the variety of non-local ceramics supports the fact that by this time, Tucson had ready access to national markets and was not dependant on locally made wares. Their presence is a reflection of the growing commerce with suppliers outside of Tucson. Many of the ceramics were likely used by the hotel guests, and this again indicates an opening up of the City: new and upscale hotels with modern features and amenities were now possible in the "Old Pueblo."

Figure 37. Activity artifacts: (a) bisque porcelain doll piece (PD: 166 FN: 570); (b) porcelain doll arm (PD: 159 FN: 167); and (c) gaming piece (PD: 187 FN: 200).

Figure 38. Alcohol bottles: (a) brown beer bottle (PD: 281 FN: 479); (b) "porter" style bottle; (c) "export" style bottle (PD: 22 FN: 1); (d) picnic flask (PD: 275 FN: 435); (e) olive green flask (PD: 267 FN: 403).

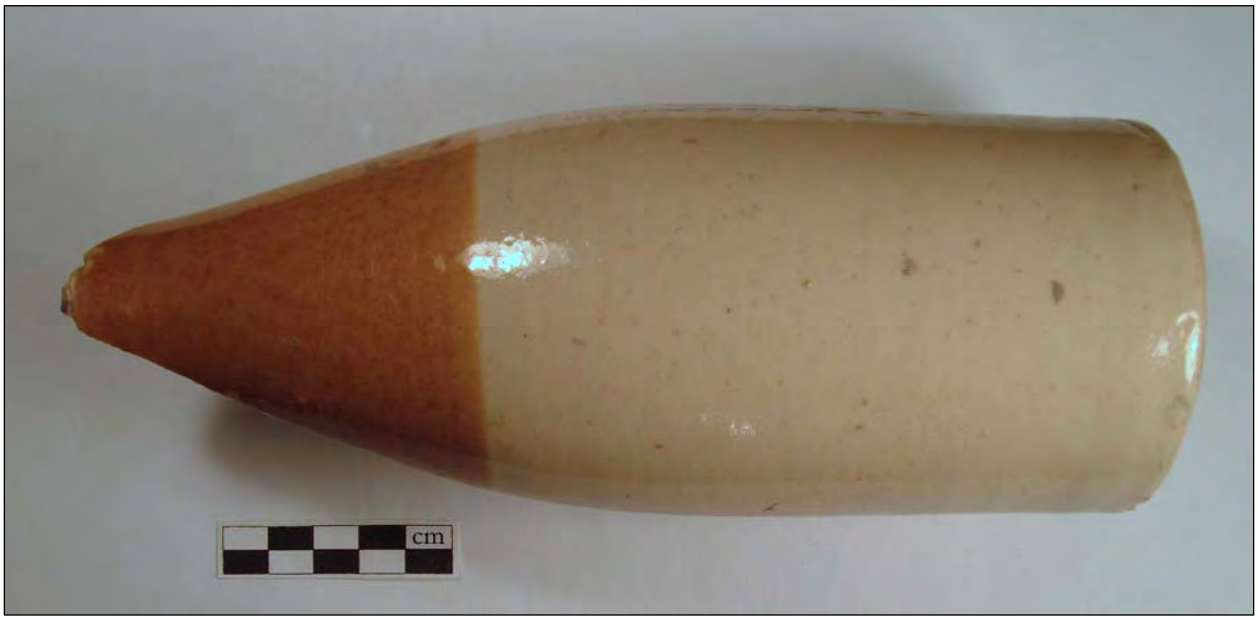

Figure 39. A stoneware beer bottle (PD: 101 FN: 11), dating 1880 to 1900.

Figure 40. Rim fragment of a rice wine bottle (PD: 208 FN: 270).

Figure 41. Non-alcohol bottles: (a) olive green mineral water bottle (PD: 291 FN: 541); (b) beverage bottle (PD: 276 FN: 453); (c) beverage or mineral water bottle (PD: 276 FN: 452).

Figure 42. Round bottom bottle (PD:276 FN:44) recovered from Feature 27, a privy associated with the industrial occupation of the property. Bottles of this type typically held seltzer, as well as other carbonated beverages, and date from the 1870s to the 1910s.

Figure 43. Two Lea & Perrins bottles (PD: 276 FN: 456, left; PD: 395 FN: 266, center) and a peppersauce bottle (PD: 412 FN: 214, right) are among the sauce bottles recovered from the 6th and Toole parcel.

Figure 44. Olive green colored Mexican glazed ceramics (PD:194 FN:243; PD:167 FN: 118), typically called "olive jar," recovered from the 6th and Toole parcel.

Figure 45. Fragments of Chinese stoneware jar (PD:176 FN:173). Storage jars of this type held soy sauce, black vinegar, peanut oil, as well as other food items.

Figure 46. Mexican glazed ceramics (PD:194 FN:243). Rim is finger-impressed. These wares are typically associated with food preparation or storage.

Figure 47. Hard paste earthenwares: (a) transfer print (PD: 29 FN: 118); (b) decal print (PD: 279 FN: 279); (c) Victorian majolica (PD: 224 FN: 191); (d) undecorated earthenware (PD: 191 FN: 224); (e) decorated English porcelain (PD: 382 FN: 256); (f) Victorian majolica (PD: 204 FN: 254).

Figure 48. Whiteware pitcher (PD: 277 FN: 466), typical of hotel or restaurant ware, recovered from Feature 45, a large privy associated with the San Xavier Hotel.

Figure 49. White hard paste earthenware vessels from the 6th and Toole parcel: (a) cup (PD: 165 FN: 125); (b) saucer (PD: 266 FN: 393); (c) serving bowl (PD: 266 FN: 390); (d) saucer (PD: 165 FN: 125); (e) platter (PD: 287 FN: 523).

Figure 50. Portion of Wintergreen rice bowl (PD: 189 FN: 220) shows a maker's mark on its base.

Figure 51. An English maker's mark (PD: 421 FN: 279), dating 1890+.

Figure 52. Stemware fragments (PD: 291 FN: 536) recovered from Feature 45, a large privy associated with the San Xavier Hotel.

Figure 53. Bitters, cosmetic, and medicine bottles from the 6th and Toole parcel: (a) Homer's Bleached Jamaica Ginger Brandy (PD: 276 FN: 463); (b) Damiana Bitters (PD: 276 FN: 459); (c) prescription bottle (PD: 287 FN: 525); (d) Palmer bottle (PD: 286 FN: 506); (e) St. Jakobs Oel (PD: 204 FN: 259); (f) small prescription bottle (PD: 299 FN: 548); (g) John Wyeth and Bro. (PD: 299 FN: 548); (h) Hoyt's German Cologne (PD: 215 FN: 414); (i) Ed Pinaud bottle (PD: 110 FN: 4).

Figure 54. Toothpowder jar (PD:214 FN:567) recovered from Feature 39, a trash pit.

Figure 55. Stacks of bottle bases recovered from Feature 78, a feature associated with the industrial occupation of the property.

Table 4. Frequency of Artifacts Recovered from the 6th and Toole Parcel, by Functional Category

Functional Category	Count	Percent of Total
Activities	33	1.4
Architecture	690	28.9
Clothing	28	1.2
Furniture	2	0.1
Kitchen	1,519	63.7
Personal	104	4.4
Miscellaneous	7	0.3
Total	2,383	100

Table 5. Distribution of Artifact Types in Activities Group at the 6th and Toole Parcel, by Feature

Feature No.	Chalkboard Fragment	Domino	Doll Arm	Doll Head	Flowerpot Fragments	Ink Bottles	Metal Ferrule	Slate Pencil	Total
12	–	–	–	–	–	–	1	–	1
23	–	–	–	–	–	–	–	1	1
27	1	–	–	–	–	4	–	–	5
32	–	–	1	–	–	–	–	–	1
38	–	–	–	–	5	–	–	–	5
39	–	–	–	–	–	11	–	–	11
44	–	–	–	–	–	1	–	–	1
45	–	–	–	–	–	4	–	–	4
46	–	–	–	–	–	–	–	1	1
62	–	–	–	–	–	1	–	–	1
67	–	–	–	1	–	–	–	–	1
68	–	1	–	–	–	–	–	–	1
Total	1	1	1	1	5	21	1	2	33

Table 6. Distribution of Four-Hole, Sew-Through Glass Buttons, by Feature

Feature No.	Button Measurements (lines)							Total
	16	17	18	20	22	26	28	
32/37 [a]	–	–	1	–	1	–	–	2
37	–	–	–	–	1	–	–	1
39	1	7	3	4	–	3	2	18
44	–	–	–	–	1	–	–	1
45	–	–	1	–	–	–	–	1
68	–	–	2	–	–	–	–	1
Total	1	7	7	4	3	3	2	24

[a] As described in Chapter 3, Features 32 and 37 were initially considered the same feature, but were finally treated as separate features. Artifacts designated as Feature 32/37 were collected before the features were determined to be separate features.

Table 7 Frequency of Food and Beverage Storage Artifacts Collected at the 6th and Toole Parcel

Artifact Type	Count	Percent of Total
Alcoholic beverage bottles		
Ceramic	57	5.3
Glass	780	73.2
Nonalcoholic Beverage/mineral water bottles	194	18.2
Food bottles	7	0.7
Jars		
Ceramic	11	1.0
Glass	9	0.8
Cork	1	0.1
Glass stoppers	6	0.6
Paper label	1	0.1
Total	1,066	100

Table 8. Distribution of Alcohol and Beverage Bottle Glass Recovered from the 6th and Toole Parcel, by Feature

Feature No.	Alcoholic Beverage Bottle	Nonalcoholic Beverage Bottle	Total
15	2	–	2
23	1	–	1
27	429	126	555
32	18	1	19
32/37	4	–	4
37	12	5	17
38	2	–	2
39	25	10	35
44	22	2	24
45	19	6	25
46	5	–	5
49	1	–	1
57	3	–	3
60	8	–	8
61	80	11	91
62	9	1	10
67	55	11	66
68	15	1	16
78	123	20	143
Judgmental sample	4	–	4
Total	837	194	1,031

[a] As described in Chapter 3, Features 32 and 37 were initially considered the same feature, but were finally treated as separate features. Artifacts designated as Feature 32/37 were collected before the features were determined to be separate features.

Table 9. Identifiable Maker's Marks from Bottles Recovered at the 6th and Toole Parcel

Complete Maker's Mark	Count	Date	Reference
A & DHC	1	ca. 1865+	Toulouse 1971:37
AB	7	1886–1889	Ayres et al. 1999:2
AB (connected mark)	1	1905–1917	Lockhart 2004:17
AB Co	2	1905–1917	Lockhart 2004:17
ABG Co.	7	1888–1893	Ayres et al. 1999:2

Complete Maker's Mark	Count	Date	Reference
ABGM Co.	135	1886–1928	Toulouse 1971:26
AGWL	2	1880–1905	Toulouse 1971:43
BG Co.	3	1877–1909	Toulouse 1971:85
C & Co.	2	1879–1907	Toulouse 1971:119
C MILW	1	ca. 1880	Toulouse 1971:111
C.V.G. Co NO 2 MILW	1	1880–1881	Toulouse 1971:151
CCGCo.	9	1888–1894	Toulouse 1971:119
CV NO 1 MILW	1	1880–1881	Toulouse 1971:111
CV NO 2 MILW	1	1880–1881	Toulouse 1971:151
DOC	8	1882–1937	Toulouse 1971:163
EHE Co.	2	1893–1904	Toulouse 1971:185
FB & Co.	5	unknown	Toulouse 1971:197
FHGW	20	1880–1900	Toulouse 1971:202
IGCO	2	1880–1900	Toulouse 1971:264
KYGW	1	1849–1855+	Toulouse 1971:313
Backwards "J"	8	1900+ (?)	Ayres et al. 1999
LGCo.	10	ca.1880	Toulouse 1971:323
MB & G Co.	1	1900–1904	Toulouse 1971:348
McCM	1	1832–ca. 886	Toulouse 1971:351
MGCo.	1	1898–1911	Toulouse 1971:359
M.J.H. & Co.	2	unknown	n/a
N & Co.	1	1872–1913	Toulouse 1971:380
NBBGCo.	2	1885–1930	Toulouse 1971:379
R & Co.	70	1880–1900	Toulouse 1971:439
ROSS'S BELFAST	1	1875–1890	Wilson and Wilson 1971
SAN ANTONIO BREWING ASS'N	5	unknown	n/a
S (in a shield)	4	unknown	n/a
S. MCKEE & Co	1	ca. 1860	Toulouse 1971:476
S.C. HERBST MILWAUKEE	1	unknown	n/a
SB & G Co.	48	1881–1905	Toulouse 1971:461
WIS. G. CO MILW	1	1881–1885	Toulouse 1971:541
Total	367		

Table 10. Historic Ceramic Types and Vessel Forms Recovered from the 6th and Toole Parcel

Ceramic Type	Cups	Rice Bowl	Mugs	Pitchers	Platters	Saucers	Serving Bowl	Serving Plates	Unidentified Vessels	Total	
										n	%
Victorian Majolica	–	–	–	–	–	–	12	8	22	42	10.4
Porcelain											
Chinese	–	3	–	–	–	–	–	–	4	7	1.7
English	2	–	–	–	–	1	–	2	13	18	4.4
Whiteware											
Undecorated	6	–	1	3	9	11	32	44	217	323	79.8
Decal-print	1	–	–	–	–	–	–	–	1	2	0.5
Transfer-print	–	–	–	–	–	–	–	5	7	12	3.0
Yellowware	–	–	–	–	–	–	–	–	1	1	0.2
Total	9	3	1	3	9	12	44	59	265	405	100

Table 11. Distribution of Decorated and Undecorated Whiteware Ceramics Recovered from the 6th and Toole Parcel, by Feature

Feature No.	Undecorated	Decal Print	Transfer Print
25	2	–	–
27	1	–	–
32	33	–	1
32/37[a]	19	–	–
37	35	1	1
38	10	–	–
39	96	–	2
40	17	–	–
44	42	–	1
45	14	–	3
46	14	–	–
57	–	–	4
60	7	–	–
62	6	–	–
67	2	–	–
68	24	–	–
Judgmental sample	1	1	–
Total	323	2	12

[a] As described in Chapter 3, Features 32 and 37 were initially considered the same feature, but were finally treated as separate features. Artifacts designated as Feature 32/37 were collected before the features were determined to be separate features.

Table 12. Distribution of Chinese Porcelain, Victorian Majolica, English Porcelain, and Yellowware, by Feature

Feature No.	Porcelain		Victorian Majolica	Yellowware
	Chinese	English		
32	–	–	5	–
32/37 [a]	–	–	1	–
37	–	–	22	1
38	7	–	–	–
39	–	12	13	–
45	–	2	1	–
60	–	2	–	–
62	–	2	–	–
Total	7	18	42	1

[a] As described in Chapter 3, Features 32 and 37 were initially considered the same feature, but were finally treated as separate features. Artifacts designated as Feature 32/37 were collected before the features were determined to be separate features.

Table 13. Maker's Marks on Whiteware Ceramics Recovered from the 6th and Toole Parcel

Maker's Mark	Vessel Form	Date	Reference
G.P. CO. (Greenwood Pottery)	saucer	1868–1933	Kovel and Kovel 1986:176
THOMAS FURNIVAL & SONS	saucer	1818–1890	Kovel and Kovel 1986:11d
J. & G. MEAKIN HANLEY	plate	1890+	Kovel and Kovel 1986:11o
K.T.& K CHINA	plate	1890–1910	Gates and Ormerod 1982:125d
ROYAL IRONSTONE CHINA	bowl	1894–1901	Gates and Ormerod 1982:41d
K.,T & K GRANITE	pitcher	1890–1907	Gates and Ormerod 1982:119d
STONE C[HINA] B & C CHA— ENG[LAND]	plate	unknown	n/a
Portion of unidentified mark	plate	unknown	n/a
—CHINA & [co]	plate	unknown	n/a
Lion and unicorn with portion of shield and crown	plate	unknown	n/a
—VAL & [S]— appears to be portion of a crown	unidentified vessel	unknown	n/a

Note: Brackets [ ] indicate author's interpretation, Dash — indicates missing letters

Table 14. Distribution of Glassware Vessel Forms, by Feature

Feature No.	Cup	Stemware	Serving Bowl	Stopper	Tumbler	Unidentified Vessel	Total
23	–	–	–	–	1	–	1
27	–	–	–	–	2	2	4
32	–	1	–	–	1	–	2
37	–	–	–	–	–	2	2
39	3	1	–	–	1	–	5
45	–	2	9	–	–	7	18
67	–	1	–	–	1	–	2
68	–	–	–	1	–	–	1
78	–	–	–	–	1	–	1
Total	3	5	9	1	7	11	36

Table 15. Medicinal or Hygiene Bottles Recovered from the 6th and Toole Parcel

Complete Maker's Mark	Purpose	Date	Reference
CALIFORNIA FIG SYRUP CO SAN FRANCISCO CAL.	medicinal	1880–1970	Fike 1987:225
COLGATE & CO	hygiene	1806–1928	Fike 1987:56
C.W. ABBOTT & CO. BALTIMORE	aromatic bitters	1873–1956	Fike 1987:50
DAMIANA BITTER	bitters	1877–1885	Fike 1987:33
DR. JGB SIEGERT & HIJOS	aromatic bitters	1880–1890	Fike 1987:42
ED PINAUD PARIS	hygiene	1810–1900+	Fike 1987:67
FRED FLEISHMAN & CO DRUGGIST TUCSON	medicinal	1880–1928	Thiel 1993:95
HOMER'S BLEACHED JAMAICA GINGER BRANDY	medicinal	1870–?	Cannon 2006
HOYTS GERMAN COLOGNE	hygiene	1871–1986	Fike 1987:64
H.P. WAKELEE & CO. SAN FRANCISCO CAL.	medicinal	ca.1860s	Wilson and Wilson 1971:129
HUNYADI JANOS SAXLEHNERS BITTERQUELLE	aromatic bitters	1863–1900	Toulouse 1971:257
JAQUES' CHEMICAL WORKS CHICAGO	medicinal	1881–1889	Fike 1987:65
JOHN WYETH & BRO PHILA	medicinal	ca. 1880–1900	Toulouse 1971:548
MC. C.	unknown	unknown	n/a
"N" (in a square)	unknown	1894–1915	Toulouse 1971:374
PALMER	hygiene	1871+	Toulouse 1971:413
PARFUMEUR	hygiene?	unknown	n/a

Complete Maker's Mark	Purpose	Date	Reference
PONDS EXTRACT "1846" (on base)	hygiene	1880–1900+	Fike 1987:120
SALE AND SON	medicinal	unknown	n/a
ST. JAKOBS OEL/ A. VOGELER & CO	medicinal	ca. 1879	Wilson and Wilson 1971:79
TARRANT & CO DRUGGIST NEW YORK	medicinal	ca. 1857	Wilson and Wilson 1971:89
WEN—PERIO—NEW YOR[K]	hygiene?	unknown	n/a
WT & CO	medicinal	1857–1938	Thiel 1993:95

Note: Brackets [ ] indicate author's interpretation, Dash — indicates missing letters

Table 16. Datable Artifacts from Feature 39 at the 6th and Toole Parcel

PD No.	Artifact Type	Dates	Reference
204	medicine bottle	1879	Wilson and Wilson 1971
204	medicine bottle	1863–1900	Fike 1987
214	medicine bottle	1880–1928	Thiel 1993
214	sauce bottle	ca. 1875	Zumwalt 1980
214	unidentified bottle	ca.1868	date marked on bottle
215	alcohol bottle	1880–1900	Toulouse 1971
215	beverage bottle	1880–1881	Toulouse 1971
266	alcohol bottle	ca. 1865	Toulouse 1971
266	sauce bottle	1880–1900	Toulouse 1971
266	whiteware saucer	1878–1890	Birks 2006
267	liquor flask	1880–1881	Toulouse 1971
304	stoneware bottle	1880s–1900	Lindsey 2006

CHAPTER 5
METAL ARTIFACTS

Jeffrey T. Jones

METHODS

Two hundred seventy-four identifiable metal artifacts were recovered during Tierra's data recovery investigations at the 6th and Toole Parcel. Analysis of these artifacts was focused on answering research questions put forth in Tierra's data recovery plan (Hushour et al. 2006). These include questions about transportation, commerce, and industry in relation to the Tucson Warehouse Historic District and the Southern Pacific Railroad and questions about the everyday life of those who lived and worked in the area. To this end, metal artifacts were assigned to specific categories that might better reflect their function and use. These included electrical, household, tin cans, tools and machinery, personal, and transportation. Also included was a miscellaneous category for items that did not fit in any specific category and a metal, not further specified (NFS) category for metal artifacts with an identifiable form but an ambiguous use. A description and discussion of various metal artifacts is presented under categorical headings below.

As discussed in Chapter 3, some artifacts were catalogued as coming from "Feature 27/67" or "Feature 32/37". Features 27 and 67 were ultimately combined under the designation Feature 27. Features 32 and 37 were ultimately separated; artifacts from Feature 32/37 were collected before the features were separated.

RESULTS

Two hundred seventy-four identifiable metal artifacts were and analyzed. Metal artifacts recovered from Tierra's investigations at the parcel were, for the most part, extremely rusty or corroded and often not specifically identifiable. The majority of the collection consisted of fragments of tin cans, nails or bolts, scraps from blacksmithing operations, and various metal objects too small to identify. Ferrous metal objects were by far the most common, but artifacts made of lead, babbitt, copper, brass, and silver were also identified.

Artifacts that could be identified during analysis are listed in Table 17 and are described in the sections below. Identified metal artifacts were divided into several categories including electrical; household; tin cans; tools and machinery; personal; transportation; miscellaneous; and metal, NFS. This latter category includes such items as metal straps that could be machinery or wagon parts and irregular pieces of metal plate that are probably scraps from blacksmithing operations related to the manufacture or repair of tools or equipment.

Unidentifiable metal artifacts included a large quantity of rusted metal, some of which could be recognized as fragments of tin cans or fasteners (nails or bolts) and some of which could only be termed amorphous conglomerate—large chunks of rusted-together metal fragments. The estimated percentage of recognizable objects and the total volume of unidentifiable metal were recorded by

individual provenience (Table 18) but were not analyzed further. An average of 22 percent of the unidentifiable metal is thought to be fragments of tin cans, and 45percent is thought to be fasteners such as nails, screws, or small bolts.

Electrical

Sixteen items related to electricity were recovered from trash and privy deposits (see Table 17). These items represented 5.8 percent of the identifiable metal artifacts and included short strands of copper wire of various gauges, an unused seal for an electric meter, and a battery core. Wire sizes ranged from a strand of ¼-inch-thick solid copper wire probably used as a lightening ground on a power pole or rooftop power installation to stranded wire for electrical appliances. In one instance, a length of #12 AWG (American Wire Gauge) wire was recovered extending through a porcelain tube used to pass electric wire through a wooden wall.

Unusual artifacts include a portion of a lead seal used in the installation of electric meters. The artifact is a round lead disk with two holes passing lengthwise through it. A metal wire is placed through the meter loop with both ends passing through the seal. The seal is then compressed using a tool that leaves an embossed emblem to prevent tampering with the electric meter. Also unusual were two strands of #18 AWG wire, one of which was wrapped around a rectangular object that has since deteriorated. This gauge of wire was probably originally used for communication lines, but its last use appears to have been for the repair of something, such as a broken knife handle.

Electric power was first available in Tucson around 1882 (Tucson Electric Power, Inc., 2006), shortly after the arrival of the railroad. Thus, it is not surprising to find artifacts related to electric wiring in trash deposits from both the warehouses and the hotel. Artifactual evidence indicates these structures were wired using the knob-and-tube system where individual wires passed through walls and studs via protective porcelain insulating tubes and were supported along their length by porcelain knob insulators. This was the earliest standardized method of wiring buildings and was in use from about 1880 to the 1930s (Answers.com 2006).

Household

Only two artifacts, a possible curtain rod hanger and the lid to a Franklin stove, were classified as household items (see Table 17). The possible curtain rod hanger was recovered from Feature 63 in the western portion of the site. This feature may have been associated with a small building in the area, possibly related to the nearby stables. The Franklin stove top came from warehouse and bottling works privy Feature 27, so it likely was associated with one of these industries. It may have been used for heating and/or cooking for the individuals known to have lived in the warehouses.

Personal

Nineteen items, representing 6.9 percent of the metal collection, were assigned to the personal category (see Table 17). Two of these, a 12-gauge shotgun shell base and a cross that may be part of a rosary, came from Features 7 and 8, respectively, in the western portion of the site.

Two shoe parts, both metal plates for the heel of a narrow shoe or boot, and a fragment of a bullet jacket, were found in industrial privy Feature 27. The remaining personal items were from proveniences associated with the San Xavier Hotel (Feature 45). These included one pocket watch, one dress or corset stay, one buckle for a corset or brassier, one overall hook, three buttons, two coins, two shoe eyelets, one fork tine, two shotgun shell bases, and one fragment of a rifle or

handgun cartridge. The two coins, an 1899 nickel and a 1901 silver dollar, were found in Feature 45, the privy associated with the hotel's servants' quarters (see Figure 23). The San Xavier Hotel burned down in 1903 and was not replaced. The presence of relatively new coins in the servant's privy indicated that new coinage was coming into Tucson in a timely fashion and may indicate that servants were paid in coin.

Tin Cans

Metal cans were first developed in Europe in 1810 but did not appear in this country until about 1820. The first cans were simply cylinders with side seams and tops joined by overlapping and soldering. A large hole was left in the top so the can could be filled. After filling, a cap with a tiny vent hole in it was soldered over the larger hole, and the can was heated to cook the contents. When the food was cooked, the vent hole was sealed with a drop of solder. This hole-in-top style of can was produced through the nineteenth and into the early twentieth centuries (Fontana and Greenleaf 1962).

During the late 1800s, can-production equipment was invented that crimped both tops and bottoms by a double seam method, but it was not until after 1900 that this "sanitary" can became commercially practical. High licensing fees and equipment costs limited the production of sanitary cans, however, and they generally were not accepted by the canning industry until around 1922 (Fontana and Greenleaf 1962; Rock 1978).

Only 19 specifically identifiable portions of tin cans were found. Of these, 14 were lids to soldered hole-in-top cans, 1 was a soldered seam, 1 was a stamped top to a hole-in-top can, 1 was a bail to a large can or bucket, 1 was simply melted solder, and 1 was a threaded spout to a can. The threaded spout was soldered onto a can and had a sealed top that was opened with a knife or other sharp, flat object. This type of spout is generally associated with rectangular cans for kerosene or other oil products. The remaining identifiable artifacts were parts of cylindrical food cans.

This small percentage of identifiable tin cans, however, is somewhat misleading. More than 24 percent of ferrous metal that was unidentifiable and discarded could be recognized as rusted-together fragments of tin cans. The majority of these came from trash-filled pits, Features 32, 39, 44, 46, and 68, and privy Feature 45, all likely associated with the San Xavier Hotel (see Table 18; see Figure 31). Perhaps the most telling factor in the analysis of tin cans is that despite the large number of fragments collected, not one could positively be identified as coming from a sanitary can. This reflects archival data indicating the industrial and hotel-related buildings were removed from the parcel by the early 1900s.

The concentration of tin cans in the area associated with the hotel is interesting when compared to their dearth in the industrial area. One possibility is that hotel staff (and possibly guests) were eating significantly more canned goods than the employees of the warehouses and bottling works nearby. There were food remains associated with the latter, but they were more often remnants of meat cuts than tin cans. Once again, there is clearly a disparity between the two.

Tools and Machinery

A total of 38 artifacts (13.9 percent of the identifiable artifacts) were recorded under the tools and machinery category (see Table 17). Over half of these were large bolts (n = 15) between 0.5 and 1 inch in diameter and associated washers (n = 3) and a nut (n = 1). Also found were a cold chisel, a

portion of a monkey wrench, a cotter key, a 1-inch ball valve, a hooked stay, portions of the handle to a valve or something similar, a segment of pipe, a fragment of the upper edge of an ore bucket, six pieces of babbitt metal, two hitch pins, and three large cast iron parts of some type of heavy machinery.

Twelve of the 17 bolts were found in privy Feature 27 and were likely associated with timbers that were used to cover it. Remnants of this covering indicate that it was constructed of large timbers placed side by side in an east-west direction. The number of large bolts exposed during backhoe scraping over the privy suggests these timbers were bolted together. Smaller bolts were also discarded with the unidentifiable metal (see Table 18). Unfortunately, the extent of corrosion was such that it was impossible to distinguish between small bolts, screws, and nails.

Only three tools—a cold chisel, portions of a monkey wrench, and a hooked stay—were recognized. The cold chisel was square with a flat, tapered blade identical to many in use today. The monkey wrench consists of only a part of one jaw and the handle. The stay is a clevis-like object with two hooks that extend along either side of a beam and hook to a dowel that extends through the beam, providing a platform for a shelf or a stop for something sliding or rolling along the beam.

Of particular interest are the six pieces of babbitt metal. Babbitt is a lead-copper alloy used as friction bearings in rotating machinery. Before the invention of shell-type bearings in the late 1920s, bearings for rotating shafts associated with steam or internal combustion engines were poured-in-place babbitt. These bearings were hand formed and required frequent replacement. Three of the babbitt metal artifacts recovered during Tierra's investigation are in the form of splatter, probably related to pouring bearings for an early engine or similar piece of rotating equipment. The remaining two babbitt artifacts are straps only a quarter inch wide, 3 inches long, and 0.04 inches thick. They appear to be shims of some type.

Hitch pins are used to couple together train cars, wagons, or other pieces of equipment. The diameter of the pins we recovered suggests they were railroad related, although they could have been used to couple together heavy wagons or large pieces of equipment. Both are bowed from use, however, so if they were used in wagons or other non-railroad related equipment, this equipment was probably drawn by steam or early internal combustion traction engines.

Transportation

Only 24 identifiable artifacts (8.8 percent) were assigned to transportation (see Table 17). Over half of these (n = 14) were railroad related. These included six railroad spikes, six tags or badges, and three track plates. Five of the six railroad spikes were standard items approximately 6 inches long that were designed to attach railroad track plates to cross ties. The remaining track spike was only about 3 inches long. The smaller spikes of this type were used to attach narrow-gauge tracks usually associated with underground mining. This could suggest that a narrow-gauge transportation system was installed in one of the warehouses on the property, but it is more likely that the short spike was used for some task other than what it was designed for. In older ranch and farm settings, it was common for short spikes to be used to attach an anvil or vise to a large timber or tree stump. One piece of unidentifiable scrap metal was also recovered from the site.

One of the more interesting artifacts recovered was a baggage check tag found in one of the privies, Feature 45 (Figure 56). The tag was manufactured by the W. W. Wilcox Company of Chicago for

the New Mexico and Arizona Railroad (NM&A). The NM&A was a subsidiary of the Santa Fe Railroad that ran between Benson and Nogales, Arizona, and then on to Guaymas, Sonora, Mexico. The NM&A railroad was incorporated under Arizona laws on June 17, 1881, and was completed in October 1882. The main station and freight depot were in Benson. Abandonment of the line began in 1926, and only a small portion of the railroad between Calabasas and Nogales is still in operation (Myrick 1975:268–296).

Four other tags were also found in Feature 45. Only two of these are legible, one stamped "OPAC Co / 3988" and the other "OPAC Co / ?? SYSTEM / 9796" (the slash / denotes line change) (see Figure 56). Efforts to identify the OPAC Co. proved futile, and a query posted on a website dedicated to collectors of railroad paraphernalia (Railroadiana Online 2006) went unanswered.

Other items catalogued under the transportation category are horse related, and include five harness rings, two horseshoes, and a fragment of a mule shoe. One of the harness rings has a portion of a bit attached, whereas the others are simply iron rings that were used on various areas of tack to attach reins or join straps. Both horseshoes are for large draft horses. These, and the mule shoe, were probably associated with wagon freight coming into or out of one or all of the businesses in the project area.

Miscellaneous

The miscellaneous category consists of a number of items that either do not fit into any of the other categories or that fit into more than one category (see Table 17). These include barrel hoops and bungs, cast iron fragments that are probably parts of stoves, the female end of a cast iron sewer pipe, various pieces of baling wire, threaded jar lids, two lumps of plumbers lead, three cut nails, a brass #10 screw, portions of a deadbolt, a hasp, two champagne or wine seals, at least 11 kerosene lamp burners, fragments of a metal window frame, and several fragments of what appears to be a flat aluminum object that is possibly a tray of some sort. Uses for most these artifacts vary. For example, wooden barrels were used for everything from nails to oysters, and baling wire was, and still is, used for any numbers of functions not related to baling hay. On the other hand, barrel bungs were used to seal metal barrels or drums usually associated with petroleum products.

At least 11 lamp burners were found in Feature 45 during data recovery, and an additional 15 were noted during testing (Jones 2006:33). The burners accommodated a 1½-inch wick and used a #2 chimney. They were stacked, with up to four in each stack when found, and may have initially been in a single stack. None of them had a wick or wick adjustment screw, indicating they were new and suggesting they accidentally fell into the privy or that they perhaps were discarded when the hotel installed electric lighting.

Among the most interesting items in the miscellaneous category are two lead-foil champagne or wine seals. One is a champagne seal embossed "Krug & Co / Reims." Reims is a French city in the heart of the Champagne district. The House of Krug was founded in 1843 by Johann-Joseph Krug and is still in business (Krug 2006). The Krug Company today produces premium champagne for a limited market, with prices per bottle starting at $139 and ranging upward to more than $500 (Krug 2006). If it can be assumed that the Krug Co. has maintained this standard through time, at least one guest of the hotel was likely quite wealthy.

The other bottle seal is more less informative. It appears to be a wine seal of some sort that bears the Hungarian words "BUDAI / KESERO[??]Z / FORRAS." Budai and Kesero apparently are family names. An Internet search failed to produce a company or product named Budai or Budai Kesero__z. The wine may have been imported for sale or by a resident, guest, or employee of the hotel.

Also listed under this category are 28 fragments of a pot metal casement window, some of which still retain caulking. The window fragments were found in Feature 45 in conjunction with a number of fired-clay bricks and suggest that the structure was an example of the proverbial brick outhouse with at least one metal-framed window.

Metal, Not Further Specified

Artifacts categorized under the metal, NSF category consist of 42 pieces of metal plate or strap, none of which has a recognizable function or use. The strap could be part of any number of machines or wagons, whereas those artifacts listed as scrap are irregular pieces of flat iron probably associated with blacksmithing operations. Only one of the items is non-ferrous, a ½-inch-thick copper plate approximately 2 inches in diameter.

PRESERVATION

One overriding factor in the analysis of metal artifacts from the 6th and Toole Parcel was their extremely poor preservation—most items were simply unidentifiable or could only be recognized as fragments of tin cans or fasteners. Many of the preservation problems can be related to the discovery context. The effects of the acidic nature of human waste in privies and the caustic nature of the lime used to alleviate odors from privies are obvious. The 6th and Toole Parcel, however, was almost entirely industrial, with various warehouses, an ironworks, a bottling plant, and a cold storage facility. A large portion of the block was covered with deposits of coal cinders, the end product of coal-fired forges and steam engines. Some of these deposits were obviously associated with the operation of industrial facilities on the parcel. Cinder deposits were also found above the bulldozed and leveled structures, indicating that the adjacent Southern Pacific Railroad had a hand in their deposition, perhaps as a method of disposal. In any case, sulfur and other chemicals leaching out of the cinders have had a detrimental effect on buried metal objects. Over 77 liters of unidentifiable metal was collected, quantified, and discarded during Tierra's project.

DISCUSSION

The purpose of the following section is to discuss the recovered metal artifacts in relation to research questions proposed prior to excavation. One of the dominant research themes was system construction and operation, administration, and commerce as related to the Southern Pacific Railroad in Tucson (Hushour et al. 2006:9–13). Metal artifacts that could be directly related to the railroad, however, were fairly rare. Track plates and spikes recovered from various features throughout the parcel indicate that construction methods have changed little in the last 125 years. Also recovered was a "local" baggage tag from the NM&A Railroad. In the United States, the NM&A only ran from Benson to Nogales, and the presence of the tag in Tucson may indicate that local baggage could be checked through to Tucson. The tag was recovered from the privy associated with the servants' quarters, which suggests that baggage tags were removed by members of the hotel domestic staff rather than porters or other railroad personnel.

A number of other recovered metal artifacts are certainly related to transportation and commerce, but whether they were associated with the railroad or one of the other businesses on the property is not clear. What is clear is that horse- or mule-drawn wagons were moving goods to and from the parcel, blacksmith operations were repairing machinery and tools, and plumbers were installing or repairing pipes. The hotel was lighted by kerosene lamps at one time but may have later converted to gas or electricity, providing a reason to discard a large number of new burners. At least some of the warehouse buildings also had electricity.

Nearly invisible in the archaeological record were those personal items that might tell us more about those who lived and worked at the 6th and Toole Parcel. A portion of a Christian cross, probably part of a rosary, and a 12-gauge shotgun shell base were found in the southwestern portion of the site, and a few clothing-related artifacts, coins, and a 12-gauge shotgun shell base came from trash or privy deposits associated with the hotel. Only a dress stay and a brassiere or garter buckle could be positively identified as articles of woman's clothing.

Figure 56. Luggage tags recovered from Feature 45 at the 6th and Toole parcel; (left) tag stamped "NM & ARR LOCAL 032" (PD: 275 FN: 425); (center) tag stamped "OPAC Co. 3988" (PD: 282 FN: 568); (right) two rusted-together tags, one stamped "OPAC Co. __ SYSTEM 9796" (PD 277: FN: 569).

Table 17. Identifiable Metal Artifacts, by Feature and Use Category

Feature No., by Use Category	Unit No.	Level	PD/FN No.	Count	Description	Metal Type
Electrical						
Feature 8	E1/2	2	124/46	1	wire, stranded, 6 to 8 strands, twisted, appliance cord?	copper
Feature 27	6	1	146/60	2	wire, very small gauge, probably wrapping for capacitor or electromagnet	copper
Feature 27	24	2	283/489	1	wire, 18 gauge, electrical	copper
Feature 27	24	2	283/489	1	wire, 18 gauge, wrapped around rectangular object, possibly decorative or to fix broken handle, knife?	copper
Feature 27	24	2	283/489	1	wire, 1/4-inch diameter, probably ground wire	copper
Feature 32	9	1	160/99	1	wire, twisted, electric, small gauge	copper
Feature 32	9	2	160/99	1	wire, twisted, electric, small gauge	copper
Feature 32/37 [a]	11	1	167/119	2	wire, twisted, electric, small gauge	copper
Feature 32/37 [a]	11	1	167/119	1	battery core	carbon
Feature 39	17	1	204/261	1	seal, for electric meter, 1 1/4-inch diameter, 3/16 thick with 2 holes for wire loop	lead
Feature 44	16	1	197/248	1	wire, 12 gauge, electric	copper
Feature 46	22	3	240/352	1	miscellaneous, melted lead-encased copper wire	mixed
Feature 73	19	1	220/325	1	wire, electrical, #12 AWG, insulation gone but passing through ceramic sleeve used to insulate electric wire through wooden walls	copper
Feature 73	19	1	220/325	1	wire, electrical, gauge indeterminate, single strand approximately 16 inches long	copper
Household						
Feature 63	W 1/2	1	263/389	1	hanger, curtain rod?	ferrous
Feature 67	10	2	166/147	1	lid to Franklin stove	ferrous
Personal						
Feature 7	E 1/2	3	131/42	1	base, shotgun shell, 12 gauge, crushed	brass
Feature 8	E 1/2	2	124/46	1	jewelry, cross, may be portion of rosary or broach PHOTO	copper alloy
Feature 27	24	5	289/553	2	boot heel part? 2 1/4 inch wide and long, 4 rows of 5 nail holes	ferrous
Feature 27	24	2	283/489	1	bullet jacket	lead
Feature 32/37 [a]	11	1	167/116	1	shotgun shell base, 12 gauge, UMC	brass
Feature 32/37 [a]	11	1	167/116	1	button, 2-hole, depressed flat center, rounded edge	brass
Feature 37	14	4	201/252	1	dress stay, metal strap, 1/2-inch wide, 5+ inches long, fabric coated, brass end cap	mixed
Feature 38	15	1	189/406	1	Button, self-shank, 2-piece, cloth-covered at one time	brass

Feature No., by Use Category	Unit No.	Level	PD/FN No.	Count	Description	Metal Type
Feature 38	15	1	196/237	1	hook, overalls	ferrous
Feature 39	17	3	214/311	1	casing, cartridge, .32 caliber?	brass
Feature 39	17	3	214/311	1	button, recessed center, loop shank	ferrous
Feature 45	E 1/2	1	275/564	1	pocket watch	brass
Feature 45	18	6	225/328	1	tine for fork	silver-plated copper
Feature 45	E 1/2	4	285/494	1	buckle, ladies bra or garter	ferrous
Feature 45	E 1/2	6	291/533	1	coin, 1899 nickel	silver
Feature 45	E 1/2	6	291/534	1	coin, 1901 liberty dollar	silver
Feature 73	W 1/2	1	220/325	2	eyelets for boot or shoe laces	brass
Tin can						
Feature 27	24	1	273/461	1	lid to hole-in-top can	ferrous
Feature 27/67[b]	18	3	468/152	3	lid for hole-in-top cans	ferrous
Feature 32	9	1	159/85	2	lid to hole-in-top can	ferrous
Feature 32	9	2	160/99	1	lid to hole-in-top can	ferrous
Feature 32	9	3	165/130	1	lid to hole-in-top can	ferrous
Feature 32/37[a]	11	1	167/119	1	lid to hole-in-top can	ferrous
Feature 39	17	4	215/318	3	lid, hole-in-top can	ferrous
Feature 39	17	4	215/318	1	seam, soldered, to food can	lead
Feature 39	17	4	215/318	1	top, hole-in-top can	ferrous
Feature 44	16	3	209/287	1	spout, threaded, 1 1/2 inch diameter, soldered to can, top of spout was sealed with metal, opened with knife	ferrous
Feature 44	16	3	209/287	1	bail, to large can	ferrous
Feature 60	3	1	128/18	1	lid, hole-in-top can	ferrous
Feature 68	13	2	186/202	1	melted solder, probably from can	lead
Feature 68	13	4	192/228	1	lid to hole-in-top can	ferrous
Tools and Machinery						
Feature 27	6	1	146/60	1	bolt, carriage, 1/2 inch, head and square only, no shank	ferrous
Feature 27	6	1	146/60	1	washer, flat, estimated for 3/4-inch bolt	ferrous
Feature 27	6	1	146/60	2	bolt, shank only, each approximately 5 inches long by 3/4 or 1 inch diameter	ferrous
Feature 27	6	2	153/58	1	bolt, shank only, 4 1/2 inches by 3/4 or 1 inch	ferrous
Feature 27	6	6	170/158	1	valve, ball, 1 inch female threads both ends, stamped "patent guard stop" / "Sep 6, 87"	brass
Feature 27	24	1	273/461	3	bolts, 2 shanks only, 1 with square nut and flat washer, estimated 1-inch diameter	ferrous
Feature 27	24	1	273/461	1	bolt, 1/2 by 5 inch, square head	ferrous
Feature 27	24	1	273/461	1	pipe, 1 inch diameter, 4 inches long	ferrous

Feature No., by Use Category	Unit No.	Level	PD/FN No.	Count	Description	Metal Type
Feature 27	24	4	288/528	1	bolt, estimated 1/2 by 5 inch, square nut	ferrous
Feature 27	24	5	289/553	1	bolt, 5/8 or 3/4 diameter, 9 inches of shank only, flat washer	ferrous
Feature 27/67 [b]	10	4	171/155	1	bolt, square head, 1 inch diameter, 7 1/2 inch long	ferrous
Feature 27/67 [b]	10	4	171/155	1	pin, hitch, 1 1/2 inches diameter, 13 1/2 inches long, raised ring at 11 inches, bowed in center from pulling force	ferrous
Feature 27/67 [b]	10	2	166/147	1	wrench, monkey, distal jaw and portion of body, broken in half	ferrous
Feature 32	9	3	165/31	1	machinery part, unidentified, cast iron, 2 open area in center, 2 inches square, bolt or pivot on 1 end, other rectangular	ferrous
Feature 32/37 [a]	11	1	167/119	1	hook, stay, clevis style, for 1 1/2-inch beam	ferrous
Feature 37	12	2	180/183	1	bolt, carriage, 1/2 by 2 1/2 inch, with flat washer and square nut	ferrous
Feature 37	12	2	180/183	1	bolt, carriage, head only	ferrous
Feature 37	12	3	185/191	1	bolt, carriage, 1/2 by 4 inch	ferrous
Feature 37	14	1	155/215	1	cotter key	ferrous
Feature 37	14	3	194/242	1	chisel, 6 by 1/2 inch, square body, tapered end, flat blade	ferrous
Feature 38	15	1	189/218	1	melted babbit splatter	babbit
Feature 39	23	3	372/343	1	handle, cast iron, to valve, 4 inch diameter	ferrous
Feature 39	23	5	266/402	2	machinery parts, unidentified, 2 parallel straps, 1 inch thick, 13 inches long, 1 inch separations, clevis on 1 end, joined at center and other end.	ferrous
Feature 40	21	1	233/334	1	washer, flat, estimated for 3/4-inch bolt	ferrous
Feature 40	21	1	233/334	1	pin, hitch, 1 1/2 inches diameter, 12 inches long, raised ring at 10 inches, tapered end, bulbous top, bowed in center from pulling force	ferrous
Feature 43	20	1	227/571	1	Bearing material, waste from pouring	babbitt
Feature 45	18	1	206/265	1	nut, square, estimated for 1/2-inch bolt	ferrous
Feature 45	18	1	206/265	1	bolt, carriage, estimated 3/4 by 3 inch	ferrous
Feature 45	18	1	206/265	1	washer, flat, estimated for 3/4-inch bolt	ferrous
Feature 45	18	1	206/265	2	strap, 3 by 1/4 by 0.040, shims?	babbit
Feature 45	E 1/2	1	275/425	1	ore bucket, riveted edge, 2 fragments	ferrous
Feature 60	5	1	139/22	1	miscellaneous, lead or babbit splatter from casting	lead
Feature 67	8	1	157/134	1	babbit splatter	babbit
Transportation						
Feature 27	6	2	153/58	1	scrap, metal, unidentified, heavy plate iron, >3/4 inch thick	ferrous
Feature 27	6	2	153/58	1	tack, harness ring, 1 inch diameter	ferrous

Feature No., by Use Category	Unit No.	Level	PD/FN No.	Count	Description	Metal Type
Feature 27	6	3	163/101	1	tack, harness or bit ring	ferrous
Feature 27	24	2	283/489	1	railroad spike, 6-inches long	ferrous
Feature 27	24	3	286/503	1	railroad spike, 3 inches long	ferrous
Feature 27	24	4	288/528	1	railroad spike, 6-inches long	ferrous
Feature 37	14	1	155/215	1	horse shoe, draft	ferrous
Feature 37	14	1	155/215	1	tack, harness or bit ring, 2 inch diameter	ferrous
Feature 37	14	3	194/242	1	mule shoe, fragment	ferrous
Feature 38	15	1	189/218	1	tack, harness ring, 1 1/2 inch diameter	ferrous
Feature 40	21	1	233/334	1	tack, portion of bit and rein ring	ferrous
Feature 44	16	1	197/248	1	railroad spike, 6-inches long	ferrous
Feature 45	18	1	206/265	1	plate, protects end of saddle horn, 9 brad holes	copper
Feature 45	E 1/2	1	275/425	1	badge, NM & ARR / LOCAL / WW Wilcox, Chicago, slots on both sides	copper
Feature 45	E 1/2	1	275/425	2	track plate, two portions from spike holes outward, may be same plate	ferrous
Feature 45	E 1/2	1	275/425	1	railroad spike, 6-inches long	ferrous
Feature 45	E 1/2	3	282/568	1	tag, stamped OPAC Co. 3988	ferrous
Feature 45	E 1/2	3	277/569	4	tags, 2 fragments, 2 stuck together with rust, 1: OPAC Co. __SYSTEM 9796	ferrous
Feature 45	E 1/2	5	287/514	1	spike, railroad, 6 inches long	ferrous
Study Area 2	n/a	n/a	279/422	1	horse shoe, draft	ferrous
Miscellaneous						
Feature 7	E 1/2	3	131/42	1	chain, 1/4 or 5/16 inch diameter links, estimated 8 links and hook, very poor condition	ferrous
Feature 7	E 1/2	2	130/43	1	cast iron fragment, 3/8 inch thick, irregular, probably stove part	ferrous
Feature 8	E 1/2	1	119/44	1	wire, twisted, baling wire	ferrous
Feature 27	6	1	146/60	1	barrel hoop, fragments	ferrous
Feature 27	6	3	163/101	4	barrel hoop, fragments	ferrous
Feature 27	24	3	286/503	1	nail, cut, estimated #16D	ferrous
Feature 27	24	3	286/503	1	nail, cut, estimated #6D	ferrous
Feature 27	24	3	286/503	1	screw, #9	ferrous
Feature 27	24	4	288/528	1	deadbolt, 6-inch long bolt, estimated 2 by 5 inch plate, 3 screws still in place	ferrous
Feature 27/67 [b]	18	3	468/152	3	nail, cut, 1 1/2 inch portion of large nail	ferrous
Feature 32/37 [a]	11	1	167/119	1	seal, champagne, Krug & Co, Reims in shield with crown on top	lead
Feature 37	14	1	155/215	1	staple, fixed, for strap hasp, 1/2 inch diameter	ferrous
Feature 38	15	1	189/218	1	plate, 9 fragments, very thin and fragile	aluminum
Feature 38	15	1	196/237	1	plate, 10 fragments, very thin and fragile	aluminum

Feature No., by Use Category	Unit No.	Level	PD/FN No.	Count	Description	Metal Type
Feature 38	15	1	196/237	1	strap, 2 inches wide, 1 rounded end, probably hasp	ferrous
Feature 39	17	2	210/276	1	barrel bung	ferrous
Feature 39	17	2	210/280	1	miscellaneous, metal object with pointed copper cap, bulbous base	mixed
Feature 39	17	3	214/311	2	barrel bung	ferrous
Feature 39	17	4	215/318	1	miscellaneous, cast iron, curved, with raised seam, probably portion of cast iron tea pot	ferrous
Feature 39	17	4	215/318	1	miscellaneous, cast iron, tapered 1 1/2 to 1 inch, 1/2 inch thick, 2 1/2 inches long, probably handle of some sort	ferrous
Feature 39	23	3	372/343	1	barrel bung	ferrous
Feature 39	23	3	372/343	1	miscellaneous, metal object, cast iron with 4 squares with raised dots in them, probably stove part	ferrous
Feature 39	23	4	256/386	1	seal, champagne?, embossed "BUDAI / KESERO_Z / FORRAS..."	lead
Feature 39	23	5	266/395	1	jar lid, fragment only	ferrous
Feature 44	16	1	197/248	1	hinge?, 5 fragments, 1 screws still in place	ferrous
Feature 44	16	2	207/266	1	screw, #10?	brass
Feature 44	16	3	209/287	5	barrel hoop, 5 fragments, may be 1 hoop	ferrous
Feature 44	16	4	212/295	1	hand-forged loop, flat inside with curved outer surface in cross-section, loop is 3 1/4 inches high, 2 1/2 inches wide, with 1 inch extensions at 90 degree angle on either side. Probably harness related	ferrous
Feature 45	18	4	213/299	1	miscellaneous, spherical lump of plumbers lead	lead
Feature 45	18	4	213/301	2	wire, fragments not further identified	ferrous
Feature 45	18	7	234/336	1	wire, 5 inches long, diameter unknown	ferrous
Feature 45	E 1/2	1	275/425	28	casement window frame fragments, including caulking	ferrous
Feature 45	E 1/2	1	275/437	1	pipe, 4-inch sewer, cast iron, female end with most of bell, small portion of pipe	ferrous
Feature 45	E 1/2	1	275/424	3	lamp burners	brass
Feature 45	E 1/2	2	277/474	9	fragments of lamp burners	brass
Feature 45	E 1/2	2	277/475	4	lamp burners	brass
Feature 45	E 1/2	3	282/481	2	metal, fragments, probably lamp burner parts	brass
Feature 45	E 1/2	3	282/480	4	kerosene lamp burners, 1 1/2 inch wick, stacked, for #2 chimney	brass
Feature 45	E 1/2	5	287/514	1	wire, baling? 8 inches long	ferrous
Feature 45	n/a	n/a	299/542	3	lamp burners, fragments only	brass
Feature 45	n/a	n/a	299/542	1	clip board clip	copper
Feature 46	22	3	240/352	1	jar lid, 2 inch diameter	ferrous

Feature No., by Use Category	Unit No.	Level	PD/FN No.	Count	Description	Metal Type
Feature 46	22	4	241/355	1	jar lid, 1 5/8 diameter	ferrous
Feature 59	1	4	134/78	1	wire, straight pieces wrapped with other pieces	ferrous
Feature 68	13	1	176/174	1	wire, baling? 5 1/2 inches long	ferrous
Feature 68	13	3	187/211	8	barrel hoop, fragments	ferrous
Feature 68	13	4	192/228	1	plumbers lead	lead
Feature 68	13	3	187/211	1	jar lid, 2 inch diameter, 4 pieces	ferrous
Feature 68	13	4	192/228	2	jar lid, 1 7/8 inch diameter	ferrous
Metal, Not Further Specified (NFS)						
Feature 8	E1/2	2	124/46	1	metal, scrap?	ferrous
Feature 27	6	2	153/58	3	metal, scrap?	ferrous
Feature 27	6	5	169/163	1	strap, 3/4 wide, thickness unknown	ferrous
Feature 27	7	4	164/107	3	metal, scrap?	ferrous
Feature 27	24	1	273/461	1	strap, 1 1/2 wide, 2 pieces totaling 8 1/2 inches long, thickness unidentifiable	ferrous
Feature 27	24	4	288/528	1	metal, scrap?	ferrous
Feature 27/67 [b]	8	1	157/134	1	strap, 1 inch wide, thickness unknown, 2 inches long, rounded corners, rivet in one end	ferrous
Feature 27/67 [b]	10	1	162/142	1	strap, 3/4 wide, 4 inches long, thickness unknown, rivet one end	ferrous
Feature 27/67 [b]	10	4	171/155	2	strap, 1 inch wide, thickness unknown, 15 inches long	ferrous
Feature 27/67 [b]	10	4	171/155	1	strap, 1 3/4 inches wide, 4 inches long, approximately 1/2 inch thick	ferrous
Feature 32	9	3	165/130	3	metal, scrap?	ferrous
Feature 37	12	3	185/191	1	strap, 1/2 inch, thickness unknown, 17 fragments	ferrous
Feature 37	12	3	185/191	1	metal, scrap?	ferrous
Feature 39	17	4	215/318	2	scrap, heavy iron plate, estimated 1 inch thick	ferrous
Feature 39	23	2	242/360	1	miscellaneous, cast iron, not further identified	ferrous
Feature 39	23	5	266/395	1	strap, 3/4 wide, thickness unknown, 3 fragments	ferrous
Feature 39	23	5	266/395	1	strap, 1 inch, thickness unknown, rivets on one end, 2 fragments	ferrous
Feature 39	23	5	266/395	5	metal, scrap?	ferrous
Feature 44	16	2	207/266	1	Strap, estimated 3/4 wide, 6 fragments totaling 13 inches, thickness indeterminate	ferrous
Feature 44	16	2	207/266	2	metal, scrap, 2 fragments	ferrous
Feature 45	18	1	206/265	1	metal, scrap?	ferrous
Feature 45	18	2	208/273	1	metal, scrap?	ferrous

Feature No., by Use Category	Unit No.	Level	PD/FN No.	Count	Description	Metal Type
Feature 45	E 1/2	2	277/474	1	strap, 1 1/4 by 13 inches, hand-forged, 2 bolt or screw holes in each end, handle or slide for large bolt	ferrous
Feature 45	E 1/2	5	287/514	1	metal, scrap?	ferrous
Feature 60	3	1	128/18	1	metal, scrap?	ferrous
Feature 60	5	1	139/22	1	strap, 1 inch by 13 inches total, 4 pieces	ferrous
Feature 63	W 1/2	1	263/389	1	metal, scrap?	ferrous
Feature 68	13	2	186/202	1	strap, 1/2 inch, thickness unknown, 3 fragments	ferrous
Study Area 2	n/a	n/a	279/422	1	plate, 1/2 inch thick, 2 inch diameter	copper

[a] As described in Chapter 3, Features 32 and 37 were initially considered the same feature, but were finally treated as separate features. Artifacts designated as Feature 32/37 were collected before the features were determined to be separate features.
[b] As described in Chapter 3, Features 27 and 67 were initially considered separate features, but were finally treated as the same feature. Artifacts designated as Feature 27/67 were collected after the features were combined.

Table 18. Unidentifiable Metal Artifacts, not Analyzed

Feature No.	PD	FN	Kept (count)	Discarded Volume (liters)	Percent Cans	Percent Fasteners	Comments
7	130	43	1	0.05915	10	0	10% cans; 20% amorphous conglomerate; 70% - 1 large flat fragment
7	131	42	1	0.11829	0	50	50% nails/bolts; 50% misc - 1 large (and multiple small) chain fragments and conglomerates
8	119	44	4	0.05915	0	95	95% nails/bolts; 5% misc - 2 fragments copper, 2 fragments twisted metal
8	124	46	4	<0.05915	0	90	90% nails/bolts; 10% misc - 1 handle? Fragments: 2+ wire fragments, 1?, volume less than ¼ cup
12	253	380	–	<0.05915	0	100	100% nails/bolts - 5 fragments
23	137	53	–	0.11829	75	25	75% cans; 25% nails/bolts
25	144	72	–	0.11829	0	100	100% nails/bolts - 1 very large
27	146	60	7	1.06465	25	25	25% cans; 25% nails/bolts; 25% amorphous metal conglomerates; 25% misc - 1 large strap, 2 pieces wire, 2 pieces large bolt, 1 large washer, 1 large bolt
27	153	58	6	0.23659	10	40	10% cans; 40% nails/bolts; 50% misc - 1 large chunk, 3 pieces strap, 1 metal ring, 1 large bolt/pin, 1 solder top seal
27	163	101	5	0.11829	5	20	5% cans; 20% nails/bolts; 70% strap; 5% misc - chain link?

Feature No.	PD	FN	Kept (count)	Discarded Volume (liters)	Percent Cans	Percent Fasteners	Comments
27	164	107	3	0.23659	0	90	90% nails/bolts; 10% strap
27	169	163	2	0.47318	10	85	10% cans; 85% nails/bolts (mostly small); 5% misc - 1 cap, 1 strap
27	170	158	3	0.35488	20	60	20% cans (cylinders); 60% nails/bolts; 20% misc - draft horseshoe, 1 pipe valve, 1 strap
27	273	461	7	1.30124	10	70	10% cans; 70% nails/bolts; 20% misc - 4 large bolts, part of pipe, 2 pieces metal/strap, circular disc, 1 bolt adhered to a large washer
27	283	489	6	3.78541	10	85	10% cans; 85% nails/bolts; 5% misc - railroad tie, 3 pieces wire, 1 piece aluminum, 1 piece copper?, 3 solder top seals
27	286	503	4	4.022	5	90	5% cans; 90% nails/bolts; 5% misc - 1 screw, 3 square nails?
27	288	528	4	1.89271	10	70	10% cans (solder seam); 70% nails/bolts - most large bolts and nails - many more than other PDs; 20% misc - 2 railroad spikes, 1 latch?, 1 machined piece of metal of unknown function
27	289	553	5	1.18294	5	80	5% cans; 80% nails/bolts (medium size predominate); 15% misc - conglomerates rusted together, 1 very large bolt, 2 pieces perforated oval, 1 piece un-rusted square nail?, 1 solder top small cap?
27	292	555	–	0.47318	0	80	80% nails/bolts; 20% misc - conglomerate bulk metal, nails/bolts are medium sized, likely bolts
30	181	184	–	<0.05915	0	100	100% nails/bolts (6 fragments)
32	159	85	4	0.23659	10	60	10% cans (1 solder top); 60% nails/bolts; 30% misc -several conglomerate chunks of unidentifiable metal, 2 pieces of fine wire, 1 circular perforated disc, 1 oval disc fragment
32	160	99	5	0.94635	80	10	80% cans; 10% nails/bolts; 10% misc - conglomerate, 4 pieces wire, at least 3 solder top cans
32	165	130	5	2.36588	80	10	80% cans (at least 3 hole in top solder seal); 10% nails/bolts; 10% misc - 3 pieces strap, 1 can top, 1 small cylinder
32	165	131	2	0.23659	0	0	100% misc - large machine? part, discarded misc fragments and rusty bits of the large part, part is in 2 pieces (broken during excavation)
32/37 [a]	167	113	1	0	0	0	1 metal button (fragment)

Feature No.	PD	FN	Kept (count)	Discarded Volume (liters)	Percent Cans	Percent Fasteners	Comments
32/37 [a]	167	116	2	0	0	0	shotgun shell fragments
32/37 [a]	167	119	6	0.70976	15	60	15% cans; 60% nails/bolts; 25% misc - 1 large machine part, 1 disc, 1 cap w/ writing (lead), 1 aluminum cylinder?, 2 pieces wire
36	235	340	–	<0.05915	0	100	100% nails/bolts - 3 fragments
37	174	171	12	3.54882	10	85	10% cans (at least 3 solder top cans); 85% nails/bolts, mostly small nails; 5% misc - 4 pieces strap, 5 circular caps?, 2 wire, 1 lead tag?
37	180	183	2	0.47318	5	80	5% cans, 80% nails/bolts; 15% misc - 1 disk, 12 squarish chunks, 1 bolt/washer/nut together
37	185	191	19	0.11829	0	50	50% nails/bolts; 40% strap; 10% misc - 4 somewhat cube-like metal chunks, several straps perforated, 1 very large bolt
37	188	215	8	0.59147	10	70	10% cans (at least 2 hole in top); 70% nails/bolts; 20% misc - 1 draft horse shoe, 2 pieces circle, 2 pieces strap, 1 wire, 1 chain part, 1 part of latch?
37	191	222	–	0.59147	70	30	70% cans (at least 2 solder hole in top and some rectangular); 30% nails/bolts
37	194	242	3	0.94635	20	70	20% cans; 70% nails/bolts (many large bolts); 10% misc - 1 part of horseshoe?, 1 disc, 1 large non-bolt spike
37	201	252	4	0.05915	10	85	10% cans; 85% nails/bolts; 5% misc - 4 small flat strips
38	189	218	10	0.47318	20	70	20% cans (rectangular); 70% nails/bolts; 10% misc 1 link of chain, 1 blob of lead, 8 pieces of flat aluminum
38	189	406	1	0	0	0	1 metal button
38	193	237	13	1.06465	10	80	10% cans; 80% nails/bolts (many rusted together); 10% misc - 11 pieces aluminum, 1 metal strap, 1 pin?
39	204	255	–	0.47318	55	45	55% cans; 45% nails/bolts
39	204	261	1	0	0	0	1 piece of lead
39	210	276	1	1.41953	80	15	80% cans; 15% nails/bolts; 5% misc - conglomerates, 3 solder seam tops
39	210	280	1	0	0	0	1 specimen with ornate cone/point
39	214	311	7	3.07565	85	10	85% cans; 10% nails/bolts; 5% misc - unidentified
39	215	318	9	3.54882	95	4	95% cans; 4% nails/bolts; 1% misc; 2 solder tops, 1 solder seam

Feature No.	PD	FN	Kept (count)	Discarded Volume (liters)	Percent Cans	Percent Fasteners	Comments
39	238	342	–	<0.05915	0	100	100% nails/bolts - 3 bolts in total, volume less than 0.25 cup
39	242	360	1	0.82806	10	85	10% cans; 85% nails/bolts; 5% misc - unidentified conglomerate, 1 piece heavy unknown
39	256	386	2	1.77441	20	75	20% cans (solder seam cylinder); 75% nails/bolts; 5% misc; 1 piece copper, 1 piece aluminum
39	266	394	–	0.11829	100	0	100% cans - 1/2 square/rectangle, 1/2 cylinder
39	266	395	11	2.36588	60	0	60% cans (70% square/rectangle, 30% cylinder - at least 4 solder seam top, 2 hole in top solder seam; 10% misc - 6 pieces of strap, 2 pieces lead, 1 square nail?, 1 threaded lid?, 1 large metal chunk
39	266	402	3	0	0	0	3 very large pieces of metal
40	233	299	1	0.11829	0	0	1 lead fragment, crucible shaped - very hard possibly fired sediment inside
40	233	334	5	0.23659	60	35	60% can; 35% nails/bolts; 5% misc; 1 solder top, ratio not taking into account large metal pin (railroad car coupling), misc - 2 pieces of some type of wiring, 1 thick circular disc
44	197	248	4	1.18294	20	20	20% cans; 20% nails/bolts; 50%amorphous conglomerates; 10% misc - railroad spike, 1 piece of wire, 2 machine parts?
44	207	266	9	2.12929	65	30	65% cans (smashed/rusted together); 30% nails/bolts; 5% misc - straps (6), 1 rounded strap, 1 piece melted lead?, 1 piece large flat metal
44	209	287	7	1.53782	60	25	60% cans; 25% nails/bolts; 15% misc. - 5 pieces of strapping, 1 piece wiring, 1 spring?, cans were smashed, squashed, and rusted together
44	212	295	1	0.11829	70	20	70% cans; 20% nails/bolts; 10% - handle?
45	206	265	7	1.06465	33	33	33% cans; 33% nails/bolts; 20% wire (a handful ~10-inch pieces), 14% misc - conglomerates, 1 large washer, 1 large nut, 1 large bolt, 2 pieces lead strips, 1 piece perforated copper (lamp part?), 1 large piece of flat metal, 1 solder seam top seal
45	208	273	1	0.17744	50	40	50% cans; 40% nails/bolts; 10% misc - conglomerate, metal chunk
45	211	290	–	0.05915	30	70	30% cans; 70% nails/bolts

Feature No.	PD	FN	Kept (count)	Discarded Volume (liters)	Percent Cans	Percent Fasteners	Comments
45	213	301	3	0.70976	30	50	30% cans; 50% nails/bolts; 20% misc - bulk highly degraded conglomerate fragments, 2 pieces wire
45	218	320	–	0.05915	0	80	0% cans; 80% nails; 20% misc - unidentifiable bulky material
45	225	328	1	0.05915	10	85	10% cans; 85% nails; 5% misc - non-ferrastine
45	234	336	2	<0.05915	0	80	80% nails/bolts (5 fragments); 20% wire (barbed?)
45	275	424	8	0	0	0	8 pieces lamp parts - parts of 3 lamps
45	275	425	1	0	0	0	railroad badge
45	275	437	1	0	0	0	100% - 1 pipe end - large machine/machined parts? (perforated, shaped, edged specimens); 5% misc - 1 wire, 1 railroad spike, some of discarded may have been flat sides attached to the machined parts that were kept
45	275	439	28	3.31224	20	10	20% cans (at least 1 solder top); 10% nails/bolts; 65%
45	277	474	9	1.41953	20	20	20% cans; 20% nails/bolts; 60% misc - 1 large handle, lamp fragments, 3 or 4 metal tags (moved to new bag)
45	277	475	11	0	0	0	lamp parts - 100% - 2 whole parts, 2 partial
45	277	569	5	0	0	0	4 railroad badges - 2 fused together
45	282	480	11	0	0	0	4 identical lamp parts (1 fragmented, 2 stuck together)
45	282	481	5	1.18294	50	15	50% can - flat rusted together (solder seam); 15% nails/bolts; 35% misc - rusted conglomerates, 4 pieces copper likely lamp part (including screw), another railroad badge (moved to FN 568), can - rectangular/square corner present
45	282	568	1	0	0	0	1 railroad badge w/ writing
45	285	494	1	0.94635	80	19	80% cans (square/rectangular corner 1 fragment); 19% nails/bolts; 1% misc - part of buckle? for cloth
45	287	514	2	1.41953	70	10	70% cans; 10% nails/bolts; 20% misc - railroad spike/wire/large strap, can is large/square/rectangular and badly decayed/conglomerated
45	291	533	1	0	0	0	1890 "V" Nickel
45	291	534	1	0	0	0	1901 Liberty Dollar
45	291	535	–	1.18294	80	20	80% cans (square/rectangular very rusted conglomerates); 20% nails/bolts

Feature No.	PD	FN	Kept (count)	Discarded Volume (liters)	Percent Cans	Percent Fasteners	Comments
45	293	543	–	0.47318	100	0	100% cans? conglomerate irregular rusted together - messy
45	299	549	9	0	0	0	9 pieces lamp (MNI = 4); 1 clipboard part; 80% lamp; 20% clipboard
46	239	347	–	0.35488	0	100	100% nails/bolts (moderate size)
46	240	352	2	0.47318	30	65	30% cans (cylinder and rectangular); 65% nails/bolts; 5% misc - 1 piece lead, 1 piece screw cap
46	241	355	2	0.47318	20	75	20% cans (mostly from 2 large pieces of square/rectangular can); 75% nails/bolts; 5% misc - conglomerate, 2 pieces screwtop lid
46	246	372	4	1.30124	45	45	45% cans (2 solder top); 45% nails/bolts; 10% misc - parts of wheel, 1 lead strip (cut), 1 part of lid (screwtop), 1 piece checkerboard like?
46	246	376	–	0.11829	20	80	20% cans (cylinder solder seam); 80% nails/bolts
56	115	67	–	<0.05915	0	90	90% nails/bolts; 10% amorphous unidentified conglomerate; volume less than 1/4 cup
57	118	28	–	0.11829	40	60	60% nails/bolts; 40% cans
57	122	36	–	<0.05915	0	60	60% nails/bolts; 40% amorphous conglomerate; volume less than 1/4 cup
57	123	33	–	<0.05915	0	0	100% large thin metal ~ 4cm x 3cm x .3mm - 2 pieces
59	126	76	–	<0.05915	0	100	100% nails - 5 specimens, less than 1/4 cup
59	134	78	2	0.47318	0	50	50% nails/bolts; 49% wire fused together; 1% misc - disc w/ paper
60	128	18	2	0.94635	65	25	65% cans; 25% nails/bolts; 10% misc - 1 medium washer, 1 piece irregular metal, 2 pieces flat metal - large can
60	139	22	5	0.35488	10	80	10% cans; 80% nails/bolts; 10% misc - strapping, 2 pieces of ferrous
61	148	69	–	0.05915	0	100	100% nails/bolts - ~25 fragments
62	152	83	–	0.94635	50	50	50% cans (rectangular/cylinder [at least 1 solder seam top]); 50% nails/bolts - several large can pieces
63	263	389	2	0.11829	0	80	80% nails/bolts; 20% misc - 12 large unidentified (1 blob, 1 latch?)
67	157	134	2	0.59147	10	85	10% cans; 85% nails/bolts (small); 5% misc - 1 piece lead, 1 piece strap
67	161	140	–	0.05915	0	100	100% nail/bolt (relatively small ~10 count)

Feature No.	PD	FN	Kept (count)	Discarded Volume (liters)	Percent Cans	Percent Fasteners	Comments
67	162	142	1	1.18294	60	35	60% cans (mostly square/rectangle solder seam); 35% nails/bolts; 5% misc - conglomerate unidentifiable, 1 strap
67	166	147	6	1.41953	25	50	25% cans (1 rectangle can bottom); 50% nails/bolts; 25% misc - 1 piece of aluminum, 1 large wrench, 1 small cap, 1 rivet, 1 1/2 square?, 1 part of stove?/drain cover
67	168	152	3	0.94635	5	90	5% cans; 90% nails/bolts; 5% misc unidentified conglomerate, 3 metal caps? ~1" diameter, bolts/nails are mix of large and small
67	171	155	5	1.65612	10	50	10% cans; 50% nails/bolts; 40% misc - 1 large railroad coupling pin, 1 very large bolt, 3 pieces strapping
68	176	174	–	0.47318	5	90	5% cans; 90% nails/bolts; 5% misc - wire
68	186	202	3	1.06465	20	75	20% cans (rectangular and cylinder); 75% nails/bolts; 5% strap
68	187	210	9	3.07565	80	10	80% cans (1 whole cylinder, several solder seam); 10% nails/bolts; 10% misc - 8 pieces metal strap, 1 screwtop lid
68	187	404	2	0	0	0	metal button (2 fragments)
68	192	228	9	1.65612	30	50	30% cans (rectangular and cylinder - at least 3 solder top); 50% nails/bolts; 20% misc - conglomerates, 7 pieces screwtop lip, 1 piece perforated strip, 1 piece lead
73	220	325	4	0.17744	30	50	30% cans; 50% nails; 20% misc - 2 copper wiring, 2 rivets, 1 large bolt w/ square nut, 1 square can fragment
Judgmental sample	279	422	2	0	0	0	1 horseshoe (large/draft), 1 large chunk copper?

[a] As described in Chapter 3, Features 32 and 37 were initially considered the same feature, but were finally treated as separate features. Artifacts designated as Feature 32/37 were collected before the features were determined to be separate features.
[b] As described in Chapter 3, Features 27 and 67 were initially considered separate features, but were finally treated as the same feature. Artifacts designated as Feature 27/67 were collected after the features were combined.

CHAPTER 6
NATIVE AMERICAN CERAMICS

Linda M. Gregonis

Ten prehistoric Hohokam sherds and 337 historic period Tohono O'odham sherds were collected during testing and excavation of features at the 6th and Toole Parcel (Table 19). The prehistoric sherds include one Late Rincon Red-on-brown, one indeterminate red-on-brown, one Sells Red, and seven plain ware sherds. The prehistoric sherds were scattered among the features at the site, which may indicate that they were part of a low-density scatter of sherds that were on the property before the historic period activities took place.

The Tohono O'odham pottery includes 261 Papago Red, 40 Papago Plain, 2 Papago Black-on-red sherds, and 15 sherds from a rare Papago White-on-red vessel. Nineteen Papago sherds that were either Plain or Red ware were also identified. The Tohono O'odham pottery is reflective of the late 1800s cultural setting of the excavated area, which consists of railroad-associated businesses and servants' quarters for the San Xavier Hotel. The pottery, which was found in trash or pits and privies, included pieces that could have been sold to rail travelers, used as water containers by businesses associated with the railroad, or used as household items by the San Xavier Hotel servants.

METHODS

All sherds found during testing and excavation at the 6th and Toole Parcel were collected and bagged by provenience. In the laboratory, sherds were washed, labeled, and inventoried by provenience. Variables recorded during analysis included size, ceramic ware, ceramic type (when possible), vessel part, vessel form and shape (when possible), rim finish and lip shape (when applicable), gross temper inclusions, interior and exterior surface finish, presence or absence of slip, and vessel wall thickness. All information about the ceramic collection was recorded in a computerized Microsoft Access database.

Sherd size was recorded to provide a general indication of disturbance of a particular provenience and a gross measure of processes involved in the formation of deposits. The size categories used are 3.2 cm^2 and smaller (about the size of a U.S. dime and smaller), 3.2–4.4 cm^2 (about the size of a U.S. nickel), 4.4–5 cm^2 (about the size of a U.S. quarter), 5–16 cm^2, 16–49 cm^2, 49–100 cm^2, and larger than 100 cm^2. A higher percentage of small sherds (16 cm^2 and smaller) indicates a greater amount of disturbance than a high percentage of large sherds (16 cm^2 and larger) from a given provenience. Size was determined using a template developed by the Center for Desert Archaeology (Henry Wallace, personal communication 1991), with the addition of the even smaller categories of 3.2–4.4 cm^2 and 3.2 cm^2 and smaller. The smaller size categories were used because Tohono O'odham pottery often breaks into tiny pieces. This is probably because of the use of manure tempering and the firing method, which consisted of brief, low-temperature conditions that were no more than 700–800°F (Naranjo 2002:16).

The concept of sherd size as an indicator of disturbance follows Nielsen's (1991) finding that sherds tend to retain certain size distributions after initial breakage (see also Pyszczyk 1984; Schiffer

1987:129; Wallace et al. 1992:7–9). Sherd size can also indicate whether or not sherds lay on the surface of a site for a period of time before being redeposited or washed into a pit or privy or whether the fill for such features came from another cultural context. If trash was deposited directly into a pit or feature after initial use, for example, the sherds would be larger on average than if the trash had come from another trash heap or other cultural feature (Beck 2006; Schiffer 1987).

Pottery wares include Hohokam brown wares (both decorated and plain) and Tohono O'odham brown wares. Except for the Hohokam plain wares and one indeterminate red-on-brown sherd, the pottery was assigned to named and described pottery types. Brief descriptions of those pottery types are listed in Table 20.

Vessel part includes rim, body, shoulder, base, or (in one case) handles. Vessel shape and form are related. Form refers in general to bowls (vessels with unrestricted openings) and jars (vessels with restricted openings). Shapes include bowls; wide-mouthed vessels with recurved rims, also known as "bean pots" (Fontana et al. 1962); ollas (jars with wide mouths that are slightly more restricted than the bean pot category); tall-necked jars; and jars with medium height necks. Rim shapes recorded for jars include straight, outcurved, and flared; bowls had outcurved or direct (straight) rims; and bean pots had slightly outcurved rims. Lip finishes were rounded, beveled round, and, in one case, round to square. In this chapter's analysis tables, bean pots are included with bowls, and ollas are included with jars.

Gross temper categories were determined using a 10× hand lens. Inorganic tempers consisted of sand-sized particles categorized as quartz and feldspar; quartz, feldspar, and mica; granitic; and volcanic. Quartz-feldspar and quartz-feldspar-mica tempers are those in which the minerals were found as separate fragments in the sherd. Those categorized as having granitic temper contained particles in which quartz, feldspar, and mica grains were fused. They may have come from granite, gneiss, or mylonite, all of which can be found in local wash sands. The range of volcanic tempers may include yellowish tuff particles, gray andesite fragments, or gray to purple rhyolite pieces. The Tohono O'odham pottery from the 6th and Toole Parcel also includes organic tempers. This temper is from cow or horse manure. Clay bodies containing manure temper usually have a deep black core color and rectangular "blow outs" on the surface. The blow outs are impressions of grass particles that have burned out in the firing process.

The presence or absence of slip was recorded. Slips consist of a fine clay coating applied to the surface of a vessel, either by dipping a vessel in the material or painting it on the surface. Sherds with slips usually were tool polished. The categories "smoothed," "eroded," "weathered," and "scored, wiped" were also recorded. Tool polish refers to a surface that has been smoothed using a tool, such as a smooth stone, stick, or fingernail, to compact the surface and create a sheen. Smoothed refers to sherds with a satiny to dull surface that have surfaces that appear to have been compacted using a hand or other soft tool. Weathered and eroded refer to sherds with surfaces that have been damaged to the point where the original surface finish cannot be determined. Scored and wiped refers to surfaces characterized by a rough surface with marks left by a hard tool (scored), a bundle of grass (wiped), or a similar object. Scoring produces lines that are shallower than incising but slightly deeper than wiping.

Vessel wall thickness was recorded in millimeters. When one sherd or a group of sherds varied in thickness, the range of thickness was recorded. Vessel thickness was recorded primarily to see if there were differences in thickness among the Tohono O'odham vessel forms.

RESULTS

Hohokam Sherds

As shown in Table 19, 10 Hohokam sherds were found in various pits at the 6th and Toole Parcel. Most of the sherds are small (Table 21); four were 3.2 cm^2 or smaller; two were 4.4–5 cm^2, and the remainder were 5–16 cm^2 in size. Their size and distribution indicates that the sherds likely were "background noise" at the site—that is, they were dumped into or fell into the pits as part of general trash and dirt fill at the site. No prehistoric features were found during excavations at the site, indicating that the sherds may have been part of a low-level scatter of artifacts related to the prehistoric village that has been found under the Tucson presidio. The Late Rincon Red-on-brown and indeterminate red-on-brown sherds were from bowls. The forms of the others could not be determined (Table 22). The majority of the Hohokam sherds had tool-polished surfaces, inside and out (n = 9). Temper in Hohokam sherds was varied and included all of the major inorganic temper categories (Table 23).

Tohono O'odham Sherds

The 337 Tohono O'odham sherds collected from the site are varied. They include red, plain, and painted wares and represent shapes including bean pots, bowls, ollas, and other jars. More than half of the sherds (n = 226; 67 percent) were found in Feature 37, a trash pit. Of those sherds, 50 percent (n = 115) were 4.4 cm^2 or smaller; 76.5 percent were smaller than 5 cm^2 (n = 173) (Table 24). Throughout the 6th and Toole Parcel, 78 percent (n = 260) of the Tohono O'odham sherds collected were 4.4–5 cm^2 or smaller. The large number of small sherds indicates that they represent reworked trash rather than vessels or partial vessels deposited directly in various features. The small number of sherds with eroded or weathered surfaces (Tables 25 and 26) indicates that the pottery did not lie on the surface of the ground for any length of time.

Despite the small size of most of the sherds, a number of vessel forms could be determined (Table 27). These included 15 sherds from a Papago White-on-red jar found in Feature 37; a sherd from a Papago Black-on-red jar found in Feature 37; 5 Papago Red sherds representing at least two bean pots (from Feature 37 and Feature 60); 4 Papago Red (from Feature 37 and Feature 60), 1 Papago Plain or Red (Feature 32/37), and 1 Papago Plain (Feature 37) sherds from at least four bowls; 1 Papago Red handle from an olla or mug (from Feature 60); and 35 Papago Red (Features 37–40, 44, 45, 60, and 78), 3 Papago Plain or Red (Feature 32/37), and 3 Papago Plain (Features 32 and 37) sherds representing 15 jars (see Table 27). Among the jar shapes identified were straight-necked, tall-necked flared rim, and medium height straight-necked jars, all from Feature 37. A wide-mouthed jar was found in pit Feature 32. All of these jars could have been water ollas. Rim form and lip finish could only be identified for 13 sherds, and no patterns were evident in these data.

The Papago White-on-red jar sherds (found in Feature 37) differed from other Papago White-on-red vessels that have been found in the Tucson area in the past (Fontana et al. 1962; Whittlesey 1997). Instead of broadly painted white patterns, the white paint on the jar from Feature 37 consisted of fugitive squiggles that look like they were part of a panel or panels (Figure 27). It is unclear whether Papago White-on-red vessels were made for Tohono O'odham, Mexican, or Euroamerican use. Fontana and colleagues (1962:105) described the type as being made between 1700 and 1860, but the provenience in late 1800s pits at the 6th and Toole Parcel (Block 82) and in contexts that date to the 1890s–1940s in Block 180 (Whittlesey 1997:445) indicate that the pottery may have had a long, though infrequent, manufacturing history.

The Papago Black-on-red jar sherd from Feature 37 has drip-like marks that were parallel on the neck area of a tall-necked, vase-shaped vessel. This may have been part of a saguaro wine vessel, which may indicate that some of these vessels were being sold to tourists along the rail line or that some of the workers at the San Xavier Hotel or at other areas on the line were Tohono O'odham. The paint, which is probably mesquite sap, was not black. Instead, it was a red-brown color, which could indicate that the paint did not carbonize properly during firing or that what we have described as "paint" is actually drips from some organic substance (perhaps saguaro syrup). The other Papago Black-on-red sherd (of indeterminate shape), found in a pit, Feature 62, had a thin brown to black painted line. Both sherds were slipped and tool polished; both had organic temper, along with quartz, feldspar, and mica sand particles. One sherd also contained volcanic particles.

The vast majority of Tohono O'odham sherds from the site had organic temper (n = 331) (Table 28) along with sand-sized particles of various types. The dominance of organic-tempered Tohono O'odham sherds at the site supports the idea that the features date primarily after the 1850s. According to Heidke (2006:7.78, Figure 7.20), organic-tempered pottery came to dominate Tohono O'odham wares in Tucson by the 1870s.

Twenty-one Papago Red, Papago Plain, and Papago Plain or Red sherds from Features 32 and 37 (a pit) and Feature 60 (a midden) appear to have been burned. Evidence of burning ranged from soot-coated exteriors to slips that seem to have been vitrified to one sherd that had its organic material completely burned off. One Papago Red sherd with a sooted exterior and a Papago Plain wide-mouthed jar sherd may have been from cooking pots. The burning on the other sherds could have been either from cooking or from trash burning that affected the sherds.

Finally, the vessel wall thickness of the sherds from the 6th and Toole Parcel was measured in hopes that some correlation between vessel form and vessel wall thickness could be found. Table 29 shows the results of these measurements for the identifiable vessel forms. There was a wide range of vessel wall thicknesses. The majority of Tohono O'odham sherds (for which vessel form was identified) (n = 41; 60 percent) range from 3 to 6 mm in thickness. Jar and bowl sherds are represented in all ranges of thickness, indicating that vessel wall thickness was not subscribed by vessel form.

SUMMARY AND CONCLUSIONS

The Native American pottery collection from the 6th and Toole Parcel includes Hohokam and Tohono O'odham sherds. The Hohokam sherds appear to be incidental to the site and may have been part of a low-level artifact scatter associated with a village site under the Tucson presidio.

The historic Tohono O'odham sherds were found in features that appear to date to the late 1800s and fit within the norms for pottery that might be associated with the Southern Pacific Railroad and businesses associated with it. Tohono O'odham ceramics (or Papago Red) have been documented at other historic period sites in proximity to the railroad as far east as New Mexico. These include the Gage, New Mexico, railroad site, LA 58972, along the Southern Pacific Railroad (Bruder et al. 1990) and LA 50354, approximately 25 miles to the south (Klune 2005). Both of these sites are the farthest east that Tohono O'odham pottery has been reported. Regional movement of native ceramics clearly continued into the historic period, and this movement very likely utilized the railroad, at least in part. Whether this was related to railroad workers, migrants, or trade is unclear, but it may have been related to all three.

In regard to the research themes developed for this project, the Tohono O'odham sherds can be used to address issues of railroad-related commerce (Hushour et al. 2006:12). The sherds found in the pits and privies at the site may represent wares that were used by Mexican or Tohono O'odham laborers along the tracks, servants living in the San Xavier Hotel, or Euroamericans who used the pots as water ollas. Given the type of businesses (warehouses and bottling plants) in the area, it is doubtful that the pottery was used in conjunction with those businesses directly (i.e., they were not sold or distributed by the businesses), but may well have been used by the employees, some of whom may have been Tohono O'odham, and some of whom were Mexican and/or Mexican-American. Use of Tohono O'odham ceramic water ollas and other native ceramics was common practice in Tucson at this time, and was not necessarily associated only with Tohono O'odham use (see below).

The largest collection of Tohono O'odham sherds came from two trash pits, Features 32 and 37. Sherds found in those features includes Papago White-on-red, Papago Black-on-red, Papago Red, and Papago Plain pottery. The two features also yielded the widest variety of vessel shapes—bowls, bean pots, and jars. The numbers of sherds and variety of shapes may indicate that the two pits were part of household-related trash and could have been associated with servants at the San Xavier Hotel or industrial workers who also lived on or near the parcel.

If the two pits do represent household trash, the presence of a possible Papago Black-on-red saguaro wine vessel sherd and the Papago White-on-red jar sherds may indicate that there were Tohono O'odham living and working in the area, or the pottery may have been sold to travelers on the Southern Pacific Railroad. Fontana and colleagues (1962) and Najarano (2002) have commented on the association of innovative decorated pottery with railroads in southern Arizona. Enterprising Tohono O'odham regularly produced pottery for the tourist trade and made water ollas for consumption by Euroamericans and bean pots for Mexican-American households.

Figure 57. Papago White-on-red sherd recovered from Feature 37 at the 6th and Toole Parcel (PD: 185 FN:192).

Table 19. Distribution of Native American Sherds across the 6th and Toole Parcel

Feature No.	Feature Type	Hohokam Pottery Type				Tohono O'odham Pottery Type					Total
		Late Rincon Red-on-brown	Sells Red	Plain	Indeterminate red-on-brown	Papago White-on-red	Papago Red	Papago Plain	Papago Black-on-red	Papago Plain or Red	
23	pit	–	–	–	–	–	3	–	–	–	3
27	privy	–	–	–	–	–	16	–	–	–	16
30	pit	–	–	–	–	–	1	–	–	–	1
32	pit	–	–	–	–	–	1	1	–	–	2
32/37 [a]	pit	–	1	–	–	–	6	14	–	18	39
37	pit	–	–	2	–	15	195	14	1	1	228
38	pit	–	–	1	–	–	1	–	–	–	2
39	pit	–	–	–	–	–	5	–	–	–	5
40	trench	–	–	–	–	–	2	–	–	–	2
44	pit	–	–	–	1	–	2	–	–	–	3
45	privy	–	–	1	–	–	8	1	–	–	10
46	pit	–	–	1	–	–	–	–	–	–	1
60	sheet trash	–	–	–	–	–	18	10	–	–	28
62	pit	–	–	2	–	–	1	–	1	–	4
68	pit	1	–	–	–	–	–	–	–	–	1
78	pit	–	–	–	–	–	1	–	–	–	1
Stripping Area 2		–	–	–	–	–	1	–	–	–	1
Total		1	1	7	1	15	261	40	2	19	347

[a] As described in Chapter 3, Features 32 and 37 were initially considered the same feature, but were finally treated as separate features. Artifacts designated as Feature 32/37 were collected before the features were determined to be separate features.

Table 20. Brief Descriptions of Pottery Types and Wares Discussed in This Report

Pottery Type or Ware	Description	Source
Hohokam Wares		
Plain	Sherds typed as plain wares have a brown ware paste and temper that ranges from quartz-feldspar-mica particles to granitic to granitic-volcanic and micaceous granitic pieces. The plain ware sherds have polished or hand-smoothed surface finishes. They may be historic wares that do not have organic temper but appear most similar to prehistoric Hohokam wares.	
Indeterminate red-on-brown	This Tucson Basin brown ware has red paint; the design could not be assigned to a particular phase.	
Late Rincon Red-on-brown	This brown ware has offset, quartered, and primarily rectilinear designs on the interiors of bowls and the exteriors of jars. Design elements include many Tanque Verde phase motifs but tend to be a bit tighter and busier than Tanque Verde Red-on-brown. Vessel interiors are often smudged. The vessel shapes are primarily Rincon phase forms including large platters, hemispherical bowls, and jars with sharp to rounded shoulders.	Wallace 1985, 1986a, 1986b
Sells Red	This pottery has a dark, reddish brown clay body with angular white quartz and feldspar particles (granitic); volcanic tempers also occur. The paste is generally coarse, and temper fragments are large (2–3 mm and larger); the surface has a thick slip that is light brick red and has a patterned polish. The polishing marks run slightly oblique to vertical to the rim of bowls; the bowls often have a horizontal "band" of polish around the rim. Vertical polishing marks are common on jars. Fire clouding is common and striated polishing marks run slightly oblique to vertical on interior and exterior of bowls. Forms include deep flare- or outcurved-rim bowls, shallow bowls with thickened rims; short-necked, globular jars with outflared, straight, or slightly in-sloping necks; and neckless jars. Indentations of the bases are common, as are lugs on lips of shallow bowls (making them a "bean pot" form). The sherd identified as Sells Red in the 6th and Toole collection could be a historic ware that does not contain organic temper.	Scantling 1940
Tohono O'odham Wares		
Papago Plain	Papago Plain is similar to Papago Red except that it is not slipped. The paste and surface color tends to be a yellowish-brown. Like Papago Red, in the Tucson area, Papago Plain often has organic temper and soft surfaces. In addition to organics, temper includes granitic and volcanic fragments. Surfaces may be polished or hand smoothed. Vessel forms include lugged bowls (bean pots), hemispherical bowls, globular bodied jars with straight or outflared necks (ollas); rim coils or folded rims may occur on earlier forms.	Fontana et al. 1962:105; Haury 1950

Pottery Type or Ware	Description	Source
Papago Plain or Red	Sherds categorized as Papago Plain or Red have a red color, but it is unclear whether the vessels are slipped or if the color results from the color of the clay or firing.	
Papago Red	This pottery is generally thick walled (larger than 6 mm), with a coarse clay body that varies in color from dark orange or red brown to light-orange brown in color. The pottery can be tempered with any local sands; in Tucson, that includes granitic and volcanic tempers. In Tucson, organic (manure) temper is common in Papago Red and Plain pottery after the 1850s (Heidke 2006:Figure 7.18). Slip on Papago Red is dark red (darker than Sells Red) and usually well polished with occasional visible brush marks. Fire clouds are common. The surface of Papago Red is soft. Vessel forms include lug-handled bean pots, supra-hemispherical bowls with outcurved rims; round-bottomed flare-rim bowls, globular jars with outcurved necks (ollas); rim coils or folded rims may occur on earlier forms. Papago Red is sometimes difficult to distinguish from Sells Red.	Fontana et al. 1962:104–105; Heidke 2006:7.77; Haury 1950
Papago Black-on-red or Brown-on-red	The clay bodies of Papago Black- or Brown-on-red pottery may be brown to red in color. Vessels are tempered with a variety of materials including local sands, ground schist, and/or manure. The surfaces of the vessels are slipped. Mesquite sap paint ranges from a dark black to watery brown to brown-black in color. Most Papago Black-on-red vessels apparently were made for consumption by non-O'odham, primarily for the railroad trade. The Brown-on-red variant observed on the two sherds in the 6th and Toole collection may reflect a misfiring of the vessel in which the mesquite paint did not carbonize properly.	Fontana et al. 1962:107–108.
Papago White-on-red	This red-slipped brown ware has a fugitive white paint applied to the exterior. Designs tend to be broad zigzags or other patterns in white on the red background. The sherds from the vessel found at 6th and Toole have a series of parallel squiggle lines in what looks like a panel. Fontana et al. (1962:105) date Papago White-on-red from A.D. 1700 to 1860. Whittlesey (1997:445) found white-on-red pottery in late 1890s to 1940s contexts.	Fontana et al. 1962:105; Whittlesey 1997:445

Table 21. Sizes of Hohokam Sherds, by Ceramic Type and Feature Number

Ceramic Type, by Feature No.	Sherd Size			Total
	3.2 cm^2 or smaller	4.4–5 cm^2	5–16 cm^2	
Feature 32/37 [a]				
Sells Red	–	1	–	1
Feature 37				
Plain	2	–	–	2
Feature 38				
Plain	1	–	–	1
Feature 44				
Indeterminate red-on-brown	–	–	1	1
Feature 45				
Plain	–	–	1	1
Feature 46				
Plain	–	1	–	1
Feature 62				
Plain	–	–	2	2
Feature 68				
Late Rincon Red-on-brown	1	–	–	1
Total	4	2	4	10

[a] As described in Chapter 3, Features 32 and 37 were initially considered the same feature, but were finally treated as separate features. Artifacts designated as Feature 32/37 were collected before the features were determined to be separate features.

Table 22. Distribution of Hohokam Vessel Forms, by Ceramic Type and Feature Number

Ceramic Type, by Feature No.	Vessel Form		Total
	Bowl	Indeterminate	
Feature 32/37 [a]			
Sells Red	–	1	1
Feature 37			
Plain	–	2	2
Feature 38			
Plain	–	1	1
Feature 44			
Indeterminate red-on-brown	1	–	1
Feature 45			
Plain	–	1	1
Feature 46			
Plain	–	1	1
Feature 62			
Plain	–	2	2
Feature 68			
Late Rincon Red-on-brown	1	–	1
Total	2	8	10

[a] As described in Chapter 3, Features 32 and 37 were initially considered the same feature, but were finally treated as separate features. Artifacts designated as Feature 32/37 were collected before the features were determined to be separate features.

Table 23. Gross Temper Categories for Hohokam Ceramics at the 6th and Toole Parcel

Ceramic Type	Inorganic Gross Temper Type				Total
	Quartz, Feldspar	Granitic	Volcanic, Granitic	Volcanic, Quartz, Feldspar, Mica	
Late Rincon Red-on-brown	–	1	–	–	1
Sells Red	–	–	1	–	1
Plain	2	2	–	3	7
Indeterminate red-on-brown	–	–	–	1	1
Total	2	3	1	4	10

Table 24. Sizes of Tohono O'odham Sherds, by Ceramic Type and Feature Number

Ceramic Type, by Feature No.	Sherd Size						Total
	3.2 cm^2 or smaller	3.2–4.4 cm^2	4.4–5 cm^2	5–16 cm^2	16–49 cm^2	49–100 cm^2	
Feature 23							
Papago Red	2	–	1	–	–	–	3
Feature 27							
Papago Red	12	–	2	2	–	–	16
Feature 30							
Papago Red	1	–	–	–	–	–	1
Feature 32							
Papago Red	1	–	–	–	–	–	1
Papago Plain	–	–	1	–	–	–	1
Feature 32/37 [a]							
Papago Red	6	–	–	–	–	–	6
Papago Plain	–	8	1	3	2	–	14
Papago Plain or Red	2	7	5	3	1	–	18
Feature 37							
Papago White-on-red	5	–	3	4	2	1	15
Papago Red	88	14	50	31	12	–	195
Papago Plain	2	6	5	1	–	–	14
Papago Black-on-red	–	–	–	1	–	–	1
Papago Plain or Red	–	–	–	1	–	–	1
Feature 38							
Papago Red	–	–	1	–	–	–	1
Feature 39							
Papago Red	1	–	2	–	2	–	5

Ceramic Type, by Feature No.	Sherd Size						Total
	3.2 cm^2 or smaller	3.2–4.4 cm^2	4.4–5 cm^2	5–16 cm^2	16–49 cm^2	49–100 cm^2	
Feature 40							
Papago Red	1	–	–	1	–	–	2
Feature 44							
Papago Red	1	–	–	1	–	–	2
Feature 45							
Papago Red	5	–	3		–	–	8
Papago Plain	1	–	–	–	–	–	1
Feature 60							
Papago Red	9	1	2	5	–	1	18
Papago Plain	2	–	6	2	–	–	10
Feature 62							
Papago Red	1	–	–	–	–	–	1
Papago Black-on-red	1	–	–	–	–	–	1
Feature 78							
Papago Red	–	–	–	–	1	–	1
Study Area 2							
Papago Red	–	1	–	–	–	–	1
Total	141	37	82	55	20	2	337

[a] As described in Chapter 3, Features 32 and 37 were initially considered the same feature, but were finally treated as separate features. Artifacts designated as Feature 32/37 were collected before the features were determined to be separate features.

Table 25. Interior and Exterior Surface Finish of Tohono O'odham Bowls from the 6th and Toole Parcel

Ceramic Type and Vessel Form, by Interior Surface Finish	Exterior Surface Finish		Total
	Tool Polished	Weathered or Eroded	
Tool polished			
Papago Plain bowl	1	–	1
Papago Plain or Red bowl	1	–	1
Papago Red bowl	7	–	7
Weathered			
Papago Red bowl	–	2	2
Total	9	2	11

Table 26. Interior and Exterior Surface Finish of Tohono O'odham Jars from the 6th and Toole Parcel

Ceramic Type and Vessel Form, by Interior Surface Finish	Exterior Surface Finish			Total
	Smoothed	Tool Polished	Weathered or Eroded	
Scored, wiped				
Papago Red jar	–	1	–	1
Smoothed				
Papago White-on-red jar	–	15	–	15
Papago Red Jar	–	30	–	30
Tool polished				
Papago Red jar	–	2	–	2
Papago Plain jar	1	1	–	2
Papago Black-on-red jar	–	1	–	1
Papago Plain or Red jar	–	3	–	3
Weathered				
Papago Red jar	–	1	1	2
Papago Plain jar	–	–	1	1
Total	1	54	2	57

Table 27. Distribution of Tohono O'odham Vessel Forms, by Ceramic Type and Feature Number

Ceramic Type and Vessel Form, by Feature No.	Vessel Form			Total
	Bowl	Jar	Indeterminate	
Feature 23				
Papago Red	–	–	3	3
Feature 27				
Papago Red	–	–	16	16
Feature 30				
Papago Red	–	–	1	1
Feature 32				
Papago Red	–	–	1	1
Papago Plain	–	1	–	1
Feature 32/37 [d]				
Papago Red	–	–	6	6
Papago Plain	–	–	14	14
Papago Plain or Red	1	3	14	18
Feature 37				
Papago White-on-red	–	15	–	15
Papago Red	5[a]	20	170	195
Papago Plain	1	2	11	14
Papago Black-on-red	–	1	–	1
Papago Plain or Red	–	–	1	1
Feature 38				
Papago Red	–	1	–	1
Feature 39				
Papago Red	–	1	4	5
Feature 40				
Papago Red	–	2	–	2
Feature 44				
Papago Red	–	2	–	2
Feature 45				
Papago Red	–	5	3	8
Papago Plain	–	–	1	1
Feature 60				
Papago Red	4[b]	3	11[c]	18
Papago Plain	–	–	10	10

Ceramic Type and Vessel Form, by Feature No.	Vessel Form			Total
	Bowl	Jar	Indeterminate	
Feature 62				
Papago Red	–	–	1	1
Papago Black-on-red	–	–	1	1
Feature 78				
Papago Red	–	1	–	1
Study Area 2				
Papago Red	–	–	1	1
Total	11	57	269	337

[a] Includes three sherds from a bean pot.
[b] Includes two sherds from a bean pot.
[c] Includes one sherd from a handle of an olla or mug.
[d] As described in Chapter 3, Features 32 and 37 were initially considered the same feature, but were finally treated as separate features. Artifacts designated as Feature 32/37 were collected before the features were determined to be separate features.

Table 28. Gross Temper Categories for Tohono O'odham Ceramics at the 6th and Toole Parcel

Ceramic Type	Inorganic Gross Temper Type		Organic Gross Temper Type					Total
	Quartz, Feldspar	Volcanic, Quartz, Feldspar, Mica	Organic	Organic, Granitic	Organic, Quartz, Feldspar, Mica	Organic, Volcanic	Organic, Volcanic, Quartz, Feldspar, Mica	
Papago White-on-red	–	–	–	–	15	–	–	15
Papago Red	1	5	1	13	238	1	2	261
Papago Plain	–	–	–	–	40	–	–	40
Papago Black-on-red	–	–	–	–	1	–	1	2
Papago Plain or Red	–	–	–	–	19	–	–	19
Total	1	5	1	13	313	1	3	337

Table 29. Sherd Wall Thickness of Tohono O'odham Vessels from the 6th and Toole Parcel

Vessel Form, by General Ceramic Category	Thickness (mm)									Total
	3.1–4	4.1–5	5.1–6	3–6	6.1–7	7.1–8	8.1–9	6–10	9.1–11.1	
Painted										
Jar	–	1	15	–	–	–	–	–	–	16
Red										
Bowl	–	2	1	–	1	2	1	–	2	9
Jar	2	4	8	7	3	3	1	6	1	35
Plain										
Bowl	–	1	–	–	–	–	–	–	–	1
Jar	–	–	–	–	–	1	2	–	–	3
Plain or Red										
Bowl	–	–	–	–	–	–	1	–	–	1
Jar	–	–	–	–	–	–	3	–	–	3
Total	2	8	24	7	4	6	8	6	3	68

CHAPTER 7
FAUNAL REMAINS

Michael Margolis, M.A.

This chapter presents the analysis of 3,322 specimens of animal bone from 18 different contexts that were collected during the 6th and Toole project. All of the remains were analyzed by the author through the use of the comparative collection at Arizona State Museum. The standard fauna data was collected and includes the taxa and elements represented, as well as cultural modifications, weights, and counts. Manufactured items made out of bone included a button/snap, a handle, and toothbrushes. Domesticated animals (pig, cattle, sheep, goat, dog, cat, chicken, and horse) made up a large portion of the identified taxa, but undomesticated animals (fish, rabbit, deer, and rodents) were also observed. The cuts of meat represented by the cattle, pig, sheep, and goat specimens suggested access to relatively expensive cuts of meat. However, less expensive cuts and non-domesticated animal remains were also used, suggesting diversity in the status of the individuals responsible for the deposits. This chapter examines types of animals consumed (wild versus domesticated), preparation of those animals, specific cuts of meat consumed, the price of those cuts, and how this relates to the status of the individuals living and working on the site. It also examines the faunal collection to determine if any disparities exist between the industrial and hotel related areas of the site.

THE FAUNAL SAMPLE

In total, 3,322 pieces of faunal bone were collected from the excavation of 17 features and one unnumbered trash lens at the 6th and Toole Parcel (AZ BB:13:781[ASM]) (Table 30). The numbered features included 12 pits, 2 privies, 1 tree well, 1 trench, and 1 sheet trash feature. Ten additional pit features were excavated that contained no faunal bone. Features 32 and 37 were initially considered the same feature (Feature 32/37) and were later identified as separate features. Specimens collected before the features were split were analyzed as a discrete unit.

A sample of the faunal remains representative of feature function and chronology was selected for analysis. As such, the sample contained 14 different contexts believed to represent the full range of activities present within the project area, and 1,582 faunal specimens (48 percent of the total collection) were analyzed (see Table 30). Figure 4 shows the locations of the features in this sample. From this, we can see that most of the faunal sample on the site is associated with the industrial complex. A smaller portion of this project and faunal sample is from features associated with the San Xavier Hotel.

All of the analyzed faunal bone is from screened contexts (¼-inch mesh), except for one specimen. This specimen, a carved handle, was collected during testing as a judgmental sample from the general site trash lens.

METHODS

Prior to analysis, all of the faunal bone was dry-brushed, counted, weighed, and bagged. For the sampled artifacts, standard attributes were recorded for each specimen, including: taxonomic classification, element type, portion of element present, level of completion, and degree of epiphyseal fusion. The presence and types of bone modifications were recorded, including tool marks, burning, animal gnawing, and environmental changes. The morphological variations associated with these modifications were also noted.

Taxonomic identifications were made utilizing the comparative collection at the Arizona State Museum. Many of the specimens were not diagnostic to a specific animal because of fragmentation. In these cases, differentiation was made at the most specific level possible. However, at times, it was only possible to differentiate specimens to class. Within the mammal classification, some specimens could be separated into the size groups of small (e.g., rabbit and smaller), medium (e.g., canid), or large (e.g., deer). When not readily apparent, the comparative collection at the Arizona State Museum was also used for element determinations and siding. When possible, the additional attribute of meat cut for domesticated animal remains was recorded.

The portion of each specimen was also recorded. For example, the portions of long bones were recorded as proximal end, proximal 1/3, middle 1/3, distal 1/3, or distal end. The completeness of the specimens was recorded using the categories of complete (75–100 percent), partial (25–75 percent), and fragmentary (0–25 percent), and a numerical estimate of the percent complete was also recorded. When possible, epiphyseal fusion was recorded as complete, partial, or unfused. Morphology with regards to maturation was also recorded when possible.

When present, taphonomic data were collected. The types of tool marks were recorded and differentiated by noting the morphology, number, and location of the modifications. The coloration and severity of burning were also recorded. The specimens were examined for the presence of rodent or carnivore damage, and if present, the location and morphology were recorded. Changes due to weathering were also noted.

To quantify the sample, the number of identifiable specimens (NISP) and the minimum number of individuals (MNI) was calculated. For the NISP, when specimens could be refit on recent breaks they were only counted once. Attempts to refit were only made on specimens from the same bag. The MNI was calculated by feature by examining redundancies in portions of elements and taking into account age at death. The MNI was not calculated for specimens identified as "possible," "probable," that were only differentiated to class, or for specimens from combined Feature 32/37. Values presented in the text and tables are the NISP, unless otherwise indicated.

RESULTS

The taxa identified from the 6th and Toole Parcel are presented in Table 31. Of the 1,582 samples analyzed, 1,577 were unworked specimens, and 5 were worked specimens (manufactured bone artifacts).

Of the 1,577 unworked faunal specimens, 802 (51 percent) of the specimens were identified beyond class, with the remaining 775 (49 %) specimens inventoried into indeterminate categories (Table 32). Separated by class, 1,381 specimens (88 percent) are mammal; 64 specimens (4 percent) are bird, 114 specimens (7 percent) are fish; and 18 (1 percent) are indeterminate bird or mammal. A total of 657

(42 percent) of the specimens were identified as domesticated animals, with 118 specimens (7 percent) originating from pets. Wild taxa are represented by at least 143 specimens (9 percent).

Five manufactured bone artifacts were found and analyzed from the site (Figure 58). Two of these artifacts were toothbrushes (see Figure 58d and e). One was a bamboo-design carved handle from a tool or brush, possibly a manicure brush (see Figure 58c). The only bone ornament collected was a shank button/snap (see Figure 58b). There is another piece of worked bone that is of indeterminate function; it is worked and polished to a sheen on one surface, with an unfinished saw cut on the reverse surface (see Figure 58a). It is possibly a scale for a handle of a knife, gun, or other tool. Knife scales are handle material applied to the two sides of the tang, which is the extension of the knife blade into the handle.

Weights are shown for the taxa in Table 33 by feature. The majority of the bone by weight is cattle or probable cattle. The next largest weight is medium to large mammals, the majority of which is probably also cattle bone. Deer, sheep/goat, and pig follow with the next largest weights.

Modifications to the specimens are presented in Table 34. The majority of the specimens have modern postmortem breakage, which is normally caused by the bone being weakened by environmental impacts before excavation. Pre-depositional postmortem breakage was common, being represented by 706 (45 percent) of the specimens, but only 56 (4 percent) specimens had perimortem breakage.

Cultural modifications (see Table 34) to the specimens were dominated by the bone being sawed into pieces. In all, 415 specimens (26 percent) were sawed during butchering. Of the specimens with evidence of modification by a saw, 340 (81 percent) are from one of the domesticated taxa. Only 1 specimen had anvil abrasions, and 17 (1 percent) had cut marks. Burning was present on 220 specimens (14 percent), with 135 (9 percent) calcined and 85 (5 percent) charred black. No specimens had rodent or carnivore gnaw marks, but one probable cattle pelvis fragment did have carnivore tooth puncture marks. The cultural modifications present in this sample by feature are depicted in Table 35.

Table 32 shows the distribution of the MNI by taxa and feature. The MNI corresponds to the pattern for NISP, showing that domesticated animals dominate the collection. Cattle and sheep or goat have the highest MNI, followed by chickens and then pigs. Two cats, a dog, and a horse are the domesticated animals with the lowest MNIs.

Woodrat is the most frequent wild taxa (MNI = 2). It is unclear if these individuals are intrusive or if they were disposed of and dumped into the features. There was also at least one deer and one hare deposited in the features. The fish specimens that are present correspond to a MNI of two.

Faunal Remains by Feature

The faunal bone was found in a number of different types of features at the site. What follows is a summary of the faunal bone described by feature.

Feature 8

This feature is a small pit that yielded historical artifacts. In all, 19 faunal specimens were analyzed from this feature. Two specimens were identified as cattle, 4 were identified as probable cattle, and

the other 13 were grouped in medium mammal and medium–large mammal. Both cattle specimens, a sacrum fragment and femur fragment, have paired hand-saw marks indicative of butchering. A rib fragment, identified as a medium sized mammal, has deep, parallel v-shaped cutmarks on the neck. None of the specimens have evidence of burning. These specimens account for all of the bone excavated from this feature.

Feature 12

This feature is also a small pit that contained small amounts of historic artifacts. Only two faunal specimens were collected, and they were identified as indeterminate mammal. These long bone fragments are not well preserved, being more weathered than most of the other specimens found at the site, and had no attributes of burning or modifications from butchering. These specimens account for all of the bone excavated from this feature.

Feature 23

Feature 23 is a large pit that yielded a small quantity of historical artifacts. Two specimens of faunal bone were analyzed. A left distal cattle radius was recovered that had been cut almost entirely through the bone perpendicular to the shaft, and the remaining connected cortical bone was snapped, creating a perimortem break. The other specimen is an indeterminate postcranial element from a medium-to-large-sized mammal, it also exhibits a hand saw cut. These two specimens are from Control Unit 4, and account for all of the faunal bone from this unit. However, Control Unit 7 was also in Feature 23 and contained 110 pieces of animal bone that were not analyzed.

Feature 27

Feature 27 represents the pit and remains of a superstructure of a single privy. A high density of historic artifacts was recovered from this feature that is associated with the industrial use of the site. Out of a total of 666 pieces of bone collected from this feature, 309 specimens (46 percent) were analyzed. This includes all of the faunal bone collected from the privy pit (59 specimens), and a sample (250 out of 607) of the bone from the superstructure and extension of the pit.

A large portion (55 percent) of the analyzed remains from this feature is cattle or probable cattle (Table 36). Of these 169 specimens, 103 of the specimens (61 percent) were saw cut and four were burned. Of the identifiable non-cattle specimens, two are chicken, three sheep or goat, one pig, and one probable pig. None of these specimens have tool marks. In all, 129 of the specimens were in general medium mammal and medium to large mammal categories. Within these categories, 28 of the specimens have saw cuts, and 24 were burned. Four specimens are from medium sized birds, likely chicken, and have no cultural modifications. No wild taxa were identified from this feature.

The element distribution for the various taxa is depicted in Table 36. Vertebrae and ribs dominate the collection, as well as other elements that are common in cuts of meat. A small number of teeth and foot bones from cattle were also recovered.

Feature 30

This feature is a small pit with a low density of historic artifacts. Of the two specimens recovered from this feature, one is a long-bone fragment from a bird and the other is a rib fragment from a probable cow. Neither of the specimens had tool marks or evidence of burning, but the specimen of bird bone has a perimortem fracture.

Feature 32/37

Features 32 and 37 are pits filled with a high density of historic artifacts. Initially, Features 32 and 37 were thought to be a single feature, but they were shortly separated. However, Control Unit 11 was placed at the interface of the two features before they were separated. Therefore, the artifacts that came out of this control unit are from both features, and are labeled as such.

This control unit was a 1-by-1-m square and was dug 21 centimeters in depth. A relatively high density of historic artifacts was encountered in the unit. In total, 148 specimens were collected and analyzed. The majority of this bone was placed in the general mammal categories, but 11 cattle, 6 pig, and 6 sheep or goat specimens were identified (Table 37). Additionally, six specimens were identified as medium sized bird.

The element distribution of the cattle was primarily vertebrae and rib, with one femur fragment. Fragments of a femur, tibia, and rib were present from a sheep or goat; and teeth, mandible, and a tibia fragment were identified as pig.

Tool marks were present in the form of hand saw cuts on nine of the cattle, three of the sheep or goat, one of the pig, and nine of the medium to large mammal specimens. Perimortem fracturing was found on 18 specimens in total—1 from cattle, 5 from the sheep or goat, 10 from medium to large mammals, and 2 from the medium bird specimens. Only one large mammal specimen was burned.

Feature 32

A 1-by-1-m control unit was placed into the center of Feature 32 and was excavated 0.96 meters in depth. The fill of this feature appeared to be burned, and a high density of historic artifacts were encountered in this unit.

The faunal remains are represented by 141 specimens that were analyzed (Table 38). The majority of the specimens were inventoried in general mammal categories, but cattle, pig, sheep/goat, and chicken were identified. Wild taxa were also identified within this feature, and consisted of deer and small rodent. Two specimens from a domesticated cat were also present.

The distribution of the specimens by element is shown in Table 38. Most of the specimens fell into the indeterminate categories of long bone and postcranial, but vertebrae, ribs, and long bones were represented at a low frequency.

Tool marks were relatively infrequent in the specimens from this feature, with four cattle, two probable cattle, and one sheep or goat with saw cuts. Additionally, one deer bone and eleven indeterminate mammal specimens had cut marks made with a metal tool. Twenty mammal bones were calcined, and an additional four mammal bones were charred. One pig specimen was also charred. Perimortem breaks were found on seven mammal specimens.

One bone tool, a toothbrush, was found in this feature (see Figure 58). The backside of the brush is rounded and highly polished, and the front side is relatively flat and has sixteen rows of four holes, and one row of two holes (at the top end) drilled into the face. The specimen is broken into two, exposing small holes perpendicular to the outer holes.

Feature 37

Two control units (Control Units 12 and 14), both 1-by-1-m, were placed into Feature 37. These units were excavated to approximately 0.9 meters in depth. A moderate to high density of historic artifacts were recovered from these units.

Table 39 depicts the distribution of the faunal remains by taxa and element for feature 37. In all, 424 specimens were recovered and analyzed from this feature. Sixty-two specimens represent cattle, and another 137 specimens were probable cattle. There were four specimens identified as pig, four as sheep or goat, one specimen as dog, and one as horse. Chickens were relatively well represented with 20 specimens identified. One piece of worked bone (a probable knife scale) was recovered from Feature 37.

The majority of the cattle specimens are vertebrae or ribs, but the long bones are represented as well. Pigs were represented by a piece of mandible with teeth, a fibula fragment, and elements of the feet. The sheep or goats are represented by ribs and vertebrae. The dog element is a calcaneus, and the horse specimen is a phalange.

Cultural modifications to the specimens from this feature (see Table 35) include one anvil abrasion on an indeterminate mammal specimen; a cut mark on a cattle specimen; and 200 saw cuts which are distributed on cattle, probable cattle, and indeterminate mammal categories. Burning included 6 specimens that were calcined and 39 specimens that were charred black.

Feature 38

This feature is a large pit containing historic artifacts. All 62 faunal specimens excavated from this feature were analyzed. The only identifications made beyond class were 3 specimens that were sheep or goat and 32 specimens of probable cattle. Three specimens of bird bone were observed. The other 24 specimens were in indeterminate mammal categories. The primary element that is present are ribs (34), followed by a few long bone and vertebrae fragments.

Saw cuts were present on 28 of the specimens—1 on sheep or goat, 23 on probable cattle, and 4 on medium to large mammal specimens. Two of the probable cattle and two of the medium to large mammal specimens were charred black. Two of the sheep or goat and one medium-to-large mammal specimens have perimortem fractures.

Feature 39

This feature is a trash pit that based on location may be associated with the San Xavier Hotel. It contained significant quantities of charred organic material and melted glass. Of the 567 pieces of faunal bone recovered, 142 (25 percent) were analyzed. Table 40 shows the distribution of specimens by element and taxa that were recovered from Feature 39.

All of the specimens identified beyond class are domesticates, with cattle, pig, chicken, and sheep or goat being represented. A single fish specimen was also observed. The majority of the specimens fall into the category of medium-to-large mammals, and many of these likely are also domesticates but are not identifiable as such.

Most of the specimens from this feature were burned. A total of 39 specimens (27 percent) were charred black and 79 (56 percent) were calcined white, which results in 83 percent of the specimens

being burned. The 142 specimens from this feature account for 9 percent of the unworked specimens analyzed for the project, but the 118 burned specimens account for 54 percent of the burning in the entire sample. This suggests a different depositional process for Feature 39 than for the rest of the site.

There are five specimens with tool marks (see Table 35). These specimens were hand saw cut, with three of them having multiple saw cuts. Only three of the specimens had evidence for perimortem breakage.

Two manufactured bone artifacts were found in this feature. A circular bone disc with a cylindrical protuberance in the center of one side was found during the cleaning of the feature post-excavation. This is likely a button or a snap (see Figure 58b). The other manufactured artifact is a brush handle (see Figure 58d) that is stamped in ink with the maker ("G. B. Kent & Co."), as well as the location it was made ("London Made"). The word "Warranted" is also stamped on the brush handle. This is likely a toothbrush. Both artifacts are polished, removing all marks that would have been made during the manufacturing of the specimens.

Feature 45

This is a deep privy that would have been adjacent to the servant's quarters of the San Xavier Hotel. The artifact density was high and consisted of historic artifacts. Of the 322 faunal specimens collected from this feature, all of them were analyzed. The distribution of the number of specimens by taxa is skewed by the presence of two relatively complete individuals (Table 41).

The most complete individual is an immature domesticated cat. In all, 115 specimens constitute this kitten. This individual is almost complete, with a partial skull and complete long bones except for a missing left fibula. Twenty-one ribs and 20 vertebrae are present and complete. Hand and foot elements are represented by 26 specimens. The epiphyses of this individual are unfused except for the vertebrae in which the neural arches are fused to the centrums. No cultural modifications were present on this individual.

There is also a relatively complete fish skeleton, represented by 112 specimens. Most of the cranial elements are present and complete. However, only two vertebrae are present. There is a high degree of fragmentation, but no cultural modifications were observed. Another fish vertebra was found in this feature but is from a different level and may or may not be the same individual.

The fish and cat individuals comprise 70 percent of the faunal remains from this feature. Besides these two individuals, there are an additional 95faunal specimens. When the bias caused by the individuals is realized, it is clear that only a small quantity of faunal bone was recovered from this feature relative to other features.

Additional faunal material includes cattle and chickens, which are each represented by eight specimens. Two specimens are sheep or goat, and another two are black-tailed jackrabbit. Thirteen of the specimens were identified as woodrat; this may possibly be an intrusive animal.

Thirteen of the specimens were cut by a saw, and of these, seven are cattle, one is sheep or goat, and the other four are categorized as indeterminate mammals. Only two of the specimens from this feature were burned, both being calcined medium to large mammal specimens. The 13 woodrat

specimens are copper-stained green from proximity to lamp parts that were also deposited in the privy.

In general, Feature 45 is interesting in that it had a low artifact density (for all artifact types) compared to other privy at the site, and the artifacts that were recovered appear to be mostly whole. A small number of faunal bones were recovered from this feature, compared to the other features on the site. The relatively complete fish and cat recovered from feature 45 can be considered relatively whole artifacts, which correlates to the other relatively complete artifacts recovered from the feature.

Feature 57

This feature is a large pit that contained a moderate density of historic artifacts. The five faunal specimens that were found in this feature were analyzed. The taxa represented are sheep or goat by two specimens and probable cattle by two specimens. The remaining specimen is from a medium to large mammal.

The sheep/goat is represented by a metapodial and rib. The probable cattle specimens are from a rib and a vertebra. The medium to large mammal specimen is rib.

The medium to large mammal and cattle specimens exhibit saw cuts. One of these saw cuts, on a probable cattle specimen, created perimortem breakage in the form of "peeling" of the cortex.

Feature 59

Feature 59 is tree well with a low density of artifacts. The two faunal specimens found in this feature were analyzed and identified as large mammal ribs. One of the ribs was saw cut. No other cultural modifications were present.

DISCUSSION

Much of the faunal bone from domesticated animals exhibits cultural modification as a result of processing the animals into market-ready cuts of meat. As various cuts of meat are of different quality and expense, it may be possible to assess socioeconomic status from the faunal assemblage (Thiel 1998:197). This can be applied to the site as a whole, as well as specific parts and features of the site that can be linked to various uses of the site.

Presumably, the majority of the faunal bone deposited at the site would be associated with labor from the various businesses on the parcel. Based on proximity to the historical locations of buildings, features can be tentatively associated with various activities at the site. Two of the strongest associations are Feature 27 with the industrial area of the site, and Feature 45 with the servant's quarters for the San Xavier Hotel.

Comparing the faunal bone excavated from these features is a way to test these associations, as well as to examine the status of the individuals using the features. A number of employees of businesses on the industrial portion of the property reported their residential addresses as those of the warehouses and so may have lived in the places they worked. Most of their meals therefore probably took place on-site, with the refuse deposited in their privy, Feature 27. The servants' rooms for the San Xavier hotel were also on the property, and the privy associated with this was Feature 45. Their meals may not be reflected in this privy, however, as they may have taken place elsewhere and the

refuse may not have been deposited there. This would explain the dearth of faunal artifacts in Feature 45 as compared to other features on the site.

In general, meat cuts of the lower back, or loin, are the most expensive. This is because these muscles are the least used and therefore the most tender. In contrast, the muscles of the limbs are in constant use and therefore much tougher. Following Thiel (1998:197), the meat cuts can be ranked by price. Table 42 lists these rankings for beef, pork, and mutton.

Figure 59 shows the positions of the specimens that could be identified to the element level. Groupings of vertebrae and ribs that could have originated from multiple cuts of meat were not included. The diagrams of the cattle and mutton show significant variety in which most of the possible primary meat cuts are represented. The pig, however, shows that the majority of specimens originated in the feet and head, which are the lower value cuts.

Cattle, Pig, and Sheep/Goat

The breakdown of cuts of meat by animal (beef, pork, and mutton) and feature is presented in Table 43. It shows that in general the beef distribution is weighted to the higher end cuts of meat, whereas the pork specimens are skewed to the cheaper cuts. Mutton is more evenly distributed except for the relative lack of specimens from the loin.

Features 23, 32, and 37 are located in the general industrial area and contain slag. The cuts of meat from these features vary, containing a few of the higher value cuts, but consist of mostly lower end cuts.

In contrast, Feature 27, which has a significant association to the industrial area based on proximity and correlation to buildings on a 1901 Sanborn Map, has a different pattern in relation to cuts of meat. Within this sample, there were at least 19 different cuts from the loin, the most expensive cut. Cheaper cuts are also present, but the sample is weighted to expensive cuts. Many of these cuts were T-bones. This data does not agree with the assumption that there is a correlation between expensive cuts of meat and higher income. If this privy was indeed used by the employees of the bottling works and other warehouses, it is interesting that these individuals had access to what are assumed to be expensive cuts of meat. There may be some other explanation as to the abundance of presumably expensive meat cuts in the privies of low-income laborers. It may be as simple as the fact that multiple groups of individuals were using this feature for trash disposal over time, or the employers may have purchased some of the meat for the laborers as a form of payment.

This feature also contained more elements commonly used by Hispanic people (head, foreshank, and hindshank [Mabry et al, 1994:161]) than did the other privy(Feature 45) on the site, although Feature 37 (a trash pit of unknown association) also contained a high number of these elements.

The trash in Feature 39 may be associated with the hotel because of its location. This feature is interesting in that only two specimens could be identified to cut for cattle, both of which were low-cost cuts. A small number of low-value pork cuts were also identified, but the majority of identifiable cuts are mutton. Within the mutton category, the value of cuts was diversified, ranging from high to low cost cuts. At one point, this feature was hypothesized to consist of kitchen trash. If that were true, cooking patterns and deposition might be responsible for the observed patterns. It is possible that dishes made from cattle were served with the bones, so the bones went to the dining

tables and were then deposited elsewhere. It is also possible that the way mutton was served was without the bones, and they would have been removed at the kitchen; therefore, mutton specimens ended up in this feature.

Additionally, Feature 39 had a very high percentage of bones that were burned prior to deposition. Other artifacts from this feature, including glass, also had evidence of burning. This suggests that purposeful burning, likely to reduce trash volume, was carried out before deposition in this feature, but was not part of the depositional process for other features.

Feature 45, a privy that also may be associated with the hotel, had a number of cattle specimens but also chicken, pig, and fish. This feature had very few cattle specimens that can be identified to cut. Those that could were split between high value cuts and less expensive cuts. T-bones were also identified in this sample, but several were also the cheap cuts of the feet. The presence of more expensive cuts of meat may be explainable when the type of establishment is considered. Although the people using this privy were servants, they worked for an upscale establishment and may have had access to higher quality food as part of their compensation, or may have earned more than the laborers living in the warehouses next door. Again, conclusions cannot be drawn, as these materials are secondary refuse, possibly from multiple contexts.

Other Fauna

Chicken remains *(Gallus gallus)* were found in many of the features associated with both the hotel and the industrial areas (see Table 32). Consumption of chicken therefore seems to be consistent throughout the site, regardless of occupation.

Both fish individuals (MNI = 2) were found in features on the eastern end of the site (Features 39 and 45); they are possibly associated with the hotel. A single fish vertebra was found in Feature 39, and most of a fish skeleton was recovered from Feature 45. So, although fish was part of the subsistence base, it does not appear to have been common.

A few hare specimens were also identified in Feature 45. As specimens from only one individual were identified and there were no cultural modifications, it is not possible to determine if this individual was consumed.

Specimens from a deer were found in Feature 32. These were mostly foot elements that had a few cut marks present on one specimen. These may have been simply disposed of or used as soup bones, due to the lack of meat.

No other wild taxa were identified in the sample. The low percentage of these remains in the sample suggest they were not a large part of the subsistence pattern of the individuals using the site.

Worked Faunal Bone

The bone tools found during excavation were relatively infrequent and consisted of two toothbrushes, a brush handle carved to resemble bamboo, a button/snap, and a probable handle part (scale) (see Figure 58). Only one specimen had any markings. This was marked with a maker, G.B. Kent & Co. This is a maker of high quality brushes from London that is still in operation today. This company was founded in 1777, but the maker's mark narrows the production date to between 1837 and 1901. This brush was found in Feature 39, which by location, may have been

associated with the hotel. The expense of this brush suggests that it would not have been originally purchased by a low-income hotel worker, and would more likely have been the possession of a patron of the San Xavier Hotel.

CONCLUSIONS

It was not possible to significantly test the associations of features to specific historical uses of the site. However, some basic generalizations can be made about the individuals responsible for the deposits there. It appears that they had access to and the means to consume what are assumed to be relatively expensive cuts of meat, but they also consumed meat from inexpensive cuts. Whether or not this variability is the result of deposits from multiple groups using the site (which is likely, based on the names of employees and the number of businesses) or the same individuals differentially using high and low cost cuts of meat can not be determined. However, if the deposits are predominantly those of laborers in the warehouses (some of whom were poor enough to have to live in the warehouses or were temporary employees), as the historical research would suggest (see chapter 2), these deposits suggest that people were eating quite well considering their presumed low economic status.

There are several possible reasons for this. The fact that at least some of the workers in the industrial area of the site were Hispanic may explain a reliance on meat (traditional diets) as opposed to the newly introduced canned goods and imported foods. An investigation into the effect the introduction of these new goods had on the prices of meat in general may also help explain these observations (an influx of new food products may have driven down the prices of meat, allowing people to purchase more of what would previously have been expensive cuts). Another possibility is that the workers were paid partially in food or otherwise provided with food by their employers. We know that some of them were living in the warehouses, and it may be that their employers were also providing them with food, which may have been purchased by them or even traded to them by other local businessmen on the site.

The possibility remains that we may be wrong in our assumption of the poverty of the individuals living and working in the warehouses. Although the fact that there are so many processed and burned faunal specimens in the industrial privy suggests that people were cooking often on the site (which does lend credence to the supposition that people were living there), there may be other explanations for the presence of the faunal specimens, such as deposition of outside trash in the privy.

Figure 58. Manufactured bone tools; (a) scale from handle (Feature 37); (b) button or snap (Feature 39); (c) tool or brush handle (Backhoe Trench 7), (d) toothbrush (Feature 39), and (e) toothbrush (Feature 32).

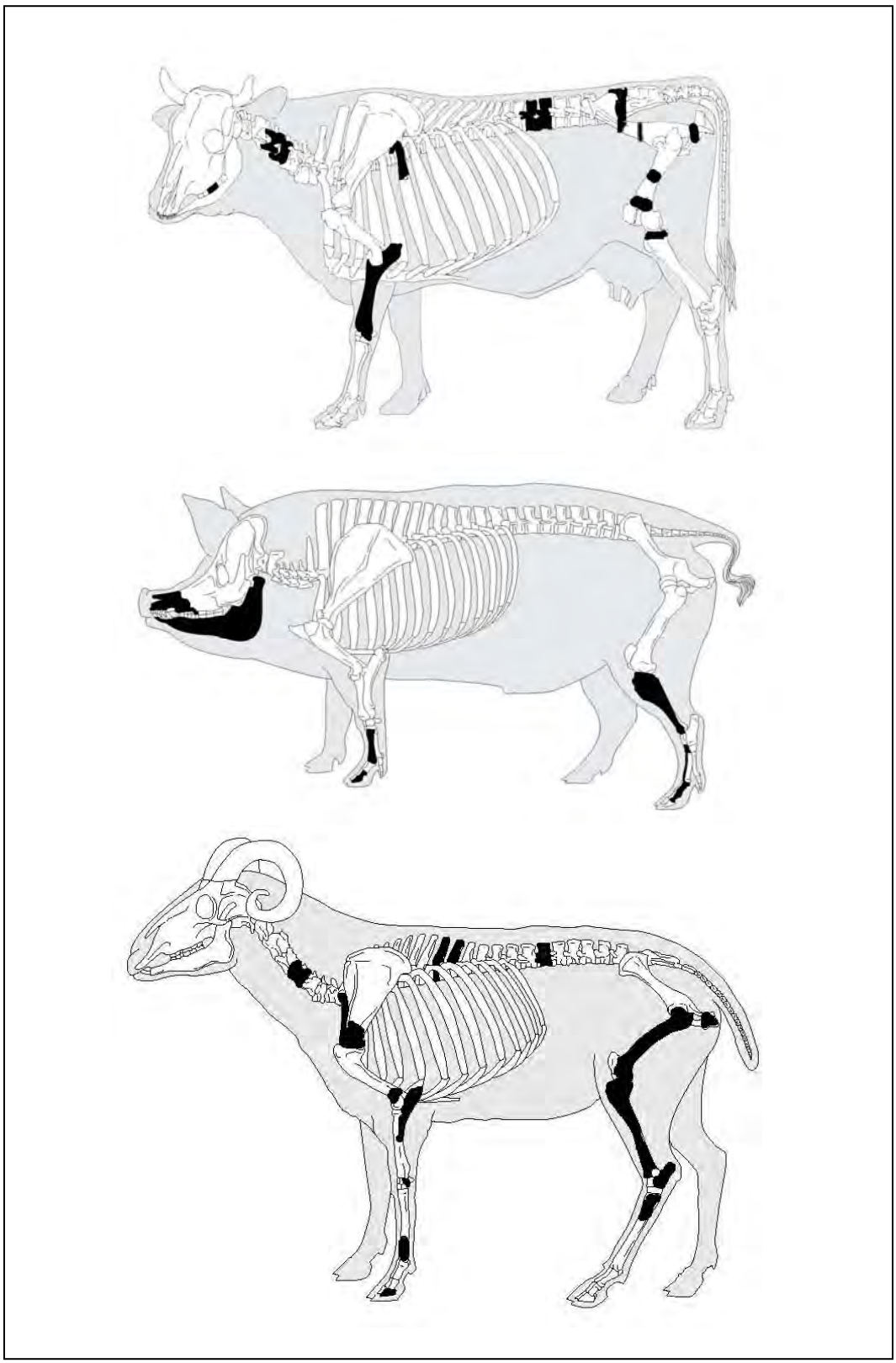

Figure 59. Elements represented at entire 6th and Toole site for cattle, pig, and sheep/goat.

Table 30.Faunal Bone Collected and Analyzed from the 6th and Toole Parcel

Feature No.	Feature Type	Control Units	Number of Faunal Bones (NISP)	Number of Specimens Analyzed (NISP)	Percent Analyzed
8	small pit	east ½	19	19	100
12	small pit	south ½	2	2	100
23	pit	4	2	2	100
		7	110	–	0
27	privy	6, 24, judgmental sample	59	59	100
		2, 8, 10	607	250	41
30	small pit	east ½	2	2	100
32	pit	9	141	141	100
32/37	pit	11	148	148	100
37	pit	12, 14	424	424	100
38	large pit	15	62	62	100
39	pit	17, 23, judgmental sample	567	142	25
40	trench	21	24	–	0
44	pit	16	188	–	0
45	privy	18, east ½	322	322	100
46	small pit	22	178	–	0
57	large pit	north ½	5	5	100
59	tree well	1	3	3	100
60	sheet trash	3, 5	162	–	0
68	pit	13	297	–	0
n/a	trash lens	Backhoe Trench 7	1	1	100
Total			3,323	1,582	48

Table 31. List of Taxa Identified at the 6th and Toole Parcel

Taxon	Common Name
Identifiable taxa	
Osteichthyes	bony fishes
Gallus gallus	chicken
cf. *Gallus gallus*	probable chicken
Leporidae	rabbit/hare
Lepus californicus	black-tailed jackrabbit
Small rodent	mouse-size
Neotoma sp.	packrats and woodrats
Odocoileus sp.	deer
Felis domesticus	domestic cat
Canis familiaris	domestic dog
Sus scrofa	domestic pig
cf. *Sus scrofa*	possible pig
Ovis/Capra	sheep/goat
cf. *Ovis/Capra*	probable sheep/goat
Equis caballus	horse
Bos taurus	cattle
cf. *Bos taurus*	probable cattle
Unidentifiable taxa	
Aves	bird, indeterminate size
Small–medium Aves	small-medium bird (quail/dove size)
Medium Aves	medium bird (duck size)
Aves/small mammal	bird/small mammal
Indeterminate mammal	mammal, indeterminate size
Small mammal	rabbit-size and smaller
Small–medium mammal	rabbit size to dog size
Medium mammal	dog size
Medium–large mammal	dog size and larger
Large mammal	cow/horse/deer size

Table 32. NISP and MNI for Unworked Specimens Analyzed from Features at the 6th and Toole Parcel

Taxon	Total NISP	% NISP[a]	Feature No.												
			8	12	23	27	30	32	32/37	37	38	39	45	57	59
Identifiable taxa															
Bony fishes	114(2)	14.2	–	–	–	–	–	–	–	–	–	1(1)	113(1)	–	–
Chicken	39(8)	4.8	–	–	–	2(1)	–	6(1)	–	20(3)	–	3(1)	8(2)	–	–
Probable chicken	4	0.5	–	–	–	–	–	–	–	–	–	3	1	–	–
Rabbit/hare	2	0.2	–	–	–	–	–	–	–	–	–	–	2	–	–
Black-tailed jackrabbit	2(1)	0.2	–	–	–	–	–	–	–	–	–	–	2(1)	–	–
Small rodent	3	0.4	–	–	–	–	–	3	–	–	–	–	–	–	–
Packrats and woodrats	13(2)	1.6	–	–	–	–	–	–	–	–	–	–	13(2)	–	–
Deer	11(1)	1.4	–	–	–	–	–	11(1)	–	–	–	–	–	–	–
Domestic cat	117(2)	14.6	–	–	–	–	–	2(1)	–	–	–	–	115(1)	–	–
Domestic dog	1(1)	0.1	–	–	–	–	–	–	–	1(1)	–	–	–	–	–
Domestic pig	17(5)	2.1	–	–	–	1(1)	–	4(2)	6	4(1)	–	2(1)	–	–	–
Probable pig	1	0.1	–	–	–	1	–	–	–		–	–	–	–	–
Sheep/goat	35(10)	4.4	–	–	–	3(1)	–	4(2)	6	4(1)	3(1)	11(2)	2(1)	2(2)	–
Probable sheep/goat	1	0.1	–	–	–	–	–	–	–	–	–	1	–	–	–
Horse	1(1)	0.1	–	–	–	–	–	–	–	1(1)	–	–	–	–	–
Cattle	146(10)	18.2	2(1)	–	1(1)	55(3)	–	5(1)	11	62(2)	–	2(1)	8(1)	–	–
Probable cattle	295	36.8	4	–	–	114	1	3	–	137	32	2	–	2	–
Subtotal, identifiable taxa	802	100	6	0	1	176	1	38	23	229	35	25	264	4	0
Unidentifiable taxa															
Bird, indeterminate size	7	0.9	–	–	–	–	1	1	–	–	2	–	3	–	–
Small–medium bird	1	0.1	–	–	–	–	–	–	–	–	1	–	–	–	–
Medium bird	13	1.6	–	–	–	4	–	2	6	–	–	1	–	–	–

Taxon	Total NISP	% NISP[a]	Feature No.												
			8	12	23	27	30	32	32/37	37	38	39	45	57	59
Bird/small mammal	18	2.3	–	–	–	–	–	17	–	1	–	–	–	–	–
Indeterminate mammal	72	9.3	–	2	–	–	–	37	–	15	14	–	4	–	–
Small mammal	2	0.2	–	–	–	–	–	–	–	–	–	1	1	–	–
Small–medium mammal	21	2.7	–	–	–	–	–	19	–	2	–	–	–	–	–
Medium mammal	1	0.1	1	–	–	–	–	–	–	–	–	–	–	–	–
Medium–large mammal	604	77.8	12	–	1	128	–	22	118	155	10	113	44	1	–
Large mammal	36	4.7	–	–	–	1	–	4	1	21	–	–	6	–	3
Subtotal, unidentifiable taxa	775	100	13	2	1	133	1	102	125	194	27	115	58	1	3
Total	1,577	n/a	19	2	2	309	2	140	148	423	62	140	322	5	3

[a] MNI is given in parentheses ( ) following NISP
[b] % NISP is calculated separately for identifiable taxa and unidentifiable taxa
Note: MNI was not calculated for "possible" or "probable" or unidentifiable taxa or for Feature 32/37.

Table 33. Weight in Grams of Analyzed Specimens

Taxon	Feature No.														Total
	8	12	23	27	30	32	32/37	37	38	39	45	57	59	67	
Identifiable taxa															
Bony fishes	–	–	–	–	–	–	–	–	–	0.8	35.2	–	–	–	36.0
Chicken	–	–	–	–	–	3.6	–	24.2	–	1.1	15.1	–	–	1.3	45.3
Probable chicken	–	–	–	–	–	–	–	–	–	1.8	0.1	–	–	–	1.9
Rabbit/hare	–	–	–	–	–	–	–	–	–	–	0.5	–	–	–	0.5
Black-tailed jackrabbit	–	–	–	–	–	–	–	–	–	–	1.7	–	–	–	1.7
Small rodent	–	–	–	–	–	0.2	–	–	–	–	–	–	–	–	0.2
Packrats and woodrats	–	–	–	–	–	–	–	–	–	–	3.6	–	–	–	3.6
Deer	–	–	–	–	–	123.2	–	–	–	–	–	–	–	–	123.2
Domestic cat	–	–	–	–	–	2.1	–	–	–	–	41.1	–	–	–	43.2
Domestic dog	–	–	–	–	–	–	–	5.0	–	–	–	–	–	–	5.0
Domestic pig	–	–	–	–	–	21.1	50.0	15.8	–	3.0	–	–	–	2.7	92.6
Probable pig	–	–	–	6.6	–	–	–	–	–		–	–	–	–	6.6
Sheep/goat	–	–	–	–	–	55.3	231.3	7.8	6.2	38.2	6.5	18.2	–	12.3	375.8
Probable sheep/goat	–	–	–	–	–	–	–	–	–	0.8	–	–	–	–	0.8
Horse	–	–	–	–	–	–	–	5.5	–	–	–	–	–	–	5.5
Cattle	16.2	–	122.0	240.1	–	159.7	123.7	579.4	–	11.4	310.9	–	–	429.0	1,992.4
Probable cattle	9.7	–	–	23.2	3.3	4.9	–	500.4	54.0	5.7	–	13.7	–	388.7	1,003.6
Subtotal, Identifiable taxa	25.9	0	122.0	269.9	3.3	370.1	405.0	1,138.1	60.2	62.8	414.7	31.9	0	834.0	3,737.9
Unidentifiable taxa															
Bird, indeterminate size	–	–	–	–	0.7	0.2	–	–	1.1	–	0.1	–	–	–	2.1
Small–medium bird	–	–	–	–	–	–	–	–	0.2	–	–	–	–	–	0.2

Taxon	Feature No.														Total
	8	12	23	27	30	32	32/37	37	38	39	45	57	59	67	
Medium bird	–	–	–	–	–	2.2	5.0	–	–	0.3	–	–	–	0.2	7.7
Bird/small mammal	–	–	–	–	–	4.4	–	0.2	–	–	–	–	–	–	4.6
Indeterminate mammal	–	0.4	–	–	–	11.6	–	10.1	3.9	–	2.3	–	–	–	28.3
Small mammal	–	–	–	–	–	–	–	–	–	0.1	0.3	–	–	–	0.4
Small–medium mammal	–	–	–	–	–	23.1	–	1.3	–	–	–	–	–	–	24.4
Medium mammal	0.8	–	–	–	–	–	–	–	–	–	–	–	–	–	0.8
Medium–large mammal	1.7	–	1.0	32.4	–	36.2	374.1	215.8	28.1	142.5	47.0	0.4	–	309.0	1188.2
Large mammal	–	–	–	9.9	–	33.3	1.1	64.7	–	14.2	12.9	–	11.6	–	147.7
Subtotal, Unidentifiable taxa	2.5	0.4	1.0	42.3	0.7	111	380.2	292.1	33.3	157.1	62.6	0.4	11.6	309.2	1,404.4
Total	28.4	0.4	123.0	312.2	4.0	481.1	785.2	1430.2	93.5	219.9	477.3	32.3	11.6	1,143.2	5,142.3

Table 34. Taphonomic Observations

Taxon	Perimortem	Ancient Postmortem	Modern Postmortem	Toolmarks			Burning	
				Anvil Abrasions	Cutmarks	Sawed	Calcined	Charred Black
Identifiable taxa								
Bony fishes	–	–	114	–	–	–	–	–
Chicken	2	–	35	–	–	–	1	1
Probable chicken	–	–	4	–	–	–	–	1
Rabbit/hare	–	–	1	–	–	–	–	–
Black-tailed jackrabbit	–	3	1	–	–	–	–	–
Small rodent	–		3	–	–	–	–	–
Packrats and woodrats	–	3	2	–	–	–	–	–
Deer	–	1	9	–	1	–	–	–
Domestic cat	–	1	116	–	–	–	–	–
Domestic dog	–		1	–	–	–	–	–
Domestic pig	–	4	12	–	–	–	1	1
Probable domestic pig	–	1	1	–	–	–	–	–
Sheep/goat	9	9	31	–	–	6	3	9
Probable sheep/goat	–	–	–	–	–	–	1	
Horse	–	–	1	–	–	–	–	1
Cattle	6	43	139	–	2	117	–	–
Probable cattle	2	228	293	–	–	217	3	5
Unidentifiable taxa								
Bird, indeterminate size	1	3	6	–	–	–	–	–

Taxon	Perimortem	Ancient Postmortem	Modern Postmortem	Toolmarks			Burning	
				Anvil Abrasions	Cutmarks	Sawed	Calcined	Charred Black
Small–medium bird	–	–	1	–	–	–	–	–
Medium bird	2	1	11	–	–	–	1	–
Bird/small mammal	–	9	18	–	–	–	–	–
Indeterminate mammal	2	36	58	–	11	–	14	1
Small mammal	–	–	2	–	–	–	–	–
Small–medium mammal	–	21	19	–	–	–	–	3
Medium mammal	–	–	1	–	1	–	–	–
Medium–large mammal	30	314	557	–	2	64	110	49
Large mammal	2	28	20	1	–	10	1	14
Total	56	706	1,456	1	17	415	135	85

Note: Individual specimens may be counted more than once on this table if they exhibit multiple taphonomic features.

Table 35. Taphonomy of Unworked Specimens, by Feature

Feature No.	Feature Type	No. of Specimens	Average Percent (%) Complete	No. and Percent of Specimens		
				Perimortem Breakage	Burning	Toolmarks
8	small pit	19	14	2 (11 %)	–	3 (16 %)
12	small pit	2	2	–	–	–
23	pit	2	16	1 (50 %)	–	2 (100 %)
27	privy	309	22	5 (2 %)	28 (9 %)	131 (42 %)
30	small pit	2	2	1 (50 %)	–	–
32	pit	140	40	7 (5 %)	25 (18 %)	19 (14 %)
32/37	pit	148	28	18 (12 %)	1 (1 %)	22 (15 %)
37	pit	424	19	15 (4 %)	45 (11 %)	202 (48 %)
38	large pit	62	9	3 (2 %)	4 (6 %)	28 (45 %)
39	pit	140	20	3 (2 %)	115 (81 %)	5 (4 %)
45	privy	322	40	–	2 (1 %)	13 (4 %)
57	large pit	5	17	1 (20 %)	–	3 (60 %)
59	tree well	3	2	–	–	2 (67 %)

Table 36. Taxa and Element Distribution for Feature 27

Element	Cattle	Probable Cattle	Sheep/ Goat	Domestic Pig	Probable Pig	Chicken	Medium Bird	Medium–Large Mammal	Large Mammal	Total
Teeth	2	–	–	–	–	–	–	–	–	2
Cervical vertebrae	3	1	–	–	–	–	–	–	–	4
Thoracic vertebrae	1	–	–	–	–	–	–	–	–	1
Lumbar vertebrae	19	–	–	–	–	–	–	–	–	19
Vertebrae	8	46	–	–	–	–	–	47	–	101
Rib	10	17	1	–	–	–	4	23	–	55
Scapula	–	–	–	–	–	2	–	–	–	2
Radius/ulna	2	–	–	–	–	–	–	–	–	2
Tibia	1	–	1	–	–	–	–	–	–	2
Femur	1	–	–	–	–	–	–	–	–	1
Pelvis	3	14	–	–	1	–	–	5	–	23
Extremity	5	–	1	1	–	–	–	–	–	7
Long bone	–	7	–	–	–	–	–	10	1	18
Postcranial	–	29	–	–	–	–	–	43	–	72
Total	55	114	3	1	1	2	4	128	1	309

Table 37. Taxa and Element Distribution for Feature 32/37

Element	Cattle	Sheep/Goat	Domestic Pig	Medium Bird	Medium–Large Mammal	Large Mammal	Total
Mandible	–	–	1	–	–	–	1
Teeth	–	–	4	–	–	–	4
Lumbar vertebrae	1	–	–	–	–	–	1
Vertebrae	5	–	–	–	–	–	5
Rib	4	1	–	–	2	–	7
Humerus	–		–	1	–	–	1
Femur	1	2	–	–	–	–	3
Tibia	–	3	1	1	–	–	5
Keel	–	–	–	1	–	–	1
Coracoid	–	–	–	1	–	–	1
Tarsometatarsus	–	–	–	2	–	–	2
Long bone	–	–	–	–	16	–	16
Postcranial	–	–	–	–	100	1	101
Total	11	6	6	6	118	1	148

Table 38. Taxa and Element Distribution for Feature 32

Element	Cattle	Probable Cattle	Sheep/ Goat	Domestic Pig	Domestic Cat	Deer	Small Rodent	Chicken	Bird, Indeterminate Size	Medium Bird	Bird/ Small Mammal	Grouped Mammal[a]	Total
Frontal	–	–	–	–	–	–	–	–	–	–	–	1	1
Maxilla	–	–	–	–	1	–	–	–	–	–	–	–	1
Cervical vertebrae	–	–	–	–	1	–	–	2	–	–	–	–	3
Thoracic vertebrae	2	–	–	–	–	–	3	–	–	–	–	–	5
Vertebrae	–	1	–	–	–	–	–	–	–	–	–	6	7
Keel	–	–	–	–	–	–	–	1	–	–	–	–	1
Rib	1	2	1	–	–	–	–	–	–	–	–	–	4
Humerus	–	–	1	–	–	–	–	1	–	2	–	–	4
Fibula	–	–	–	–	–	–	–	1	–	–	–	–	1
Long bone	–	–	–	–	–	–	–	–	1	–	17	22	40
Scapula	–	–	1	–	–	4	–	–	–	–	–	1	6
Pelvis	1	–	–	–	–	–	–	–	–	–	–	–	1
Sacrum	1	–	–	–	–	–	–	–	–	–	–	1	2
Extremity	–	–	1	4	–	7	–	1	–	–	–	–	13
Postcranial	–	–	–	–	–	–	–	–	–	–	–	51	51
Indeterminate	–	–	–	–	–	–	–	–	–	–	–	1	1
Total	5	3	4	4	2	11	3	6	1	2	17	83	141

Note: this table includes worked bone
a Grouped Mammal includes all unidentified specimens that were identified as mammal but not further identified

Table 39. Taxa and Element Distribution for Feature 37

Element	Cattle	Probable Cattle	Domestic Pig	Sheep/ Goat	Domestic Dog	Horse	Chicken	Bird/Small Mammal	Indeterminate Mammal	Small–Medium Mammal	Medium–Large Mammal	Large Mammal	Total
Mandible with teeth	–	–	1	–	–	–	–	–	–	–	–	–	1
Cervical vertebrae	–	–	–	1	–	–	5	–	–	–	–	–	6
Thoracic vertebrae	4	24	–	–	–	–	–	–	–	–	–	–	28
Lumbar vertebrae	1	–	–	–	–	–	–	–	–	–	–	–	1
Vertebrae	15	33	–	2	–	–	–	–	–	–	12	1	63
Rib	3	18	–	1	–	–	–	–	–	–	18	12	52
Humerus	–	–	–	–	–	–	1	–	–	–	–	–	1
Radius/ulna	1	–	–	–	–	–	–	–	–	–	–	–	1
Femur	2	1	–	–	–	–	1	–	–	–	–	–	4
Tibia	7	–	–	–	–	–	–	–	–	–	–	–	7
Fibula	–	–	1	–	–	–	–	–	–	–	–	–	1
Scapula	–	–	–	–	–	–	–	–	–	–	1	–	1
Pelvis	5	2	–	–	–	–	–	–	–	–	–	–	7
Sacrum	1	–	–	–	–	–	–	–	–	–	–	–	1
Extremity	3	–	2	–	1	1	8	–	–	–	1	–	16
Tarsometatarsus	–	–	–	–	–	–	4	–	–	–	–	–	4
Tibiotarsus	–	–	–	–	–	–	1	–	–	–	–	–	1
Long bone	–	–	–	–	–	–	–	–	12	2	13	9	36
Postcranial	20	59	–	–	–	–	–	1	3	–	110	–	193
Total	62	137	4	4	1	1	20	1	15	2	155	22	424

Table 40. Taxa and Element Distribution for Feature 39

Element	Bony Fishes	Cattle	Probable Cattle	Sheep/Goat	Probable Sheep/Goat	Domestic Pig	Chicken	Probable Chicken	Medium Bird	Small Mammal	Medium–Large Mammal	Large Mammal	Total
Radius	–	1	–	–	–	–	–	–	–	–	–	–	1
Ulna	–	1	–	3	–	–	–	2	1	–	–	–	7
Femur	–	–	–	–	–	–	–	–	–	–	1	–	1
Carpometacarpus	–	–	–	–	–	–	1	–	–	–	–	–	1
Metatarsal	–	–	–	1	–	1	–	–	–	–	–	–	2
Phalange	–	–	–	–	1	1	1	–	–	–	–	–	3
Scapula	–	–	–	3	–	–	–	–	–	–	–	–	3
Rib	–	–	–	2	–	–	–	–	–	1	13	–	16
Lumbar vertebrae	–	–	2	1	–	–	–	–	–	–	–	–	3
Vertebrae	–	–	–	–	–	–	–	1	–	–	1	–	2
Pelvis	–	–	–	1	–	–	–	–	–	–	–	–	1
Long bone	–	–	–	–	–	–	–	–	–	–	68	1	69
Dorsal spine	1	–	–	–	–	–	–	–	–	–	–	–	1
Postcranial	–	–	–	–	–	–	–	–	–	–	30	–	30
Indeterminate	–	–	–	–	–	–	–	–	–	–	2	–	2
Total	1	2	2	11	1	2	2	3	1	1	115	1	142

Note: this table includes worked bone specimens.

Table 41. Taxa and Element Distribution for Feature 45

Element	Bony Fishes	Cattle	Sheep/ Goat	Domestic Cat	Rabbits/ Hares	Black–tailed Jackrabbit	Packrats and Woodrats	Bird, Indeterminate size	Chicken	Probable Chicken	Small Mammal	Medium–Large Mammal	Large Mammal	Mammal	Total
Cranium	–	–	–	–	–	–	1	–	1	–	–	–	–	–	2
Maxilla	–	–	–	–	–	2	–	–	–	–	–	–	–	–	2
Mandible	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1
Radius	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1
Ulna	–	1	–	–	1	–	–	–	–	–	1	–	–	–	3
Femur	–	–	–	–	–	–	4	–	2	–	–	–	–	–	6
Tibia	–	–	–	–	–	–	4	–	–	–	–	–	–	–	4
Fibula	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1
Coracoid	–	–	–	–	–	–	–	3	–	–	–	–	–	–	3
Metacarpal	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1
Scapula	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1
Rib	–	1	–	–	–	–	–	–	–	–	–	6	2	–	9
Lumbar Vertebrae	–	4	1	–	–	–	2	–	–	–	–	–	–	–	7
Vertebrae	1	–	1	–	–	–	–	–	–	–	–	–	1	–	3
Pelvis	–	1	–	–	–	–	2	–	3	–	–	1	–	–	7
Long Bone	–	–	–	–	–	–	–	–	–	–	–	21	3	–	24
Postcranial	–	–	–	–	–	–	–	–	–	–	–	16	–	4	20
Individual[a]	112	–	–	115	–	–	–	–	–	–	–	–	–	–	227
Total	113	8	2	115	2	2	13	3	8	1	1	44	6	4	322

[a] One nearly entire individual each of bony fish and domestic cat. Numbers are number of individual specimens located that make up the individual.

Table 42. Ranking of Meat Cuts for Beef, Pork, and Mutton from Most to Least Expensive

Rank	Beef	Pork	Mutton
Most expensive	short loin	butt ham	loin
	rib/sirloin	loin	rack/shank end/chuck/butt end
	round	Boston butt	
	rump	picnic ham/shank ham	
	chuck		breast/neck/brisket
	arm/cross rib/short rib	spare ribs	
	brisket/short plate	head/hock/trotter	foreshank/hindshank
	neck		
Least expensive	foreshank/hindshank		

Table 43. Counts of Cuts of Meat from the 6th and Toole Parcel, by Feature

Cuts of Meat	Feature No.									Total
	8	23	27	32	32/37	37	39	45	57	
Beef										
Short loin	–	–	19	–	1	2	–	4	–	26
Rib/sirloin	1	–	3	5	–	4	–	–	–	13
Round	1	–	2	–	1	2	–	–	–	6
Rump	–	–	–	–	–	–	–	1	–	1
Chuck	–	–	–	–	–	2	–	–	–	2
Arm/cross rib/short rib	–	–	–	–	–	–	–	–	–	0
Brisket/short plate	–	–	–	–	–	–	–	–	–	0
Neck	–	–	3	–	–	–	–	–	–	3
Foreshank/hindshank/head	–	1	8	–	–	11	2	2	–	24
Pork										
Butt ham	–	–	–	–	–	–	–	–	–	0
Loin	–	–	–	–	–	–	–	–	–	0
Boston butt	–	–	–	–	–	–	–	–	–	0
Picnic ham/shank ham	–	–	–	–	1	1	–	–	–	2
Spare ribs	–	–	–	–	–	–	–	–	–	0
Head/hock/trotter	–	–	1	4	5	3	2	–	–	15
Mutton										
Loin	–	–	–	–	–	–	1	1	–	2
Rack/shank end/chuck/butt end	–	–	–	1	2	–	5	–	–	8
Breast/neck/brisket	–	–	–	1	–	1	3	1	–	6
Foreshank/hindshank	–	–	2	1	3	–	2	–	1	9
Total	2	1	38	12	13	26	15	9	1	117

CHAPTER 8
SYNTHESIS

Jennifer Hushour, M.Sc.

This chapter summarizes the archaeological investigations at the 6th and Toole Parcel (AZ BB:13:781[ASM]) and discusses the results as they pertain to research questions outlined in the Data Recovery Plan (Hushour et al. 2006).

HISTORIC CONTEXTS

Because the 6th and Toole Parcel (a portion of Block 82) is within the Tucson Historic Warehouse District, research domains that guided the data recovery efforts were those that contribute to the characteristics and significance of the district. The NRHP Registration Form for the Tucson Warehouse Historic District (National Park Service 1999:11) states that the district is significant in the areas of Transportation, Commerce, and Industry for its role in the economic development of the Tucson region.

Within these domains, one facet of our research design is to emphasize social and economic history. Although political and institutional history are also represented, we have focused, when possible, on the particulars of research that shed light on the day-to-day lives of individuals, which may not reflect the dominant sociopolitical group of the time period. These individuals are often under-represented in historical studies, despite the fact that they make up the majority of the population. This is of particular importance in Tucson, where much of the population was and is of Mexican or American Indian heritage and to a lesser extent Chinese and African American heritage. In fact, prior to the arrival of the railroad, Tucson was culturally more tied to northern Mexico than it was to the rest of the United States (Bell et al 1972).

Within each research domain are several research themes, directed at understanding the varying experiences and perspectives in Tucson at the turn of the century. The main domains are all addressed as completely as the data has allowed.

The point of departure for this parcel is of course the arrival of the railroad. The parcel was not used or occupied, to our knowledge, prior to this event. In general, the research issues can be summed up as pertaining to the railroad and industrialization of Tucson and the effect new people, goods, systems, and practices had on the city and its residents. What were the large and small scale effects of the railroad's arrival on the Tucson Warehouse Historic District and on the City as a whole? What changes in architecture, building practices, business practices, and lifestyles were brought about?

One hindrance to our research was the lack of official railroad records. These records, which at the time of this writing were privately held and were not provided to Tierra (discussed in Chapter 2) would have allowed us to discover the system of ownership and rental of the properties and buildings on the site, presumably including names, prices, and durations. However, Tierra's research, combined with the results of the excavations, has allowed us to address several research issues despite the dearth of official records.

Another complication arises when trying to ascertain associations between data and specific individuals or groups of individuals. When dealing with data from a privy (and associated building) that was known to have been used by a specific individual, family, or group, conclusions about the data can be drawn relatively simply. The current project deals with data from contexts that are more complex. The privy features, for instance, are associated with an industrial area and a hotel. Moreover, they were probably used by people from different social strata, some of whom may or may not have been living on the property. Does the data from the industrial privy (Feature 27) reflect food eaten by laborers or the manager of the bottling plant? Does the trash filled pit (Feature 39) contain refuse from the hotel servants, guests, or neither? This complexity may help explain the wide range of types of goods, cuts of meat, and so forth, but it also limits us in our interpretation. The conclusions discussed below were drawn with these limitations in mind.

TRANSPORTATION

The location of the railroad near the town center provided the motivation for private entities to construct warehouses and manufacturing plants with direct access to shipping and receiving various goods and products. The railroad and its location were directly responsible for the location and development of the Warehouse District. This location was a population center in close proximity to markets and was important not only for transportation of goods but also of people. Therefore, a research theme for the transportation research domain is the Southern Pacific Railroad in Tucson.

The other research theme associated with this domain, Life along the Tracks, was adapted from Thiel and Diehl (2002). With the coming of the railroad and associated business and industry, an influx of new people, goods, and services also arrived. This research theme explores the day-to-day lives of the people who worked and lived near the railroad tracks during the heyday of the Tucson Warehouse District.

Southern Pacific Railroad

When the railroad came to Tucson in 1880 it brought in new products and resources and led to rapid population and economic growth (Sheridan 1986). Local products could be transported inexpensively to markets outside the Tucson Basin, and a wide variety of goods and merchandise from outside the Basin became available. This in turn led to the creation of new businesses and the expansion of existing ones. New businesses within the current project area included several warehouses, a hardware and milling machinery business, an iron works, an icehouse, a bottling plant, the San Xavier Hotel, and a soda factory, all of which were located on railroad property.

Janus Associates, Inc. (1989), in their historical context for transcontinental railroads, groups property types into three major functional divisions. These include (1) system construction and operation; (2) administration; and (3) commerce. This property was almost exclusively used for the third function, commerce (see below).

System Construction and Operation

While the parcel in question was owned by the Southern Pacific Railroad, the land was leased by private businesses and individuals for commercial and/or industrial use. The tracks themselves were just outside of the project area. One Sanborn map depicts a railroad section house on the property (see Figure 7), but no remains of this structure were located during excavation. No subsurface remnants of other railroad related-structures were located during data recovery. The private rail spur was visible on the surface, but we were unable to locate any specific information about the origin or

nature of the spur, save one aerial photo that depicts the presence of a rail car on the spur after the area was turned into a park (see Figure 11).

Documentary research undertaken during testing has determined that records relating to the construction and operation of the railroad on Block 82 are limited to building and business names with almost no record of construction or daily transactions (Lundquist 2006). Railroad records, apparently from the beginning of operations in Tucson, were stored in a records vault that is now part of the restored depot adjacent to the project area. These records were given to private individuals (members of Old Pueblo Trolley) when the City of Tucson bought the depot property in 1998. According to depot and Southern Arizona Transportation Museum personnel, the majority of the records are in the possession of Howard Greenseth. Mr. Greenseth was contacted, and he informed Tierra that no records from the time period in question were present in his collection.

Administration

The day-to-day administration of the railroad required a variety of structures and buildings for supervisors and employees (Janus Associates, Inc., 1989:29). The presence of a railroad section house on the property in 1883 suggested that the section foreman and his crew lived on the parcel (Myrick 1975), but no physical evidence of this was recovered. The area in which the section house is depicted was used for several different types of buildings over the years (based on the Sanborn maps), and it may be that all evidence of the residential structure and the leavings of its inhabitants were removed when the building was converted or destroyed. No documentary evidence specific to the administrative properties on the property was located.

Rail-Related Commerce

Commercial activities associated with railroads, including the hauling of freight and passengers and repair and maintenance of locomotives and rail cars, required specialized buildings and structures (Janus Associates, Inc., 1989:30). A number of apparently railroad-related structures (including loading platforms) are depicted on the property in the late 1800s and early 1900s. Foundations of the larger warehouses were located during data recovery (as discussed in Chapter 3).

From 1883 to 1909, there were at least nine businesses on the property. All but one (the San Xavier Hotel) were commercial businesses, mainly wholesale, that depended on the railroad for their goods. The area was clearly an important staging point for the arrival and distribution of new goods into Tucson. Machinery, pipes, multiple varieties of food and alcohol, ice, and oil were all goods which moved through the buildings on the property to be sold to the businesses and citizens of the growing city.

Rail-related commerce can also be measured in passengers. The missing railroad records may have addressed this issue directly, but other sources can also be of use. No official records of the San Xavier Hotel were located, but based on its size and its description as an upscale establishment we can assume that it housed a large number of guests of considerable means. The large number of employees also suggests that the hotel dealt with large numbers of guests at one time. The location of the hotel along the tracks and the fact that it was originally owned by the railroad (Myrick 1975:72–73) leave little doubt as to the means by which the majority of guests came and went.

Life along the Tracks

This research theme is intended to address the history of those who lived and worked on or near the railroad. Thiel and Diehl (2002:26) define this research theme as exploring everyday lives of residents in Tucson after the advent of the railroad, which brought new goods, services, and people to the area. The railroad forever changed the face of Tucson and dramatically changed the lives of its residents. Although the people living and working in the project area were not directly associated with the railroad (i.e., they did not work for the railroad), the businesses they did work for were reliant on the railroad for goods, guests, and their livelihoods in general.

The parcel had several places of employment, such as the bottling works, hotel, ice company, hardware milling and machinery building, liquor distributor, the Standard Oil Company, soda factory, iron works, and stables. Based on archival information, we know that some of these businesses were also residences for employees. Four of the employees of these businesses either list their residences as "warehouse near depot" or do not list them at all, which may indicate residence at the warehouses. No formal dwellings are depicted on the Sanborn maps, and none were located in field investigations.

The major sources of information for answering questions about *Life along the Tracks* are the privies, Features 27 and 45, which are strongly associated with the industrial area and hotel, respectively (based on their locations and the types of artifacts recovered). Material evidence suggests that the employees/residents of the industrial area of the site were eating quite a bit of beef, while residents of the hotel area of the site had a more varied diet consisting of beef, but also chicken, pork, eggs, oysters, fish, and pre-packaged foods. As discussed in Chapter 7, there are a number of conclusions that can be drawn from these data. The types of beef consumed by the warehouse employees varied greatly—from the most to least expensive cuts. This may mean that different groups of individuals were using the site for cooking or simply trash dumping, or that these employees (some of whom lived in the warehouses) may not have been as poorly paid as we have assumed.

Very few material items other than faunal bones and commercial items associated with the warehouses were recovered from the industrial features on the site, suggesting that the residents were unable to or were uninterested in purchasing pre-packaged food. Some of the individuals were Hispanic, and this apparent reluctance may have been due to an adherence to traditional diets. Moreover, the variation in types of beef cuts consumed can be explained by the fact that Hispanic and non-Hispanic people were living in the warehouses, and probably consuming different cuts of meat. No other domestic or luxury goods were located in the industrial features, but whether this was due to poverty, the use of temporary employees, or some other explanation, is unclear. The status of the individuals living and working within the project area is discussed further below in the *Industry* section.

Several luxury items (crystal, china, and so forth) were recovered from the hotel privy, but this is probably not indicative of the quality of life of the servants as much as of the quality of the hotel. Both areas were using a combination of European, Mexican, and native (Tohono O'odham) ceramics. The distribution of Native American ceramics across the site does not appear to reveal any patterns (no prevalence in the industrial or hotel areas, for example).

As discussed above, the specific context of artifacts is unclear with regards to the ethnicities and socioeconomic status of the people who used them. What can be said is that there were artifacts

typically associated with people from several ethnic groups (Chinese, Mexican, Tohono O'Odham, and European) and socioeconomic groups throughout the site.

PRIVATE COMMERCE

Among the structures depicted on the project area prior to 1909 are the William B. Hooper & Co. Warehouse No. 2, the I & Bast Iron Works, the Noble & Hill Hardware and Milling Machinery, Union Ice Company, Standard Oil Company, A. Goldschmidt Warehouse, and the Adolph Bail (later Bail Heineman & Co.) Warehouse. All the structures on the property were removed by 1909; between 1909 and 1919, a rail spur was constructed (Levstik and Jones 2005; Lundquist 2006). These appear to be private enterprises located on railroad property but again, no official records were located that could either confirm or deny this possibility. Themes within this domain include economic viability and distribution and distributors.

Economic Viability

Documentary research has determined that several private businesses were operating on the parcel between 1880 and ca. 1908. The relatively high number of businesses in a short span of time suggests that businesses may not have been economically viable on the parcel. Mose Drachman, a leading merchant at the time, describes an economic depression of sorts in Tucson between 1884 and 1896. He recalls:

> The coming of the railroad caused considerable activity in a business way but it did not last long. Between 1880 and 1884, there was some growth but at the same time some failures…We practically stood still from 1884 to 1896—a period of 12 years…Everybody was downhearted, discouraged, and disgusted (Drachman 1931:103).

Several causes are posited for the depressed economy in Tucson just before the turn of the twentieth century, including drought that hurt the cattle industry, the collapse of the region's silver mines, and an overall national economic depression (Rieder 1999). It is also possible that the relationship between the railroad and local businesses was not initially positive. The railroad brought with it the widespread use of the U.S. dollar; this depreciated the Mexican peso, which had been the common currency in southern Arizona. The railroad also put several wagon freighters out of business; this was a major industry for Tucson at the time period, but it could not compete with the lower shipping fares of the railroad (Rieder 1999). Between 1880 and 1890, the official population of Tucson decreased from 7,007 to 5,150 (U.S. Censuses 1880 and 1890). This may have had more to do with the dying out of the silver boom (and hence the relocation of many silver miners and associated labor) than poor economic conditions brought about by the railroad. In their study of Block 180, Ciolek-Torrello and Swanson (1997:534) also noted slow growth in the decade following the arrival of the railroad, noting that "[At] Block 180, in the heart of the community…the pace of construction…did not increase until more than 15 years after the arrival of the railroad".

Concrete foundations for several of the smaller structures were not identified during testing, suggesting that some buildings may have been easily dismantled pole and wood or metal structures with wood or earthen floors. Three large structures were located, however, and archival research suggests that several businesses were housed in each over time. This suggests that the railroad, which owned the property, may not have offered private business owners the option to purchase the property, or to lease it on a long-term basis. Because of a lack of records, questions remain about the

relationship of the private business owners to the railroad and how this would affect the viability of businesses on the parcel. The funding source (railroad or private) of the buildings' initial construction is unknown. Given the various methods of construction (construction is inconsistent across the parcel, with brick, wood, adobe, and concrete present), it may be that the individual businesses were responsible for constructing the buildings.

It is also possible, however, that the large number of businesses present on the parcel in a relatively small number of years is unrelated to poor economic viability. It may be that other circumstances, perhaps even economic growth, were responsible. The railroad was responsible for the expansion of Tucson northward and eastward from its original, Presidio-based center (Sheridan 1992:83). In 1881, 184 people listed their residences as "the Southern Pacific Railroad," and this was an early indicator of "the profound economic, demographic, and geographic changes the railroad was bringing to Tucson" (Sheridan 1992:83). Although there was an initial population decrease after the railroad's introduction (from 1880 to 1890), from 1890 to 1900 there was an increase from 5,150 to over 7,500 (U.S. Census 1890 and 1900). Clearly there was an initial lag, probably caused by a combination of factors, but the turn of the century was nevertheless clearly a volatile time that saw rapid expansion and great change, brought about by the railroad's arrival. The changing states of private businesses on the parcel may simply be a result of this.

The fact that the area was turned into a park around 1909 may have less to do with business failure and more to do with the image of Tucson that its residents and administrators wished to portray. The area was adjacent to the railroad station and near a number of residences and businesses. Residences around the area were increasing in number (again, this would indicate growth), and it may be that the railroad agreed to the park based on an idea of improving quality of life or its image to residents of the area and new arrivals to Tucson alike. It also may have been that the SPRR turned the area into a park specifically for the private rail car that was parked on the spur in the middle of it. The sidewalks were constructed in alignment with the spur, and it is possible that the area was reserved for the use of the visiting railroad executive or wealthy private businessman. The fact that there was water, steam heat, and electricity available for the private cars (as evidenced by the archaeological findings) supports this possibility. Perhaps the area was even cleared of businesses with the specific intent of providing a location for private rail cars.

Distribution and Distributors

Prior to the coming of the railroad, distribution of outside goods in Tucson was limited at best. Mule teams and wagon freighters were the only means of importing goods from outside the basin. The establishment of the railroad in Tucson drastically changed not only the types and amount of goods available, but also the means by which they were distributed.

As discussed, several businesses are known to have operated on the property from the 1880s until approximately 1908. Several of these businesses were themselves distributors of goods that for the most part originated outside of Tucson. Archival research has provided some information regarding the volumes and types of goods distributed during this time period.

The volume of freight for the Adolf Goldschmidt warehouse was described in one source (see Chapter 2) as "26,000 pounds…in one day." The volume received by the other warehouses can only be speculated upon, but based on the number of employees for the various warehouses and the large artifact deposits (particularly bottle glass and metal cans), we can assume it was considerable.

The Union Ice Company icehouse on the parcel may have been associated with a company of the same name based in California. The Standard Oil Company warehouse, as discussed in Chapter 2, is likely associated with John D. Rockefeller's oil giant of the same name. No records of local businesses bearing these names were located. The bottling plant and wholesale liquor warehouses of W. B. Hooper and Adolph Bail & Co. dealt not only in retail but also in wholesale liquor sales and described themselves in advertisements as agents for companies such as Anheuser Busch; Schlitz Brewing Co.; and San Francisco Breweries, Ltd. The proximity of these businesses to the railroad depot, with immediate access to large, inbound shipments of goods, suggests that wholesale distribution was their primary reason for being on the property.

The possible reasons for the removal of these warehouses and distribution centers from the property are unknown, but educated speculations can be made. It is possible that because of the development of man-made ice plants and other means of refrigeration around the turn of the century, ice importation, distribution, and use in rail cars was no longer necessary. The fact that the Union Ice Company (assuming it was the same Union Ice Company that shipped ice in by rail from outside of Tucson and not a local company of the same name) was no longer present on the property past 1901 seems to correlate with this information. However, it may have been that it simply moved to a new location. It is also possible that because of the breakup of the Standard Oil Company Trust (which coincided loosely with the removal of the company name from the warehouse), the company no longer maintained a distribution center on the property. The Bail-Heineman warehouse moved from the property to 424 North Stone around 1908. This location was itself not far from the railroad tracks and so may have continued to facilitate their receiving and distributing goods.

Lastly, there may have been a larger reason for the businesses leaving the property en masse. As discussed above, whether the buildings were owned or leased is unknown. If the buildings or the land they occupied were leased, the railroad could simply have refused renewal of these leases in order to build the private car park.

Several items including French champagne bottles; medicine bottles from all over the country; beer from San Francisco; tooth powder from Newport, Rhode Island; and oyster shells are evidence of the fact that with the arrival of the railroad, Tucson was connected with the rest of the United States and the world. Moreover, it demonstrates that the project area was one of the main staging points for distribution of goods into the growing city.

INDUSTRY

The turn of the century brought about significant changes in American industry. The proliferation of steam locomotives, electricity, and mass-production factories necessitated (and brought about) many changes in technologies, communication, labor, and economy. The railroad was often the harbinger of industry, its introduction allowing increased flow of goods, services, and people. Given the fact that the parcel was occupied primarily around the turn of the century and considering its proximity to the railroad, industry is clearly an important research domain to consider for this project. Themes within this domain include labor, status, and technology.

Labor and Status

Although one of our initial research areas under *Industry* was organized labor as it related to the railroad, subsequent research found that very little, if any, evidence of this exists that relates to this

parcel in particular. There was a railroad section house on the property at one point according to a Sanborn map, but no archival or archaeological evidence of this was found.

In general, industrial workers are known to have been grossly exploited by employers before the labor movement took hold in America. Even on such a small scale, it is probable that the rise of industrial labor had adverse affects on, or at least did not improve, the socioeconomic status of the individuals living or working on the property. In the United States, as in many places, status often correlates with ethnicity. It is known that employment opportunities were often segmented along racial lines in early twentieth-century Tucson in particular (Thiel 1993), and it is documented that several of the individuals in labor positions in the industrial businesses on the parcel were of Mexican descent, and possibly American Indian or other non–Euroamerican heritage. Interestingly, not a single name in the lists of San Xavier Hotel employees is Hispanic. The individuals (presumably employees) depicted in the photograph of the hotel (see Figure 21) appear to be European and African American. African Americans were often hired by the railroads for positions of porters, cooks, and waiters on trains, and this may have extended to the hotel. There was perhaps a social divide which prevented Mexicans and Mexican Americans from serving at this particular hotel, and possibly in the hospitality industry in the area in general. That Hispanic individuals were not hired in places where African Americans were, assuming it was due to the fact that they were Hispanic, speaks volumes about the general attitude towards these people in turn of the century Tucson.

The employees of the bottling plants and other warehouses on the site were clearly not wealthy, as several of them lived in the warehouses in which they worked. Although there remained in Tucson many large and prominent Mexican families, it appears that in the case of the businesses within the project area, a number of Mexican individuals were relegated to working in low wage positions and poor living conditions. As Mabry et al. (1994:25) discuss:

> Clearly, the overall trend in the late nineteenth century was not a fortunate one for native Tuconenses. Unlike in El Paso, immigration from Mexico had been declining, and Anglo immigration was constantly increasing after 1880, (except for the years just before and after 1890). With their larger numbers came greater power, and the Mexican community in Tucson became more and more marginalized – economically, politically, socially, and even geographically – as the first *barrios* were created on the southern and northern edges of town.

Ciolek-Torrello and Swanson (1997:527) also discuss this phenomenon observed in their excavations in nearby Block 180, which was largely occupied by Hispanic families in the decades prior to the arrival of the railroad:

> Perhaps the single most important change in the character of the block in the 1890's involved ethnicity. A decade after the arrival of the railroad and the associated influx of Euroamericans, there was not a single person with a Hispanic surname residing in Block 180. This major change is reflected in the artifactual and faunal remains from trash deposits dating to this decade.

The place of prosperous and influential Mexican families, who had heretofore been on par socially with Euroamericans, was clearly impacted by the influx of the latter.

However, adverse economic affects on individuals brought about by the industrialization of Tucson was not reserved only for Hispanic individuals. Two other men with non-Hispanic names (Peter Gantriand and E. T. Taylor) also listed their residences as being on the property. They are listed as a porter and a clerk, respectively, with the William B. Hooper company. The ethnicity of these two individuals is unknown. Their names are not Hispanic, but beyond that no conclusions can be drawn regarding their ethnicities, and whether they were European, African-American, or otherwise is unclear. As discussed above, their presence may explain the variation in meat cuts consumed on the site, in that the Hispanic individuals may have preferred (or been able to afford) one cut of meat, while these individuals consumed others.

In examining the names of employees on the parcel, an interesting trend emerges. Laborers for A. Bail & Co., for example, all give Hispanic names, but the two non-laborer positions (clerks), give surnames of Petty and Green. The Union Ice Company, in 1899/1900, hired one Carlos Salazar as an "employee" and R.A. Johnson as "Agent." Apparently the positions of prominence, at least in the case of these two businesses, were reserved for people other than Hispanic individuals.

Technology

The arrival of the railroad no doubt provided not only materials but an increased flow of information and available technology to the area. Among the buildings on the property were a bottling plant, a cold storage facility, a soda factory, and an iron works. All of these buildings produced or stored goods on an industrial level. Further investigation into these buildings has resulted in information about what sorts of technologies were used in industrial and railroad settings at the turn of the nineteenth century in Tucson.

Feature 52 appears to be associated with a machinery area between the Adolph Bail (later Bail & Heinemann) warehouse and the bottling works. Machinery depicted on the 1901 Sanborn map (see Figure 4) includes an ammonia condenser, a 10-horsepower engine, and a steam boiler. Evidence of rotating machinery (in the form of babbitt bearings) was located on the property. Hitch pins, used to couple railroad cars and heavy freight wagons, were also located.

The buildings that received and housed the various goods discussed above were in some cases simple warehouses and in other cases specialized structures (such as the bottling plant). It is clear that the people who constructed the buildings relied partially on technologies and materials they knew (namely adobe brick and native stone) and partially on those that had not been heavily used in Tucson before the arrival of the railroad (clay brick and concrete, as well as steam engines and ammonia condensers).

Based on artifacts recovered from the site, horse- or mule-drawn wagons were moving goods to and from the parcel, blacksmith operations were repairing machinery and tools, and plumbers were installing or repairing pipes. The hotel was lighted by kerosene lamps at one time but may have later converted to gas or electricity, providing a reason to discard a large number of new burners. At least some of the warehouse buildings also had electricity.

CONCLUSIONS

This project has allowed us to learn a great deal of information on the development of the Tucson Warehouse Historic District, and of Tucson in general, with regards to transportation, commerce, and industry. The changes in material culture evidenced at Block 82 are to be expected in a

community that saw the introduction of the railroad and rapid modernization. In many ways, this site is a microcosm of a changing Tucson, in that it combined elements that existed there prior to the railroad's arrival (adobe, Tohono O'Odham ceramics, architectural use of native stone, and traditional cuts of meat) with new elements (imported and pre-packaged food, luxury items, industrial machinery, concrete architecture, and mass production). It is interesting to note, as others have (Mabry et al. 1994:185; Ciolek-Torrello and Swanson 1997:533), the persistence of Tohono O'odham ceramics, small game hunting as a means of subsistence, and adobe architecture, despite the influx of new wares, foods, and construction methods. As would be expected, the process of shifting away from these traditional practices was, in the case of the current project area, a gradual one, and did not happen overnight.

The portion used for industrial purposes was a center of commerce and a source of wealth for non-local and local distributors as well as managers. The businesses there received and re-sold new products and technologies, and undoubtedly aided in the booming growth that Tucson saw at the turn of the twentieth century. It was also a scene, however, of the exploitation of laborers, some of whom were Hispanic, and many of whom were paid so poorly that they lived in the warehouses themselves.

The other area of the site, which contained the hotel servants' quarters and associated features, served mostly wealthy patrons and provided its guests with luxury food and amenities, most of which were provided by the railroad and the enterprising merchants who ran the warehouses next door. The San Xavier Hotel did not employ Hispanic individuals, but, in a manner consistent with many railroad hotels, did employ African Americans in service positions.

Several questions remain and merit examination in future studies. For example, an investigation of other businesses in the area (not on railroad property) at the turn of the twentieth century could aid in answering the questions regarding turnover: was the high number of businesses moving in and out of the buildings on the parcel related to poor economic viability, growth and expansion, or simply a decision by the railroad to remove them? Other topics to examine include the ethnicities and economic positions of the employees of other new industrial enterprises at the time, the utilization of the workplace as a residence, and the working and living conditions of hotel servants and other service positions as compared to industrial labor in Tucson. These topics can shed further light on this period of change and growth that ushered the Old Pueblo into the twentieth century.

APPENDIX A
CONTENTS OF THREE FLOTATION SAMPLES FROM AZ BB:13:781(ASM), THE 6TH AND TOOLE PROJECT

Michael W. Diehl, Ph.D.

Tierra Right of Way Services, Ltd., submitted three flotation sample light fractions to the author for paleobotanical analysis and description. This report describes the identified wood and seed taxa, both burned and unburned, observed in the samples and lists their frequency distributions in accordance with standard paleobotanical practices.

LABORATORY PROTOCOL AND IDENTIFICATION

Upon receipt and preliminary inspection the light fraction bags were opened and placed next to a warm microscope lamp fan to continue drying because the samples, as received were damp, with a faint odor of mold growth. Extended drying required 3 days for two of the samples (PD 163, 192) and 12 days (PD 266) to achieve proper aridity for handling. After drying, each light fraction was weighed, and the flotation sample volumes (as reported to the author) were recorded.

All wood and seed tissues observed in each sample were identified to the closest fit taxon to the extent that their physical condition permitted. Identifications were substantiated by comparison with an extensive comparative collection of southwestern seeds and woods and with illustrations in comprehensive seed and wood manuals and relevant botanical texts (Hitchcock 1971; Martin and Barkley 1961; Montgomery 1978; Parker 1990; Saul 1955; Schopmeyer 1974; U.S. Department of Food and Agriculture 1971). All charred seeds, large seed fragments, and fruit tissues were counted. In each light fraction sample, 20 randomly selected wood charcoal fragments larger than 2 mm were counted. In addition, the substantial presence of anthracite coal was noted in one sample. The contents of the flotation samples are listed in Table A.1, Table A.2, and Table A.3. Each of the samples differed substantially from the others sufficiently to warrant discussion of each sample rather than merely reviewing the identified taxa.

FEATURE 27, PD 163

Feature 27 was described by the excavators as an outhouse pit or privy. The contents of the flotation sample were not diagnostic as to the use of the pit, but they were not inconsistent with its use as an outhouse pit. This sample was comprised in the main of reduced remnants of anthracite (hard coal), principally ash and small mineralized fragments of burned coal. No wood charcoal was observed, but twenty splinter-like fragments or shavings of an unburned gymnosperm wood were observed. The unburned wood fragments were too small and spongy to support more precise identification.

The sample also contained numerous charred seeds or possible seeds in very poor states of preservation. Apart from two fragments of oat or wheat (Gramineae, cf. old-world grain), all were very badly puffed and distorted from heating, and their seed coats had been burned away. Although more than 500 possible seeds (small, roughly symmetrical, and frangible) were estimated to be in the sample, the only other specimens definitely recognizable as seeds included two possible panicgrass

seeds (Gramineae, cf. *Panicum* sp.), three possible creosote bush (cf. *Larrea tridentata*) seeds, and one possible loco seed (cf. *Astragalus* sp.).

FEATURE 39, PD 266

Excavators described Feature 39 as a trash-filled borrow pit, and the identified wood and seed taxa are consistent with that description. Large quantities of wood charcoal were observed with a light but persistently adhering coat of very fine ash. All of the counted and identified wood charcoal was mesquite (*Prosopis* sp.); further scanning of the 2-mm pan subfraction of the sample did not reveal any other wood taxa. Only one seed or fruit tissue was observed—a well-preserved, wholly charred spherical berry measuring 5.3 mm in diameter. The berry was consistent in size and shape with desert hackberry *(Celtis pallida)*. Cracking the fruit case revealed that the interior tissues had burned away, as though the fruit had been burned before the interior seeds or stone had fully developed.

FEATURE 68, PD 192

Wood charcoal fragments comprised most of this sample; no seeds or possible seeds were observed. Counted wood charcoal taxa included ponderosa pine *(Pinus ponderosa)*, an unidentified desert legume (acacia, ironwood, mesquite, or paloverde), mesquite (*Prosopis* sp.), one fragment of a wood from the maple family (Aceraceae), and one juniper fragment (*Juniperus* sp.). After counting, unburned fragments or splinters of a gymnosperm were noted in passing.

Table A.1. General Characteristics of Flotation Samples from AZ BB:13:781(ASM)

Feature	PD	Volume (liters)	Weight (g)	Anthracite	Ash	Snails (count)
27	163	6.0	19.4	abundant	present	10–50
39	266	5.0	153.0	none	present	1–10
68	227	no data	40.5	none	absent	1–10

Table A.2. Fruit and Seed Tissues from AZ BB:13:781(ASM)

Taxon	Common Name	Tissue	Feature 27	Feature 39	Feature 68
cf. *Astragalus* sp.	resembles loco	seed	1	–	–
cf. *Celtis pallida*	resembles desert hackberry	berry	–	1	–
cf. *Larrea tridentata*	resembles creosotebush	seeds	3	–	–
Gramineae, cf. *Panicum*	grass family, resembles panicgrass	seeds	2	–	–
Gramineae, cf. OWG	grass family, resembles old-world grain	seed fragment	2	–	–
Unidentified	unidentified	fruit or seed tissue fragments	–	3	–
Unidentified	unidentified	possible seed fragments	est. >500	–	–

OWG = old-world grain
Note: old-world grain–two fragments resembling a Eurasian domesticated grain of the wheat or oat variety.

Table A.3. Frequencies and Weights of Wood Fragments from AZ BB:13:781(ASM)

Taxon	Common Name	Feature 27		Feature 39		Feature 68	
		Count	Weight (g)	Count	Weight (g)	Count	Weight (g)
cf. Aceraceae	maple family	0	–	0	–	1	0.1
cf. Gymnosperm	gymnosperm	20	0.1	0	–	present	–
Juniperus sp.	juniper	0	–	0	–	1	t
Leguminosae	legume family	0	–	0	–	1	0.1
Pinus cf. *ponderosa*	ponderosa pine	0	–	0	–	3	0.1
Prosopis sp.	mesquite	0	–	20	7.7	14	2.2

Notes: All carbonized, except for gymnosperm splinters from Feature 27.
t = trace quantity < 0.1 g

APPENDIX B
HISTORIC ARTIFACTS RECOVERED FROM THE 6TH AND TOOLE PARCEL

Feature No. and Level	Functional Category									Total
	Activities	Architectural	Clothing	Furniture	Kitchen			Miscellaneous	Personal	
					Food Preparation	Food Service	Food Storage			
Feature 7										
Level 3	–	–	–	–	–	–	–	–	1	1
Feature 8										
Level 1	–	–	–	–	–	–	1	–	–	1
Level 2	–	–	–	–	–	–	1	–	1	2
Feature 12										
Level 1	1	–	–	–	–	–	–	–	–	1
Feature 15										
Judgmental sample	–	–	–	–	–	–	2	–	–	2
Feature 23										
Level 1	1	–	–	–	–	1	–	–	–	2
Judgmental sample	–	–	–	–	–	–	1	–	–	1
Feature 25										
Level 1	–	–	–	–	–	2	–	–	–	2
Feature 27										
Level 1	–	7	–	–	–	3	148	–	1	159
Level 2	–	14	–	–	–	–	93	–	–	107
Level 3	1	8	–	–	–	1	100	–	1	111
Level 4	–	19	–	–	–	–	106	–	1	126
Level 5	1	–	–	–	–	–	44	–	1	46
Level 6	–	–	–	–	–	1	50	–	–	51
Judgmental sample	2	–	–	–	–	–	17	–	1	20

Feature No. and Level	Functional Category									Total
	Activities	Architectural	Clothing	Furniture	Kitchen			Miscellaneous	Personal	
					Food Preparation	Food Service	Food Storage			
Feature 32										
Level 1	1	–	–	–	–	29	13	–	1	44
Level 2	–	–	–	–	1	2	2	1	2	8
Level 3	–	–	–	–	–	3	1	1	1	6
Judgmental sample	–	–	–	–	–	7	3	–	4	14
Feature 32/37										
Level 1	1	–	2	–	–	20	8	–	1	32
Feature 36										
Judgmental sample	–	–	–	–	–	–	–	–	2	2
Feature 37										
Level 1	–	–	–	–	2	15	14	–	2	33
Level 2	–	–	–	–	8	25	3	–	–	36
Level 3	–	–	3	–	3	17	4	–	–	27
Level 4	–	–	–	–	–	5	–	–	–	5
Judgmental sample	–	–	–	–	–	–	–	–	2	2
Feature 38										
Level 1	2	–	–	1	–	10	1	–	–	14
Level 2	3	1	–	–	–	7	2	–	–	13
Feature 39										
Level 1	–	–	3	–	–	37	–	1	7	48
Level 2	2	–	–	–	–	6	6	–	1	15
Level 3	–	82	2	–	–	26	13	1	9	133

Feature No. and Level	Functional Category									Total
	Activities	Architectural	Clothing	Furniture	Kitchen			Miscellaneous	Personal	
					Food Preparation	Food Service	Food Storage			
Level 4	9	232	3	–	–	41	11	–	7	303
Level 5	–	16	9	–	–	8	6	–	3	42
Judgmental sample	–	–	2	–	–	10	2	–	2	16
Feature 40										
Level 1	–	–	–	–	–	17	–	–	1	18
Feature 44										
Level 1	1	–	–	–	–	22	4	–	–	27
Level 2	–	1	–	–	–	8	19	–	1	29
Level 3	–	2	1	–	–	9	3	–	–	15
Level 4	–	–	–	–	–	4	–	–	–	4
Judgmental sample	–	–	–	–	–	–	1	–	–	1
Feature 45										
Level 1	3	13	–	–	–	7	4	–	4	31
Level 2	–	9	–	1	–	3	2	–	–	15
Level 3	–	2	–	–	–	1	1	–	3	7
Level 4	–	2	–	–	–	7	6	–	3	18
Level 5	–	19	1	–	–	14	5	–	9	48
Level 6	–	25	–	–	–	4	3	1	7	40
Level 7	1	–	–	–	–	3	2	–	–	6
Judgmental sample	–	1	–	–	–	–	2	–	4	7
Feature 46										
Level 2	–	3	–	–	–	4	2	–	–	9

Feature No. and Level	Functional Category									Total
	Activities	Architectural	Clothing	Furniture	Kitchen			Miscellaneous	Personal	
					Food Preparation	Food Service	Food Storage			
Level 3	1	3	–	–	–	6	2	–	6	18
Level 4	–	–	–	–	–	2	1	–	–	3
Level 5	–	–	–	–	–	2	–	–	3	5
Feature 48										
Judgmental sample	–	–	–	–	–	–	1	–	–	1
Feature 49	–	–	–	–	–	–	1	–	–	1
Feature 57										
Level 1	–	–	–	–	–	2	2	–	–	4
Level 2	–	–	–	–	–	1	1	1	–	3
Level 3	–	–	–	–	–	1	–	–	–	1
Feature 59										
Level 4	–	–	–	–	–	–	6	–	–	6
Feature 60										
Level 1	–	1	–	–	–	7	8	–	3	19
Feature 61										
Level 1	–	–	–	–	–	–	91	–	–	91
Feature 62										
Level 1	1	6	–	–	–	8	10	–	–	25
Feature 67										
Level 1	–	2	–	–	–	4	17	–	–	23
Level 2	1	–	–	–	–	–	12	–	–	13
Level 3	–	–	–	–	–	–	2	–	–	2

Feature No. and Level	Functional Category									Total
	Activities	Architectural	Clothing	Furniture	Kitchen			Miscellaneous	Personal	
					Food Preparation	Food Service	Food Storage			
Level 4	–	–	–	–	–	–	36	–	1	37
Feature 68										
Level 1	–	220	–	–	–	3	3	–	–	226
Level 2	–	1	–	–	–	6	7	–	–	14
Level 3	1	–	2	–	–	13	7	–	4	27
Level 4	–	–	–	–	–	3	3	1	1	8
Feature 78										
Level 1	–	–	–	–	–	–	44	–	–	44
Level 2	–	–	–	–	–	1	49	–	–	50
Judgmental sample	–	–	–	–	–	–	50	–	–	50
Non-feature Judgmental sample	–	1	–	–	–	1	7	–	3	12
Total	33	690	28	2	14	439	1,066	7	104	2,383

APPENDIX C
INVENTORY OF UNDIAGNOSTIC GLASS ARTIFACTS

Feature No. and Level	Glass Color							Total
	Aqua	Blue	Brown	Clear	Green	Milk	Red	
Non-feature (Stripping Area 2)	10	–	5	10	–	–	–	25
Feature 7								
Level 2	–	–	1	2	–	–	–	3
Level 3	–	–	5	8	–	–	–	13
Feature 8								
Level 1	1	–	3	20	2	–	–	26
Level 2	1	1	3	13	–	–	–	18
Feature 10								
Level 1	–	–	–	1	–	–	–	1
Feature 12								
Level 1	–	–	1	1	–	–	–	2
Feature 23								
Level 1	–	–	–	1	–	–	–	1
Feature 25								
Level 1	5	–	17	14	5	–	–	41
Feature 27								
Level 1	527	5	1,745	277	1	–	–	2,555
Level 2	627	4	2,376	98	87	–	–	3,192
Level 3	385	–	2,159	111	76	–	–	2,731
Level 4	415	–	1,509	151	60	–	–	2,135
Level 5	484	–	990	73	55	–	–	1,602
Level 6	294	1	1,147	62	64	–	–	1,568

Feature No. and Level	Glass Color							Total
	Aqua	Blue	Brown	Clear	Green	Milk	Red	
Feature 30								
Level 1	5	–	7	5	2	–	–	19
Feature 32								
Level 1	8	2	12	46	6	–	–	74
Level 2	15	3	8	24	5	–	–	55
Level 3	2	–	5	19	5	12	–	43
Feature 32/37								
Level 1	46	–	163	93	120	–	–	422
Feature 37								
Level 1	520	–	866	301	82	–	–	1,769
Level 2	43	–	129	72	85	–	–	329
Level 3	9	–	56	28	33	–	–	126
Level 4	5	–	24	1	17	–	–	47
Feature 38								
Level 1	10	–	29	20	10	1	–	70
Level 2	2	–	1	9	4	–	–	16
Feature 39								
Level 1	42	2	26	16	113	–	–	199
Level 2	28	–	35	33	23	–	–	119
Level 3	70	–	70	25	133	–	–	298
Level 4	563	–	102	50	111	1	–	827
Level 5	3	–	29	54	63	14	–	163
No level indicated	–	–	–	4	–	–	–	4

Feature No. and Level	Glass Color							Total
	Aqua	Blue	Brown	Clear	Green	Milk	Red	
Feature 40								
Level 1	5	–	22	9	6	–	–	42
Feature 44								
Level 1	7	–	40	215	13	–	–	275
Level 2	8	–	24	8	19	–	–	59
Level 3	18	–	8	3	8	3	1	41
Level 4	–	–	4	–	3	1	–	8
Feature 45								
Level 1	16	–	52	40	16	2	–	126
Level 2	17	–	33	8	7	–	–	65
Level 3	21	–	10	33	1	–	–	65
Level 4	70	–	5	38	2	–	–	115
Level 5	9	–	2	24	2	–	–	37
Level 6	5	–	2	1	1	–	–	9
Level 7	7	–	–	24	2	1	–	34
Feature 46								
Level 1	2	–	–	–	–	–	–	2
Level 2	6	–	12	4	15	–	–	37
Level 3	13	–	14	16	31	9	–	83
Level 4	2	–	8	17	1	2	–	30
Level 5	1	–	2	4	1	2	–	10
Feature 57								
Level 1	–	–	4	11	2	–	–	17
Level 2	–	–	6	32	3	–	–	41

Feature No. and Level	Glass Color							Total
	Aqua	Blue	Brown	Clear	Green	Milk	Red	
Level 3	–	–	1	6	–	–	–	7
Feature 59								
Level 1	–	–	–	4	–	–	–	4
Level 4	–	–	–	12	–	–	1	13
Feature 60								
Level 1	29	–	76	70	39	–	–	214
Feature 61								
Level 1	161	–	717	–	172	–	–	1,050
Feature 62								
Level 1	4	–	16	29	12	–	–	61
Feature 63								
Level 1	4	–	2	5	–	–	–	11
Feature 67								
Level 1	58	3	82	38	30	–	–	211
Level 2	58	–	233	15	25	–	–	331
Level 3	29	–	157	12	14	–	–	212
Level 4	121	1	707	16	53	–	–	898
Feature 68								
Level 1	3	–	1	4	1	–	–	9
Level 3	24	–	40	27	22	16	–	129
Level 4	33	–	9	65	15	8	–	130
Total	4,851	22	13,812	2,432	1,678	72	2	22,869

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