South Mountain corridor team

A Class I Overview of the South Mountain Freeway Corridor Study Area, Maricopa County, Arizona

by

Damon Burden

In support of the **Technical Studies** to the **Environmental Impact Statement**

South Mountain Transportation Corridor in Maricopa County, Arizona

Arizona Department of Transportation
Federal Highway Administration
in cooperation with
United States Army Corps of Engineers
United States Bureau of Indian Affairs

ADOT

Version1.0/February 2002

ADOT TRACS No. 202L: MA 054 H5764 01L
FHWA Federal Aid Project No. NH-202-D( )

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Abstract: This Class I Overview presents a comprehensive inventory of previous archaeological investigations and recorded archaeological sites within the South Mountain Freeway Corridor study area. This document is to be used as a management tool in the consideration of alignment alternatives within the project area.

SHPO REPORT ABSTRACT

AGENCY: Arizona Department of Transportation; Arizona Game and Fish; Arizona State Land Department; Bureau of Land Management; Gila River Indian Community; Phoenix Parks, Recreation, and Library Department

PROJECT TITLE: A Class I Overview of the South Mountain Freeway Corridor Study Area, Maricopa County, Arizona

DATE OF REPORT: May 21, 2002

GRIC-CRMP REPORT NUMBER: CRMP Technical Report 2002-09

PROJECT DESCRIPTION: This Class I overview presents a comprehensive assessment of previous archaeological investigations and recorded archaeological sites within the 140 square mile (362 km^2) South Mountain Freeway Corridor study area.

LOCATION: The project area is comprised of a broad, L-shaped transect that extends from Interstate 10 west of Phoenix to Interstate 10 south of the greater Phoenix metropolitan area. Designed for the consideration of alternative freeway corridors, the study area covers a large portion of the southwest valley between the Estrella Mountains and South Mountain Park. The north-south arm of the project area extends southward from the west Phoenix/Tolleson area through the communities of Laveen, St. Johns, and Komatke. Below South Mountain Park, the study area turns eastward, passing through the southern portion of the Ahwatukee/Foothills community and ending in southern Chandler. A large portion of the project area falls on the northern edge of the Gila River Indian Community (GRIC). The entire study area is situated in the townships and ranges depicted on the following 7.5′ USGS topographic quadrangles: Avondale SE, Fowler, Gila Butte NW, Guadalupe, Laveen, Lone Butte, Montezuma Peak, Pima Butte, and Tolleson. Refer to Table 2.1 for a list of township and range coverage within specific topographic quadrangles.

- Township 2 North, Range 1, 2 East
- Township 1 North, Range 1, 2 East
- Township 1 South, Range 1, 2, 3, 4 East
- Township 2 South, Range 1, 2, 3, 4 East

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NUMBER OF ACRES SURVEYED: 37,286 acres of the 89,347 acre project area have previously been surveyed

NUMBER OF PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS: 145

NUMBER OF SITES: 301

NUMBER OF LISTED SITES: 2 (GR-1057 [T:12:9 ASM; Villa Buena] and T:11:39 ASM [the Cashion Site])

NUMBER OF ELIGIBLE SITES: 27

NUMBER OF POTENTIALLY ELIGIBLE SITES: 121

NUMBER OF INELIGIBLE SITES: 15

NUMBER OF SITES OF
"UNDETERMINED" OR "UNKNOWN" ELIGIBILITY: 136 (Table 5.3)

COMMENTS: The Arizona Department of Transportation (ADOT) is preparing a new Environmental Impact Statement and Location/Design Concept Report for the South Mountain Freeway Corridor, south and west of the greater Phoenix metropolitan area. As part of that report, this Class I overview provides a detailed inventory of previously recorded archaeological sites and previous archaeological investigations located in the current study area. This document is to be used primarily as a management tool in the consideration of alignment alternatives within the project area or area of potential effect (APE). As such, it provides information on the nature, distribution, and National Register of Historic Places (NRHP) eligibility for recorded archaeological sites, identifies areas in need of archaeological survey, and presents management recommendations for the study area.

LIST OF FIGURES

LIST OF TABLES

Acknowledgments

Special thanks must be extended to members of the GRIC-CRMP staff who were instrumental in the completion of this overview. Rick Barfield set up contacts with the Arizona State Museum in Tucson and collected the bulk of the archival information appearing in this report. He was also responsible for building the sites and projects tables via the tortuous process of data entry. The contributions of Lynn Simon, Russ Talas, and Selena Cruye of the CRMP Survey and Cartography section were invaluable. These individuals spent long hours preparing the figures and graphics included in this report, and many more hours addressing the author's comments and edits. Dr. Andrew Darling served as Project Director and handled most of the official business and contacts with HDR, Inc.

Thanks are extended to the following agencies, institutions, and persons for their assistance in our archival research:

- Arizona State Museum, University of Arizona, Tucson

  -Sharon Urban

- Arizona State University, Department of Anthropology, Tempe

  -Dr. Michael Barton

- State Historic Preservation Office, Phoenix

  -Dr. David Jacobs

- HDR, Inc.

  -Karen Wigglesworth

- Archaeological Research Services, Inc., Tempe

  Suzanne Crohn

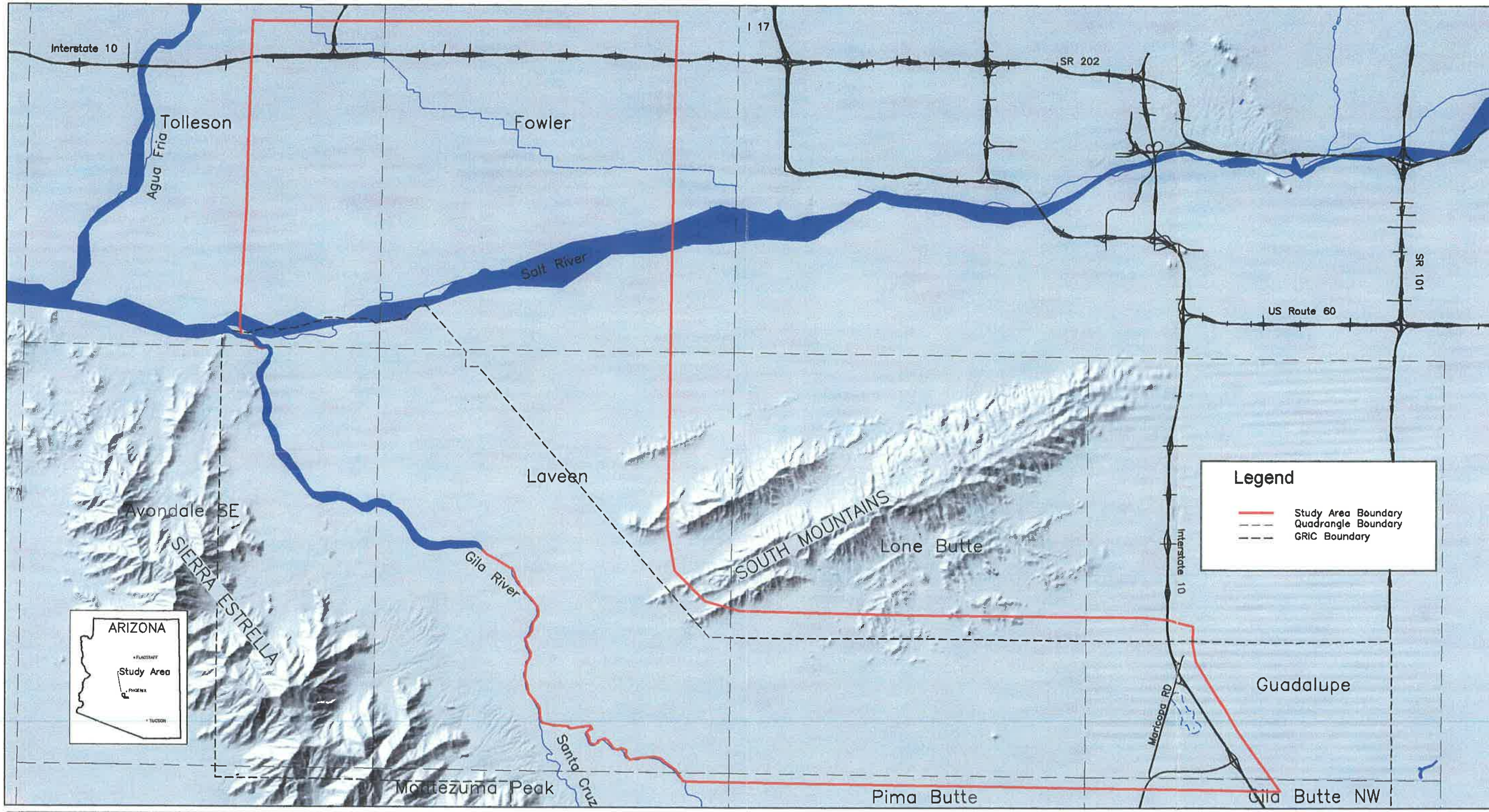
Parts of the "Environmental Setting" and "Cultural Background" sections were abstracted from the following GRIC-CRMP reports: Darling and Touchin (2001), Woodson and Davis (2001), and Woodson and James (1999).

1. Introduction

The following Class I Overview of the South Mountain Corridor Study and Environmental Impact Statement (EIS) was completed by the Gila River Indian Community (GRIC) Cultural Resource Management Program (CRMP) under contract to HDR Engineering, Inc. The overview is designed as a management tool to identify previously recorded archaeological sites that might be impacted by future Arizona Department of Transportation (ADOT) highway construction, as well as areas in need of additional archaeological survey. As such, this report provides a summary of previous archaeological investigations; information on the nature, distribution, and National Register of Historic Places (NRHP) eligibility of all recorded archaeological sites; and management recommendations for the study area.

The South Mountain Freeway is planned as an outer loop connecting Interstate 10 west of Phoenix with Interstate 10 south of the greater Phoenix metropolitan area. Since the placement of the actual freeway corridor has yet to be decided, the current study area covers a broad portion of the valley between the Estrella Mountains and South Mountain Park. As defined by the Arizona Department of Transportation (ADOT), the north-south leg of the study area extends from the west Phoenix/Tolleson area through the community of Laveen (Figure 1.1). The central segment of the study area passes through the communities of St. Johns and Komatke, at the southwestern edge of South Mountain Park. The east-west leg of the study area passes through the southern portion of the Ahwatukee/Foothills community, ending in southern Chandler. Much of the study area includes reservation land on the Gila River Indian Community (GRIC). In all, the South Mountain Corridor study area encompasses approximately 362 $km.^2$ (140 square miles).

This overview, accomplished by an archival records check and literature search, identified a total of 301 recorded prehistoric and historical archaeological sites in the study area. Numerous unrecorded but historically documented cultural resources are also present. Given the large number of archaeological investigations and recorded archaeological sites in the area of potential effect (APE), the project area has been divided into four segments using USGS 7.5′ topographic quadrangle boundaries (Table 2.1; Figure 2.1). While the figures presented in this document reflect these divisions, they also include areas immediately surrounding specific quadrangle boundaries to facilitate visual continuity between study area segments.



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0 .5 1 2 4 Miles

Map of the South Mountain Freeway study area.

Figure 1.1

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PROJECT HISTORY

The Arizona Department of Transportation (ADOT) initiated preparation of a new Environmental Impact Statement and Location/Design Concept Report in 2001 to consider alternatives to the findings of the 1988 South Mountain Freeway concept (SMCT 2001). In the summer of 2001, HDR Engineering, Inc. was contracted to provide services in connection with this project. The GRIC-CRMP was contracted by the project engineer to provide a Class I cultural resource overview of the study area and subsequently to perform a Class III cultural resource survey of any properties requiring archaeological coverage. As an integral part of this effort, this overview was undertaken by the GRIC-CRMP to document all cultural resources that might be impacted by future highway construction and to identify areas in need of additional archaeological survey.

PROJECT DELIVERABLES

The following deliverables are part of the Class I Overview:

1) A report presenting summaries of the environmental setting and cultural historical background of the study area; a summary of previous archaeological investigations in the project area; information on the nature, distribution, and NRHP eligibility of recorded archaeological sites; and management recommendations for the project area.

2) A table summarizing 145 previous archaeological investigations conducted in the project area, organized chronologically by year of the project and project number(s), including the following project information: USGS 7.5′ topographic quadrangle, organization that completed the project, brief project description, project type, and reference(s) in which the project is documented.

3) A table summarizing the 301 recorded archaeological sites in the project area, organized by site number, including the following information: USGS 7.5′ topographic quadrangle, site name, site type, cultural affiliation, time period, NRHP eligibility status, land ownership status, and reference(s) in which the site is documented.

4) Maps of the western, central, and eastern portions of the project area depicting USGS 7.5′ topographic quadrangle coverage, townships, property ownership, previous archaeological project areas, and the locations of recorded archaeological sites.

CLASS I OVERVIEW METHODS

To facilitate this research, archaeological site records were examined at various agencies and institutions for information on the project area. Locations of sites and previous archaeological project areas were then plotted on the topographic maps. Further information, such as NRHP eligibility status, was gathered from available published reports and materials, as listed in the References Cited.

Based on this research, two sets of tables were generated that inventory the previous archaeological investigations and known archaeological sites within the project area. Relevant summary information for each investigation and site is included in these tables, which constitute the core of this overview. In addition, summaries of the environmental setting and culture historical background of the study area are presented.

Information Sources

Site records, supporting documentation, and representatives from the following agencies and institutions were consulted from information relevant to the project area:

- Arizona State Museum (ASM), University of Arizona, Tucson
- Arizona State University (ASU), Department of Anthropology, Tempe
- Gila River Indian Community, Cultural Resource Management Program, Sacaton
- State Historic Preservation Office (SHPO)

Representatives of the State Historic Preservation Office were contacted with regard to this project, and a brief visit was made to the Phoenix office. Unfortunately, all of this office's information on Maricopa County was recently sent to another location to be recorded on CDs, and therefore not available for review. This material will be consulted as soon as it is returned to the SHPO in Phoenix.

REPORT ORGANIZATION

In the following four chapters, project background information, results of archival records check and literature search, and a summary of the findings are presented. General background information relevant to the overview is provided in Chapter 2. This includes project location, a summary of the environmental setting, and culture historical background of the study area. The results of the archival records check and literature search are presented in tabular form. Chapter 3 presents summary information on previous archaeological investigations, organized chronologically by year of the project and project number(s). Chapter 4 presents information on all recorded archaeological sites, organized by site number, and includes a brief discussion about historically documented cultural resources within the project area. A summary of the overview results along with project area management recommendations is presented in Chapter 5.

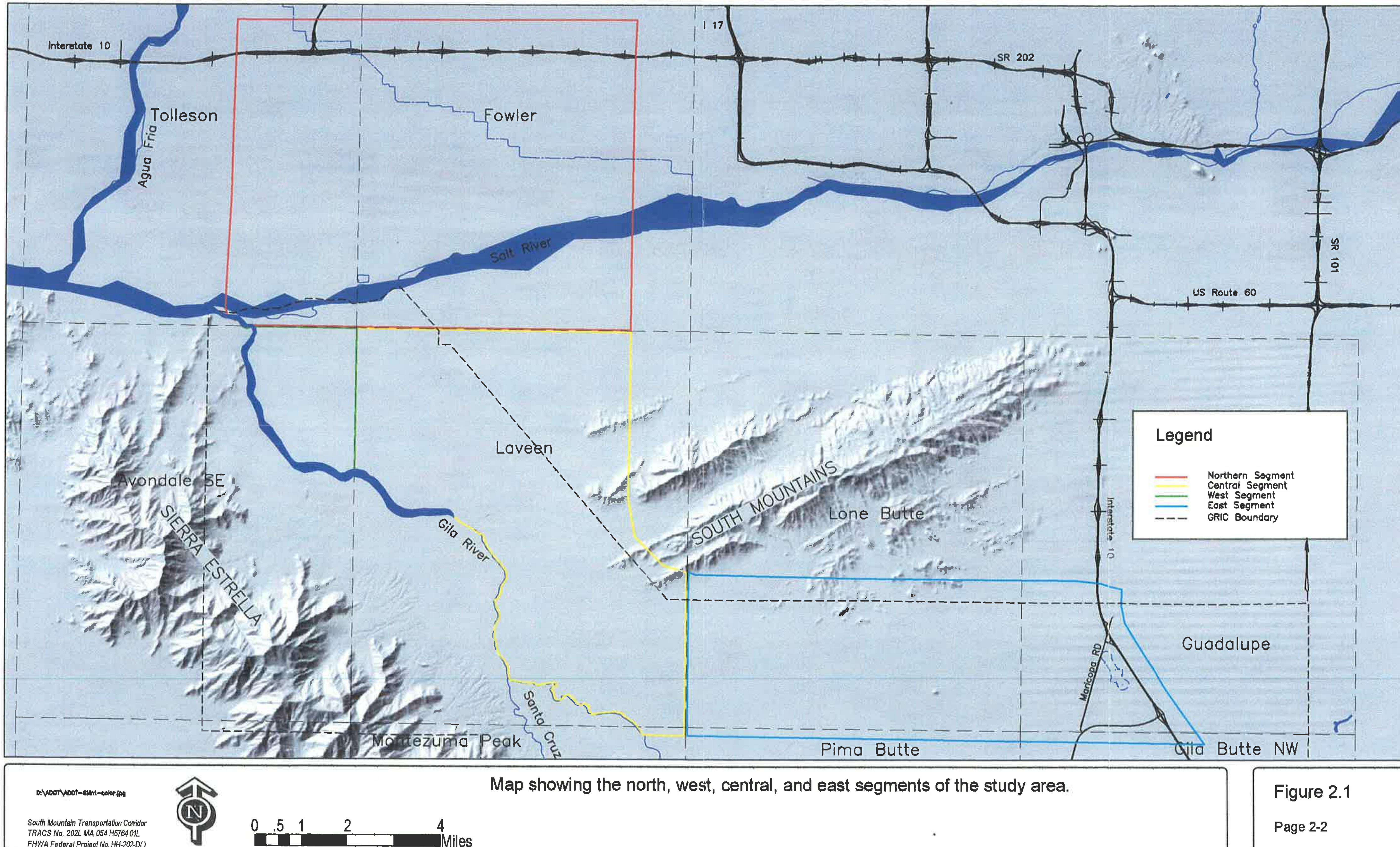
2. Project Background

PROJECT LOCATION

The South Mountain Freeway Corridor study area, herein referred to as the area of potential effect (APE), includes approximately 36,159 ha. (89,347 acres) south and west of the greater Phoenix metropolitan area (Figure 1.1). The APE crosses portions of 12 townships in Maricopa County, south-central Arizona, and can be found on the following USGS 7.5′ maps: Avondale SE, Fowler, Gila Butte NW, Guadalupe, Laveen, Lone Butte, Montezuma Peak, Pima Butte, and Tolleson. For clarity, figures of the study area are divided into north, west, central, and east segments along topographic quadrangle boundaries (Figure 2.1). Figures 2.2, 2.3, and 2.4 depict township boundaries, topographic quadrangle coverage, and land ownership status in each of these segments. Table 2.1 summarizes township and USGS 7.5′ topographic quadrangle coverage included in each of these segments.

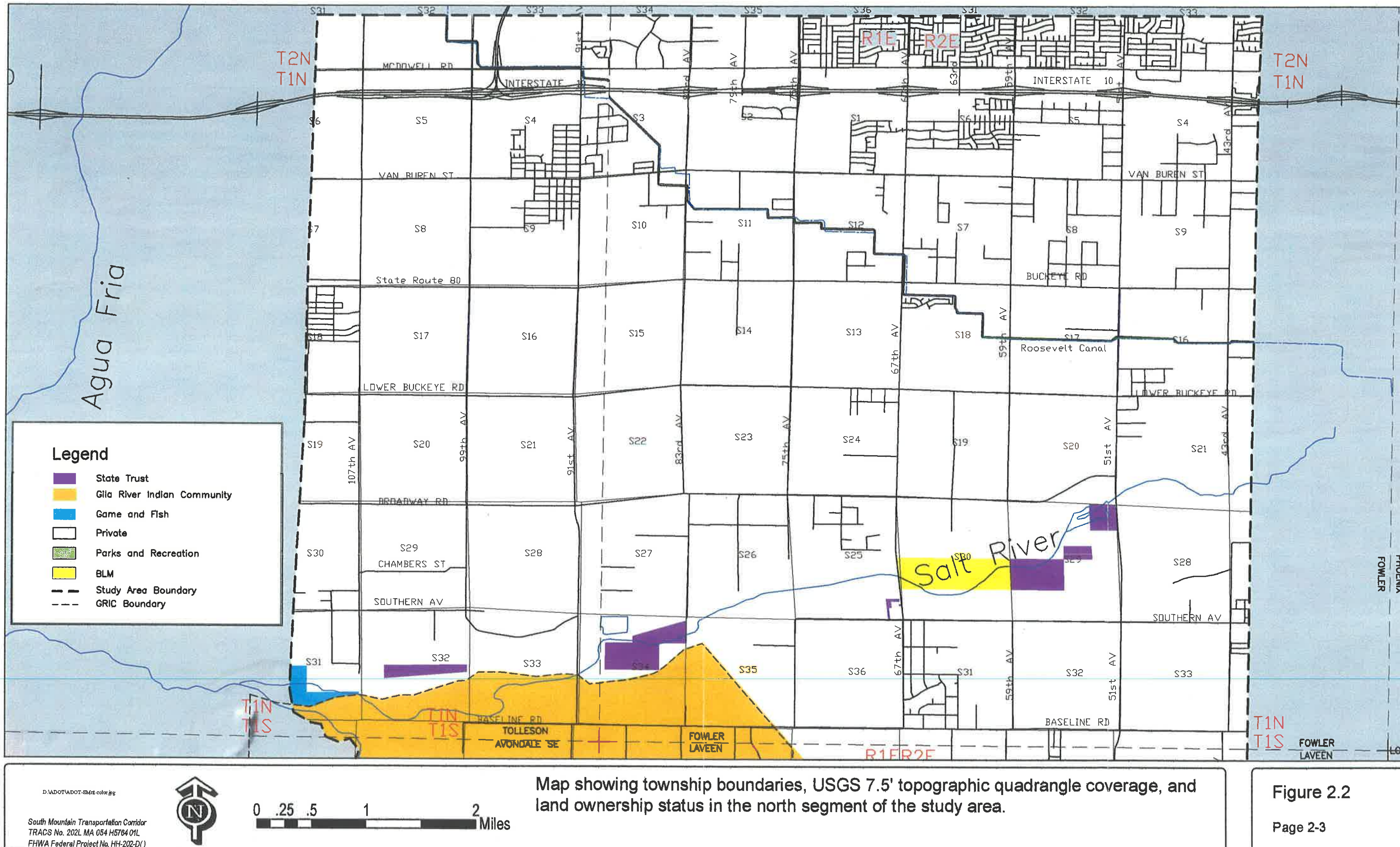
Table 2.1. Study Area Segments and Corresponding Townships and USGS 7.5′ Topographic Quadrangles

Study Area Segments	Townships	USGS 7.5′ Topographic Quadrangles
North	Township 2 North, Range 1, 2 East Township 1 North, Range 1, 2 East Township 1 South, Range 1, 2 East	Fowler Tolleson
West	Township 1 South, Range 1 East	Avondale SE
Central	Township 1 South, Range 1, 2 East Township 2 South, Range 1, 2 East	Montezuma Peak Laveen
East	Township 1 South, Range 2, 3, 4 East Township 2 South, Range 2, 3, 4 East	Gila Butte NW Guadalupe Lone Butte Pima Butte



Map showing the north, west, central, and east segments of the study area.

Figure 2.1



Map showing township boundaries, USGS 7.5' topographic quadrangle coverage, and land ownership status in the north segment of the study area.

Figure 2.2

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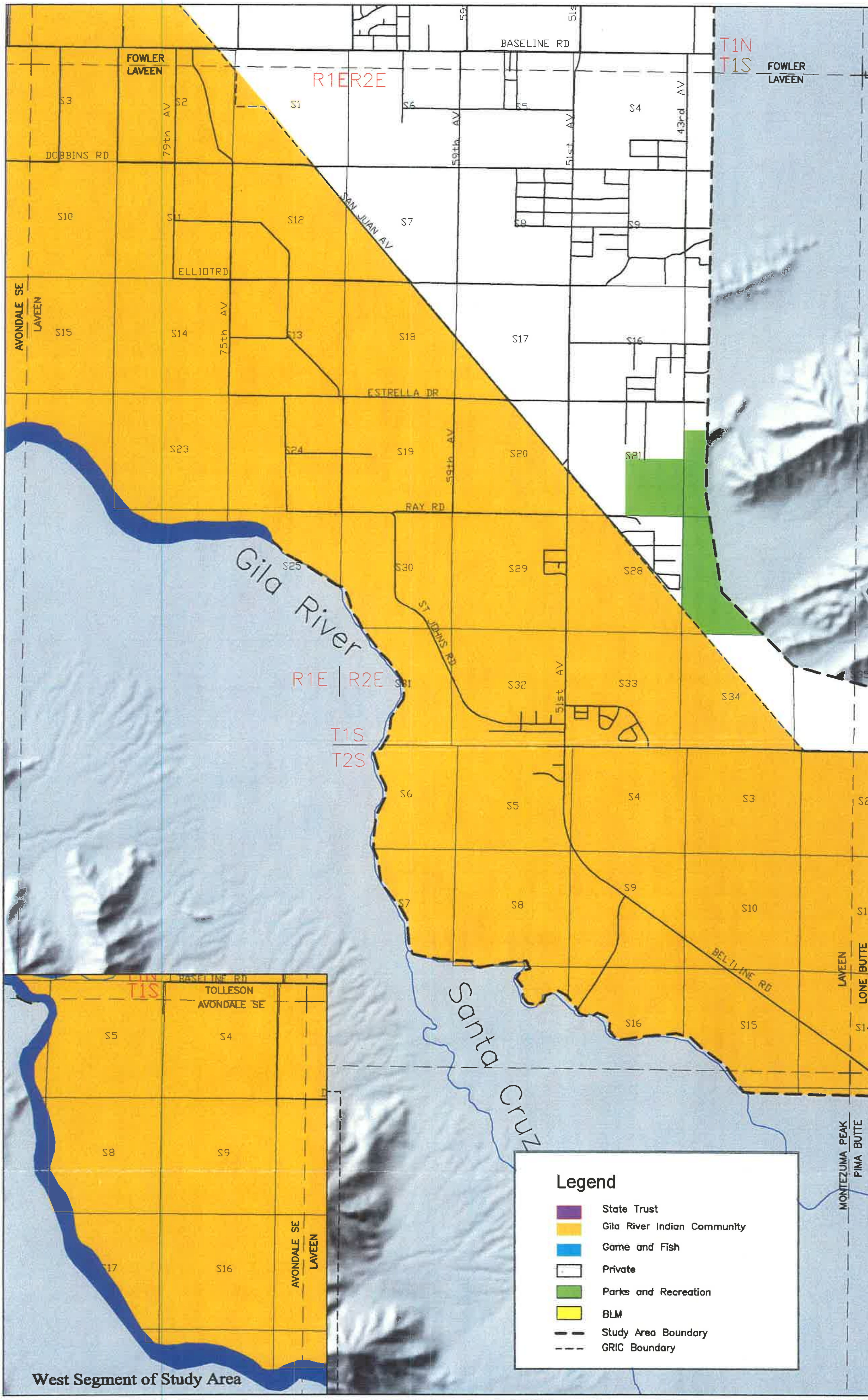

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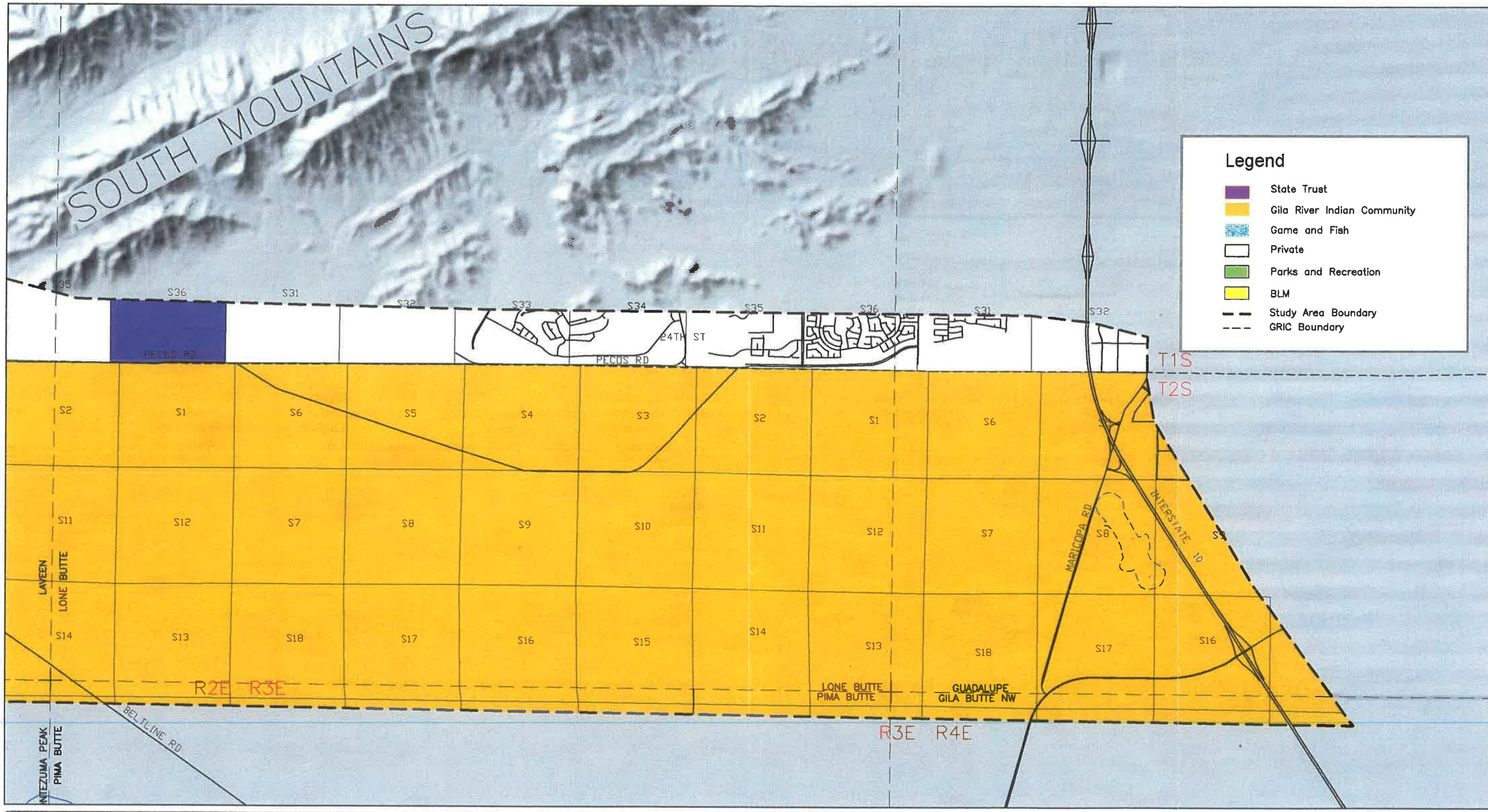
Map showing township boundaries, USGS 7.5' topographic quadrangle coverage, and land ownership status in the west and central segments of the study area.

0 .25 .5 1 2 miles

Figure 2.3



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Map showing township boundaries, USGS 7.5' topographic quadrangle coverage, and ownership status in the east segment of the study area.

Figure 2.4

ENVIRONMENTAL SETTING

The South Mountain Freeway study area is located just above the Gila-Salt River confluence in the Phoenix Basin, an area of south-central Arizona characterized by fault-block mountains and intervening, sediment-filled basins. The basin is generally defined by the Bradshaw-Mazatzal-Superstition Mountains on the north and east, the area of the Hassayampa River on the west, and the Buckeye Hills and Sierra Estrella Mountains on the west and southwest (Péwé, 1978:1). This region is part of the Sonoran Desert subprovince of the Basin and Range physiographic province.

According to Abbott (2000:20), the study area is located at the western edge of the central Phoenix basin, a subregion loosely defined by the Agua Fria and Gila Rivers on the west and south and the Usery, Santan, Phoenix, and McDowell Mountains to the east and north. For the purposes of discussing environmental setting, the study area is divided into two primary geographic zones: the lower Salt Valley and the middle Gila Valley. These zones represent geographic subdivisions of southern-central Arizona based on dominant drainage areas and constitute convenient spatial units for summarizing the present-day environment of the study area. The physiography, hydrology, climate, and floral and faunal communities of each zone are briefly discussed below. Although a few observations are included on past environment and the transformation to the modern environment, the reader is directed to other sources for a more thorough treatment of these subjects (for example, Berry and Marmaduke, 1982; Castetter and Bell, 1942; Dobyns, 1981; Doelle, 1976; Gasser, 1976; Gasser and Kwiatowski, 1991; Hackenberg, 1983; Rea, 1983, 1997; Russell, 1908; Teague and Crown, 1984a; Wilson, 1999).

Middle Gila Valley

The Gila River, which drains about 150,000 $km.^2$, is divided into upper, middle, and lower reaches (Waters, 1998). The middle Gila River is conventionally described as that 120-km. (72-mile) reach from North and South Butte (collectively known as "the Buttes") located about 26 km. east of Florence, downstream to the confluence of the Gila and Salt rivers (Doyel et al., 1995; Eiselt et al., 2002; Gregory and Huckleberry, 1994; Waters and Ravesloot, 2000, 2001; Woodson and Davis, 2001). Prominent bedrock features include the Sierra Estrella, South, Sacaton, and Santan mountains. Smaller bedrock extrusions along the Gila River include Pima, Gila, Cholla, and Poston buttes. Elevations range from 287 m. (941 ft.) at the Salt-Gila confluence to 1,375 m. (4,512 ft.) in the Sierra Estrella Mountains. The middle Gila Valley is broad, ranging from 5 km. (3.2 miles) to over 20 km. (12.5 miles) in width, and has a low gradient, dropping only 176 m. (579 ft.) from the Buttes to the Gila-Salt confluence, an average of 1.4 m. (4.6 ft.) per kilometer. The valley contains three major landforms: the river channel, terraces, and bajadas (Waters, 1996). An eolian sand sheet also covers large portions of the upper terrace.

The Gila River is the primary drainage in this geographic zone, and its major tributary washes include (from west to east) the Santa Cruz and McClellan washes, and the Little Gila River. The floodplains of the middle Gila Valley are broad with low gradients and the river is characterized by low stream velocities when flowing. With the construction of Coolidge Dam in 1928, streamflow from approximately 75 percent of the watershed above the middle Gila became regulated, which left the San Pedro River as the primary unregulated streamflow source (Huckleberry, 1993:46, 48). Today, all streamflow above the middle Gila River is diverted into the Florence-Casa Grande Canal at Ashurst-Hayden Diversion Dam, just below the Buttes, leaving the middle and lower reaches of the Gila River dry, except following heavy rainfall. In most cases this runoff water infiltrates the ground after flowing a short distance (Waters and Ravesloot, 2000, 2001). Regular surface flow is only present in a few places on the lower sections of the middle Gila River, such as near the confluence with Santa Cruz Wash; however, these sources are not perennial.

The climate of the middle Gila Valley is hot and arid (Sellars and Hill, 1974). The mean annual temperature is 20.6° C (69° F), with July maximum temperatures averaging 41° C (106° F) and January minimum temperatures averaging 1° C (33° F; Camp 1986). There is a slight moisture gradient from west to east, and mean annual rainfall ranges from 19 cm. (7.5 in.) at Maricopa to 21 cm. (8.3 in.) at Sacaton to 24 cm. (9.4 in.) at Florence (Sellars and Hill, 1974). The wettest months are typically July and August, during which afternoon thunderstorms develop and produce heavy but localized rainfall. A secondary period of precipitation occurs in the winter when large storms from the Pacific Ocean enter the region. Rainfall associated with these storms is typically gentle and widespread. The months of April, May, and June are the driest. Occasionally, late summer or early fall tropical storms from the eastern mid-Pacific circulate over Arizona and may contribute considerable rainfall to the region (Hirschboek, 1985; Smith, 1986). Generally, the middle Gila Valley is a water-deficient region, with evapotranspiration most always exceeding precipitation (Waters, 1998).

Vegetation in the middle Gila Valley is classified as part of both the Lower Colorado River Valley and Arizona Upland subdivisions of the Sonoran Desertscrub biotic community (Brown, 1994; Brown and Lowe, 1980). The easternmost part of the middle Gila Valley and the upper mountain elevations are within the Arizona Upland subdivision, and the lower elevations are within the Lower Colorado River Valley subdivision. Also, some sections alongside the Gila River still support segments of the Sonoran Riparian Woodland and Riparian Scrubland biomes. This riparian habitat has been substantially altered since the late nineteenth century, when mesquite bosques and extensive stands of cottonwoods, willows, and reeds dominated riverine and drainage areas (Rea, 1983, 1997). The Lower Colorado River Valley subdivision is predominantly characterized by the creosote bush-white bur sage and saltbush series. At higher elevations along the bajadas, the palo verde-cacti-mixed scrub series appears in the transition to the Arizona Upland Subdivision, which also includes the creosote bush–crucifixion thorn series.

A large portion of the middle Gila Valley has been altered as a result of agricultural development; grasses, forbs, and Russian thistle are common in fallow or previously cultivated fields (Eiselt et al., 2002; Woodson and Davis, 2001).

A wide variety of animals presently inhabits or formerly populated the middle Gila Valley. The most diverse faunal community lived in the riparian zones, and included beaver, muskrat, otter, skunk, raccoon, gophers, squirrels, and a number of species of fish (Berry and Marmaduke, 1982; Doelle, 1976; Rea, 1998; Russell, 1908). Animals that are or were present throughout the middle Gila area include mule deer, white-tailed deer, bighorn sheep, antelope, badger, gray fox, coyote, and gray wolf (Doelle, 1976:10–11; Russell, 1908). Bird species are and were numerous, including red-tailed hawk, American kestrel, turkey vulture, great-horned owl, Gila woodpecker, cactus wren, and Gambel's quail (Rea, 1983). Reptiles inhabiting the area include desert tortoise, Sonoran mud turtle, rattlesnakes, and a number of other snakes, iguanas, and lizards. Many of these and other animal species have been recovered from archaeological sites in the area (for example, see Haury, 1976 and faunal studies therein; James, 1992, 1993, 1999).

Lower Salt Valley

As the principal tributary of the Gila River, the Salt River drains approximately 33,670 km.^{2} (Graybill and Nials, 1989). The approximate 71 km. (44 mile) stretch between the Verde River and Gila River confluences is known as the lower Salt River Valley (Doyel, 1995). This portion of the valley shares a number of geologic and environmental similarities with the middle Gila Valley. Prominent bedrock features include the Phoenix, McDowell, Usery, and South Mountains and the smaller Papago and Tempe Buttes along the river in the central portion of the lower valley. Elevations range from 287 m. (941 ft.) at the Salt-Gila confluence to 1,255 m. (4,116 ft.) at the summit of the McDowell Mountains. Paired terraces along the Salt River between Tempe and Roosevelt Dam include the Lehi, Blue Point, Mesa, and Sawick (Péwé, 1978). At present, the Salt River Valley is largely composed of alluvial fan-pediment surfaces sloping toward the river.

The Salt River is the second largest river in Arizona. Major tributary washes of the lower Salt River include (from west to east) Cave Creek, Indian Bend Wash, and the Verde River. Before the construction of Roosevelt Dam in 1911, the Salt River was characterized by perennial streamflow except in the driest months when water moved beneath permeable portions of the riverbed (Abbott, 2000). In the vicinity of Phoenix, the river had a broad, shallow, braided streambed with a low to relatively steep gradient, dropping between 1.2 m. and 3.0 m. per kilometer (6.2 and 15.3 ft. per mile; Graybill and Nials, 1989). On average, annual streamflow in the Salt (when combined with that of the Verde River) was almost four times greater than that of the Gila and San Pedo rivers combined, making it more favorable for irrigation agriculture (Masse, 1991; Waters and Ravesloot, 2001). Streamflow peaked in March and April with snowmelt from higher elevations, and again in August as a result of summertime thunderstorms

(Doyel, 1995; Henderson and Hackbarth, 1995; Masse, 1991). Streamflow reconstructions via the analysis of tree-ring data collected from the upper watershed of the Salt and Verde Rivers indicate that yearly flow was quite variable (Graybill, 1989). Modern regulatory actions and resource exploitation have narrowed and deepened the original channel (Graybill and Nials, 1989).

Not surprisingly, the climate of the lower Salt Valley shows little difference from that of the middle Gila Valley. Climactic data for the city of Phoenix shows a mean annual temperature of 22.2° C (72° F), with July maximum temperatures averaging 40.3° C (104.4° F) and January minimum temperatures averaging 5° C (41° F). Mean annual rainfall is 19.3 cm. (7.6 in.; Sellars and Hill, 1974). Like the Middle Gila Valley, rainfall is biseasonal but typically summer dominant, with high intensity thunderstorms providing the most moisture in July and August. The secondary period of precipitation occurs in the winter when Pacific frontal systems spread gentle rainfall across the region. April, May, and June are the driest months.

The expansion of modern agricultural fields and subsequent encroachment of the Phoenix metropolitan area has greatly affected the extent of the lower Salt River Valley's original vegetative regimes. However, examples of the Lower Colorado River Valley and Arizona Upland subdivisions of the Sonoran Deserscrub community can still be found along this portion of the Salt River (Brown, 1994: Brown and Lowe, 1980). The Lower Colorado River Valley subdivision is characterized by the creosote bush-white bur sage and saltbush series along the lower river terraces and the palo verde-cacti-mixed scrub along the bajadas (Henderson and Hackbarth, 1995). The latter series appears in transitional zones with representatives of the Arizona Upland subdivision—the creosote bush-crucifixion thorn series. Agricultural expansion and urban sprawl have all but eradicated the extensive mesquite bosques, stands of cottonwood and desert willow, and mixtures of reeds, saltbush, and grasses that once dominated riverine and drainage areas along the Salt River (Abbott, 2000; Rea, 1983, 1997). Presently, the Sonoran Riparian Woodland and Riparian Scrubland biomes are represented by a handful of relict stands in undeveloped and sufficiently watered areas along the river (Henderson and Hackbarth, 1995).

Changes brought upon the various vegetative regimes in the Phoenix Basin also had a profound affect on faunal species diversity. The impacts produced by the construction of water control facilities along the Salt mirrored the impacts seen in the Gila River Valley. Most obvious was the loss of riverine habitats that once carried the greatest faunal species diversity. Animal communities in the lower Salt Valley were also greatly affected by agricultural intensification and urbanization. The Salt River Valley supports or once supported all of the animal species noted in the middle Gila Valley description. The only addition to that list would be the possible presence of the occasional black bear and mountain lion in mountainous areas in the northern and eastern edges of the lower Salt Valley (Doyel, 1995).

CULTURE HISTORICAL BACKGROUND

Human occupation and utilization of the Phoenix Basin spans at least the last 11,500 years. This temporal span comprises nine main chronological periods: Paleo-Indian, Archaic, Early Formative, Pioneer, Colonial, Sedentary, Classic, Protohistoric, and Historic. These periods apply generally across the project area. Figure 2.5 presents the chronological periods and phases for the Phoenix Basin, which includes the middle Gila and lower Salt valleys. The "Phoenix Basin," as a unit, is used to organize archaeological data in both a geographically and culturally meaningful way. The chronology was compiled using the most recently published evidence, which is cited below in the cultural historical summary. It should be noted that in some cases this chronology differs from other published ones. Although it is felt that the current evidence supports the chronology presented here, it is recognized that ongoing research throughout southern Arizona will result in future modifications.

Each of the nine periods and their constituent phases is characterized by a unique set of attributes, which are briefly summarized below to provide an appropriate interpretive context for the cultural resources documented in the following chapters. Where appropriate, significant developments and sites are noted in the discussion of each period. For more detailed culture historical discussions, the reader is directed to summaries in Berry and Marmaduke (1982), Crown and Judge (1991), Gumerman (1991), and McGuire and Schiffer (1982).

Paleo-Indian Period

The initial occupation during the Paleo-Indian period (around 10,000 – 8500 B.C.) appears to have been somewhat intermittent in the middle Gila Valley based on the limited amount of recovered evidence. The period is manifested in southern Arizona and throughout the Southwest by isolated surface finds of Clovis points, as well as buried megafauna kill sites in alluvial contexts with associated lithic assemblages (Haynes, 1980; B. Huckell, 1982; Mabry, 1998a). Based on this scant data, the period seems to be characterized by dispersed mobile groups that primarily hunted now-extinct megafauna and supplemented their diet with collection of wild plant materials (Waters, 1986). In the Phoenix Basin, this period is represented by only a few surface artifact finds in the middle Gila Valley and a single specimen recovered at the northern edge of the basin (Agenbroad, 1967; B. Huckell, 1982). However, it is likely that Paleo-Indian period remains are buried by subsequent Holocene alluvium overlaying older Pleistocene deposits.

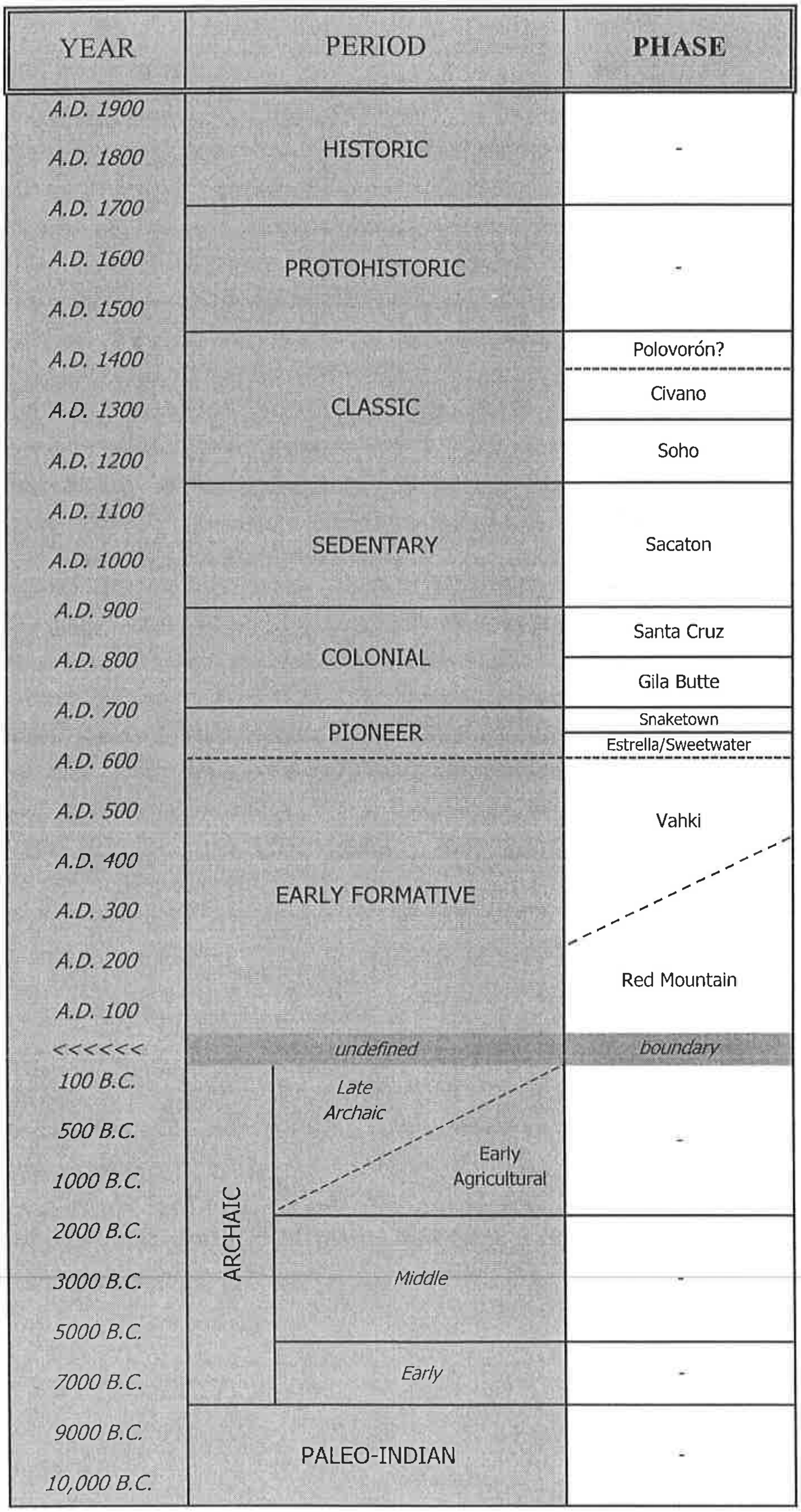

Figure 2.5 Chronological periods and phases in the Phoenix Basin

Archaic Period

The period following climatic amelioration and the extinction of the previously exploited large mammals saw the emergence and flourishing of the Southwestern Archaic Tradition (8500 B.C. – around A.D. 100). This tradition initially is characterized by small, mobile residential groups living in short-term field camps or long-term base camps that hunted small to medium game and foraged for a diversity of floral resources. This subsistence-settlement pattern persists in most of southern Arizona through the Early (8500 – 5000 B.C.), Middle (5000 – 1500 B.C.), and Late (1500 B.C. – around A.D. 1/150) Archaic periods. Although there was a trend toward increased reliance on gathering within a seasonal round – as evidenced by the increased prevalence of grinding tools in artifact assemblages – and increasing sedentism, most groups did not develop a reliance on agriculture. Beginning about 1500 B.C., however, groups in and around the Tucson Basin occupying upland and primary or secondary stream courses, adopted maize horticulture, maintained substantial storage facilities, and developed a semi-sedentary subsistence-settlement pattern (B. Huckell, 1995; Mabry, 1998b). By 800 B.C., some communities had developed into large, seasonally occupied villages exhibiting communal structures (B. Huckell, 1995; Mabry, 1998b). The latter sites are contemporary with Late Archaic period sites, but they are referred to as Early Agricultural period sites to highlight their divergent subsistence-settlement pattern.

At present, few Archaic period sites have been identified in the Phoenix Basin, and these appear to represent short-term, seasonal field camps that date primarily to the Middle and Late Archaic periods (see Bayham et al., 1986; Bubemyre et al., 1998; Fish, 1968; Halbirt and Henderson, 1993; Neily, 1991a; Neily et al., 1999a). Surface finds of temporally diagnostic projectile points attest to the widespread use of the area by Archaic period groups. However, preceramic, horticultural settlements such as those found in and around the Tucson Basin have not been identified in the Phoenix Basin. If any Early Agricultural period settlements were present in the area, they might have been situated along Holocene terraces that had the potential for floodwater agriculture and, consequently, might be deeply buried in alluvium (Waters and Ravesloot, 2001). It is also possible that conditions along the floodplain (especially at lower elevations) may not have been conducive to horticulture or limited agriculture. Further research, however, is necessary to confirm the absence of horticultural sites and the limiting environmental conditions.

Early Formative and Pioneer Periods

The succeeding Early Formative period (around A.D. 1/150 – 650) constitutes a period of transition characterized by an expansion of agricultural efforts; increased sedentism; construction of more substantial pit structures; and the initial production of plain ware ceramics (Doyel, 1993a; Neily et al., 1999b; Wallace et al., 1995). Evidence suggests a shared cultural pattern existed across southern Arizona during the initial phase (around A.D. 1/150 – 450/550) of this period (Cable and Doyel, 1987; Ciolek-Torrello, 1995; Doyel, 1993a; LeBlanc, 1982; Whittlesey, 1995). This cultural pattern was distinguished by semi-sedentary settlements with circular, oval, and bean-shaped pit houses; large communal houses; plain ware pottery; large projectile points; basin and slab metates; flexed and seated inhumation and primary cremation; and floodwater agriculture. Small canals appear in the Phoenix Basin at this time. The earliest dated canals include one in the lower Salt Valley, which dates to between 130 B.C. and A.D. 275 (Henderson, 1989:196), and one in the middle Gila Valley, which dates to 185 A.D. ±60 (Waters and Ravesloot, 2000:53). Early Formative period sites in the Phoenix Basin (the Red Mountain phase) include Pueblo Patricio, La Cuenca del Sedimento, La Escuela Cuba, and the Red Mountain site in the Salt River area (Cable and Doyel, 1987; Cable et al., 1985; Hackbarth, 1992; Henderson, 1989, 1995; Morris, 1969). At present, Red Mountain phase sites or components, other than a number of possible undated structures at Snaketown, have not been documented in the Middle Gila Valley.

The placement of the Vahki, Estrella, and Sweetwater phases – which, along with the Snaketown phase, traditionally comprised the Pioneer period in the Hohokam cultural chronology (Gladwin et al., 1937; Haury, 1976) – has undergone recent reevaluation with regard to the origins and development of the Hohokam (for example, Cable and Doyel, 1987; Dean, 1991; Wallace et al., 1995). Based on the available limited excavation and artifactual data, these three phases can best be conceptualized as a continuation of the broad, regional cultural development of the Early Formative period. For this reason, the transition between the Early Formative and Pioneer periods is ambiguous. During the Vahki phase (around A.D. 450/550 – 650), both micaceous plain ware and red ware ceramics were produced and a figurine complex developed. Other characteristics of this phase include settlements with plaza-oriented layouts, the construction of large square (P-4) houses (first identified at Snaketown – Gladwin et al., 1937:Figures 34 and 35; Haury, 1976:68), and a mortuary pattern incorporating both cremations in pits or trenches and flexed and semi-flexed inhumations (Doyel, 1991). The hallmark of the following Estrella and Sweetwater phases (around A.D. 550/650 – 700) is the production of grooved and decorated red-on-gray ceramics. Although the large, square P-4 houses continue to be constructed, they are smaller in size than during the Vahki phase and occur with smaller structures. The presence of some intrusive elements, including macaws, parrots, shell, and turquoise suggests the initiation of regional interaction and long distance trade. Along with ceramic incising and the figurine complex, these intrusive elements suggest that sociopolitical differentiation or ethnic marking of Formative/Pioneer material cultural was a salient feature in the Phoenix Basin. Evidence for the Vahki, Estrella, and Sweetwater phases is best represented at Snaketown and the Grewe site in the middle Gila Valley (Craig, 1999; Gladwin et al., 1937; Haury, 1976) and Pueblo Patricio (Cable et al., 1985, Henderson, 1995) in the lower Salt Valley.

The Hohokam cultural pattern appears, at the earliest, during the Snaketown phase (A.D. 700 – 750) of the Pioneer period or perhaps the subsequent Gila Butte phase (A.D. 750 – 850) of the Colonial period (Wallace, 1997; Wallace et al., 1995; Wilcox, 1979; Wilcox and Sternberg, 1983).[1] As an integrated, regional belief and ritual system, the Hohokam cultural pattern initially appeared in the Phoenix Basin and was characterized by the development of large-scale irrigation agriculture, red-on-buff pottery, a distinctive iconography, exotic ornaments and artifacts, a cremation mortuary complex, trash mounds, the adoption of public architecture such as ballcourts, and larger, more complex settlements.

In addition to pushing forward the emergence of the Hohokam, researchers have developed a consensus favoring an *in situ* development of the Hohokam from an Archaic cultural base (for example, Cable and Doyel, 1987; Doyel, 1991; Wallace, 1997; Wallace et al., 1995; Wilcox, 1979). This is in contrast to the original concept of the Hohokam as immigrants from Mesoamerica who brought with them an advanced society based on irrigation agriculture, a well-developed ceramic technology, other sophisticated craft industries, and a sedentary lifestyle (Gladwin et al., 1937; Haury, 1976). Nevertheless, significant elements of the Hohokam cultural pattern are Mesoamerican in origin – ballcourts, figurines, copper bells, macaws, pyrite mirrors – but the mechanisms for how they reached southern Arizona are still debated (for example, Kelly, 1966; Mathien and McGuire, 1986; Nelson, 1986; Wilcox, 1991; Wilcox and Sternberg, 1983).

Throughout the Hohokam pre-Classic period (Snaketown through Sacaton phases), extending from A.D. 700 to around A.D. 1150 or 1200, the Phoenix Basin can be considered the primary focus of Hohokam regional development. The Snaketown phase witnessed the first documented construction of canals on a large scale (Wilcox and Shenk, 1977:180-181), trash mounds, and urn cremation burials (Haury, 1976:164). There is evidence of Hohokam occupation outside the Phoenix Basin during the Snaketown phase in river valleys such as the Tucson Basin and the lower Verde Valley, and this expansion continued in the subsequent Colonial period (A.D. 750 – 950). By the end of the Sedentary period (A.D. 1150), a multitude of sites were occupied in the Salt and Gila River valleys and canal networks had attained their greatest levels of complexity. Large ballcourt villages included Mesa Grande, Pueblo Grande, La Ciudad de Los Hornos, La Ciudad and Las Colinas in the lower Salt Valley and Snaketown, Grewe, Olberg, Chee Nee, Hidden Ruin, and Villa Buena in the middle Gila Valley.

Colonial Period

The Colonial period (A.D. 750 – 950) – divided into the Gila Butte (A.D. 750 – 850) and Santa Cruz (A.D. 850 – 950) phases in the Phoenix Basin – is characterized by the establishment of numerous and widespread settlements throughout the area, the adoption of ballcourts as a public architectural component, the expansion of canal systems, and the spread of new material culture and an elaborate mortuary complex (Ciolek-Torrello and Wilcox, 1988; Crown, 1991; Czaplicki,

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[1] These dates represent a revision of the traditional Hohokam chronology, which posited a much earlier origin beginning around 300 B.C. in the Vahki phase (Gladwin et al., 1937; Haury, 1976).

1984; Debowski et al., 1976; Doyel, 1991; Doyel and Elson, 1985; Gasser et al., 1990; Haury, 1976; Howard, 1993; Marmaduke and Henderson, 1995; Neily et al., 1999b; Wilcox and Sternberg, 1983). Settlement patterns reveal increasing differentiation in site size and function (Gregory, 1991), and settlement hierarchies developed along irrigation systems in river valleys (Doyel, 1991). Within sites, spatial patterning in groups of structures becomes apparent. For example, habitation sites comprising courtyard groups focused on a mutual extramural work area become a common settlement organizational pattern (Howard, 1985; Wilcox et al., 1981). At smaller hamlets and villages, consisting of one or two courtyard groups, trash mounds, cemetery areas, and cooking ovens tended to be arrayed around the margins of the courtyard. At larger villages composed of clusters of courtyard groups, central plazas and communal cemetery and work areas were incorporated into the village structural layout (Howard, 1985; Wilcox et al., 1981; Wilcox and Sternberg, 1983). Ballcourts appeared as integrative structures at some villages by the early Gila Butte phase, then increased in number and areal extent throughout the remainder of the Colonial period. The number and size of ballcourts varied from village to village, suggesting a hierarchical structure within the regional system (Doyel, 1991:249; Wilcox and Sternberg, 1983).

The appearance and subsequent expansion of "Hohokam" traits in areas peripheral to the Phoenix Basin, including areas where canal irrigation was not possible, initially was viewed as evidence of migration and colonization by Phoenix Basin Hohokam (Gladwin et al., 1937; Haury, 1976). In some cases, movement of Hohokam populations into these peripheral areas is evident (for example, Doyel, 1978; Elson et al., 1995; Haury, 1932; Mitchell, 1986). However, these patterns are also interpreted as representing the integration of peripheral areas into a Hohokam regional system (Wilcox, 1979; Wilcox and Sternberg, 1983) or religious cult (Doyel, 1991; Wallace, 1997; Wallace et al., 1995) centered in the Phoenix Basin. This regional network or cult probably was maintained and regulated through the ballcourt system (Doyel, 1991), facilitating trade and exchange as well as dissemination of technological (for example, canal irrigation and red-on-buff pottery) and socio-religious ideas (for example, cremation mortuary complex). Although groups in the Hohokam region probably were integrated at these higher levels, recent research has highlighted the diversity throughout the region and questioned the utility of any monothetic explanations of a unified Hohokam "culture" (for example, McGuire, 1991; Wallace, 1997; Whittlesey, 1998; Wilcox, 1991).

Sedentary Period

The Sedentary period (A.D. 950 – 1150), as represented by the Sacaton phase in the Phoenix Basin, witnessed continued growth of the number, size, and extent of Hohokam settlements, ballcourts, and canal networks in the Phoenix Basin (Crown, 1991; Debowski et al., 1976; Doyel, 1991; Doyel and Elson, 1985; Haury, 1976; Howard, 1993; Wilcox and Sternberg, 1983). Many large sites reached their maximum size and complexity at this time (Crown, 1991). In peripheral drainage areas, the number of villages, hamlets, and farmsteads also increased. By the early Sedentary period, ballcourts were represented not only in the Phoenix Basin but in peripheral areas as well, as Hohokam influence and the ballcourt system had expanded to its greatest size (Doyel, 1980; Wilcox and Sternberg, 1983). It is also during this time that Hohokam exchange and interaction networks reach their greatest distribution, and the amount of exotic materials at large sites may indicate that some social differentiation had developed (Doyel, 1991; Nelson, 1986). The intensive use of agricultural rock piles for the cultivation of agave and possibly cholla, and nonirrigation agricultural intensification appears to stem from the late Sedentary and early Classic periods (Cantley, 1991; Doyel, 1993b; Fish et al., 1992a, 1992b; Masse, 1991:212).

By the end of the Sedentary period, however, the Hohokam regional system appears to have weakened as ballcourts and many sites in areas outside and on the fringes of the Phoenix Basin were abandoned and Hohokam populations primarily settled along major drainages (Ciolek-Torrello and Wilcox, 1988; Craig, 1999; Crown, 1991; Doyel, 1991; Gasser et al., 1990; Haury, 1976; Wilcox and Sternberg, 1983). Incipient platform mounds were constructed in the Phoenix Basin at this time, signaling the beginning of a change in public architecture (Gregory, 1987; Haury, 1976). Some ancestral villages such as Snaketown and Grewe were depopulated and the populations shifted and reorganized in nearby locations (Craig, 1999; Crown, 1991; Doyel, 1980; Wilcox et al., 1981). Other changes include "...an increase in the production of red ware pottery, a decrease in the production of red-on-buff, an emphasis on urn cremation burial, and a decrease in the frequency of ornate artifacts" (Doyel, 1991:253). These changes are concomitant with the downcutting and widening of the Gila River between A.D. 1020 and 1160 (Waters and Ravesloot, 2000, 2001), which may have been caused by several clusters of major flooding events during this interval (Graybill et al., 1999:26-27).

Classic Period

During the Classic period (A.D. 1150 – 1450) – divided into the Soho and Civano phases in the Phoenix Basin – change in the structure of Hohokam communities was indicated by several factors. Changes culminating during the Soho phase included a shift in burial practices from primarily cremations to inhumations and urn cremations; the development of new domestic architectural forms, including post-reinforced and adobe-walled structures and walled compounds; a further reduction in red-on-buff pottery and an increase in red ware pottery production; and a change in regional exchange networks reflected in a shift in the production and distribution of ceramic types and exotic materials (Crown, 1991; Doyel, 1980, 1991). The Soho phase also saw the decline and eventual collapse of the ballcourt system in the Phoenix Basin and the florescence of another monumental architectural component, the platform mound (Gregory, 1987). With roots in the late Sedentary period (Gregory, 1991), the platform mound reflected a change in Hohokam community organization that was manifested in settlement systems not only in the Phoenix Basin, but over a much wider region. Although the rapid transformation of the Classic period Hohokam appears dramatic, many of the developments were initiated in the Sedentary period and some researchers contend the basic cultural patterns remained Hohokam (for example, Crown, 1991; E. E. Sires, 1987; Teague and Crown, 1984b). Nevertheless, fundamental changes occurred in many aspects of Hohokam society, and this process is representative of cultural changes occurring across the Southwest at this time (Cordell et al., 1994; Doyel, 1993a).

A hierarchy of settlement types also emerged during the Classic period, including villages with only one or a few walled residential compounds, such as Pueblo Pasado and Sidewinder Ruin, and settlements with one or more platform mound compounds as well as other compounds, such as Las Acequias, Los Muertos, Adamsville, and Lower Santan (Doyel, 1980, 1991). By the Civano phase, specific large settlements, such as Casa Grande, Pueblo Grande, and La Ciudad, contained one or more platform mounds, numerous compounds, a ballcourt, and a tower or Great House (Wilcox, 1991:262). These various types of Classic period settlements have been postulated to form distinct irrigation communities—sociopolitical organizations consisting of a series of integrated villages that included one or more platform mound villages serving as administrative centers distributed along a single canal or canal system (Gregory, 1991; Howard, 1987). A substantial Classic period occupation with platform mounds is also evident in the non-riverine area around the Picacho Mountains (Czaplicki, 1984; Ciolek-Torrello and Wilcox, 1988). Some platform mounds appear to have evolved in function from a non-residential special purpose facility to a residence used by a specific residential group in the Civano phase (Gregory, 1987, 1991:167). Salado polychrome pottery, most of which was imported from outside the Phoenix Basin, appears in ceramic assemblages at this time (Abbott and Schaller, 1992; Crown, 1994). Such developments may reflect increasing social differentiation, and possibly the existence of elite groups controlling and coordinating ritual and agricultural knowledge, interregional interaction, and access to resources (for example, Doyel, 1991; Wilcox, 1991; Wilcox and Shenk, 1977).

Throughout the study area, the changes manifested in the second half of the Classic period have traditionally been associated with the Salado culture or Salado phenomenon. These changes include the adoption of Gila Polychrome, platform mounds, inhumation burial, and room block architecture. The Salado concept has been envisioned variously as a local culture or regional culture area (for example, Doyel, 1978; J. Wood, 1992), an exchange system linking elites from various subsystems (for example, Wilcox and Sternberg, 1983), a powerful segment of society that held leadership roles and dominated neighboring regions (for example, Haury, 1945), or a regional cult (Crown, 1994). Other approaches (for example, Nelson and LeBlanc, 1986) to the Salado concept have shown that, other than sharing Gila Polychrome, sites dubbed as "Salado" reveal a high degree of variability in most material aspects. The definition of Salado thus remains problematic. More recent studies (for example, Elson et al., 1995) argue against the Salado as an archaeological culture, but they support the thesis of Salado as a broad, regional horizon beginning around A.D. 1250.

The end of the Classic period was marked by the collapse of the system of platform mound communities and the depopulation of the Phoenix Basin. The abandonment of these late Classic period communities has been suggested to coincide with a period of drought and flood conditions that substantially reduced or destroyed the irrigation systems on which these communities relied (Nials et al., 1989). However, recent geoarchaeological testing in the middle Gila Valley found no indication that the late Classic period collapse was preceded by major changes in the fluvial landscape. Given the close association of the Gila and Salt drainages, a similar conclusion was posited for the Salt River (Waters and Ravesloot, 2001). In any case, abrupt changes in community organization and integration were marked by the appearance of dispersed rancheria settlements with shallow pit structures, "degenerate" red ware, and indications of a mixed subsistence strategy; however, some Civano phase compounds possibly were reoccupied (E. Sires, 1983; Teague and Crown, 1984b; Doyel, 1991, 1995). This terminal period of prehistoric occupation in the Phoenix Basin has been tentatively defined at several sites and site components as the El Polvorón phase (Chenault, 1993; Crown, 1991; E. Sires, 1983; Teague and Crown, 1984b). The precise nature and character of this phase, however, have yet to be clarified (Doyel, 1991, 1995), and some researchers dispute whether evidence supports the concept of the Polvorón phase as distinct from the Civano phase (for example, Henderson and Hackbarth, 2000).

Protohistoric Period

The Protohistoric period (A.D. 1450 – 1694) represents the time between the end of the Classic period and Spanish contact. The archaeology of this period remains poorly understood throughout southern Arizona, largely due to the small sample of excavated material, poor chronometric control, and lack of a cohesive interpretive framework (Ravesloot and Whittlesey, 1987; Whittlesey et al., 1998a; Wilson, 1999). As a result, the principal sources of information are Spanish ethnohistorical accounts which are relevant primarily to the late Protohistoric period. More archaeological data from the early part of this period is needed from across southern Arizona to more fully understand the transition from the prehistory to history.

In the 1690s, the Spanish identified two main subgroups of Upper Pimans occupying southern Arizona: the Akimel O'odham in the middle Gila Valley (Bolton, 1948; Doelle, 1981; Ezell, 1983; Gasser et al., 1990), and the Sobaipuri in the middle Santa Cruz and San Pedro valleys (Bolton, 1948; Doelle, 1984; Wallace and Doelle, 1997; Masse, 1981). These accounts provide an outline of the Sobaipuri and O'odham settlement-subsistence systems in the 1690s. Most settlements were located in riverine settings and consisted of small, loosely clustered, brush-covered houses. Each village was self-sufficient, politically autonomous, and focused on agriculture (both floodwater and irrigation). While Piman villages were noted as far west as the Gila-Salt confluence in the middle Gila Valley, shared hostilities with Yavapai to the north may have kept the Pima out of the Salt River Valley in the late seventeenth century (Doyel, 1989; Henderson and Hackbarth, 1995).

At present, few Sobaipuri archaeological sites that might date to the Protohistoric period have been identified in the Tucson Basin and Lower San Pedro Valley, and even fewer Protohistoric Akimel O'odham sites have been found in the middle Gila Valley (Doelle, 1981, 1984; Ravesloot and Whittlesey, 1987). In addition, the dating of much of the purported Protohistoric period archaeological data is disputable (Doelle, 1984; Ravesloot and Whittlesey, 1987). Some progress has been made in classifying early Protohistoric period settlements and their associated artifact assemblages for the Lower San Pedro Valley and Tucson Basin (for example, Masse, 1981; Ravesloot and Whittlesey, 1987). However, such attempts to synthesize data from the middle Gila Valley are still at a rather incipient stage (Cable, 1990; Gasser et al., 1990; Masse, 1990). These problems inhibit a basic understanding of the majority of the Protohistoric period. More importantly, they prevent a conclusive determination of whether a cultural and/or occupational continuum exists between the documented historical-period and prehistoric populations (for example, Doelle, 1981; Doyel, 1991; Ezell, 1983; Gasser et al., 1990; Haury, 1976; Masse, 1981; Rea, 1997).

Segments of the semi-nomadic Western Apache and Yavapai tribes occupied portions of south-central Arizona at the time of Spanish contact, but little is known of their range during the Protohistoric period. The Western Apache were a Southern Athapaskan-speaking tribe whose origins lie in modern-day Canada. The timing of the Athapaskan entry into the Southwest is debated widely, and dates range from as early as A.D. 1000 through A.D. 1400 (Opler, 1983; Perry, 1991). With a few notable exceptions, archaeological evidence of the Western Apache occupation prior to the nineteenth century is scant (Gregory, 1981; Whittlesey et al., 1998a). The Yavapai were Yuman speakers, and evidence tentatively supports a migration of Yuman peoples from the Lower Colorado River region into Arizona between A.D. 1100 and 1300 (Kendall, 1983; Rogers, 1945; Whittlesey and Benaron, 1998). Yavapai archaeology for all periods is poorly known, and the nature and extent of the Protohistoric Yavapai occupation is almost entirely unknown (Whittlesey et al., 1998a). These problems in Western Apache and Yavapai archaeology will be hard to overcome as the material culture of these hunter-gatherer people was not elaborate and is assumed to have consisted of easily transportable items (Basso and Opler, 1971; Whittlesey et al., 1998a). Moreover, "...it may be impossible to distinguish between the Yavapai and Western Apache on the basis of archaeological data and material culture alone" (Whittlesey et al., 1998a:214).

Historic Period

The Historic period (A.D. 1694 – present), which began with Spanish contact, comprises the time for which written records of the region exist. This lengthy period is subdivided into the Hispanic era, encompassing the time of Spanish and Mexican occupation of southern Arizona, and the American era, beginning with the Gadsden Purchase until the present. Archaeological evidence for the Historic period in the middle Gila Valley is abundant, but understudied, and this period is known primarily from ethnohistorical documentation.

THE HISPANIC ERA (A.D. 1694 – 1853)

Father Eusebio Francisco Kino arrived at Dolores in Sonora in 1687 and established Jesuit missions in the Pimería Alta of northeast Sonora between 1691 and 1711. He briefly visited the Sobaipuri along the middle Santa Cruz River in 1692 and the Akimel O'odham along the Gila River in 1694 and again in 1697. Although other Spanish missionaries followed Father Kino throughout the 1700s, records of his visits provide the primary source of information about these groups at the beginning of the eighteenth century.

Little written information was obtained on Akimel O'odham settlements or people in the middle Gila Valley during the Hispanic era. Living far beyond the Hispanic frontier, which never extended north of the Tucson Basin, the Akimel O'odham managed to escape involvement in the events and turbulence in the south and had only sporadic contact with Euroamericans (Ezell, 1983:153; Russell, 1908; Wilson, 1998). However, Spanish accounts identified at least six self-sufficient, autonomous Akimel O'odham settlements primarily along the Gila River west of Casa Grande Ruins (Bolton, 1948:I:127–129; Doelle, 1981; Ezell, 1983; Russell, 1908; Wilson, 1998, 1999). The economy of these villages centered on floodwater farming of corn, beans, squash, and cotton, supplemented by gathered and traded foods (Ezell, 1983; Hackenberg, 1983). The use of irrigation agriculture at the time of contact remains controversial (Doelle, 1981; Ezell, 1983; Hackenberg, 1983; Haury, 1976), but this technology certainly was important in the nineteenth century when crops such as wheat were introduced. Although not in direct contact with the Spanish settlements to the south, the Akimel O'odham were affected significantly by introduced European elements such as new cultigens (for example, wheat), livestock, metal, military strategies, and, of course, disease. Like the Sobaipuri villages to the south, Akimel O'odham settlements became a target of frequent raiding by Apache as well as the Yavapai and Quechan during the Spanish era (Dobyns, 1974; Ezell, 1983; Russell, 1908). To defend against these constant threats, the Akimel O'odham adopted a denser settlement pattern, introduced mandatory military service for all males, and conducted counter-raiding and punitive campaigns with their Tohono O'odham and Pee-Posh allies. By the end of the Hispanic period, the economic and military prowess of the Akimel O'odham were recognized by both Euroamericans and native peoples alike (Ezell, 1983:155).

Throughout the Hispanic era, the Western Apache and Yavapai had only marginal contact with the Spaniards, Mexicans, and O'odham groups (Spicer, 1962; Whittlesey et al., 1998b). This limited interaction took the form of Apache raiding on Spanish and Mexican settlements (Goodwin, 1942), as well as Apache and Yavapai raiding on O'odham villages (Bolton, 1948; Dobyns, 1974; Russell, 1908). The Western Apache and Yavapai came to resemble each other closely, and the considerable degree of cultural similarity between them led to confusion among later Euroamericans regarding ethnic identity (Khera and Mariella, 1983). These two groups also shared an economic system that was "...a fluid and opportunistic blend of gathering, hunting, farming, and raiding; a settlement system focused on small groups of extended families that were seasonally mobile; politically autonomous bands; and technology closely adapted to a mobile lifestyle" (Whittlesey and Benaron, 1998:143). The Western Apache tribe occupied a territory bounded roughly by the San Francisco Peaks in the north, the White Mountains in east-central Arizona, the Santa Catalina Mountains, and the Yavapai territory (Basso, 1983; Basso and Opler, 1971; Black and Green, 1995; Goodwin, 1942; Whittlesey and Benaron, 1998; Whittlesey et al., 1998a). The Yavapai tribe occupied a territory bounded roughly by the Lower Colorado River, the Gila River, the San Francisco Peaks, and the Western Apache territory. The Southeastern Yavapai, or Kewevkapaya, occupied the area from the confluence of the Gila and San Pedro rivers north toward the confluence of the Salt and Verde rivers (Gifford, 1932; Khera and Mariella, 1983; Whittlesey and Benaron, 1998; Whittlesey et al., 1998a).

Mexico achieved independence from Spain in 1821, whereupon modern-day southern Arizona came under Mexican rule. The Mexican government terminated the Spanish policy of subsidizing and resettling peaceful Apaches on the northern frontier around Tucson, and conditions subsequently deteriorated as Apache raiding resumed (Neily et al., 1999b; Sheridan, 1986). Despite the danger of Apache attacks, this time saw some mining exploration and ranching activities in and around the Tucson Basin. Francisco Romero established one of the first ranches in the Cañada del Oro Valley in 1844 (Elson and Doelle, 1987; L. Huckell, 1980:16). Elsewhere in southern Arizona, American trappers, traders, and mountain men entered areas inhabited by the San Carlos Apache that were previously unknown to Euroamericans (Corle, 1951; Whittlesey et al., 1998b). The beginning of the Mexican-American War in 1846 brought the U.S. military to southern Arizona, both of which contributed to the general disorder characterizing the region during Mexican rule (Neily et al., 1999b). The end of the Hispanic era is formally marked by the Gadsden Purchase in 1853, although the Mexican military did not withdraw from Tucson until 1856 with the arrival of the U.S. First Dragoons (Officer, 1987; Sheridan, 1986).

THE AMERICAN ERA (A.D. 1853 – PRESENT)

With the Gadsden Purchase of 1853, modern-day southern Arizona became part of the United States. The subsequent arrival of the U.S. military and Euroamerican settlers in the Tucson Basin was followed by an economic boom, with ranches, farms, and mercantile shops being established (Neily et al., 1999b). The Civil War temporarily halted economic development in the area, but southern Arizona saw the influx of thousands of Euroamerican settlers after the war. At that point, Euroamerican population and economic interests increased dramatically throughout the region. The primary areas of economic development and expansion were in mining, ranching, and farming, accompanied by increased homesteading (Whittlesey et al., 1998b). A local government was instituted with the organization of the Territory of Arizona in 1863, but Arizona did not become a state until 1912. Interaction between Native American groups and Euroamerican settlers and economic interests became increasingly tense, and the U.S. Government adopted a policy of pacification and reservation confinement of Native Americans.

The reservations and Indian agencies were established from 1859 through the 1870s. In the Tucson Basin, Euroamerican and Hispanic populations became increasingly segregated as Euroamerican economic and cultural norms became more common in the late 1800s (Sheridan, 1986). The development of railroad lines throughout southern Arizona in the late 1800s provided a significant catalyst for mining operations as well as immigration of Euroamericans (Myrick, 1980; Neily et al., 1999b). Overall, the advent of the American era augmented and accelerated the changes that began in the Hispanic era, and these processes have completely altered the environmental, economic, and cultural landscapes of southern Arizona (Ezell, 1983; Hackenberg, 1983; Russell, 1908; Spicer, 1962; Thrapp, 1964).

Euroamerican contacts with the Akimel O'odham in the middle Gila Valley increased after 1846 as a result of the Mexican-American War and its aftermath, with incursions of the military, explorers, surveyors, immigrants, and finally settlers. New markets were subsequently developed to supply grain to the military, as well as to immigrants heading for California, resulting in a period of prosperity for the Akimel O'odham (Doelle, 1981; Ezell, 1983; Hackenberg, 1983; Russell, 1908). U.S. Government policies for pacification and reservation confinement of Native Americans (Spicer, 1962) contributed to the establishment of the Gila River Indian Reservation in 1859.

One profound effect of the post-war influx of Euroamerican settlers on indigenous populations was the construction of upstream canals that diverted much of the water to non-Indian farmers along the Gila River in the 1870s (Dobyns, 1981; Ezell, 1983). The introduction of animal husbandry, decimation of woodlands for mining operations, destruction of beaver populations, and construction of wagon roads and railroads in the region led to increased erosion and disastrous flooding events (Dobyns, 1981). As a result, during subsequent periods of drought, the lack of Gila River water that could be used for irrigation agriculture led to widespread famine and eventual relocation of some settlements to the Salt River Valley (Ezell, 1983; Hackenberg, 1983). The Akimel O'odham refer to the period between 1870 and 1910 as the "years of famine," during which they "...were plunged from the status of independent farmers competing successfully with White farmers to that of wage laborers" (Ezell, 1983:158-159). During this same period, Euroamerican population and economic interest increased dramatically throughout the region. The primary areas of economic development and expansion were in mining, ranching, and farming, accompanied by increased homesteading (Dobyns, 1981; Whittlesey et al., 1998b). A host of new towns were founded in the Phoenix Basin and elsewhere along the Gila River from the mid- to late-1800s, including Phoenix, Tempe, Mesa, Florence, Casa Grande, and Safford. Concurrent with the establishment of these communities, vast tracts of land were subjugated for cultivation and ranching. New canals, roads, and railroads were constructed, and a cash economy was initiated in the Territory. Together, these late nineteenth century events represent some of the most significant cultural, economic, and environmental transformations in central Arizona history.

The most ambitious effort to rectify the economic plight of the Akimel O'odham was the San Carlos Project Act of 1924, authorizing the construction of a water storage dam on the Gila River to provide for the irrigation of 50,000 acres of Indian and 50,000 acres of non-Indian land. For a variety of reasons, the San Carlos Project failed to revitalize the O'odham farming economy (Hackenberg, 1983). Over the years, the U.S. Government placed severe acculturative pressures on the Akimel O'odham that have affected changes in nearly every aspect of their lives. Since World War II, however, the Akimel O'odham have experienced a resurgence of interest in tribal sovereignty and economic development. As the community became a self-governing entity, it has developed several profitable enterprises in agriculture and telecommunications, built two casinos, and begun the process of revitalizing their farming economy by constructing a water delivery system across the reservation.

The incorporation of the Western Apache and Yavapai groups into the United States followed a very different trajectory than that of the O'odham. Long-time enemies of the O'odham, the Apache and Yavapai also wreaked havoc on Euroamerican settlements. To protect the lives and property of settlers, the U.S. military engaged in a campaign to control and pacify the Apaches, who put up stiff resistance (Basso, 1983; Basso and Opler, 1971; Spicer, 1962; Thrapp, 1964). From the 1860s to the 1880s, raids, confrontations, and battles were common occurrences between the Apache and the U.S. military and non-Indian populations (Black and Green, 1995). Most of the various Apache and Yavapai bands were consolidated at San Carlos, but many Yavapai were allowed to leave the reservation in the 1880s and 1890s to return to their former homes in the upper Verde Valley (Khera and Mariella, 1983; Whittlesey et al., 1998b). By 1890 the Apache wars were all but over. Originally designated the San Carlos Division of the White Mountain Reservation in 1872, the later-named San Carlos Apache Reservation was reduced on several occasions in response to Euroamerican pressures (Black and Green, 1995; Whittlesey et al., 1998b). Because theirs was a mobile, hunter-gatherer lifestyle, the Apache and Yavapai found it difficult to bear confinement on reservations that were often in undesirable environments away from their ancestral territory (Basso, 1983; Basso and Opler, 1971; Goodwin, 1942; Spicer, 1962).

BRIEF HISTORY OF THE SOUTH MOUNTAIN FREEWAY PROJECT

The South Mountain Freeway was presented as part of a Regional Freeway System plan in 1983 and approved by Maricopa County voters in 1985. In 1988, a state-level Location/Design Report and an Environmental Assessment set a corridor alignment for the freeway which followed the Pecos Road alignment and the northern border of the GRIC, turned north along 59th Avenue, and intersected I-10 between 55th and 63rd avenues (SMCT, 2001). The 1988 assessment included a cultural resource inventory of the project corridor completed by the Office of Cultural Resource Management at Arizona State University (Bostwick and Rice, 1987). In 1994, the South Mountain Freeway was dropped from immediate consideration due to a lack of funds. ADOT's plans to complete the entire Regional Freeway System by 2007 revived active interest in the project in 1999, and a study of the Awatukee/Foothills area transportation needs was conducted the following year. This report is part of the 2001 South Mountain Freeway Environmental Impact Statement and Location/Design Concept Report designed to examine alternatives to the 1988 assessment.

3. Previous Archaeological Investigations

This chapter presents summary data on the 145 previous archaeological investigations conducted within the project area (Table 3.1). The data are presented in tabular form and are organized chronologically by year of the project and project number(s). The following information is provided for each project:

- USGS 7.5′ topographic quadrangle(s) on which the project is mapped.
- Year of project and project numbers
- Organization that completed the project
- Brief description of the project
- Project type, such as linear (L), block (B), or irregular (I) survey or excavation/testing (E)
- Reference(s) in which the project is documented

Every effort was made to provide a complete and accurate listing of previous archaeological projects conducted within the South Mountain Freeway project area. However, the records at the various archival institutions consulted for this overview (as listed in Chapter 1) were not thoroughly updated or well-organized in some cases.

To find the location of a particular project area on the USGS 7.5′ topographic quadrangles, refer to the appropriate quadrangle as listed in the table and locate the project number on the map (Figures 3.1–3.3). All project areas are distinctively coded with hachuring on the maps; project numbers are listed inside or next to the project areas. Cross hachuring is used where different project areas overlap to identify areas investigated by more than one project.

Table 3.1. Previous Archaeological Investigations within the South Mountain Freeway Study Area

USGS 7.5' Topo. Quad.	Year-Project No.[a]	Organization[b]	Project Description	Project Type[c]	Reference
Avondale SE, Fowler, Laveen, Montezuma Peak, Pima Butte, Tolleson	55.31/ 1955-003	ASM	Survey of Southern Pacific Pipeline ROW	L	McConville and Holskamper, 1955a, 1955b
Laveen	77.31	ASU	Survey of lots for the Arizona 15-12 development project	I, E	H.-Ditzler, 1977a
Laveen	77.36	ASU	Survey of 4 relocated Project 15-12 housing lots	I, E	H.-Ditzler, 1977b
Laveen	78.32	ASU	Survey of 2 housing lots in St. John's Mission area	I	Rice, 1978
Laveen	78.35	ASU	Survey of three house lots, GRIC	I	Simonis, 1978
Laveen	79.01	ASU	Survey near Dobbins Road and 83rd Avenue, GRIC	B	Stafford, 1979
Fowler, Gila Butte NW, Laveen, Lone Butte, Montezuma Peak, Pima Butte	82.32	ACS	Assessment of Western Area Liberty to Coolidge Rebuild Project	L	Effland, 1984; Effland and Green, 1985
Guadalupe	83.31	ARS	Survey of 3 parcels at Firebird Lake	B	Stone, 1983
Pima Butte	83.32	ACS	Survey for proposed Firebird Stadium	B	Effland, 1983
Laveen	84.04	Alan Kite and Associates	Survey of 37 home sites, GRIC	I	Kite, 1984a
Laveen	84.07	GRIC-CRMP	Survey of 2 proposed well sites, GRIC	I	Kite, 1984b
Fowler	86.03	ASU	Evaluation of five proposed water and sewage facilities, GRIC	L, B	Rice, 1984
Laveen	86.08	ASM	Survey of 4 parcels of land for the Gila River Housing Authority	B	T. Sires, 1986
Fowler, Gila Butte NW, Laveen, Lone Butte, Montezuma Peak, Pima Butte	86.11	NRI	Archaeological data recovery, Liberty to Coolidge Rebuild Project	L, E	Quillian, 1986
Laveen	86.13	ASM	Test Excavations at Villa Buena	E	Kaler, 1986a
Laveen	86.17	ASM	Testing project at Villa Buena	E	Kaler, 1986b
Laveen	87.01	ASU	Survey for the Pentacostal Church, GRIC	B	Rice, 1987

Table 3.1. Previous Archaeological Investigations within the South Mountain Freeway Study Area

USGS 7.5' Topo. Quad.	Year-Project No.[a]	Organization[b]	Project Description	Project Type[c]	Reference
Guadalupe, Laveen, Lone Butte, Pima Butte	87.04	ASU	Survey of eight core drilling sites for the Superstition Crushing Company, GRIC	L, I	Euler, 1987
Avondale SE, Tolleson	87.07	ASU	Survey of proposed gravel pit by Tanner Land Company	B	Weiss and Rice, 1988
Laveen	88.02	NRI	Assessment of eight parcels for the Gila River Housing Authority	B	Montero and Van Nimwegan, 1988
Gila Butte NW, Guadalupe	88.05a	ASU	Survey of Maricopa Road	L	Ravesloot, 1989
Laveen	89.03	ACS	Assessment of proposed utility lines and lagoons	L, B	Adams, 1989
Gila Butte NW, Guadalupe	89.05	ASU	Survey of Queen Creek Road Alternative C	L, B	Kaler, 1990
Fowler, Laveen	90.02	ACS	Survey and testing of proposed Gila River telecommunications office sites	I, E	Adams, 1990a; Macnider, 1990
Laveen, Montezuma Peak, Pima Butte	90.05	ACS	Monitoring of Santa Fe Pacific Pipeline	L	Adams, 1990b, 1990c
Fowler, Laveen	90.07a	ACS	Assessment of proposed sanitation facilities, GRIC	B, L	Adams, 1990d
Guadalupe	90.09	ASU	Survey of proposed borrow area west of the Maricopa/I-10 interchange	B	Haynes-Peterson, 1990
Guadalupe, Laveen, Lone Butte	90.13	ACS	Survey of the Santa Fe Pacific Pipeline, Phoenix to Williams AFB right-of-way	L	Irwin, 1991
Avondale SE, Guadalupe, Laveen, Lone Butte, Montezuma Peak, Tolleson	91.02/ 1991-253	ACS	Survey of existing EPNG pipelines on the GRIC	L, B	Neily, 1991a, 1991b
Guadalupe, Lone Butte	91.06	ACS	Survey of the western half of the Gila Drain borrow area	B	Neily, 1991c
Tolleson	91.08b/ 1992-005	ACS	Assessment of ROWs, staging areas, test pit and test boring locations, EPNG 2102 and 1203 pipelines	L, I	Adams, 1992; Macnider, 1992

Table 3.1. Previous Archaeological Investigations within the South Mountain Freeway Study Area

USGS 7.5' Topo. Quad.	Year-Project No.[a]	Organization[b]	Project Description	Project Type[c]	Reference
Laveen	91.09	NRI	Survey of the St. John's Accomodation School Site	B	Hutira, 1991
Guadalupe	91.11	ASU	Survey of Queen Creek Road from I-10 to Price	L	Lascaux, 1992
Fowler, Laveen, Montezuma Peak, Pima Butte	92.06/ 1992-239	ACS	Santa Fe Pacific pipeline surveys	L	Crary, 1993; Crary and Macnider, 1992
Guadalupe	93.01	GRIC-CRMP	Survey of the GRIC casino site	B	Lascaux and Ravesloot, 1994
Fowler, Laveen	93.07	ACS	Assessment of proposed sewerline installation in Districts 6 and 7, GRIC	L, B, I	Douglas, 1993
Laveen	93.12	ACS	Survey of EPNG cathodic protection station 1261	B	Troncone, 1993
Laveen	93.16F	BIA	Pecos Road borrow pit survey	B	Cantley, 1993
Laveen	94.02	GRIC-CRMP	Gila Crossing Site monitoring and test excavation	M, E	Brodbeck, 1997
Fowler, Laveen	94.05	GRIC-CRMP	Survey of proposed irrigation pipeline, District 7	L	Brodbeck, 1994a
Guadalupe	94.07	GRIC-CRMP	Survey of Gila River Casino office/parking lot	B	Brodbeck, 1994b
Pima Butte	94.08	GRIC-CRMP	Survey of Sweetwater Industries	B	Ragins, 1995
Avondale SE, Fowler, Gila Butte NW, Guadalupe, Laveen, Lone Butte, Pima Butte, Tolleson	94.14	GRIC-CRMP	Pima-Maricopa Irrigation Project (P-MIP), or Central Arizona Project (CAP), survey	B	Ensor and Doyel, 1997; and various reports in the GRIC-CRMP Small Project Files (see below)
Guadalupe	94.14	GRIC-CRMP	P-MIP survey of Pecos-Price canal alignment	L	Brodbeck, 1996
Gila Butte NW, Guadalupe	94.14	GRIC-CRMP	P-MIP survey of Santan Extension (Memorial) Management Area	B	Neily et al., 1999a
Guadalupe	94.14, Task 1	GRIC-CRMP	P-MIP testing of Pecos Road segment of Pecos-Price canal alignment	E	Foster and Woodson, 1997; Woodson and Neily, 1998
Guadalupe, Laveen, Lone Butte	94.14, Task 3	GRIC-CRMP	P-MIP survey of Santan Extension (Broadacres) Management Area	B	Brodbeck and Neily, 1997
Guadalupe	96.05	GRIC-CRMP	Survey of Lone Butte Industrial Park, GRIC	B	Bubemyre, 1997a; James, 1996
Laveen	97.04c	GRIC-CRMP	GRTI Gila Crossing Survey	L	Randolph, 1997
Laveen	97.13	GRIC-CRMP	Survey and monitoring of water and sewer lines and an access road for the West End Casino	I, L	Bubemyre, 1997b

Table 3.1. Previous Archaeological Investigations within the South Mountain Freeway Study Area

USGS 7.5' Topo. Quad.	Year-Project No.[a]	Organization[b]	Project Description	Project Type[c]	Reference
Laveen	97.16	GRIC-CRMP	Cultural resources investigation of the Maricopa Indian Cemetery, GRIC	B	Wiedemann, 1997
Laveen	97.24	GRIC-CRMP	Home sites testing	I	GRIC-CRMP Small Project Files, 1997
Gila Butte NW, Guadalupe, Lone Butte, Pima Butte	97.26	GRIC-CRMP	Survey of Borderlands and Borderlands West areas	B	Brodbeck, 1999a, 1999b; Bubemyre et al., 1998; Neily et al., 1999c
Avondale SE, Fowler, Laveen, Lone Butte, Pima Butte, Tolleson	98.02	GRIC-CRMP	Home sites survey and testing, GRIC	I, E	GRIC-CRMP Small Project Files, various reports (see below)
Laveen	98.02	GRIC-CRMP	Evaulation of 41 proposed home sites, GRIC	I	Foster and Ravesloot, 1999
Laveen	98.02, Task 1	GRIC-CRMP	Testing program at 32 home sites, GRIC	E	Foster, 2000a
Fowler, Laveen	98.02, Task 5	GRIC-CRMP	Evaluation of 26 home sites, GRIC	I	Foster, 2000b
Laveen, Tolleson	98.02, Task 6	GRIC-CRMP	Evaluation of 33 home sites, GRIC	I	Rinker and Foster, 2000
Laveen	98.02, Task 7	GRIC-CRMP	Evaluation of 10 home sites, GRIC	I	Rinker, 2001
Fowler, Tolleson	98.02, Task 10	GRIC-CRMP	Quarterly home sites testing report	E	Neily and Darling, 2001
Laveen	98.02, Task 13	GRIC-CRMP	Evaluation of 8 home sites, GRIC	I	Burden, 2002
Gila Butte NW, Guadalupe	98.1	GRIC-CRMP	Memorial airfield survey, GRIC	B	Brodbeck et al., 1999
Laveen	98.13	GRIC-CRMP	Survey of proposed Gila Crossing Health Center	B	GRIC-CRMP Small Project Files (No Historic Properties Form), 1998a
Laveen	98.19	GRIC-CRMP	Development of solid waste transfer station, District 6	B	GRIC-CRMP Small Project Files (No Historic Properties Form), 1998b
Laveen	98.24, Task 1	GRIC-CRMP	Testing at GR-1112 for expansion of Gila Crossing Community school facilities	E	Brodbeck, 1999c
Laveen	98.24, Task 2	GRIC-CRMP	Assessment of additional areas of proposed development at the Gila Crossing Community School	B	GRIC-CRMP Small Project Files (No Historic Properties Form), 1999
Laveen	98.3	GRIC-CRMP	Water quality program 25 wells	I	GRIC-CRMP Small Project Files, 1998
Guadalupe	99.01	GRIC-CRMP	Survey of the I-10/Maricopa Road interchange	B	Brodbeck and James, 2000

Table 3.1. Previous Archaeological Investigations within the South Mountain Freeway Study Area

USGS 7.5' Topo. Quad.	Year-Project No.[a]	Organization[b]	Project Description	Project Type[c]	Reference
Gila Butte NW, Guadalupe, Lone Butte	99.36	GRIC-CRMP	APS reroute and reconductoring surveys, GRIC	L	Neily and Randolph, 1999; Neily et al., 2000
Guadalupe, Lone Butte, Pima Butte	99.4	GRIC-CRMP	Class III Survey of 62 miles of SCIP electrical transmission line right-of-way	L	Foster et al., 2000
Laveen	99.48	GRIC-CRMP	Assessment for proposed farmland development, GRIC Small Farms Improvement Project	B	Foster, 2000c
Laveen	99.54	GRIC-CRMP	Survey for proposed St. Johns Waterline Expansion Project	L	Foster, 1999
Gila Butte NW, Guadalupe	2000.25, Task 1	GRIC-CRMP	Class I overview / Class III survey of I-10 between Maricopa Road and I-8	L	Darling and Touchin, 2001
Lone Butte	2000.28	GRIC-CRMP	Monitoring along the WAPA Transmission Line	L	Foster, 2001
Laveen	2000.6	GRIC-CRMP	St. Johns Lagoon Extension	B	Rinker, 2000
Avondale SE, Fowler, Laveen, Tolleson	2001.01	GRIC-CRMP	Dumpsites Beautification	I	Morgan and Darling, 2001
Gila Butte NW, Guadalupe	1964-9	ASM	I-10 Survey from Phoenix to Casa Grande	L	Vivian, 1964
Montezuma Peak	1969-1	ASM	Survey of EPNG pipeline	L	ASM Project Files, (No report), 1969
Avondale SE, Gila Butte NW, Guadalupe, Laveen, Montezuma Peak, Pima Butte, Tolleson	1970-1	ASM	Archaeological reconnaissance of the GRIC	B	Ayers, 1975; D. Wood, 1971a, 1971b, and 1972
Fowler	1972-007	ASM	Survey of ADOT materials pit	B	ASM Project Files, (No report), 1972
Fowler, Laveen	OCRM 75-14	ASU	Survey of housing project 15-9	I	Rosenberg, 1975
Fowler	OCRM 76-4	ASU	Survey of Beauty Built Homes, Inc., Housing Development	B	Rosenberg, 1976a
Laveen	OCRM 76-31	ASU	Survey of housing projects 15-9, 15-10, 15-11	I	Rosenberg, 1976b
Fowler	OCRM 78-192	ASU	Survey of proposed Roosevelt Irrigation Canal rehabilitation	L	Roy, 1978

Table 3.1. Previous Archaeological Investigations within the South Mountain Freeway Study Area

USGS 7.5' Topo. Quad.	Year-Project No.[a]	Organization[b]	Project Description	Project Type[c]	Reference
Guadalupe, Lone Butte	OCRM 79-46	ASU	Pima Ranch survey	B	Neitzel, 1979
Fowler, Tolleson	OCRM 79-238	ASU	Survey of pipeline in the northwest planning area - Tolleson	L, B	Williams, 1979
Laveen	OCRM 79-245	ASU	Survey of road and canal alignments, GRIC	L	Larson, 1979
Laveen	1980-124	ASM	Survey of Provident Energy Company oil pipeline right-of-way	L	Czaplicki, 1980
Fowler	1980-185	ASM	Survey of ADOT materials pit	B	ASM Project Files, (No report), 1980
Guadalupe	1980-211	ACS	Assessment for proposed APS Kyrene EHV Transmission Line Project	L	Effland and Green, 1980
Fowler	OCRM 80-264	ASU	Survey of the Plaza de la Gente Shopping Center	B	Willliams, 1980
Guadalupe, Lone Butte	ARS 1984	ARS	768 acre survey for Continental Homes	B	Stone, 1984
Fowler	1984-042	ASM	Survey for City of Phoenix treatment plant	B	Lange, 1984
Fowler	1986-236	SSI	Cultural resources inventory of Buckeye Road, 59th Avenue to 35th Avenue	L	Jackson and Allen, 1986
Guadalupe	1986-238	D&M	Cultural resources report for the Southeast Loop Highway	B	Bruder and Rogge, 1987
Fowler, Guadalupe, Laveen, Lone Butte	OCRM 87-66	ASU	Survey for the Southwest Loop Freeway Project	L, B	Bostwick and Rice, 1987
Fowler	1987-199	SSI	Scope of work for testing on Buckeye Road	L	Soil Systems, Inc., 1987
Fowler, Tolleson	1987-222	D&M	U.S. Telecom Fiber Optic Cable Project	L	O'Brien et al., 1987
Tolleson	OCRM 87-382	ASU	Survey of the 107th Ave. property	B	ASU Project Files, Survey Registration Form, 1987
Fowler	1988-004	ASM	Letter report (ASM State Land Survey)	B	Roth, 1988
Fowler	OCRM 88-390	ASU	Survey for Tolleson Plant of the Research Chemical Division of Nucor Corporation	B	ASU Project Files, Survey Registration Form, 1988
Tolleson	1991-022	BOR	SRP Land Exchange	B	Lincoln, 1991
Laveen	1992-169	BOR	Survey for deed of release for ditch easement	L	Telles, 1992
Fowler	1994-006	ACS	Survey for proposed Salt River and 51st Avenue quarry	B	Douglas, 1994

Table 3.1. Previous Archaeological Investigations within the South Mountain Freeway Study Area

USGS 7.5' Topo. Quad.	Year-Project No.[a]	Organization[b]	Project Description	Project Type[c]	Reference
Fowler	1994-193	ACS, BOR, and PGM	Monitoring, survey, and excavation for the Tres Rios Wetlands Project	M, B, E	Hurlbut, 1995; K. Schroeder, 1995; Telles, 1994a, 1994b
Fowler	1994-301	SSI	Survey of Broadway Road between 35th and 43rd Avenues	L	Foster, 1994
Fowler	1994-346	SWCA	Survey for improvements along 59th Avenue	L	Howell and Mitchell, 1994
Tolleson	1994-438	SSI	Survey of 91st Avenue between I-10 and Buckeye Road	L	Owens, 1994
Tolleson	1995-037	BOR	Survey for Avondale Wetlands	L, B	Telles, 1995a
Fowler	1995-110	BOR	Survey for land sale to ARCO Products Company	B	Telles, 1995b
Fowler, Laveen	1995-263	SSI	Survey of 59th Avenue between Southern Avenue and Dobbins Road	L	Owens, 1995
Tolleson	1996-012	Aztlan	Survey of the United States Postal Service	B	Slawson, 1996
Fowler, Laveen	1997-202	D&M	Cultural resource inventory of 51st Avenue from Lower Buckeye Road to Dusty Lane	L, I	Shepard and Rogge, 1997
Tolleson	1997-390	ARS	Survey of 22.5 acres between the alignments of McDowell Road and I-10, west of 91st Avenue	B	Palus, 1997
Fowler	1997-443	CES	Survey of Tolleson waterline extension	L	Heuett, 1997, 1998
Fowler	NRI 1998	NRI	80 acre survey for Stardust Development, Inc. at 83rd Avenue and Buckeye Road	B	Marshall, 1998
Fowler	1998-006	ACS	Survey for Phoenix Redi-Mix Company, Inc.	B	Crownover, 1998
Tolleson	1998-111	ACS	Survey near Buckeye Road and 83rd Avenue	B	DeMaagd, 1998
Fowler,Tolleson	1998-194	D&M	Monitoring at city of Phoenix 91st Avenue wastewater treatment plan	L, B	Rogge et al., 1998
Guadalupe, Tolleson	1998-247	Stantech Consulting, Inc.	Cultural resource assessment of 10 locations for the Arizona Department of Transportation	L	Larkin and Giacobbe, 1998
Guadalupe	1998-310	D&M	Survey of I-10 interchange for Santan Freeway Project	B	Bauer and Bruder, 1999
Fowler	1998-327	SAS	Archaeological inventory of the 43rd Avenue storm water drainage system	L, B	Rodgers, 1998
Tolleson	1998-361	ACS	Survey of 99th Avenue from Glendale to McDowell	L	Aguila, 1999a

Table 3.1. Previous Archaeological Investigations within the South Mountain Freeway Study Area

USGS 7.5' Topo. Quad.	Year-Project No.[a]	Organization[b]	Project Description	Project Type[c]	Reference
Fowler	1998-458	NRI	80 acre survey for Stardust Development, Inc. at 83rd Avenue and Buckeye Road, (Sundance Parcel)	B	Hutira, 1998a
Fowler	1998-461	NRI	40 acre survey for Stardust Development, Inc. at 83rd Avenue and Buckeye Road	B	Hutira, 1998b
Fowler, Laveen	1999-094	ACS	EPNG CPS 2039	L	Aguila, 1999b
Fowler	1999-198	D&M	Monitoring of geotechnical drilling at the Tres Rios Wetlands Demonstration Project	M	Lewenstein and Vann, 1999
Laveen, Lone Butte	1999-244	SWCA	Survey of 320 acres at South Mountain	B	Wenker, 1999
Fowler	1999-263	NRI	Survey of 40 acres at 75th Ave. between Buckeye and Lower Buckeye Roads	B	Walsh, 1999
Fowler	1999-274	NRI	Survey at 43rd Avenue and Baseline Road	B	Walsh-Anduze, 1999
Fowler	1999-486	Stantech Consulting, Inc.	Survey of 2 acres next to 67th and Southern Avenues	B	Larkin and Giacobbe, 1999
Fowler	1999-496	ARS	Survey of Vulcan Materials Plant	B	Coriell, 1999
Fowler	1999-497	ARS	Survey of United Metro Plant No. 105 along the Salt River channel at 67th Avenue	B	Wright, 1999
Fowler	1999-521	LSD	Survey along 75th and Southern Avenues	L	Grafil, 2000
Fowler	2000-119	Entranco	Survey for Mesa Materials, Inc.	B	Walsh, 2000
Guadalupe	2000-134	Aztlan	Cultural resource inventory of allotted land, GRIC	B	Slawson, 2000
Fowler	2000-436	D&M	Survey along 43rd Avenue between Buckeye Road and Van Buren Street	L	Rogge and Winter, 2000
Laveen	2000-517	SWCA	Survey for the Foothills Project	B	Mitchell, 2000
Fowler	2000-524	SWCA	Survey at Pioneer Concrete's 51st Avenue site	B	Mitchell and Ryden, 2000a
Fowler	2000-529	SWCA	Survey at Pioneer Concrete's 59th Avenue site	B	Mitchell and Ryden, 2000b
Tolleson	2000-536	SWCA	Survey for the Cottonwood Ranch Development at 99th Avenue and Broadway Road	B	Lindly and Mitchell, 2000
Fowler	2000-619	URS	Monitoring of Trail Improvements at the Tres Rios Demonstration Wetlands	L	Bauer et al., 2001

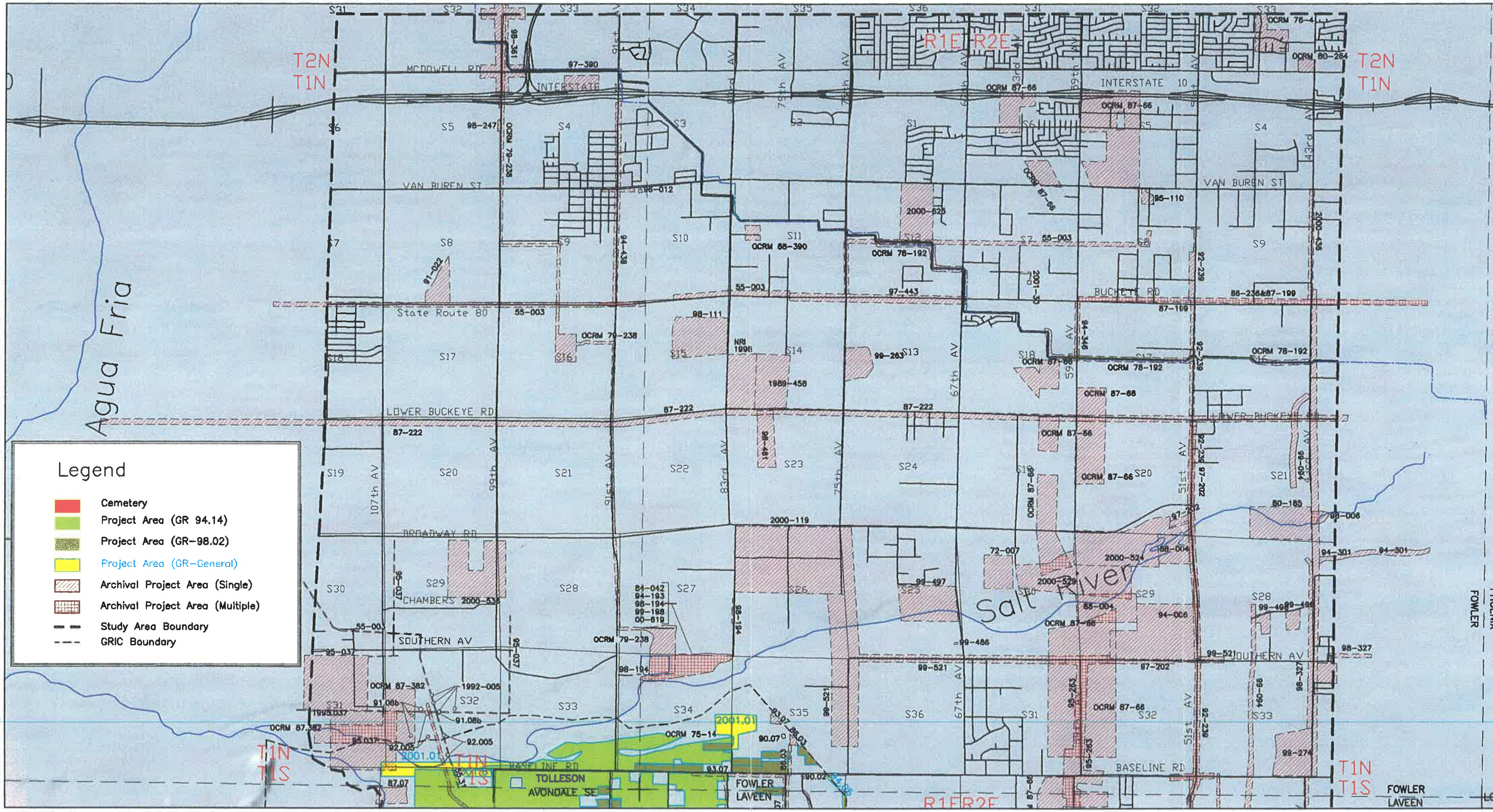
Table 3.1. Previous Archaeological Investigations within the South Mountain Freeway Study Area

USGS 7.5' Topo. Quad.	Year-Project No.[a]	Organization[b]	Project Description	Project Type[c]	Reference
Fowler	2000-625	SAS	Archaeological inventory of Buckeye Basin No. 3	B	Rodgers, 2001
Fowler	2001-30	NRI	Survey for a wireless communication facility near 63rd Avenue and Sherman Street	L	Marshall, 2001
Lone Butte	3686.R (SHPO)	—	—	B	—

[a] Year and Project Number correspond to GRIC-CRMP report numbers (55.31) or numbers listed is ASM Project files (1955-003), with a few exceptions. OCRM numbers are project/report numbers assigned by the Office of Cultural Resource Management, Department of Anthropology, Arizona State University.

[b] Organization abbreviations: ACS = Archaeological Consulting Services, Ltd.; APS = Arizona Public Service; ARCO = Atlantic Richfield Company; ARS = Archaeological Research Services, Inc.; ASM = Arizona State Museum; ASU = Office of Cultural Resource Managment, Department of Anthropology, Arizona State University; BIA = Bureau of Indian Affairs; BOR = Bureau of Reclamation; CAP = Central Arizona Project; CES = Cultural and Environmental Systems, Inc.; D&M = Dames and Moore; EPNG = El Paso Natural Gas Company; GRIC = Gila River Indian Community; GRIC-CRMP = Cultural Resource Management Program, Gila River Indian Community; GRTI = Gila River Telecommunications, Inc.; LSD = Logan Simpson Design, Inc.; NRI = Northland Research, Inc.; PGM = Pueblo Grande Museum; P-MIP = Pima-Maricopa Irrigation Project; SAS = Scientific Archaeological Services; SSI = Soil Systems, Inc.; SHPO = State Historic Preservation Office (Arizona); SRP = Salt River Project; SWCA = SWCA, Inc., Environmental Consultants; URS = URS Corporation, Environmental Consultants; WAPA = Western Area Power Administration

[c] Project Type: L = Linear Survey, B = Block Survey, I = Irregular Survey, E = Excavation/Testing



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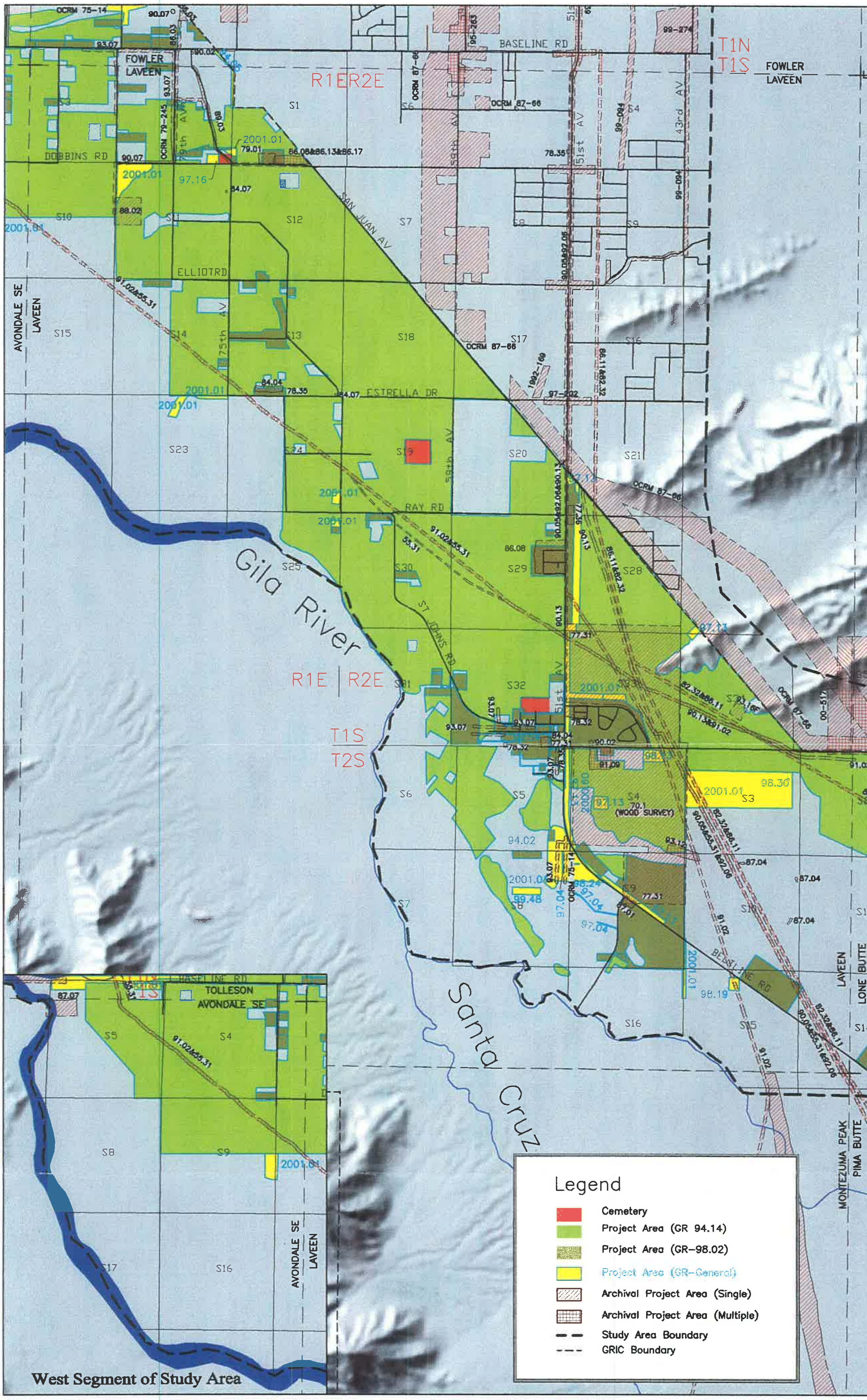
South Mountain Transportation Corridor
TRACS No. 202L MA 054 H5764 01L
FHWA Federal Project No. HH-202-D( )

0 .25 .5 1 2 Miles

Map showing project areas in the north segment of the study area.

Figure 3.1



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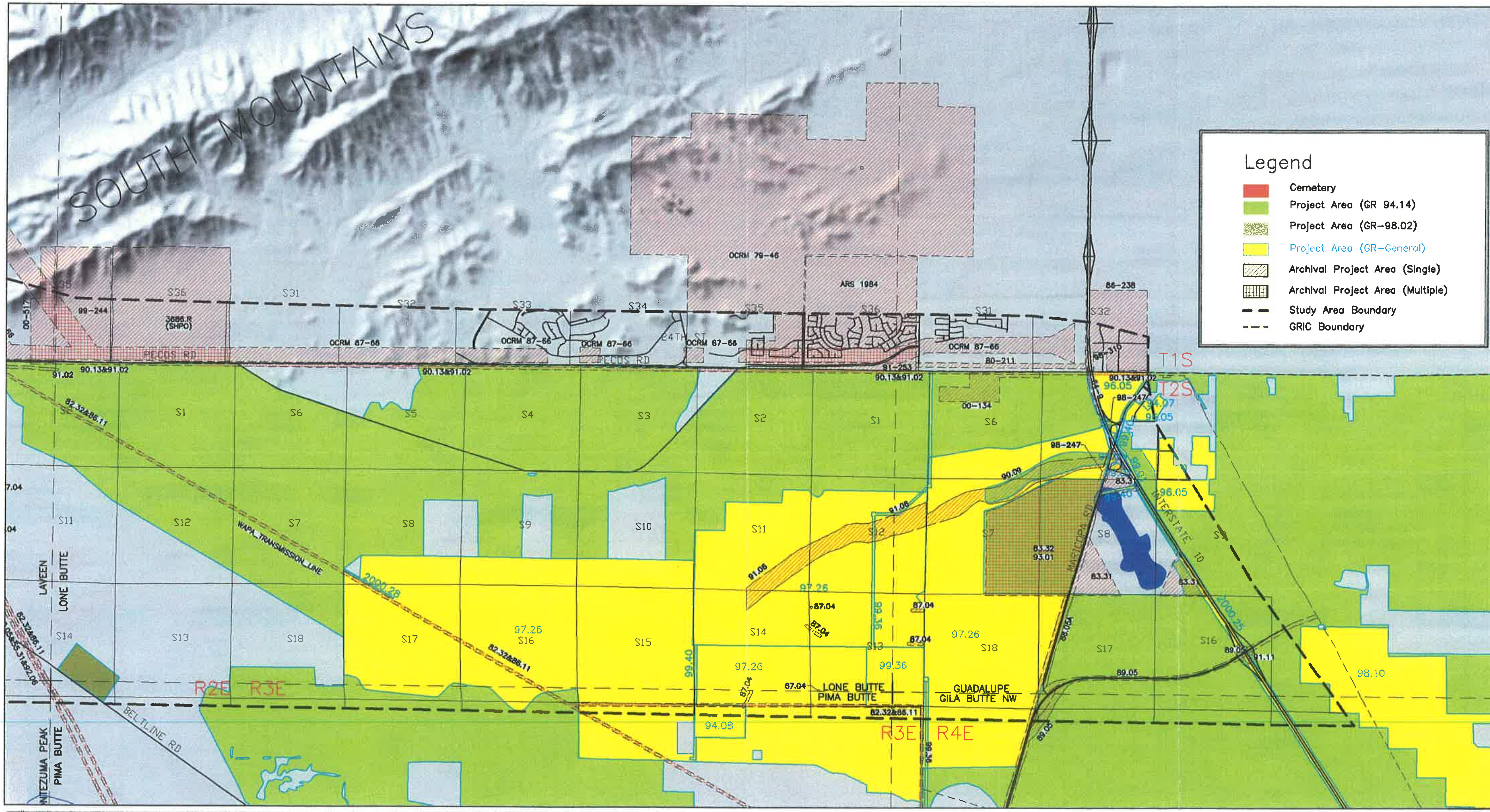
South Mountain Transportation Corridor
TRACS No. 202L MA 054 H5764 01L
FHWA Federal Project No. HH-202-D( )

Map showing project areas in the west and central segments of the study area.

0 .25 .5 1 2 Miles

Figure 3.2



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FHWA Federal Project No. HH-202-D( )

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Map showing project areas in the east segment of the study area.

Figure 3.3

5. Summary

The preceding chapters of this overview have provided a summary of previous archaeological investigations, and information on the nature, distribution, and National Register of Historic Places (NRHP) eligibility of all recorded archaeological sites in the South Mountain Freeway study area. The present chapter provides a general summary and evaluation of the recorded sites, as well as an evaluation of and recommendations for the entire project area. It is hoped that this information will serve as a useful tool in the consideration of alignment alternatives for the South Mountain Freeway corridor.

SITE SUMMARIES AND EVALUATIONS

A total of 301 recorded prehistoric and historical archaeological sites have been documented in the APE (Table 4.1; Figures 4.1, 4.2, 4.3). The recorded sites represent a broad range of site types, functions, and sizes (Table 5.1). Artifact scatters are the most common site type (n=163; 54 percent). However, Hohokam and historic indigenous habitation sites, villages, canals, and irrigations facilities have also been identified. Euroamerican sites include Roosevelt Canal (T;10:83 ASM), State Highway 80 (FF:9:17 ASM), and two mine sites. A Euroamerican presence is also indicated at two trash dumps and a rock art site.

A general summary of sites by cultural and temporal association is provided in Table 5.2. Almost half of the sites in the South Mountain study area (n=144; 48 percent) are solely prehistoric in age; a quarter (n=76; 25 percent) are strictly historical period sites. Another 48 sites (16 percent) contain both Hohokam and indigenous historic components. Temporally, the identified prehistoric sites range from the Archaic period through the Hohokam Classic period. Hohokam sites (n=116) and sites with Hohokam components (n=55) comprise about 57 percent (n=171) of the total site inventory.

The temporal range of the historic Akimel O'odham and Pee Posh sites is more ambiguous. Many of the historic indigenous sites are associated with the later part of the Historic period from about the mid-1800s to the mid-1900s, but only one is noted to have a Protohistoric component. Euroamerican sites represented a similar time range from the mid-1800s to the mid-1900s.

Site concentrations within the study area can be related to the geology and hydrology of the region. The largest villages and habitation sites are located in close proximity to the Salt River where previous perennial streamflow made extensive irrigation agriculture possible (Figures 4.1 and 4.2). Another concentration of sites is located between the

Table 5.1. Summary of Site Type Classifications for Each Segment of the Study Area

Site Type	North Segment	West Segment	Central Segment	East Segment	Totals by Site Type
Artifact Scatter	18	9	73	63	163
Canals / Canal Segments	12	–	2	–	14
Habitation (includes those with associated artifact / trash scatters)	4	–	27	14	45
Historic / Modern structural remains	1	–	2	1	4
Historic / modern trash scatters or dumps	–	–	6	2	8
Historic / modern trash scatters / dumps with prehistoric components	–	3	2	–	5
Highway	1	–	–	–	1
Human remains with artifacts	1	–	–	–	1
Lithic scatter	1	–	–	1	2
Mines	–	–	–	2	2
Mining campsite	–	–	1	–	1
Mound sites	7	–	1	–	8
Petroglyphs	–	–	1	6	7
Petroglyphs with associated artifacts	–	–	2	–	2
Petroglyphs, shrine, groundstone quarry	–	–	–	1	1
Possible habitation with artifact scatter	–	–	1	1	2
Quarries	–	–	1	1	2
Rock pile(s) - includes site with associated rock alignments	–	–	10	–	10
Rock rings with associated artifacts	–	–	2	–	2
Trail	–	–	–	1	1
Trail with associated features and/or artifacts	–	–	2	–	2
Villages	7	–	5	2	14
Unknown	3	–	1	–	4
Total Sites	55	12	139	95	301

Table 5.2. Summary of Recorded Archaeological Sites by Cultural and Temporal Association for Each Segment of the Study Area

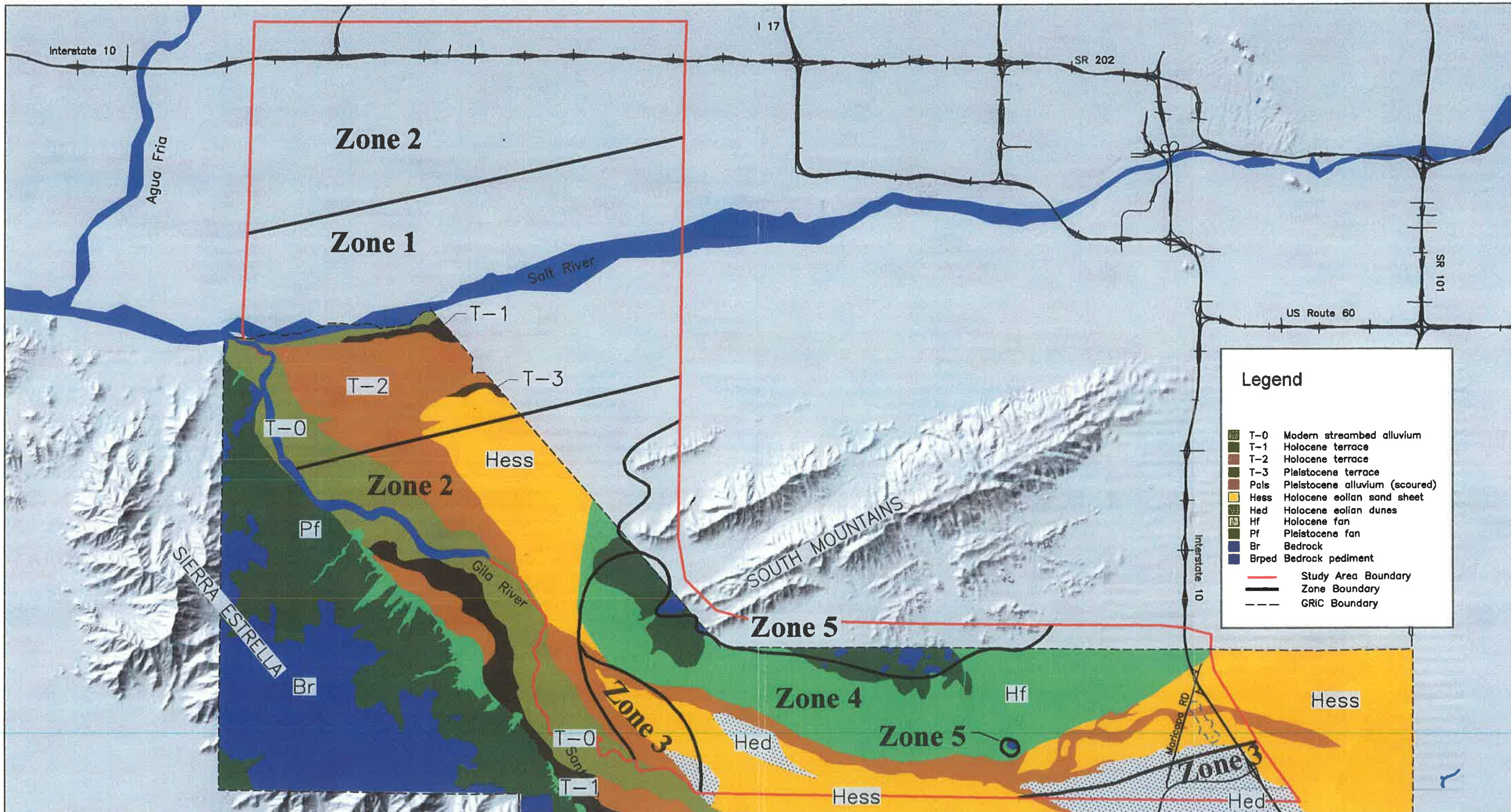
Culture / Time Period	North Segment	West Segment	Central Segment	East Segment	Totals by Culture / Time Period
Archaic	–	–	–	6	6
Archaic and Hohokam	–	–	–	5	5
Archaic / Early Formative and Hohokam	–	–	–	1	1
Archaic, Hohokam, and Indigenous Historic	–	–	–	3	3
Hohokam	39	7	49	21	116
Hohokam and Indigenous Historic	6	5	27	7	45
Hohokam and Undefined Historic	1	–	–	–	1
Protohistoric / Indigenous Historic	–	–	1	–	1
Indigenous Historic	2	–	44	19	65
Indigenous Historic / Euroamerican	–	–	–	1	1
Euroamerican	2	–	–	3	5
Undefined	1	–	13	3	17
Undefined Prehistoric	–	–	1	15	16
Undefined Prehistoric and Indigenous Historic	–	–	1	3	4
Undefined Prehistoric and Euroamerican	–	–	–	2	2
Undefined Historic	1	–	2	1	4
Undefined Multicomponent	–	–	–	1	1
Unknown	3	–	1	4	8
Total Sites	55	12	139	95	301

southwest end of South Mountain and the Gila River (Figure 4.2), where conditions were suitable for both dry farming and localized irrigation. A third site concentration is located along the southern boundary of the study area's eastern arm (Figure 4.3). The two historic indigenous villages and numerous historic indigenous habitation sites located here are on the northern edge of a site concentration centered southwest of the Maricopa Road interchange and north of Riggs Road in the vicinity of Lone Butte wash.

The distribution of sites in the current study area roughly parallels the zonal designations used to predict site density for the 1986 South Mountain survey corridor (Bostwick and Rice, 1987:Table 4). In the previous overview, the authors presented five zones based on variations in site types and densities: Zone 1 included large sites with canals, Zone 2 included small to medium sites with canals, Zone 3 consisted of small to medium sites with no canals, Zone 4 included small artifact scatters, and Zone 5 included petroglyph sites. While the larger study area considered in this report necessitates slight changes in the extent of some of these aerial designations, all of these zones are demonstrable within the study area (Figure 5.1).

The most significant changes include the extension of Zone 1 to include the villages of Pueblo Primero and Villa Buena on the south side of the Salt River, and the expansion of Zone 2 to include smaller canals (GR-1080, 1084) recorded in the vicinities of St. Johns and Komatke on the Gila River Indian Community. Two areas of small- to medium-sized sites with no canals (Zone 3) are present in the current study area. The first includes a number of habitation sites, medium to large artifact scatters, and two villages at and along a curve in Beltline Road. Zone 3 also encompasses the eastern end of the project area and includes numerous historic indigenous habitation sites and two historic indigenous villages (U:9:41 [ASM] and U:13:192 [ASM]). The concentration of sites found at the southwestern end of the South Mountains and the artifact scatters found throughout the central portion of the study area's eastern segment fall into Zone 4. The final zone presented by Bostwick and Rice (1987) includes the petroglyph sites, trails, mining sites, quarries, and nonagricultural rock features found along the upper bajada slopes and foothills immediately south and southwest of South Mountain. Similar sites found on Lone Butte are an exception to the latter since they are located within Zone 4. Although zonal boundaries require adjustments to take the larger study area into account, these boundaries are similar to those presented for a more refined study area in Bostwick and Rice (1987).

A geomorphic map of the Gila River Indian Community shows how site distribution (summarized by each of the zonal boundaries) is directly associated with variations in geologic landform (Figure 5.2). In the Middle Gila Valley, the largest and most permanent Hohokam sites are located along the edges of the Pleistocene terrace (T-3) (Waters and Ravesloot, 2000, 2001). In many areas, a veneer of Holocene eolian sand



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South Mountain Transportation Corridor
TRACS No. 202L MA 054 H5764 01L
FHWA Federal Project No. HH-202-D( )

0 .5 1 2 4 Miles

Map showing the approximate correlation between site type distribution zones and geomorphic landforms as documented within the Gila River Indian Community.

Figure 5.2

(Hess) covers the older Pleistocene surface. The T-3 terrace and the edges of the Hess close to the rivers would have provided stable surfaces suitable to long-term settlement throughout the Hohokam occupation (Waters, 2001). In the current study area, these points are exemplified by the location of the large pre-Classic to Classic Hohokam village of Villa Buena (GR-1057). While geomorphic studies for the lower Salt River are limited (Huckleberry, 1999), many of the large Zone 1 village sites north of the river are found in similar locations.

The highest Holocene terrace (T-2) would have been ideal for canal systems and irrigated fields (Figure 5.2), and many of the smaller sites in Zone 1 are located on this landform. Zone 2 sites within the GRIC are located on the T-2 terrace and the Hess between the Gila River and the west end of South Mountain. The Cooperative Ditch (GR-1080) and another "Undefined" canal site (GR-1084) are located in the sand sheet north of Lone Butte wash.

The west group of Zone 3 sites consists of a series of habitation sites, medium to large artifact scatters, a multicomponent Hohokam/indigenous historic village (GR-1112), and a Hohokam village (T:12:50 [ASU]). These sites are located on the Holocene eolian sand sheet between Lone Butte wash and the Gila River. The east group of Zone 3 sites includes habitation sites and two indigenous historic villages (U:9:41 [ASM], U:13:192 [ASM]) located in Holocene eolian dune (Hed) fields in the area of Lone Butte wash.

Zone 4 sites extend from Pleistocene and Holocene alluvial piedmont (Pf and Hf) sediments (bajadas) to the Holocene eolian sand sheet (Hess). The bajadas are composed of fan sediments emanating from surrounding mountains and buttes (Waters, 2001). Of particular interest is the site concentration at the southwest end of South Mountain (Figure 4.2). Located north of Lone Butte wash, this area can be divided between artifact scatters on the lower Holocene fans, and dry farming agricultural features (rock piles) on the higher Pleistocene fans (Figure 5.2).

Finally, Zone 5 approximates the boundaries of South Mountain and Lone Butte. This area extends from the upper reaches of the Holocene alluvial piedmont (Hf) to the peaks of the specified physiographic features (Bedrock pediment [Brped] and Bedrock [BR]). As noted, rock art sites, trails, quarries, non-agricultural rock features, and two Euroamerican mines (GR-650, 651) are included in this zone.

Federal and state regulations extend protection to NRHP-eligible resources and recognize that areas not previously surveyed may contain sites that could qualify for NRHP inclusion. Once sites are properly recorded, they can be evaluated based on National Register criteria. The NRHP eligibility status of all recorded sites in the project area is summarized in Table 5.3 and shown in Figures 5.3–5.5. Two large Hohokam villages –

Table 5.3. NRHP Eligibility Summary of Recorded Sites in the Project Area

NRHP Eligibility	North Segment	West Segment	Central Segment	East Segment	Totals by Status
Listed	1	–	1	–	2
Eligible	1	–	16	10	27
Potentially Eligible	18	12	53	38	121
Ineligible	2	–	6	7	15
Undetermined	30	–	62	40	132
Unknown	3	–	1	–	4
Total Sites	55	12	139	95	301

the Cashion Site (T:11:39 [ASM]) and Villa Buena (GR-1057) – are the only sites in the APE listed on the NRHP. A total of 27 sites are listed as eligible, and 121 more are listed as potentially eligible. The NRHP eligibility of almost half of the sites (n=136) is listed as "Undetermined" or "Unknown." Many of these sites were recorded before the mid-1980s and were not evaluated for NRHP eligibility. Site cards and documentation from this time frame often do not contain eligibility information. The term "Unknown" was used in instances when the existence of a site in a particular locality was questionable, and/or when no information could be found for a particular site.

Approximately half (n=150) of the sites in the APE are either listed to the NRHP, or are classified as eligible or potentially eligible for recommendation. All would be adversely affected by corridor preparation and highway construction. Further evaluation of those sites for which eligibility is listed as "Undetermined" or "Unknown" will likely increase the total number of sensitive sites within the study area. The presence of Traditional Cultural Properties (TCPs) along the flanks of the South Mountains must also be considered. Disturbance of listed sites and TCPs (if any fall within a corridor) will require data recovery, and data recovery will likely be necessary for eligible sites. Potentially eligible sites will probably be tested to determine the need for further data recovery.

In the study area, NRHP-listed or eligible sites are loosely associated with long-term population loci. Geomorphic characteristics advantageous to human habitation attracted residents to these localities, and as a result, many of the sites in these areas exhibit considerable time depth. These site concentrations are located at the upper reaches of Lone Butte wash (Zone 3; Figure 5.1 and 5.5), between the southwest end of South Mountain and the Gila River (Zones 2 and 3; Figures 5.1 and 5.4), and along the Salt River (Zone 1; Figures 5.1, 5.3, and 5.4).

When compared with the Lone Butte and South Mountain/Gila River areas, many of the sites along the Salt River show a general uniformity in NRHP eligibility status. While the only listed sites in the study area are found in this zone – Villa Buena (GR-1057) and the Cashion Site (T:11:30 (ASM) – only one eligible site (GR-1078) is shown. The large number of potentially eligible or undetermined/unknown sites along the Salt River is indicative of a sampling bias. Many of the sites in this zone were recorded before National Register eligibility was considered. Since then, many of these sites have been destroyed or covered by agricultural activity and/or urban expansion, leaving few if any chances to conduct eligibility testing. Review of Figures 5.3–5.5 shows the greatest variety of eligibility status determinations (and the greatest number of eligible sites) in those areas where recent fieldwork has been conducted (such as the GRIC). In many instances, these areas are also better protected from large-scale development.

A detailed evaluation of site sensitivity will ultimately depend on the location of a corridor or alternate corridors. In general engineers will face few problems if the corridor drops onto the northern portion of the Gila River Indian Community in the eastern segment of the project area (Figure 5.5). If the freeway corridor returns to the northern edge of the GRIC before rounding the South Mountains, the disturbance of TCPs and other sites related to cultural patrimony will have to be addressed. If the corridor follows a more southwesterly route to avoid the leading edge of South Mountain, many of the sites in the St. Johns/Komatke area will be affected (Figure 5.4). This portion of the APE – referred to as the "pinch point" because of its width – leaves few if any options for the avoidance of sensitive cultural properties. The alignment of the north-south arm of the freeway corridor will also be controversial since a multitude of prehistoric canals and large Hohokam villages are located on either side of the Salt River in the northern portion of the APE (Figure 5.3).

Construction in Zones 1 and 5 will require careful consideration of adverse impacts to affected sites, and in many instances, considerable effort will have to be expended to properly mitigate impacted sites (Figure 5.1). In the case of Zone 1, few large Hohokam villages remain available for study. Many of the larger prehistoric villages along the Salt River have either been completely destroyed or buried by encroaching development. With the possible exception of Villa Buena (GR-1057; T:12:9 [ASM]), all of the villages within the study area (particularly those to the north of the river) have sustained considerable damage. However, many of these sites can still provide a wealth of scientific data and so should not be treated irresponsibly.

Many of the points made for sites in Zone 1 are applicable to the site types included in Zone 5. In terms of sample size, these sites are not particularly significant since they are well represented in other localities in the immediate area and in the region. However, many of these sites and/or site localities are of particular importance to existing indigenous populations, and so should be foremost in the consideration of alignment alternatives.

Most of the site types used to categorize Zones 2, 3, and 4 are common elsewhere in the Phoenix basin, and construction impacts will only require limited testing and data recovery. Significant sites located within possible alignment corridors will require more detailed impact evaluations and greater efforts to insure proper mitigation. Also, sites of "Undetermined" or "Unknown" NRHP eligibility status will require further assessment before construction can proceed.

Prehistoric and Historical-Period Canals

While numerous canals and canal segments have been identified within the South Mountain APE, particularly in the northern portion of the study area (cf. Howard and Huckleberry, 1991), the review of archival maps and site records has identified a total of 14 named and/or recorded prehistoric and historical-period canals and canal segments in the study area (Figures 4.1, 4.2, 5.3, and 5.4). This includes seven major prehistoric canal alignments; a prehistoric canal segment (T:12:92 ASM); three historic canals; a canal segment with undefined cultural or temporal associations (GR-1084); and two canal segments with Hohokam and historic indigenous cultural affiliations (GR-1131 and T:12:134 ASM). The latter is a lateral of the historic Indian Ditch Canal that is spatially associated with a prehistoric ceramic scatter (Grafil, 2000).

From north to south, the four major prehistoric canal alignments on the north side of the Salt River are Canal Colinas, Canal Tolleson, Canal Alamo, and Canal Rio. The first prehistoric canal on the south side of the river is Canal Primero, followed by Canal Laveen and the South Branch of Canal Laveen. Clearly visible in the early part of the last century, these extensive prehistoric features were variously described, numbered, and/or named by Patrick (1903), Turney (1924, 1929), and Midvale (Supplemental Papers [no date], 1966). Much of this information has been subsequently reviewed and summarized by Howard and Huckleberry (1991).

The most extensive of the historical-period canals is Roosevelt Canal (T:10:83 ASM), which was constructed by the Salt River Project in 1928. Still important as a purveyor of local water, freeway construction will almost certainly be designed to have little if any impact on this late historic feature. The historic Indian Ditch canal carried water southward from the Salt in the first third of the twentieth century (Rodgers, 1998). Oriented southwestward, it extended from the river to the northern boundary of the GRIC. The final historic canal segment included in this inventory is the Cooperative (Co-op) Ditch (GR-1080) located between the Gila River and St Johns Road at the most narrow point of the study area. The Co-op Ditch is located to the east of the "undefined" canal segment (GR-1084) noted above. Other historical-period canals such as the León Canal which ran roughly parallel to Canal Primero were not included in the current overview since they are considered to be historically documented cultural resources.

The Co-op Ditch is considered to be eligible for recommendation to the register. The Roosevelt canal (T:10:83 ASM) and three canal segments (GR-1084, 1131, and T:12:134 ASM) are considered to be potentially eligible. While the significance of the other canals and canal segments has yet to be determined, it is evident that all of these irrigation features could be adversely affected by construction. Because of their significance in shaping the historical and prehistoric settlement patterns of the region, studies of these and other canals, their shifting channels, and utilization over time is essential. Testing for canal channel location is recommended at each alignment identified as a canal feature, as well as in areas where previously documented canal alignments occur, based on maps and aerial photographs. Archaeological testing will serve to determine the presence and integrity of subsurface deposits and their relationship to known prehistoric and historical irrigation systems, as well as Register-eligibility of each alignment.

Villages

A total of 14 prehistoric and historical period villages are present within the current study area. Ten of these are Hohokam sites ranging from the Pioneer period to the Classic period in age. Two village sites are historic indigenous settlements at the eastern end of the project area, and one contains prehistoric Hohokam and historic indigenous components. The cultural and temporal affiliation of the final village (the "Unnumbered SHPO Site") has not been defined.

The largest Hohokam villages are located along extensive prehistoric canal networks that branch off of the Salt River (Figures 4.1, 4.2, 5.3, and 5.4). Pueblo del Alamo, Pueblo del Rio, Los Aumentos, El Termino, and the Cashion Site are located north of the Salt; Villa Buena, Pueblo Primero, T:12:90 ASM, T:12:91 ASM, and the "Unnumbered SHPO site" are located south of the Salt. Villa Buena and the Cashion Site are the only sites in this inventory listed on the NRHP. While portions of Villa Buena remain relatively intact, other villages such as Cashion and Pueblo del Alamo have been severely impacted by previous agricultural activity and face new threats associated with the expansion of metropolitan Phoenix. Since many of the villages in the lower Salt valley have already been destroyed and/or completely buried by urban development, the handful of remaining examples is an increasingly valuable cultural resource. Should any of these sites fall in the pathway of the South Mountain Freeway, intensive excavation programs will be needed to salvage data from these sites and mitigate the impact of construction (Bostwick and Rice, 1987). Given the value of these sites, complete avoidance is preferable to any impact. Unfortunately, many of the largest village sites in the APE are located in the eastern half of the northern portion of the study area so an adverse impact of some kind is probably unavoidable.

Remaining village sites include a Pioneer to Classic period Hohokam village (T:12:50 ASU) and a mixed component Sedentary to Classic period Hohokam / Historical Akimel O'odham village (GR-1112) along Beltline Road just south of the APE's "pinch point" (Figures 4.2 and 5.4). Two historic indigenous villages (U:9:41 [ASM] and U:13:192 [ASM]) are located along the southern edge of the APE, south of Queen Creek Road between Maricopa Road and I-10 (Figures 4.3 and 5.5).

Traditional Cultural Properties

TCPs are those places associated with cultural practices rooted in tribal histories that are essential for maintaining cultural identity. Because of their religious and cultural importance, they are eligible for the NRHP and are worthy of registration and preservation, whenever possible. Such places may include shrines, sacred sites, natural landmarks, traditional resource areas, wells, springs, or bodies of water. An inventory of TCPs has been compiled from ethnohistoric information, ethnographic oral histories, and consultation with traditional cultural specialists. This limited access, confidential record is maintained at the GRIC-CRMP Repository, and is used as a reference for planning purposes, so that locations of these cultural resources can be avoided.

TCPs likely exist in both on- and off-reservation portions of the project area, including South Mountain Park. Once an alignment or series of possible alignments is chosen, the inventory will be reviewed to determine if any TCP's are located within potential right-of-ways. In addition to the Gila River Indian Community, other tribes such as the Salt River Pima-Maricopa Indian Community, Ak-Chin Indian Community, Tohono O'odham Nation, Yavapai, Hopi, and Zuni should be consulted concerning the possible occurrence of Traditional Cultural Properties in the project area.

PROJECT AREA EVALUATION AND RECOMMENDATIONS

Overall, the tasks associated with compiling and analyzing the information for this overview presented several challenges. Among these were the large number of documented cultural resources; the lack of consistent or comprehensive site-recording methods; outdated, ambiguous, or incomplete site records in the archival institutions; as well as a multitude of institutional reference numbers and lack of common site definitions. While every attempt was made to accurately document all previous archaeological investigations and previously recorded sites within the project area, other sites may have been recorded and other (mostly small) projects may have been conducted. Lastly, some recorded sites with outdated or ambiguous data may require further investigation.

Recommendations for Future Archaeological Survey

A total of 145 previous archaeological investigations have been conducted in the 140 square mile (89,347 acre) project area (Table 3.1). In all, these projects have surveyed and/or tested 37,286 acres (58.24 square miles), or approximately 44 percent of the study area. A total of 52,061 acres (81.32 square miles) remains unsurveyed/untested. Figures 3.1–3.3 depict the surveyed and unsurveyed portions of the APE in each of the four study area segments. Project area coverage is most extensive on the Gila River Indian Community, particularly in the eastern segment of the project area. Development has served as the catalyst for many cultural resource investigations outside of the community, but previous development and continued expansion (particularly in the northern portion of the study area) has imposed limits on areas that can be surveyed.

Recommendations for future archaeological survey are dependent on the choice of a freeway corridor or a series of possible corridors. Obviously, any unsurveyed areas falling within a corridor alignment will require Class III surveys to locate and evaluate unrecorded cultural resources. Also, any project area not surveyed within the last 10 years will have to be considered for possible re-survey to update previous cultural resource evaluations. This includes the reevaluation of sites with "undetermined" eligibility status or sites in which eligibility may have changed since initial recommendation.

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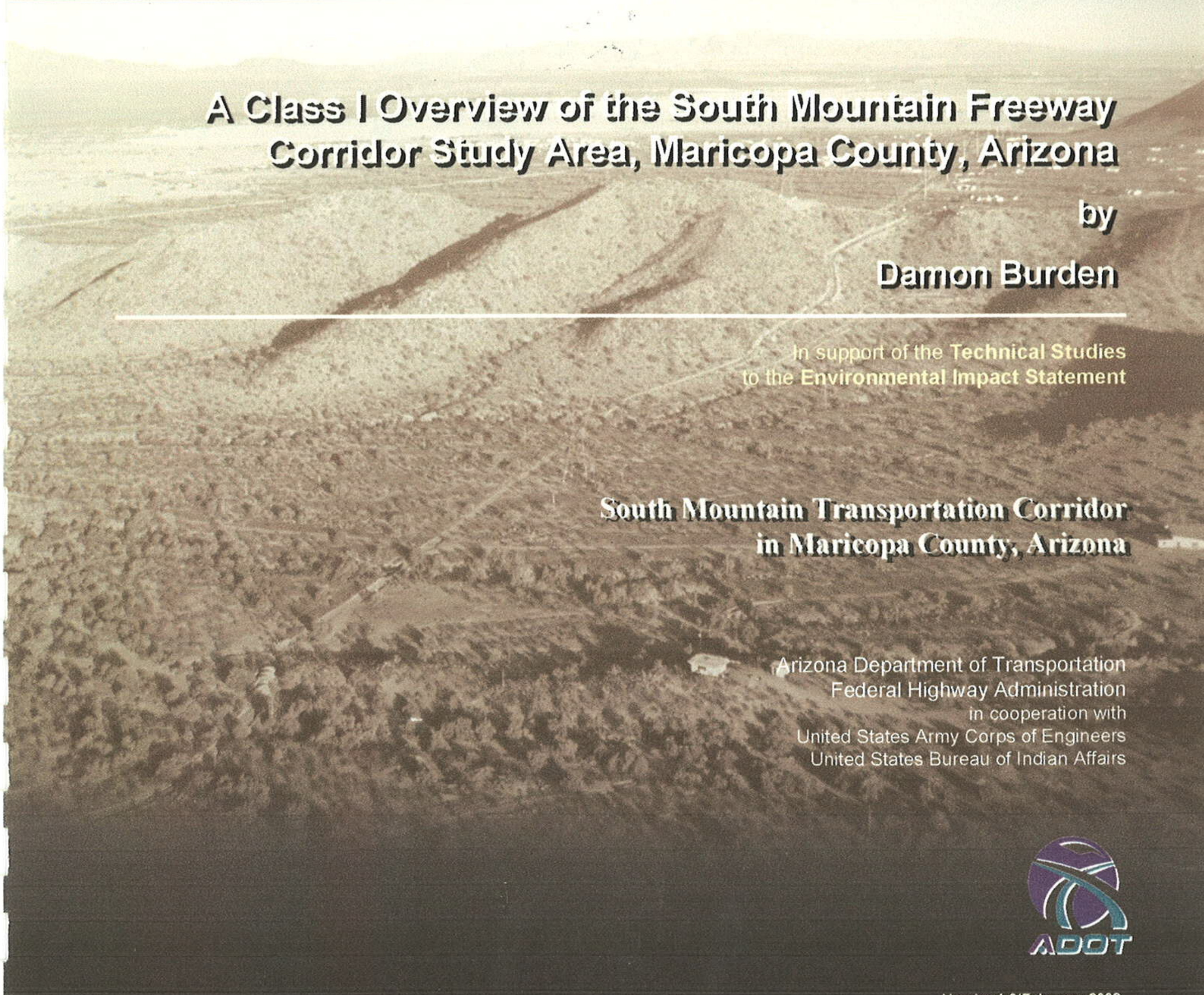
7. Appendix A. Acronyms and Abbreviations

ACS	Archaeological Consulting Services, Ltd.
ADOT	Arizona Department of Transportation. The State agency responsible for state roads and highways (ADOT 2002).
APE	Area of Potential Effect or project area
APS	Arizona Public Service electric company
ARCO	Atlantic Richfield Petroleum/Chemical Products Company
ARS	Archaeological Research Services, Inc.
ASM	Arizona State Museum, University of Arizona
ASU	Arizona State University
BIA	Bureau of Indian Affairs
BOR	Bureau of Reclamation
BR	Bedrock. Refers to all unweathered outcrops of bedrock that have topographic relief (Waters 2001, 10).
Brped	Bedrock pediment. Weathered bedrock that has been beveled into a planar, low relief surface via mechanical and chemical weathering (Waters 2001, 11).
CAP	Central Arizona Project
CES	Cultural and Environmental Systems, Inc.
CPS	Cathodic Protection Station
CRMP	Cultural Resource Management Program, Gila River Indian Community
Cultural Resources	Archaeological and historic resources that could potentially be affected by a given project. Cultural resources include buildings, sites, districts, structures, or objects having historical, architectural, archaeological, cultural, or scientific importance (ADOT 2002).

D&M	Dames and Moore
EHV	extra-high voltage
EIS	Environmental Impact Statement. A federally mandated report that analyzes potential environmental affects of federally funded projects or projects involving land with federal jurisdiction (ADOT 2002).
EPNG	El Paso Natural Gas Company
GP	Gila Pueblo Archaeological Foundation, Globe, Arizona
GRIC	Gila River Indian Community
GRIC-CRMP	Cultural Resource Management Program, Gila River Indian Community
GRTI	Gila River Telecommunications, Inc.
ha	hectare
Hess	Holocene eolian sand sheet. A geologic unit consisting of a massive blanket of sand that covers large portions of the middle Gila Valley. This deposit is derived from sand blown out of dry streambeds of the Gila River and its tributaries (Waters, 2001:9).
Hf	Holocene alluvial piedmont. This geologic unit is composed of Holocene age fan sediments or bajadas extending from surrounding mountains and buttes (Waters, 2001:9).
Holocene	A geologic epoch dating from 10,000 yr. B.P. (years before present) to the present.
km	kilometer
km^2	square kilometer
kV	kilovolt
LSD	Logan Simpson Design, Inc.
m	meter
MNA	Museum of Northern Arizona

NRHP	National Register of Historic Places. A federal listing of historic resources protected under the National Historic Preservation Act of 1966 (ADOT 2002).
NRI	Northland Research, Inc.
OCRM	Office of Cultural Resource Management, Department of Anthropology, Arizona State University
Pf	Pleistocene alluvial piedmont. This geologic deposits consists of all Pleistocene age fan sediments extending from surrounding mountains and buttes (Waters, 2001:8).
PGM	Pueblo Grande Museum
Pleistocene	A geologic epoch dating from 2 million to 10,000 yr. B.P. (years before present).
P-MIP	Pima-Maricopa Irrigation Project
ROW	Right-of-way
SAS	Scientific Archaeological Services
SCIP	San Carlos Irrigation Project
SHPO	State Historic Preservation Office (Arizona)
SMCT	South Mountain Corridor Study Team
SRP	Salt River Project
SSI	Soil Systems, Inc.
SWCA	SWCA, Inc., Environmental Consultants
TCP	Traditional Cultural Property. Those places associated with cultural practices rooted in tribal histories that are essential for maintaining cultural identity.
URS	URS Corporation, Environmental Consultants
USGS	US Geological Survey
WAPA	Western Area Power Administration

South Mountain
corridor team



A Class I Overview of the South Mountain Freeway Corridor Study Area, Maricopa County, Arizona

by

Damon Burden

In support of the **Technical Studies** to the **Environmental Impact Statement**

South Mountain Transportation Corridor in Maricopa County, Arizona

Arizona Department of Transportation
Federal Highway Administration
in cooperation with
United States Army Corps of Engineers
United States Bureau of Indian Affairs

ADOT

Version1.0/February 2002

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FHWA Federal Aid Project No. NH-202-D( )

yr. B.P.	Years before present