APPENDIX H
CULTURAL HISTORY

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1.0 CULTURAL HISTORY

The brief overview of human prehistory presented here covers the Middle Gila River Valley, generally, and the Pinal Mountain Highlands, specifically. The region is at the margin of a highland watershed that is drained by the Gila River. This general geographic characteristic seems to have had a bearing on cultural developments in the region. The following cultural history outline will focus on the cultural sequence as it pertains to this portion of south-central Arizona. A summary of various culture histories relevant to this area is presented in **Chart 1, Synoptic chart of selected cultural chronologies from central and southern Arizona**.

Arizona is a geographically diverse landscape, from the high desert Colorado Plateau in the northeast, across the rugged central mountainous zone, to the southern and western lowland desert basin and range territories. Archaeological evidence indicates that people have adapted to and inhabited this diverse landscape for more than 12,000 years. Over the tenure of human history, the environment has changed radically from the cooler and moister conditions of the late Pleistocene epoch to the warmer and drier conditions of today.

As the environment changed, and as human populations increased over time, a variety of human cultures developed. Although these did not arise in isolation from cultures in other regions, it is evident that cultures in different geographic regions followed unique trajectories. Without ascribing to a philosophy of environmental determinism, human cultural developments responded in unique ways to the biological, geological, hydrological, geographical, and physiographical diversity of Arizona. The long tenure of human prehistory and history in Arizona is divided here into five major periods representing major shifts in the human cultural adaptation: Paleoindian (11,500–8500 B.C.), Archaic (8500 B.C.–A.D. 1), Formative (A.D. 1–1450), Protohistoric (A.D. 1450–1691), and Historic (A.D. 1691–1963). These five main periods are often subdivided into briefer periods to represent cultural trends and developments specific to the various regions across Arizona.

The earliest evidence of people inhabiting Arizona is attributed to the Paleoindian period. Paleoindians, as they are called, are perceived as migratory, nomadic, “big game” hunters who roamed North America at the end of the Pleistocene epoch. Using spears tipped with characteristically large fluted lanceolate projectile points, they hunted the now extinct megafauna of the terminal Pleistocene, particularly mammoth (*Mammuthus* spp.) and ancient bison (*Bison antiquus*) (Faught and Freeman 1998; Reid and Whittlesey 1997:30–37).

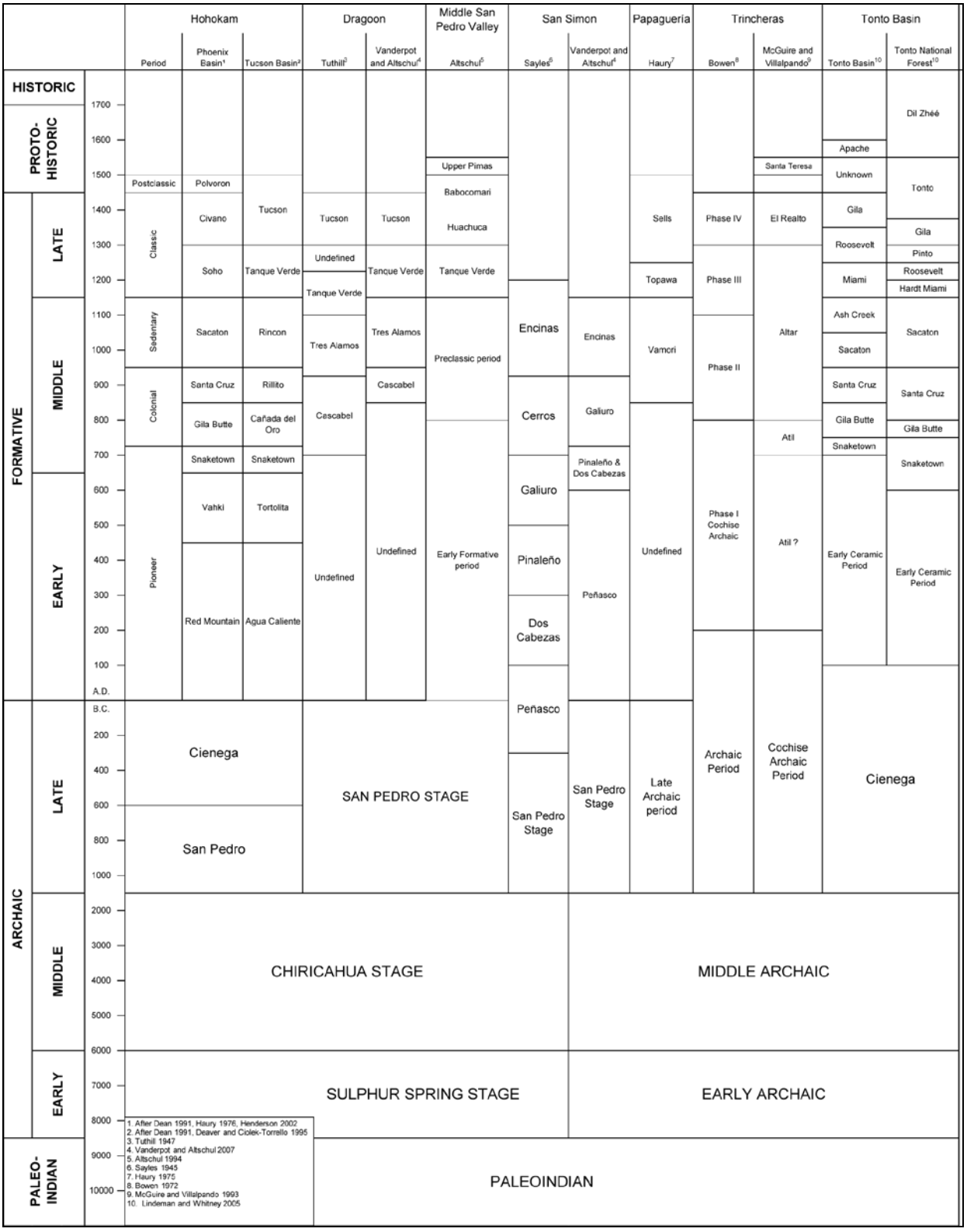
The extinction of the large mammals and the warming and drying conditions of the Holocene epoch ushered in the Archaic period. Human populations responded to changes in the environment and resources by diversifying subsistence strategies, hunting and gathering a broad spectrum of wild plant and animal resources (Mabry 1998; Mabry and Faught 1998). The Archaic period was punctuated by the hot and dry conditions of the middle Holocene “Altithermal” (Mabry 1998:30). A decrease in the number of sites during the middle Holocene led to the hypothesis that there was a virtual withdrawal from the lowlands and a reduced occupation of the highlands in response to the hot and dry conditions (Mabry 1998:65). The number of Archaic period sites increases again between about 3300 and 600 B.C. as temperatures cooled and rainfall increased (Mabry 1998:29, 73). The next significant step in the cultural development of Arizona was the introduction and development of agriculture. Current dating evidence places maize securely in the Southwest by 2100 B.C. (Merrill et al. 2009), but the transition to an agriculture-based subsistence adaptation developed later, around 1700–900 B.C. (Mabry 1998:73).

The introduction of maize and the development of agriculture set the foundation for the cultural developments that followed. As a general statement, the ensuing Formative period is characterized by

increases in population and the differentiation of these populations into the regionally distinctive cultural groups that we identify as the primary archaeological cultures of late prehistory, notably Ancestral Pueblo (Anasazi), Mogollon, Hohokam, Trincheras, and Salado. Prehistory in southern Arizona ends with the collapse of the late Formative period cultures and an apparent depopulation of the region. The subsequent Protohistoric period is poorly understood. Central and southern Arizona was sparsely occupied at first Spanish contact.

The fundamental question facing archaeologists is whether the native peoples encountered by the Spanish were descendants of the prehistoric peoples of the Late Formative period. One possible answer is yes, the people living in southern Arizona were the direct descendants of the prehistoric peoples whose numbers and culture were reduced by the social and economic changes that marked the end of the Formative period. Another answer is that Piman-speaking peoples moved into the area after the collapse of the prehistoric cultural traditions. They may not have found the region to be completely abandoned and, perhaps, were integrated with the descendants of the prehistoric cultures, a possibility suggested by oral tradition (Teague 1993:444). The Athabaskan-speaking Apache occupied the vast mountainous regions below the Mogollon Rim in central and southeastern Arizona (Gilpin and Phillips 1998:68–70; Whittlesey 2003:243). The Apache probably entered the American Southwest late in prehistory and expanded their territory south across eastern Arizona. This expansion eventually brought the Apache into conflict with the Sobaipuri and later European settlers who were also expanding and colonizing southern Arizona. The Historic period commences with the arrival of Jesuit missionary Eusebio Kino and the establishment of Spanish missions and presidios in the Santa Cruz and San Pedro River Valleys in 1691. The Historic period can be characterized by increasing Euroamerican colonization, settlement, expansion, industrialization, and conflict. It is conventionally subdivided into Spanish, Mexican, and American periods reflecting shifts in governmental authority.

Chart 1, Synoptic chart of selected cultural chronologies from central and southern Arizona



1.1 THE PROJECT AREA AND SURROUNDING REGION

1.1.1 Prehistoric Background

The middle Gila River Valley is rich in archaeological sites, and the archaeology of the area is relatively well known. There is very little documentation of a Paleoindian or Archaic period occupation, however, and evidence of the Paleoindian period is limited to a few isolated fluted points (Agenbroad 1967; Huckell 1982). Materials from the Archaic period are also sparse. Archaic campsites were identified along the Gila River during the Buttes Reservoir survey 18 km northeast of Florence (Debowski et al. 1976), and several Late Archaic period projectile points were recorded as isolated artifacts during surveys of the Florence area and the terraces above the Gila River (Doelle 1976:13; Vanderpot 1992). The majority of these sites are affiliated with the Hohokam culture.

Occupation likely occurred along the Gila River and its tributary streams prior to the Hohokam tenure, but the poor visibility of the cultural materials hinders identification and documentation of the extent and intensity of this occupation. Archaeological excavations at the Kearny site, AZ V:13:101(ASM), discovered an occupation dating to the period 100 B.C.–A.D. 200, which overlaps the terminal part of the Late Archaic period and the initial part of the Early Formative period (Clark 2000; Clark and Phillips 2000). This occupation was represented by pit structures, pits, and mortuary features located on the distal reaches of an alluvial fan bordering the Gila River floodplain (Clark 2000).

The earliest recognizable presence of the Hohokam culture in the Gila River Valley east of Florence occurs during the Snaketown phase (A.D. 650–750) of the Late Pioneer period. This period is characterized as the initial expansion of the Hohokam culture outward from the heartland along the Gila River west of Florence. The evidence generally consists of pottery sherds of a style particular to this phase. These sherds are often found mixed with later styles of pottery. Debowski et al. (1976:133) attribute the earliest Hohokam presence in the Buttes Reservoir area to the Snaketown phase based on the ceramics at AZ U:16:4(ASM) and AZ U:16:29(ASM) in the Buttes Reservoir area. There is a distinct increase in Hohokam sites during the Colonial and Sedentary periods. By the early Colonial period, around A.D. 800, many villages and communities had been established along the Gila River and its tributaries, from the Hohokam heartland to the Safford Basin (Debowski et al. 1976:133; Doyel 2000).

Deaver and Altschul (1994) hypothesize that prior to the Colonial period, Hohokam agriculture was largely based on dry-farming and floodwater techniques. During the Colonial-Sedentary period, a mixed-economy *ranchería* system dominated, and small mobile groups diversified and began to cultivate other areas. This diversification is reflected in the archaeological record. Sites were no longer clustered around small drainages and riverine environments. Non-riverine areas were now occupied, linked by a ballcourt system connecting the middle Gila River to the Phoenix Basin (Deaver and Altschul 1994). Sites identified from these periods include extensive settlements and villages, artifact scatters, agricultural sites, irrigation systems, and resource-processing and procurement sites (Deaver and Altschul 1994; Debowski et al. 1976; Doelle 1976; Doyel 1981; Hart and Craig 2006; Lindly et al. 2002; Marmaduke and Hartzell 1987). During the survey of the Buttes Reservoir area, Debowski et al. (1976) recorded a wide variety of Hohokam sites. Many of these contained rainfall- and/or runoff-dependent agricultural features, including checkdams, contoured terraces, rock alignments, and rock piles.

The Hohokam Classic period is characterized by an apparent contraction of populations back toward the settlements along the lower Salt River Valley in the vicinity of Phoenix and the middle Gila River Valley in the vicinity of Coolidge and Florence. Settlements decreased in number, but became more aggregated (Deaver and Altschul 1994:130). Regularly spaced platform mound communities replaced the ballcourt system, and canal irrigation became more systematic and sophisticated (Deaver and Altschul 1994:130). Classic period compound settlements with [platform mounds have also been identified along the Lower

San Pedro River south of its confluence with the Gila River (Clark and Lyons 2012). With this apparent westward contraction, the character of the archaeological sites along the Salt and Gila River Valleys east of the Hohokam heartland began to exhibit characteristics identified archaeologically as "Salado" (Debowski et al. 1976:134; Doyel 2006). These Saladoan characteristics include a preference for cobble-masonry architecture, compound settlement arrangements, and a pottery known as the Salado polychromes (more accurately referred to as the Roosevelt Red ware series) (Debowski et al. 1976:134). There are also changes in the overall settlement pattern. The previous Hohokam sites are generally tightly grouped along the bottomlands of the Gila River and tributary streams. Upland Hohokam sites are characteristically low-density artifact scatters that probably represent temporary foraging camps, small seasonally occupied farmsteads, and resource-procurement locales. Saladoan landscape use still exhibits a focus on the bottomlands of the rivers and streams, but cobble structures and settlements are also found in the hills away from the rivers. The architecture and pottery seem to reflect a shift in the direction of interaction from the west during the pre-Classic period to the northeast during the Classic period.

The Protohistoric period is not well represented in the archaeological record, even though historical documentation supports the presence of Piman groups to the west (Doelle 1981). Piman components were identified at two sites in the Buttes Reservoir project (Debowski et al. 1976); however, there are no known archaeological remains located along the middle Gila River that date to after A.D. 1450 or before A.D. 1694 (Doelle 1981).

The Pinal Mountains have been historically documented as the territory of the Western Apache, specifically the Pinal Band of the San Carlos group (Goodwin 1942:2). At the beginning of sustained European contact in the 1700s, the Pinal Band was known to the Spanish as the *Pinaleños* (Spicer 1962:244). The territory of the Pinal Band included the mountainous areas around the modern town of Globe. The Salt River to the north marked the northern extent of the Pinal Band's territory; the Dripping Springs Valley was the southern limit (Goodwin 1942:25). The spring, summer, and fall months were spent within the highest portions of the Pinal Mountains, hunting large game and collecting wild foods such as acorns from the Emory oak and the hearts of various agave species. Agriculture played a significant role in the diet of the Western Apache. Domesticated crops were known to have been cultivated around Wheatfields on Pinal Creek. Other Apache settlements in the area were on Miami Wash (Bigando 1989:105) and near the confluence of Pinal Creek and the Salt River (Goodwin 1942:24).

During the cold months, lower-elevation camps were established on the southern and southwestern faces of the Pinal Mountains. These were used for staging raids on Piman villages to the west and Mexican settlements to the south (Goodwin 1942:25). The Apache people were economically dependent on raiding and would rely on the acquisition of livestock and foodstuffs during the late winter and early spring months (Goodwin and Basso 1971). The steep escarpment known as Apache Leap on the western edge of the Pinal Mountains was a natural fortress from which the Apache could stage attacks on Piman villages and Anglo settlements on the Gila River (Lindeman 2006; Thrapp 1967). As Euroamerican populations increased in Arizona, conflicts escalated to levels best expressed as open warfare, with atrocities attributed to both sides.

1.1.2 Historical Background

The earliest Europeans in the vicinity were sixteenth and seventeenth century Spanish explorers in search of precious metals or on punitive expeditions against the Apache groups that occupied the surrounding areas. At that time, Mineral Creek was known to the Spanish as the *Rio Puerco* (McCarty and Bufkin 1976). These expeditions were generally small and inconsequential (Sheridan 1995:27). The first Americans to appear in the region were trappers from Taos, New Mexico. They arrived in the 1820s

to trap along the Gila and San Pedro Rivers (Pattie 1831; Walker and Bufkin 1979:17). However, no significant Euroamerican settlements were established in the region prior to the late 1800s.

General Crook's campaigns of 1872 and 1873 opened the way for Euroamerican settlement in the region. The first major ore body discovery in the Western Pinal Mountains was made in 1871 south of Stoneman's Grade by several miners who had been soldiers under a Captain Kerr (Woody and Schwartz 1977). They recorded a number of claims in late 1871 called, collectively, the Silver Queen Ledge, which eventually became the Silver Queen mine and the future location of the Magma mine 30 years later (Walker and Chilton 1991).

While the Silver Queen mine was technically the first registered set of mine claims, it was only discovered after a fruitless search for a far richer mine—the fabled Silver King mine (Woody and Schwartz 1977). The story of the discovery of the Silver King mine begins in 1871 when a Gila Valley rancher named Charles G. Mason was shown a piece of pure silver by John Sullivan. Sullivan, a soldier, had found the silver while working on Stoneman's Grade. Unfortunately for Sullivan, while Mason showed some interest, no one wanted to mount an expedition into Apache territory at the risk of their lives. Sullivan eventually left Arizona in late 1874 or 1875 to seek a milder climate (Woody and Schwartz 1977). Prior to his departure, Mason talked him into giving directions to the ore in exchange for some cash, a pair of boots, and other goods (Woody and Schwartz 1977).

Later that year, Mason went to investigate the area near Stoneman's Grade with a party of miners on their way back from working the Globe Ledge claim (Haak 1991:33). Based on the directions given to Mason—that the spot was a "stone's throw" away from a large prominent boulder near Stoneman's Grade—the ore that would become the famed Silver King mine was finally rediscovered (Woody and Schwartz 1977). The four prospectors filed their claims in Florence, and within 6 months, 50 men were working at the Silver King mine in the newly founded Pioneer Mining District (Haak 1991:33). In 1877, the original prospectors sold out to the Silver King Mining Company headed by George Barney. The Silver King mine became one of the richest mines in Arizona history, generating over 6 million dollars in silver between 1877 and 1886 (Haak 1991). During that same period, mines in the eastern portion of the Pinal Mountains within the Globe Mining District were also producing rich silver and copper ores (Bigando 1989).

As a result of the development in the Pioneer and Globe Mining Districts, Florence became a waypoint through which ore and supplies were transported. Although the Silver King mine folded in 1889, Florence persevered thanks to a water supply made possible by the construction of a controversial canal that diverted water from Piman agricultural fields. Controversy over water plagued the Florence region into the new century. A solution to the water problem was proposed by Congressman Carl Hayden (elected in 1912), who argued that the Pima should not have their water supply restored directly from the Gila River (which would deprive the cotton farmers upstream). Rather, he recommended that a dam be built that would reclaim runoff and thus alleviate the Piman need for water. The San Carlos Irrigation Project bill was passed in 1924 in order to provide irrigation water to lands on the Gila Reservation and additional lands adjacent to the reservation. However, half the lands allocated for the irrigation district to be served by the dam—50,000 acres—were outside reservation lands. These lands were exploited by white growers, who provided excessive competition for the Piman farmers. The Pima did not have the economic resources to farm the lands nearly as efficiently as the large agricultural companies. In addition, an error had been made in the estimation of runoff rates, and the Coolidge Dam (which was completed in 1928 and forms San Carlos Lake) did not provide the expected volume of water. In fact, it prevented floodwater from reaching downstream, desiccating reservation lands even further (Sheridan 1995:217). The steady water supply attracted non-Native American farmers, who began arriving in

Florence around the turn of the twentieth century with the intention of growing cotton. The cotton industry in Florence peaked in the 1920s.

Riverside was founded in 1877 as a stop along the Globe-Florence Road (Granger 1960). The Mineral Creek Mining District was established in the late 1870s, with most of the early operations targeting silver lodes (McClintock 1916:419). Precious metal mining soon faded from the scene with the realization that the district contained immense quantities of copper. This, combined with the increasing demand for copper products in the industrialized world, helped the district become a great Arizona copper producer.

The Ray Copper Company, formed in 1883, was the principal organization that attempted to extract copper from the rich lodes east of the Gila River during the 1880s (Ransome 1919:17). During this time, the town of "Ray City" sprang up around the mines (Myrick 1980:636). After several failed attempts, a syndicate from the United Kingdom named Ray Copper Mines, Ltd., bought the properties of the Ray Copper Company in 1899 (Myrick 1980:636). Over the next few years, the company developed the mines, built a narrow-gauge railroad known as the Mineral Creek Railroad, and established a reduction works at the newly formed community of Kelvin on the Gila River (Myrick 1980:637–639). Several problems hindered the development of the mines, chief among them the inaccurate estimates of the quality of the ore and the mishandling of the daily affairs of the mine by management (Myrick 1980:641).

In 1906, the properties of Ray Copper Mines came to the attention of Daniel C. Jackling, a noted mine investor and operator from Utah, and others investors (Ransome 1919:18). In 1907, Jackling and his partners took over the mining properties formerly held by Ray Copper Mines and divided them between two companies—the Ray Copper Company and the Gila Copper Company. These two companies were reorganized in 1910 into a single company named the Ray Consolidated Copper Company (Ray Con) (Seefeldt 2005:4). Over the next 4 years, Ray Con set about developing the properties. During this period, Ray Con drilled over 350 churn-drill holes to determine the extent of the copper deposits, sunk two main shafts, and drove over 30 miles of drifts and crosscuts. Ray Con also built an 8,000-ton concentration mill at the newly founded town of Hayden at the confluence of the San Pedro and Gila Rivers. The company constructed waterworks at the mine and a new reduction works, built a transmission line between Ray and Hayden, and established a standard-gauge railroad—the Ray and Gila Valley Railroad. Constructed between 1903 and 1904, this railroad extended from Ray Junction (Kelvin) to the Phoenix and Eastern Railroad at Ray. The company also erected "numerous buildings for various purposes" (Ransome 1919:19). With the completion in 1912 of a modern smelter at Hayden operated by the American Smelting and Refining Co. (ASARCO), Ray finally became a significant copper producer in Arizona.

Prior to the development of the district by Ray Con, the Phoenix and Eastern Railroad had been built along the Gila River in 1903–1904 to connect Phoenix with Winkelman, a small community located at the confluence of the Gila and San Pedro Rivers, just south of present-day Hayden (Myrick 1980). In February 1904, a railroad camp was established at the mouth of Ripsey Wash (also known as Wooley Wash), which was considered a difficult arroyo crossing (Myrick 1980:567, 578). Flooding interrupted rail service in 1905, but new, more robust bridges were constructed shortly thereafter at two Gila River crossings and the crossing over Mineral Creek. Nearby railroad stations included Cochran, Buttes, Zelleweger, and Wooley (Myrick 1980:577). Cochran appears to have been the most substantial, and a post office was established there in 1904 (Granger 1960).

Zelleweger Station was named after local cattleman and sometime miner John Zelleweger Sr. (Debowski et al. 1976:119; Myrick 1980:578). Zelleweger Wash is also named after this rancher. Wooley Station (now the A Diamond Ranch) is located at the confluence of Ripsey Wash and the Gila River. It owes its

existence to the Ripsey and Wooley mines located to the south in the Ripsey and Wooley Mining Districts (Debowski et al. 1976:131; Welty et al. 1985:60). The Ripsey mine operated as early as 1894 and was along Ripsey Wash, approximately 8 miles south of Wooley Station. The nearby Wooley mine was started in 1903 and was approximately 4 miles northwest of the Ripsey mine (Myrick 1980:578). It was accessed from the Florence-Kelvin wagon road (Stafford 1908). According to Myrick (1980:578), the mine was named after Jabez Wooley, a mine stockholder who died in 1903. The Wooley mine operated until 1907, after which time both the Ripsey and Wooley mines ceased operation (Myrick 1980:578).

Advancements in copper-mining technology, namely the development of the block-caving method and, by the 1920s, the flotation method of concentration for low-grade, disseminated copper deposits, allowed for the first production of low-grade porphyry ores extracted from the Ray mine in March 1911 (Ahlstrom et al. 1998; Bunyak 1998; Dunning 1966:266; Ransome 1919:18, 19; Tuck 1957:4). During the 1920s, the Ray mine was producing about 65,000,000 pounds of copper annually. A change in corporate ownership occurred in 1922 and again in 1926 when the mine was absorbed by the Nevada Consolidated Copper Co. In 1933, the same year the Kennecott Copper Corp. acquired all interests in the Nevada Consolidated Copper Co., the Ray mine was closed due to the Great Depression. When the mine finally reopened in 1937, copper production stood at 20,000 tons annually for the remainder of the 1930s. In 1943, Kennecott Copper assumed direct control of the Ray mine from Nevada Consolidated and began planning an open pit mine (Dunning 1966:205, 206, 233, 266).

While underground operations at the Ray mine continued through 1955, advancements in earth-moving equipment during World War II allowed Kennecott Copper to begin developing an open pit mine in 1948 (Dunning 1966:267; Tuck 1957:6). During the late 1950s, Kennecott improved the Hayden mill and built a brand new smelter adjacent to it (Dunning 1966:267; Tuck 1957:6). By 1958, the open pit had almost wholly consumed the town of Ray and surrounding ethnically segregated suburbs. Ray would disappear by 1966 (Myrick 1980:654). The town of Kearny was created in 1958 by Kennecott Copper as a company town to house the displaced mine workers and their families (Seefeldt 2005). The Ray mine stayed active throughout the Cold War, supplying copper to the defense and other industries. In the 1980s, the price of copper fell, forcing operations at the Ray mine to cease intermittently and decreasing the wages of the miners. Although several neighboring mines were forced to shut down, the Ray mine remained open and in 1986 was sold to ASARCO by Kennecott Copper (Margolis 1986).

1.2 THE TOWN OF KELVIN

The history of Kelvin is closely linked to the copper industry in the Copper Basin, being first created as a mill town by Ray Copper Mines in 1899. The genesis of Kelvin began decades before the town site was erected. In 1846, Lieutenant Emory, who was accompanying the famous Kearny expedition, described a creek that flowed into the Gila River as being rich with gold and copper lodes. He named this water source Mineral Creek (McClintock 1916:419). The lieutenant had visions of barges full of ore floating down the Gila River (McClintock 1916:419). His barges never materialized, but his vision of the importance of the area eventually became a reality with the establishment of the Mineral Creek Mining District and ore-smelting facilities at the town of Kelvin (Seefeldt 2005:3).

The first claims along Mineral Creek were staked around 1874 by silver prospectors (McClintock 1916:419). By 1877, miners were working along Mineral Creek at Monitor Camp (about 8 miles above the stage stop at Riverside) and further up the creek at the Republic claim (Myrick 1980:635). In 1878, the Mineral Creek Mining District was organized (Seefeldt 2005:3). Most of the early operations in the 1870s targeted silver lodes; however, these would soon fade from the scene with the realization that the district contained immense quantities of copper (McClintock 1916:419).

In the spring of 1880, the Ray and several nearby copper claims were staked along Mineral Creek, and that September, the Pinal Copper Company was established to develop copper claims in the vicinity of Ray. The next year, the newly formed company established a camp near the mines and installed a 30-ton water-jacketed blast furnace along the Gila River (Myrick 1980:635). The exact location of the early furnace is not known, but it was most likely located amongst the Pinal Copper Company mill site claims illustrated on Mining Survey plat map 1432, which is in the same location that would later become the Kelvin Townsite.

As with many other early attempts at mining copper deposits in Arizona, the rich copper ledges of the Pinal Copper Company claims were soon exhausted. While lower-grade ores continued below the naturally enriched lodes exploited earlier, technological and financial limitations hampered the further development of the deposits. Financial problems soon set in for the Pinal Copper Company, and the company's assets were sold at a sheriff's sale in 1881 (Myrick 1980:635). The Ray Copper Company, a New York corporation, was organized to work the 17 claims around the Ray mine. The aforementioned 30-ton blast furnace was built at this time along Mineral Creek to handle the remaining rich ores (Ransome 1919:17). As with earlier companies, the Ray Copper Company quickly ran out of quality ore and by 1888 was confronted with financial and engineering problems that prevented the profitable development of large-scale operations (Seefeldt 2005:3).

As low-grade porphyry ores came to dominate Western mining in the late 1800s, it became necessary to build mills that used gravity to concentrate the ores into a higher grade that could be efficiently smelted in furnaces (Bunyak 1998). An essential aspect of any concentration mill is a dependable water source. In 1899, the Ray mine was sold to capitalists from the United Kingdom, the Globe Mines Exploration Company, Ltd., who founded Kelvin and set up the small Hercules concentration mill for processing the copper ores removed from the mines farther up Mineral Creek (McClintock 1916:420; Myrick 1980:637–639). Ore was transported down a narrow-gauge railroad from the mines to the mill (Myrick 1980:637–641). From the mill, the concentrated ores were hauled overland via steam traction engines and, later, mule teams to the Southern Pacific Railroad at Red Rock, where they were later shipped to smelting plants (Deboswki et al. 1976:127). The Ray Copper Company properties were acquired by the English corporation, and Ray Copper Mines was organized to work the Ray mines (Ransome 1919:17). Initial estimates for Ray Copper Mines predicted the remaining ore richness at around 4.5 to 5 percent copper, but it was in reality closer to 2 percent. This fact eventually caused the company's downfall, and ore processing stopped in 1902 after only 3 years of operation. Ray Copper Mines ceased all production in 1906 (Debowski et al. 1976:127; Ransome 1919:17; Seefeldt 2005:4).

The town formed by Ray Copper Mines was named after famed English scientist Lord Kelvin (Myrick 1980:637). This town was one of the most modern in Arizona, complete with tennis courts and golf courses, possibly constructed to facilitate the desires of the English investors (Debowski et al. 1976:127; Myrick 1980:641). The concentrating mill had a daily processing capacity of 250 tons and was considered one of the most advanced mills in Arizona. In addition to the mill, the company maintained machine and blacksmith shops, a well and pumping facility, and multiple 400-hp gasoline engines. Two large adobe buildings housed the company offices, club rooms, and baths. The company also managed a mercantile ("Ray Copper Mines," *Arizona Silver Belt*, May 24, 1900). An application for a post office was processed at this time and, by 1900, the post office was moved from Riverside to Kelvin. The town continued to grow for a few short years, with an estimated 800 residents in 1900. At one point, a town census estimated the population to be as high as a thousand people (Debowski et al. 1976). Period photographs illustrate dozens of tent houses, substantial wooden buildings, adobe buildings, a water tank that supplied domestic and industrial uses, the two-story mill, and a narrow-gauge line to the mines (Myrick 1980:637). A small smelter was even constructed sometime around 1900, but it never operated (Stevens 1906:849).

Unfortunately, the poor quality of the nearby ore and the lack of technology to make it profitable made Kelvin's success short lived. In 1902, Ray Copper Mines realized that the ores at Ray would not be profitable using conventional means, and the European investors sold their interests to Ray Con in 1907 (McClintock 1916:420; Myrick 1980:644). The town of Kelvin held on. In 1906, Kelvin still had 200 residents, a railroad station, a post office, and the "Southern Hotel" (Debowski et al. 1976:127). In 1907, Ray Con took ownership of Ray Copper Mines and began developing the mines and related infrastructure. Ray Con restarted the concentration mill in 1907. The mill was enlarged and used as an experimental mill for treating Ray ore (Myrick 1980:648, 649). The low-grade ores extracted from the Ray mine were not profitably exploited until 1911 (Ahlstrom et al. 1998; Dunning 1966:266; Ransome 1919:18; Tuck 1957:4).

Despite 1909 expansion plans for the facilities at Kelvin, Ray Con decided that the topography around the town and the local water supply were not conducive to large-scale ore concentration. Ray Con officials built a new, modern reduction works farther up the Gila River near the confluence with the San Pedro River at Hayden. Production at Hayden began in March 1911 (Myrick 1980:649, 656). By this time, the town of Kelvin was no longer a thriving community. It lived on for a few more years as the junction of the Arizona Eastern (the old Phoenix and Eastern) and the Ray and Gila Valley Railroads. The Kelvin post office was officially shut down in 1952 (Debowski et al. 1976). Today, the town of Kelvin consists of decaying buildings, concrete foundations, and a few inhabited houses.

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