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United States Department of the Interior
National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM**

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A).

Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name: The Tumamoc Hill Archaeological District

other names/site number AZ AA:16:6 (ASM)

2. Location

street & number 1675 W Anklam Road/NE corner Greasewood Road and 22nd Street not for publication
city or town Tucson vicinity N/A
state Arizona code AZ county Pima zip code 85745

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this nomination request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property meets does not meet the National Register Criteria. I recommend that this property be considered significant nationally statewide locally. (See continuation sheet for additional comments.)

James W. Gorman AZSHPD
Signature of certifying official

9 FEBRUARY 2010
Date

ARIZONA STATE PARKS.
State or Federal Agency or Tribal government

In my opinion, the property meets does not meet the National Register criteria. (See continuation sheet for additional comments.)

Signature of commenting or other official

Date

State or Federal agency and bureau

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4. National Park Service Certification
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I, hereby certify that this property is:

- entered in the National Register.
_____ see continuation sheet.
- _____ Determined eligible for the National Register.
_____ see continuation sheet.
- _____ determined not eligible for the National Register.
- _____ removed from the National Register.

_____ other (explain): _____

for Erika K. Martin Seibert
Signature of Keeper

4/5/10
Date of Action

=====
5. Classification
=====

Ownership of Property (Check as many boxes as apply)

- _____ private
- _____ public-local
- public-State
- _____ public-Federal

Category of Property (Check only one box)

- _____ building(s)
- district
- _____ site
- _____ structure
- _____ object

Number of Resources within Property

Contributing	Noncontributing
_____	<u>5</u> buildings
<u>3</u>	<u>2</u> sites
_____	<u>45</u> structures
_____	_____ objects
<u>3</u>	<u>52</u> Total

Number of contributing resources previously listed in the National Register N/A

Name of related multiple property listing (Enter "N/A" if property is not part of a multiple property listing.)
N/A

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6. Function or Use
=====

Historic Functions (Enter categories from instructions)

Cat: DOMESTIC
DOMESTIC
RELIGION
DEFENSE
AGRICULTURE
INDUSTRY/PROCESSING/EXTRACTION
FUNERARY

Sub: village site
camp
ceremonial site
fortification
agricultural field
extractive facility
mortuary

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10. Geographical Data

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Acreage of Property 851.89

UTM References (See continuation sheet)

Verbal Boundary Description The boundary of the nominated district is delineated by the polygon whose vertices are shown on the accompanying USGS map (also see continuation sheet)

Boundary Justification (See continuation sheet)

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11. Form Prepared By

=====

name/title: John H. Madsen, Nancy Pearson, Suzanne K. Fish, Todd Pitezal, Jeff Burton, Mary Farrell, /Archaeologists

organization: Arizona State Museum date 08/01/2008

street & number: 1010 University Boulevard telephone: (520) 621-4795

city or town: Tucson state: Arizona zip code: 85721

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Additional Documentation

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Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location. See enclosed USGS 7.5' map.

A **sketch map** for historic districts and properties having large acreage or numerous resources. See enclosed Tumamoc Hill Archaeological District - Oversized folded 34 by 34 inch map showing noncontributing features labeled 1 through 52 and contributing properties labeled 100 through 117 (keyed);, also eleven 8 by 11 sheets of the Archaeological District with greater detail (keyed), and directions of photographs 1 through 16.

Photographs

Representative **black and white photographs** of the property. See b/w Photos 1 through 16

Additional items "...alternative method of labeling..." photographs items 3-6

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Property Owner

=====

name Arizona State Land Department

street & number 1616 West Adams telephone (602) 542-4631

city or town Phoenix state AZ zip code 85007

name Arizona Board of Regents for the University of Arizona

street & number 2020 N. Central Ave Ste 230 telephone (602) 229-2500

city or town Phoenix state AZ zip code 85007

Property Owner Continued

name _____ Pima County _____

street & number _____ 201 N. Stone Avenue, 6th Floor _____ telephone _____ (520) 740-6598 _____

city or town _____ Tucson _____ state _____ AZ _____ zip code _____ 85007 _____

Missing Core Documentation

Property Name	County, State	Reference Number
Tumamoc Hill Archaeological District	Pima, AZ	10000109

The following Core Documentation is missing from this entry:

- X Nomination Form (Missing sections 8 and 9)
- Photographs
- USGS Map

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Tumamoc Hill Archaeological District
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SECTION 7: DESCRIPTION

SUMMARY

Tumamoc Hill is an iconic landmark that offers an unsurpassed view of the Tucson Basin in southern Arizona. AZ AA:16:6 (ASM), a large and diverse archaeological site, is located on the hill and surrounding undeveloped land near the center of the modern city of Tucson. The site encompasses 851.89 acres with thousands of prehistoric features spanning a period from approximately 400 B.C. to A.D. 1350. The site embodies the distinctive characteristics of *trincheras* sites and its massive summit walls and terraces represent the first public architecture in Arizona.

The hilltop and slopes support various dry-laid rock walls called *trincheras*. These stone features are the defining characteristics for *trincheras sites*, which occur on low hills in the bi-national borderlands. Preceramic farmers built the earliest array of such features in Arizona on Tumamoc Hill. They constructed massive walls and terraces on the hilltop that constitute Arizona's first "public architecture" in the sense of being on a scale that required sustained and coordinated communal effort. These preceramic farmers, and a later set of residents near the beginning of the Hohokam sequence, account for a wide variety of *trincheras* features. In addition to massive, encircling walls that also extend down east-southeast and west slopes, a summit area of about six acres contains dry-laid house foundations, small terraces, rock alignments, trails, bedrock milling stations, artifact scatters, and petroglyphs. The two major occupations of Tumamoc Hill spanned important changes in technology, subsistence, social organization, and settlement patterns.

Hundred of prehistoric and historic petroglyphs dot the landscape of Tumamoc Hill from the earliest known Archaic scratched styles through Hohokam pecked designs. Extensive Hohokam agave fields cover nearly 220 acres of land off the west base of the hill and are represented by hundreds of rock piles, check dams, and water-control features and a dozen roasting pits.

Physical evidence of American Indian use of Tumamoc Hill after A.D. 1350 is limited to two large clusters of talus pits reminiscent of eighteenth and nineteenth-century O'odham cemeteries. A newspaper article from 1883 that mentions "Apache" and "Papago" burials on the west side of the mountain lends credence to a cemetery function. The Tohono O'odham, Akimel O'odham, and Hopi Tribe claim Tumamoc Hill as an important ancestral site.

Physical evidence of Euroamerican use of the hill is not seen until the American period, when visitors scratched and pecked their names onto boulders. The earliest inscription, "Company C, 32nd U.S. infantry," coincides with the presence of Union troops in Tucson from June 1867 to May 1868.

The andesite and andesite tuff outcrops on Tumamoc Hill were mined throughout the last two decades of the nineteenth century ending when the Carnegie Institution of Washington purchased several parcels between 1903 and 1905 and began to build its renowned Desert Laboratory. There remains a strong connection between the long-abandoned Tumamoc Hill quarries and the many architectural elements visible throughout Tucson's many historic neighborhoods.

A relatively undeveloped island amidst intensive municipal development, the resource includes the largest remaining contiguous block of archaeological features and cultural deposits within Tucson. Archaeological studies at the site have provided, and will continue to provide, important information about the past, including important information about architecture, engineering, ethnic Native American and Euroamerican heritage, agriculture, and industry to name a few. The resource retains sufficient integrity of location, design, setting, materials, workmanship, feeling, and association to qualify for the National Register. The Desert Laboratory National Historic Landmark and its contributing buildings and several mid-twentieth-century buildings, structures, and features are counted as noncontributing elements within the district.

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ENVIRONMENT

Elevation

Tumamoc Hill, Sentinel Peak, and Powder House Hill form a small geologic unit called an inselberg or residual formation, rising abruptly from the western edge of the Santa Cruz River floodplain and conjoined to the Tucson Mountains through a series of ridges and washes that extend eastward to the west flank of Tumamoc Hill. This inselberg rises from a low of 715 m (2360 ft.) at the northeastern base of Sentinel Peak to a high of 941 m (3105 ft.) at the crest of Tumamoc Hill.

Climate

Because the Tumamoc Hill summit rises only 266 m (745 ft) above the floor of the Tucson Basin, rainfall patterns are not significantly different from the rest of the valley. Of note, however, are the daily weather records kept on the hill from 1907 to the present day. Representing the longest continual weather record in the state, this information was first kept by the Desert Laboratory and is now maintained by the U.S. Geological Survey (USGS) office in Tucson. These data show that at this location (2685 ft. elevation) the average rainfall is about 12 in., of which 53 percent occurs during the summer from July to September and 28 percent occurs during the winter from December to March. The warm climate of the Tucson Basin provides a long growing season, averaging 265-frost-free days each year (Masse 1979:146). With its dark, heat-retaining rocks and a site situation that is above the cold-air drainage, the Tumamoc Hill summit itself offers the advantage of a significantly longer growing season than the floodplain below, with only as few as five or six weeks subject to freezing and the potential for an early-season crop in conjunction with winter rains (Wallace et al. 2007).

Geology

As a geological unit these hills are composed of alternating layers of lava and sediments in essentially horizontal layers. Fourteen rock types, or units, covering a time span of approximately 40 million years, are recognized in a sequence of interbedded layers exposed in the 266 m (745 ft.) from the base to the top of this residual formation. These layers comprise the most complete sections of Tertiary rocks in the Tucson Mountains for the period of 60 to 20 million years ago.

Soils

Desert Laboratory soil data provided by Post and others (1973) and by the Natural Resources Conservation Service (2007) were consulted. Variation exists between the earlier and later research but overall both studies reach the same general conclusion about the character of soils on the Desert Laboratory grounds. One can review Natural Resources Conservation Service (NRCS) soil series technical reports for detailed soil classification but for purposes here we use soil descriptions provided by Baldwin and others (ca.1974) that are adapted from Post and others (1973).

Four major soil associations characterize Tumamoc Hill:

The Nickel association is a very shallow, well drained, to excessively drained, gravelly soil found in the sloping stream terraces that extend onto the laboratory grounds from the Tucson Mountains. The soils are formed in the old alluvium-colluvium deposits derived from rhyolite and andesite rock. The soil may contain anywhere from 35-75 percent gravel by volume throughout its profile and is found on nearly level, hilly upland fan pediments where slope ranges from 3-15 percent. High calcium carbonate causes the soil complex to be lighter in color than surrounding soils. Lime tolerant plants species such as ocotillo dominate this soil association. A strong correlation between this soil and prehistoric agave plantations also exists at Tumamoc Hill (see NRCS Delnorte Series-Stagecoach Series Complex).

The Pinaleno-Palo Verde association is the same material on the same fan and stream terrace that characterize the Nickel association. The soil, however, is a deep, very gravelly, clay loam that is well drained. Unlike the former series this soil is reddish brown. Because of its clay loam texture the soil has better water retention and supports a palo verde-saguaro community (see NRCS Pinaleno Series).

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Recent alluvium deposited in and on the floodplain of Silvercroft Wash and the five lesser drainages originates from the adjacent fans and terraces of the Tucson Mountains. This material is defined as the Anthony-Arizo association. The alluvium is a deep, excessively drained, fine gravelly sand (see NRCS Arizo Series and Riverwash Series Complex).

The largest soil association within the Desert Laboratory is the Cherioni, thermic-variant Lehman's-Rock Outcrop association. This association applies of the summit, sides, and toe of Tumamoc Hill. The soil is characterized by many outcrops of andesite and tuff, talus slides, and rock fragments on gentle to steep slopes. The Cherioni thermic-variant soil is the dominate soil type in the association, consisting of a very shallow soil overlaying a silica-cemented hardpan extending down to bedrock. The Lehman's soil is found on the gentle to moderate slopes of the hill and is a weathered soil formed in place. It is a clayey soil that can reach a depth of 18 in. This soil supports the paloverde-saguaro community.

Hydrology

Journals entries and drawings from the 1850s and late nineteenth century and early twentieth-century photographs provide a glimpse of the Santa Cruz River valley near Tumamoc Hill when the river was a meandering stream, a time when the valley was filled with farms reliant on surface water and canal technology to water crops. From the earliest photograph taken from Sentinel Peak, it is not difficult to extrapolate archaeological and geomorphological research to envision what the view of the valley looked like from Tumamoc Hill two thousand years before present. The Santa Cruz River made Tumamoc Hill a habitable place for humans because it provided a source of domestic water, farmable lands, and a riparian corridor filled with exploitable plants and animals.

By 1910 entrepreneurs created sizable ponds on the Santa Cruz River by impounding its water south of town. An unfortunate series of floods and pond breaches caused serious erosion of the meandering floodplain, resulting in a single deep channel by 1915. These natural events and the advent of mechanical well pumps forever submerged the river below its sandy bed. Today the river carries surface water only during flood events.

Springs issued from the base of Sentinel Peak as late as 1878 but there is no mention of such water sources on Tumamoc Hill. Prolonged rain storms during winter rains and summer monsoons percolate downslope on Tumamoc Hill to create temporary seeps over exposed bedrock, but generate only enough water to serve animal populations temporarily. When the Carnegie Institution moved to Tumamoc Hill in 1903, a permanent source of water had to be secured from a well in what is now Menlo Park and piped to a reservoir on the hill by an electrically driven pump. By 1919 the Menlo Park well was contaminated by a growing number of exposed cesspools and a proposal was set forth to connect to the city main and to drill a new well west of St Mary's hospital.

West of the hill, five drainages extend east and northeast across the Desert Laboratory property where they join the larger Silvercroft Wash. Silvercroft Wash originates in the Tucson Mountains northeast of Cat Mountain and extends northeastward along the west base of Tumamoc Hill. During periodic heavy rains Silvercroft Wash can carry sufficient water to pose flood threats in the urban area northeast of Tumamoc Hill. There is little arable land associated with the smaller washes west of the hill but they feed sediments into the Silvercroft Wash drainage and this certainly provided opportunity for seasonal floodwater farming along its banks. Extraordinary, well-preserved prehistoric agave gardens cover the west end of the laboratory property and were completely dependent on direct seasonal rainfall and sheet flooding.

Vegetation

Tumamoc Hill is a preserve of more than 850 acres centrally located within the city of Tucson. The land has been effectively preserved with minimal perturbations to the native flora from 1903 to present. Two biotic surveys have been carried out at Tumamoc Hill; the first in 1909 by J. J. Thornber and the second by R. M. Turner in 1968-1969 (Bowers

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and Turner 1985). The following discussion is based almost exclusively on the latter report with minimal amendments based on more recent observations.

Bowers and Turner (1985) report that a total of 346 specific and infraspecific taxa were located on Tumamoc Hill based on the 1968-1969 survey data. This list differs substantially from the 238 recorded in 1909 by Thornber. Forty-nine of the 108 additions were invasive species not native to the Sonoran Desert. The overall majority of the new species recorded in the sixties, both native and non-native, were believed to have newly colonized the site as a result of incidental, artificial wetland creation. Non-systematic recent observations add three new species to the list compiled by Turner: Crown of Thorns (*Koeberlinia spinosa*), Santa Rita Prickly Pear (*Opuntia santa rita*) and Murphy's Agave (*Agave murpheyi*); the last of these is known to have been introduced through scientific experiments.

The Tumamoc Hill preserve can be loosely divided into two subregions of rocky slopes/summit and lower bajada/wash. Both of these fall under Shreve's (1951) Arizona Upland Division of the Sonoran Desert. In their 1985 description Bowers and Turner (1985:22) listed the following species as predominant on the slopes and summit of Tumamoc Hill: Foothills Paloverde (*Cercidium microphyllum*), Saguaro (*Carnegiea gigantea*), Ocotillo (*Fouquieria splendens*), Desert Lavender (*Hyptis emoryi*), *Opuntia phaeacantha* (no common name), Brittlebush (*Encelia farinose*), Berlandier Wolfberry (*Lycium berlandieri*), and Whitethorn Acacia (*Acacia constricta*). cursory observations of this region indicate this description remains accurate, with the possible addition that the invasive species *Pennisetum ciliare* (buffelgrass) is now ubiquitous in this region despite numerous efforts to control its spread.

The lower bajada region has been subject to disturbance in the form of a now retired landfill approximately 18 ac. in size, an abandoned brick quarry that now serves as a near-perennial artificial reservoir 1 ac. in size and a variety of disturbances resulting from various utility installations. These disturbance features, and the close proximity to residential zones with numerous non-native plants has resulted in numerous invasive species colonizing portions of the bajada. Nonetheless, the dominant species list created in the 1960s remains largely accurate and is composed entirely of native species including Saguaro (*Carnegiea gigantea*), Creosote Bush (*Larrea divaricata*), Triangleleaf Bursage (*Ambrosia deltoidea*), Chainfruit Cholla (*Opuntia fulgida*), Mohave Prickly Pear (*O. phaeacantha*), Cholla (*O. versicolor*), Ocotillo (*Fouquieria splendens*), and Fairy Duster *Calliandra eriophylla*. To this list recent observations warrant the addition of Christmas Cholla (*Opuntia leptocaulis*). The now predominant nature of this species in many areas of the bajada may result from reduced rainfall in the past several decades since Thompson's survey was conducted. In wash regions species such as Foothills Paloverde (*Cercidium microphyllum*), Blue Paloverde (*C. floridum*), Velvet Mesquite (*Prosopis velutina*), Catclaw Acacia (*Acacia greggii*), Whitethorn (*A. constricta*), and Gray Thorn (*Zizyphus obtusifolia*) comprise the dominant species in what are generally the areas of the highest primary biomass in the Tumamoc Hill preserve.

For a full list of species located on Tumamoc Hill, interested parties are directed to the frequently cited Bowers and Turner (1985) paper. Between the 1909 and 1968, 1969 surveys, only two species appear to have been extirpated at Tumamoc Hill. It seems likely that this high level of continuity would hold for the 1969 to present time period as well, although a similar increase in invasive species, as discussed above, may have occurred but not been fully noted by more recent survey efforts.

Wildlife

In spite of rapid adjacent urbanization, Tumamoc Hill is still home to many desert animals: Mammals such as mule deer, javelina, coyote, gray fox, and bobcat are permanent residents of the hill and an occasional mountain lion will make a foray onto the property. The site also supports populations of many smaller species such as black-tailed jackrabbit and the kangaroo rat. The annual migration route of numerous western birds crosses the hill and the region. Many transient species such as warblers and orioles can be found on site in the spring and autumn. Species frequently observed year-round include the red-tailed hawk, mourning dove, Gambel's quail, and cactus wren (Steadman 1980).

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TIME PERIOD OF OCCUPATION OR USE (see Table 1 for Chronology of Occupation at the end of this section)

Chronology of the Prehistoric Occupations

In Arizona, Archaic hunter and gatherer sites are assigned to one of three periods within the Southwest Archaic Tradition: the Early Archaic (ca. 7500 to 3500 B.C.), the Middle Archaic (ca. 3500 to 2100 B.C.), and Late Archaic (ca. 2100 B.C. to A.D. 50). Middle Archaic-period projectile points found at the base of Tumamoc Hill (Masse 1979:150) provide the first tangible sign of human use of the property. With little difference in the ecological setting between then and now, the animal and plant resources and the proximity to the Santa Cruz provided the less-than-sedentary people optimal resources for their mobile lifestyle.

The term Early Agricultural (previously identified as the Late Archaic) best reflects the cultural setting between 2100 B.C. and A.D. 50. During this time farmers irrigated fields of maize on the floodplain of the Santa Cruz River, planted on lower bajadas, and farmed at the mouths of watered canyons. They supplemented their diet with deer and other small game and wild plant foods (Ezzo and Deaver 1998; Gregory 1999; Huckell and Huckell 1984; Mabry 1998). Most individual settlements were small (with a dozen or so round or bean-shaped structures for both occupation and storage use) and even the irrigation communities may have been semipermanent, as locations shifted in response to rainfall patterns or river conditions (Wallace et al. 2007:49). Two-thousand-year-old corn was discovered on Tumamoc Hill during excavation of an area behind one of the trincheras walls in 1985 (Fish et al. 1986). The intensity of this early occupation of Tumamoc Hill was not recognized until 1998, when it was found that the previous discovery of early corn came from a small pithouse cut into terrace fill supported by the massive wall. In fact, some, and perhaps most, of the trincheras walls encircling the top of the hill and the upper slopes for a cumulative 2.3 km were built during the Early Agricultural period (pre- A.D. 50) making them the earliest known public architecture in Arizona (Fish 2005; Wallace et al. 2007).

The reasons that early farmers chose to live on the hill and invest an unprecedented amount of labor in massive public architecture are still unclear. The first explanations for the walls focused on their defensive qualities (e.g., Huntington 1904, 1914). During the survey and analysis of the site conducted in the 1970s, Wilcox (1979; Wilcox et al. 1979) developed and tested several hypotheses to explain the walls and concluded that only the morphological and spatial evidence supported the defense hypothesis. Reexamining the 1970s data and considering the frequency and distribution of projectile points as well as the data provided by recent excavations, Wallace (Wallace et al. 2007) finds support for a primary defensive function. Paul Fish and Suzanne Fish, on the other hand, argue that the low (at most knee-high) wall height, the presence of houses and gardens behind the walls, and the trails that provide passage through the walls support a broader set of functions, including specialized agriculture, communication, and ritual (Wallace et al. 2007). The presence of a spouted stone-tray fragment, polished-stone cruciform, and a clay figurine further denote Early Agricultural-period ritual activities. The similar hilltop sites in northwest Mexico suggest that Tumamoc Hill shared in a regionally widespread style of construction on elevated landforms in the Early Agricultural period (Wallace et al. 2007).

No substantial use of Tumamoc Hill has been documented for the time immediately after the Early Agricultural period. This apparent hiatus likely spans the Early Ceramic period (ca. A.D. 50 to 500). It is a period marked by the introduction of undecorated ceramics for storage, but house design, social patterns, and exchange and production systems appear little changed from the preceding period until about A.D. 450, when rectangular structures were added to the round and bean-shaped forms and went on to become the dominant design (Wallace et al. 2007:50).

Hohokam is the English pronunciation of Hu Hu Kam, a word used in the Piman language to mean "those who are gone." The geographical extent of the Hohokam tradition coincides closely with the basic and persistent patterns of settlement and subsistence seen in the Sonoran Desert before the sixth century. For purposes of this discussion, the Hohokam sequence is divided into the Preclassic period (A.D. 500 to 1150) and the Classic period (A.D. 1150 to 1450). The Hohokam aggregated into cohesive agricultural communities that occupied every hospitable niche within the Sonoran

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Desert. The term community refers to clusters of related sites centered on a large village with public architecture, surrounded by multifaceted agricultural systems and smaller sites located strategically to acquire natural resources. Material culture is similar to that found during the Early Ceramic period but the hallmark artifacts setting the Hohokam off from previous groups are a brown and buff pottery with elaborate red decorations.

Although just prior to the advent of red-painted pottery, the Tortolita phase, around A.D. 500-650/700, is considered by some researchers to be the beginning of the Hohokam culture. Settlements shifted from the floodplain to adjacent river terraces and occurred in many other settings as well. Trough metates and perhaps a new floury strain of corn were adopted. Pottery became more abundant and was used for cooking for the first time; a variety of forms proliferated, although most communities made their own pottery. In contrast, specialization appears to have developed for the production of shell and stone jewelry. Some population aggregation occurred, perhaps correlated with the expansion of existing canal systems and fields and the development of land tenure (Wallace et al. 2007:50-54).

During the Tortolita phase a village in the larger range for this time appeared atop Tumamoc Hill. Excavations in 1998 revealed that some of the circular rock enclosures atop the hill were Tortolita pithouses, some were small terraces without houses, and some pithouses were not visible on the surface (Wallace et al. 2007:47). As with the earlier massive trincheras walls and terraces, the Tortolita phase pithouses and smaller residential terraces in the village required substantial investments of labor for their construction: the pithouses were "excavated into rocky soils and compact substrates; in many cases, retaining walls were built and fill dirt and rock imported to create enough level space for house construction and activity areas" (Wallace et al. 2007:56). Whether these Tortolita phase occupants added to the existing massive encircling walls or reused existing house pits is currently unknown. A full range of artifacts suggests a substantial occupation. Wallace argues that the artifact frequency is lower than what might be expected at a year-round village site. A large, well-constructed trail connects the summit to the adjacent St. Mary's Site (AZ AA:16:26(ASM)). Although the St. Mary's Site appears to be primarily a Rillito to Rincon phase Hohokam site (ca.A.D. 850 -1150), it may have been first settled during the Tortolita phase (Wallace et al. 2007). The setting of the Tumamoc Hill village is, at least so far as is presently known, unique. No other known Tortolita phase settlement is on a hilltop; none is surrounded by massive walls. Tortolita phase occupations have not yet been identified (although neither have they been conclusively refuted) at other hilltop sites in the region. Although at least some of the walls were constructed during the Early Agricultural period, the Tortolita phase inhabitants may have chosen the location for its defensive qualities. Wallace (Wallace et al. 2007) suggests that the Tumamoc Hill archaeological site could reflect strife associated with population aggregation and intensified use of prime agricultural land. For example, the intensified agriculture may have cut off hunting and gathering groups from traditional riverine resources, resulting in conflict between the farmers and more mobile neighbors similar to that that occurred in the post-contact period. Farmers could have sought refuge on the Tumamoc summit during raids, until their attackers retreated. On the other hand, Paul Fish and Suzanne Fish suggest that the hill was the location of a specialized village and the scene of ritual activities. The wide trail on the north side, for example, provides easy access to the summit and would seem compatible with ceremonial processions. Rock art is abundant on Tumamoc Hill, comprising more than 400 elements. The unique diversity of pottery sources in Tumamoc Hill's Tortolita phase assemblages may reflect the congregation of people for trade, rituals, or other social interaction. By A.D. 700, residents had left the hilltop in favor of settlements on the Santa Cruz floodplain.

From A.D. 700 through 1450 the Hohokam culture matured and dominated the Sonoran Desert and then faded. Tumamoc Hill during this period was surrounded by Hohokam villages but the hill itself was not occupied as a living space. The largest Hohokam village in the immediate vicinity of Tumamoc Hill continued to be the St. Mary's site (ca. A.D. 850-1150). The continuing relevance of the Archaeological District to nearby populations is evidenced by A.D. 950-1350 pottery on the extensive agave rock-pile fields covering land just west of the hill. This plantation remains in excellent condition today with hundreds of terraces, rock piles, and roasting pits. Small Hohokam artifact scatters and isolated fragments of decorated Hohokam pottery indicate people continued to visit and use the natural resources of the hill and surrounding land throughout the Hohokam Preclassic and Classic periods.

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Petroglyphs appear to corroborate the long-term use of the hill. Different degrees of patina and the superposing of elements indicate time depth (Ferg 1979). Spatial distinctions in design elements, with some designs concentrated near the Tortolita-phase village on top and some concentrated near the St. Mary's village at the base (Ferg 1979), may reflect differences in chronology or function.

Chronology of the Historic occupation

Talus Pits

Talus pits, defined as "an open pit caused by the removal of loose rock from hillside talus slopes" (Wallace 1983:198), occur in two locations on Tumamoc Hill. One cluster of 53 pits is on the northern slope and a cluster of 95 pits is on the western slope and a few isolated pits dot the hillside. Most of the pits are merely shallow depressions; but some are large defined cavities in the slope, with diameters and depths of about one meter.

In the original archaeological evaluation of Tumamoc Hill, Hartman and Hartman (1979) visited a few of the pits and suggested a Hohokam affiliation based on the mistaken assumption of a Hohokam summit occupation and the presence of one Hohokam Cañada del Oro or Rillito Red-on-brown sherd dating to around A.D. 850-950. Unidentified plain sherds were also found in and around the pits on the west slope. Sherds from a shouldered Rincon Red-on-brown vessel found nearby suggested to them a Sedentary-period date, about A.D. 950-1150 (Hartmann and Hartmann 1979:59-60).

The detailed recording in 2005 of 148 talus pits on Tumamoc Hill and their analysis by Howell (2007) indicated that the pits likely postdate the prehistoric period. Close examination of a sample of the plain wares associated with the pits suggested that they were of probable historic O'odham origin. The Tumamoc talus pits further resemble known historic and archaeological examples of O'odham burial facilities and conform to 1880s newspaper accounts of O'odham/Apache cemeteries on the hill. Nevertheless, prehistoric use of some pits cannot be conclusively ruled out at this time.

Inscriptions

Although the incredible prehistoric architectural features on the hill and its use as a biological research station may overshadow the pioneer history and features, the hill's evidently long and varied use almost surely was not suspended during the Spanish-Colonial or Mexican period though there is no direct evidence of use. We do know that in 1867 or 1868, a soldier of Company C, 32nd infantry, inscribed his name and company on a rocky outcrop on a west side bench. Later inscriptions include names, dates, and musings of more recent Tucson residents.

Stone Quarries

As a local landmark that attracted people, the hill continued to serve economic and symbolic functions into the nineteenth and early twentieth centuries. The continued multiple functions of Tumamoc Hill are reflected in the stone quarries that provided symbolic, physical, and economic contributions to the creation of the modern city of Tucson. Several newspaper articles from the late 1880s and 1890s mention various uses for the quarried stone taken from hills near Tucson. The majority of these statements are one or two sentences that declare that there is a superior quality of stone being taken from the Tucson quarry west of the city. A few articles mention that the stone is being used for the façades or foundations of houses. Most of these accounts do not mention any specifics of the stones' origins but the geographic and temporal description suggests some of the stone came from Tumamoc Hill. By 1906 the Carnegie Institution of Washington purchased and leased sufficient lands on Tumamoc Hill to effectively end the commercial quarry operation. In 1906, the institution fenced the property to keep cattle off the laboratory grounds but, in part, also to keep the "stone pickers" off the land (referring to local residents harvesting surface stone for construction).

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ARCHAEOLOGICAL CULTURES

Prehistoric Cultures

The archaeological site of Tumamoc Hill mirrors social and cultural developments in the Tucson Basin. The site is within the Hohokam culture area. "Hohokam" is an archaeological construct closely identified with the Sonoran Desert, certain artifact and architectural types, canal irrigation, and an agriculture-based economy. It cannot, however, be assumed to be coterminous with a specific ethnic or language group. When archaeologists first defined the Hohokam culture, they believed the suite of associated traits was introduced simultaneously, perhaps by migrants from the south.

More recent research at the site and elsewhere along the Santa Cruz River has discovered that agriculture and canal irrigation were adopted during the Early Agricultural period long before domestic use of pottery. Some, and perhaps all, of the massive trincheras walls on Tumamoc Hill were constructed during the pre-Hohokam, Early Agricultural period. The following Agua Caliente phase with the first ordinary domestic use of ceramics is an indigenous, sedentary, agriculture-based tradition that developed from Late Archaic forebears (Whittlesey et al. 1994). Wallace and others (2007:50) note that "changes during the Agua Caliente phase at about A.D. 450 presaged the advent of Hohokam Culture," and pottery in the subsequent Tortolita phase is considered a Hohokam type (Heidke 1990:76-95). With Tortolita pottery and dates, the village marked by stone enclosures atop the hill would be categorized by many researchers as early Hohokam (Wallace et al. 2007). Sherds of the later Hohokam sequence found on the surface of the site indicate use into the Early Classic period.

Historic Cultures

Talus Pits

The connection between talus pits as cemeteries and the Tohono O'odham is probable and several ethnographic studies have described similar burial practices among early twentieth-century O'odham. Underhill (1939) documented the Papago (O'odham) practice of burying their dead in cryptlike graves in the hills near their villages. The graves were constructed by first removing rocks from a talus slope to create a pit; the body would have been placed in the hole, along with plainware vessels, and perhaps some of the individual's personal property. The grave would be covered with wooden planks, ocotillo or saguaro ribs, and rocks would be piled on top to discourage scavengers.

No human remains have ever been discovered at Tumamoc Hill but in 1883, the Arizona Weekly Citizen reported that the "south side of the mountain [Tumamoc Hill] is said to contain many graves of Apaches and Papagoes. In the vicinity is a cave where Papagoes once laid away their dead. . . ." Much can be learned from these statements, namely, that people living in Tucson in the 1880s knew about the graves on Tumamoc Hill. If we assume that O'odham still living at the time knew and spoke of the cemetery to Euroamericans, then the last period of use of the hill as a cemetery could not have been too far into the past.

Stone Procurement and Quarries

The largest quarry on Tumamoc Hill covers an area of 9 acres in the SW ¼ of Section 15, Township 14 south, Range 13 east. Prior to March 1880 the land was owned by Antonio Valencia. It is very possible that Antonio Valencia was the owner/operator of the quarries in this quarter section. A Tucson City Directory for 1900 lists Antonio Valencia as a miner who resided at 254 N. Meyer Street. He lived with an Alcario Valencia who is listed as a teamster. That Valencia was the owner/operator of the quarries is a likely conclusion given that a reporter for the Tucson Citizen wrote "[In the] 1880s volcanic rock was quarried from the south and northwest slopes by Mexican teamsters for houses..." (Lee 2003).

In March of 1880, Pinckney R. Tully purchased the SW 1/4 of Section 15 from Antonio Valencia for \$500.00. Tully with Don Estevan Ochoa ran the Tully & Ochoa Freight Company, the largest mercantile firm in Arizona. With the arrival of the Southern Pacific Railroad in 1880 the freight company fell on hard times. There is no record of what Tully planned to do with the property, but he had mining interests elsewhere in the state with Estevan Ochoa, so it is possible he also quarried andesite tuff on Tumamoc. The SW ¼ of Section 15 stayed under the ownership of Tully until 23 May 1905

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when John W. Bogan, treasurer and ex-officio tax collector for Pima County, sued P.R. Tully (presumably for back taxes owed) and the land was handed over to the sheriff to be sold at public auction. The public auction occurred on 19 June 1905. Nabor Pacheco, sheriff of Pima County, sold the section to N. E. Plumer, Trustee, for the amount of \$120.83. On 22 September of that year, N. E. Plumer, Trustee, sold the land to the Carnegie Institution of Washington for one dollar.

The NW ¼ of Section 15, Township 14 south, Range 13 east contains two small andesite quarries and at least two obvious locations where loose stone was harvested from the hill. All of the NW ¼ was "university lands" except the NE ¼ of the NW ¼. That 40 acres was owned by the Aztec Land and Cattle Company. Unfortunately, there is no documentation on who mined these locations. On 2 July 1903, the Aztec Land & Cattle Company sold its 40 acres to D.J. MacDougal. In 1905, MacDougal (a scientist and agent for Carnegie) sold the land to the Carnegie Institution. The "university lands" in this quarter section were also acquired by the institution through a lease for the Desert Laboratory and effectively ended quarrying and the majority of rock collecting on Tumamoc Hill by 1905.

PHYSICAL CHARACTERISTICS OF THE PREHISTORIC COMPONENT

The Tumamoc Hill Archaeological District includes stacked rock walls, circular rock outlines and alignments, trails, bedrock milling stations, petroglyphs, and agricultural fields and artifact scatters. Each feature type is described in the following paragraphs.

Rock Walls and Terraces (Trincheras Features)

Tumamoc Hill has "one of the most extensive, massive, and complex arrays of trincheras features in southern Arizona" (Wallace et al. 2007). The largest walls and terraces are concentrated near the summit, enclosing an area about 6 acres in size. Rock retaining walls that form smaller terraces are in summit residential areas. In the 1970s, the AAHS mapped 16 separate massive wall segments with an aggregate length of about 2 km (Wilcox 1979:24), and individual wall lengths ranging from about 20 to more than 300 m. Heights averaged less than 0.5 m, but Larson (1972:96) suggests that some walls originally may have been higher. The walls are much wider than tall: widths range from 75 cm to more than 10 m, with most averaging more than 3 m wide.

In 2005 the University of Arizona's Archaeological Field School provided additional measurements (Christopherson et al. 2005). Students recorded 43 massive terrace wall segments, ranging from 5 to 252 m long, with a mean of 56 m. Thickness ranged from less than a meter to nearly 9 m, with an average of 2.4 m. The discrepancies between the 1970s and the 2005 measurements reflect some differences in measuring techniques, instrument precision, and even feature definition. For example, new wall segments, many only a single rock course, are now being recorded (Gary Christopherson, personal communication 2007). Further research will be required to determine if the terraces supported by the walls contain houses in addition to those already discovered, activity areas, or garden plots. Detailed mapping has defined different types of walls.

Hilltop Artifact Scatter (Artifacts not plotted)

This resource has diverse artifact types, including pottery sherds, projectile points, ground stone, fragments of stone bowls, a possible pestle, a turquoise bead, a shell bead, and a shell bracelet fragment (Larson 1979:77). Plain wares were the most abundant artifacts recorded during the original survey of the hill, with up to 40 sherds in each square meter (Larson 1979:76). Most plain ware is now assumed to be attributable to the Tortolita phase (ca. A.D. 500 to 675/700). Although pottery at most Tortolita-phase sites was locally produced, Tumamoc Hill pottery appears to come from a variety of sources, suggesting that people from different villages may have congregated at the site, or that occupants were importing pottery from multiple sources (Wallace et al. 2007:56).

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Summit Trails

A system of prehistoric trails was recorded during the Arizona Archaeological and Historical Society (AAHS) survey (Hartmann and Hartmann 1979) conducted between 1974 and 1976. The "main trail," a 1- to 3-meter-wide area cleared of rocks and bordered by boulders and rocks, leads from the summit down the north slope. Hartmann and Hartmann traced the main trail across the flat summit to a large break in the wall at the northwest "corner" of the summit; from there the trail descends almost directly down the north slope, in contrast to historic wagon roads and the modern road, which zigzag back and forth. The trail, which provides relatively easy access to the summit, was still being used in the early twentieth century, but parts were destroyed by construction of the current road (Hartmann and Hartmann 1979:41). Wallace et al. (2007:78) note that the breadth, formality, labor-intensive construction, and high visibility of the main trail are compatible with ceremonial processions.

Another trail, on the east slope, is up to 2 m wide, and for the most part ascends straight up the slope. Where it crosses rock walls, however, the trail becomes narrower with an S-shaped curvature, restricting or camouflaging access (Hartmann and Hartmann 1979:46). Hartmann and Hartmann also describe other possible prehistoric trails on the east and south slopes of the hill.

Dry-laid Stone Enclosures

More than 165 stone outlines, typically between 1.7 and 5.2 m on the longest axis, have been recorded on Tumamoc Hill to date (Fish and Fish 2007). The rocks, ranging from a few cm to several 10s of cm, currently reach heights of up to 0.5 m, with an average of 0.3 m. Most of the outlines enclose rounded cleared areas, but some are rectangular. More than half of the rock outlines abut others, forming groups with as many as 10 enclosures in each group. Contiguous clusters are often adjacent to areas cleared of rocks, the latter possibly being work areas (Larson 1979: 75).

In the original 1974 recording, the rock enclosures were inferred to be sleeping circles, or brush-shelter foundations. More recent investigations indicate that at least most enclosures are the remains of Tortolita-phase structures, and other rock outlines of small terraces visible on the surface are considered to be contemporaneous on the basis of pottery associations. Rock-wall foundations of the Tortolita houses would have been knee high or so; burned daub found in burned structures indicates that the pole and brush superstructures of the pithouses were covered in mud. The current mapping project revealed the Tortolita village layout. Unlike the later pre-Classic Hohokam courtyard groups, the houses do not face a courtyard or open area; instead, many share walls, and the entrances face various directions (Fish and Fish 2007).

Bedrock Milling Features and Cupules

Thirteen bedrock metates and 59 bedrock mortars were recorded within the site, all on the summit and upper slopes. The mortars measure from 4.5 to 22 cm in diameter, and from 1.0 to 15.4 cm in depth. A ubiquitous distribution suggests the mortars were utilitarian, probably used to grind mesquite beans (Larson 1979:76-77) or palo-verde beans (Wallace et al. 2007: Appendix 3.1). The 43 cupules recorded on the hill are markedly smaller in diameter and depth, and are often spatially associated with petroglyphs, suggesting a nonutilitarian function. The cupules occur on horizontal, slanted, and vertical surfaces, the latter limiting their usefulness for grinding. Two are incorporated into the design of a petroglyph, as though they are big round feet for a human figure. In one, 13 cupules forming an arc may have been used in a game (Larson 1979:77).

Rock Art

More than 460 petroglyphs, in more than 250 panels, are recorded within the site. Petroglyphs are spatially associated with other features, such as trails, walls, and rock circles, suggesting that they served a decorative function, or enhanced the secular features of their surroundings (Ferg 1979:111, 116). Pecked motifs include anthropomorphic figures, footprints, insects, lizards, quadrupeds, and many geometric shapes such as spirals, concentric circles, ladders, and squares (Table 3). The original recording by Alan Ferg (1979:95118) was one of the first systematic studies of

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petroglyphs in the Tucson Basin. The pecked designs appear to be consistent with petroglyphs defined as Hohokam elsewhere (Burton 1988; Hedges and McDaniel 1986; Martynec 1986; Thiel 1995; Wallace 1983; Wallace and Holmlund 1986). Spatial variations noted by Ferg in the clustering of element motifs may indicate functional or temporal differences (Table 4).

Ferg also identified a "Scratched" style of Hohokam rock art as well as the better-known pecked style (Wilcox et al. 1979:189). Many of the Scratched-style designs consist of grids and diamond hachures, single or parallel, straight, wavy, or zigzag lines, chevron and nested chevron elements; triangles and hatched triangles pendant from lines; hatched bands, and concentric squares (Ferg 1979:97-99). The design elements appear to be reminiscent of motifs on Classic-period, Tucson Basin, red-on-brown pottery (Ferg 1979:99).

Agriculture-related Features

The western third of the property includes extensive dry-farming fields on the arroyo-dissected bajada of the Tucson Mountains. The fields are marked by 1,594 rock piles, and 960 rock alignments, and check dams, created to make use of either direct precipitation or runoff for agricultural purposes (Masse 1979:172; Fish et al. 2008). Within the fields are eight roasting pits and numerous artifact scatters, differentiated by the number and variety of artifacts. Using arroyos as boundaries, Masse (1979) divided the bajada into six areas, numbered I to VI north to south. Two soil horizons are visible on the surface: the light-colored Nickel Association, with numerous cobbles of rhyolitic tuff, and a darker Pinaleño-Palo Verde Association, with little surface rock. Masse, who conducted the first systematic surveys of the Tumamoc Hill archaeological features on the bajada, found the largest and most complex dry-farming features in the rockier Nickel Association soils in the northern field areas (1979:143). Subsequent work, including that of the Tumamoc Hill Survey from 2005 through 2008, has corroborated the results of Masse's field mapping, and identified additional dry-farming features outside the original six field areas (Allan et al. 2004; Estes et al. 2005; Fahrni and Twilling 2004; Fish et al. 2008, Hesse and Chenault 2003). The following paragraphs describe the various agriculture-related features identified primarily during Masse's survey and the 2005 -2008 systematic investigations. Masse, of course, was limited by the current body of knowledge and the interpretation of that knowledge that was available to him and his contemporaries. Parallels between Masse's 1970s descriptions of prehistoric behavior associated with certain features can sometimes, but not always, be drawn with those behaviors associated with features identified between 2005 and 2008.

Rock piles

Rock piles have been recorded throughout the bajada, at the foot of Tumamoc Hill and in the Silvercroft Wash floodplain. Rock piles exhibit a great range of morphology, from small clusters of a few cobbles to mounds several meters across and up to a half meter high, with hundreds of stones. On average the piles are 1 to 2 meters across, composed of a jumble of cobbles from 3 to 60 cm in diameter, with average cobble size between 10 and 15 cm. Masse hypothesized that the crops were planted in the cobble-free areas between rock piles, but research in the northern Tucson Basin (e.g., Fish et al. 1985; Fish et al. 1992) has shown that agaves and possibly other plants were planted within rock piles. The rock piles act to conserve moisture and to protect the young roots from rodents. The different shapes and sizes of the rock piles within the site, however, may reflect a variety of functions.

Rock alignments

This category includes contour terraces, channeling borders, and miscellaneous alignments. Contour terraces are long stone alignments built across hillsides to retain soil and capture slope wash; they are distinguished from check dams by being sited away from intermittent drainages. More than 30 contour terraces were recorded on the southern slope of Masse's Bajada Field I; they usually occur in parallel rows on slopes of 6 to 12 degrees. While contour terraces are up to 150 m long and up to 4 m wide, most are less than 75 m long and not more than 3 or 4 stones (about 0.75 m) wide. In this class are "bordered gardens," defined as rectangular garden plots bordered by rock alignments on three or four sides; one is present on the northern slope of Bajada Field II, and others are on the southern slope of Bajada Field I

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(Masse 1979:169). The two garden plots enclosed in Bajada Field II are about 25 m long, one being 14 m wide and the other 8 m wide. The rock alignments bordering the gardens are about 0.75 m wide.

Check dams

Check dams were built to capture sediments and moisture moving through channels and swales down the slopes. Check dams can be found as single isolated features but usually they occur in series; that is, as parallel rows of stone placed across a channel. Masse recorded two series of check dams (1979:168-169). One series is seven check dams, each 10 to 15 m long, 0.75 m wide, and 2 to 3 stones high, spaced about 6 to 8 m apart in a small drainage. The other is nine dams in two separate small drainages a few meters apart; eight dams are 5 to 6 m long, 0.75 m wide, and spaced an average of 4 to 5 m apart, but one long check dam bridges both drainages. Masse noted the presence of another series of dams in Bajada Field I, and considered additional dams likely. Field inspections by Allan and others (2004), Estes and others (2005), Fish and others (2008), and Hesse and Chenault (2003) have confirmed other check dams.

Roasting Pits

Within the agricultural fields are a number of large features identified by a mounded appearance, ashy soil, and fire-cracked rocks. These areas are identifiable by the often highly dispersed and darkened soil resulting from ash produced during repeated thermal events. Other diagnostic characteristics are ubiquitous fire- and heat-altered rocks and the presence of both ceramic and lithic artifacts. Excavations of nearly identical features in other areas of the Tucson Basin have demonstrated their primary function was to roast agave hearts. Roasting pits at Tumamoc range in size from 10 to 20 m in diameter and up to 50 cm in height. No roasting pits on Tumamoc Hill have been excavated but pits elsewhere can range from 1 to 2 m deep and contain stone tools and pottery, charred fuel woods, and often charred agave leaves. Masse identified only one roasting pit during his survey and classified it as one of his "Limited Activity Areas", that is, as a light scattering of artifacts thought to be the remains of short-term plant procurement and processing (Masse 1979:154). It may also be that some features he identified as hearths are, in fact, roasting pits.

Artifact scatters

There are fifty one concentrations of artifacts found throughout the western portion of the Tumamoc Hill Archaeological District. Scatters cover areas of 4 sq. m to just over 600 sq. m. in size. Surveyor's, including Masse (1979:151-154); Fahrni and Twilling (2004); Allan et al. (2004); Estes et al. 2005 and Fish et al. (2008) all suggest these scatters represent short term activities related to procuring and processing wild plant foods and the process of agaves from local fields. The majority consists of a few plain ware or decorated sherds (or both), flaked stone tools and flaked stone debitage. The remaining few scatters are characterized as just concentrations of plain ware or decorated ware or just scatters of stone tools and debitage. Decorated pottery at seven loci are "stylistically transitional between Rillito Red-on-brown and Rincon Red-on-brown (about A.D. 850 to 1150)" (Masse 1979:151).

General artifact scatter (isolated artifacts not plotted)

All of the prehistoric components of the Tumamoc Hill Archaeological District (from the massive trincheras to the smaller flaked-stone procurement and reduction areas) are tied together by a general artifact scatter. It is impossible to walk anywhere without seeing isolated artifacts. Nine lithic tools found in the bajada field areas were attributed to the Archaic period, including three Middle Archaic projectile points, one Late Archaic or Early Agricultural projectile point, four unifacially retouched flakes, and one biface (Masse 1979:149). In their 200-foot-wide survey transect across the property, WSA counted isolated artifacts and reported 2 tabular knife fragments, 10 plain sherds, and 65 flaked-stone artifacts (Estes et al. 2005). In a 5.7-acre survey in the northern portion of the site, mostly within the floodplain of Silvercroft Wash, Harris Environmental Services recorded a basalt chopper and five flakes (Fahrni and Twilling 2004). Fish and others (2008) noted a fairly even and continuous light blanket of flaked-stone tools and occasional pottery fragments over the entire property.

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PHYSICAL CHARACTERISTICS OF THE HISTORICAL RESOURCES

Historic Features of O'odham Origin

Talus pits

As previously mentioned, a talus pit is defined as "an open pit caused by the removal of loose rock from hillside talus slopes" (Wallace 1983:198). All but 2 of the 150 talus pits recorded in 2005 on Tumamoc Hill occur in two concentrations, one on the north slope and the other on the west slope, within rocky basaltic andesite talus slopes. One cluster contains 53 pits and the other cluster contains 95. The talus pits are typically one half to 1 m deep and 1 to 2 m across; evidence of pit wall collapse suggests that some of the pits may have been originally slightly deeper with steeper sides (Hartmann and Hartmann 1979: 58-60).

Historic Resources of Euroamerican Origin

Inscriptions

In addition to the hundreds of petroglyphs created by the pre-contact inhabitants, later visitors to Tumamoc Hill also created rock inscriptions. One indicates that a member of Company C, 32nd U.S. Infantry, visited the site. This military unit was stationed at Camp Lowell (which was then in downtown Tucson) from June 1867 to May 1868 (Larry Ludwig, personal communication 2007). On the summit, there are additional inscriptions, most of which date to between 1885 and 1905 (Lindsay and Metcalf 1973).

Surface rock procurement loci and quarries

The volcanic rock on Tumamoc Hill was used in architectural constructions in Tucson between 1880 and 1905. The boulder-strewn slopes and steep talus slides extending from the top to nearly the base of the hill were covenant sources of dark, highly weathered surface stone. Commercial quarry operators also exposed angular, light gray to tan andesite and andesite tuff by blasting outcrops along the west and south face of the hill and from lesser outcrops on the north face. A little more than 12.5 acres are impacted by historical quarry operations. The total area impacted by surface collecting cannot be calculated except in two locations where wagon roads lead to talus slopes where talus slides are truncated by rock removal.

Ancillary features associated with both surface collecting and quarrying include complex wagon roads, stone chutes, and shelters.

Wagon roads

For rock to be transported to town, wagon roads were built on all sides of the hill. Most of these haul roads are visible today and, where wagons had to traverse steep slopes, a large amount of labor went into leveling roadbeds. Instead of cutting into the ground to build a flat surface, a road was built up using terrace-style construction. The terraced portions of two roads on the property extend for several hundred feet and range from 2 to 8 ft. in height. The terraced portions of the roads were of a simple dry-laid construction; no mortar or soil appears to have been used.

Chutes

There are five rock chutes associated with the procurement of loose stone, or quarry sites on Tumamoc Hill. A chute on the west side of the hill approximately halfway between the northern and southern faces is representative of the other four and is described here. The rock chute is made up of two parallel walls, averaging 3ft. high and 4 ft. wide. Between the two walls are 3 to 4 ft. of space that have been cleared down to bedrock. The rock alignments are 110 yds. long and travel parallel to the slope on Tumamoc Hill's west face, which is at a 35 degree angle. Howell (2007) suggests the rock alignments were most likely used as a way to move rocks from the top of Tumamoc Hill to a loading area below. One can imagine a large stone having no problem rolling from the top to the bottom of the chute. At the foot of the chute is a loading area. This area is a massive, man-made terrace that creates a large flat surface approximately 40 yds. wide. This loading area is connected to a wagon road.

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Possible quarry-related structures

There is a 13-by-10-ft. dry-laid structure at a small quarry on the north side of the hill that has walls nearly 4 courses wide at the base and 3 ft. high. There are no artifacts associated with the structure or the quarry. The structure might be a field house for workers or perhaps a small corral.

A structure on a ridge that extends below and north of the laboratory was identified as part of Hartmann and Hartmann's Historic Component 1 in their trail survey (Hartmann and Hartmann 1979:42, 45). The construction consists of a dry-laid rectangular structure of local rock, with an opening on the north side. The structure measures 20 by 30 ft.; a partial central wall divides the structure into two rooms. White-bodied earthenware, sun-colored-amethyst glass, and lead-seamed cans, wire nails, Mason jar fragments, historic O'odham sherds, metal strapping, and a metal oil or gas can suggest a turn-of-the-century date. This structure is in proximity of a wagon road and the northernmost hillside quarry.

A small rectangular structure, measuring 10 by 13 ft., with single-width rock walls standing more than 3 ft. high, is near a wagon road that leads to a stone-collection location from above the laboratory (Howell 2007:3). There is an opening on the west wall. Artifacts at the structure include a white-glazed metal washbasin, cooking pot, tin cans, glazed-ceramic dish fragments, and glass jars dating from the early twentieth century.

On a small bench on the western slope of the hill is an alignment of small to large boulders outlining a 10-ft. square within a larger cleared area. A pile of rocks at one end may have served as a fire ring or chimney. There is a rock cairn about 50 ft. south. This structure is at the end of an old road or trail, not far from quarry areas. Artifacts noted in the vicinity included a sardine can and a can lid. There is an 1860s military inscription and scratched glyphs 66 ft. west. The structure may have been a sentry post related to military use or may have sheltered miners excavating at the nearby quarries.

Masse (1979:148) recorded two small rectangular structures between 3 and 7 ft. above the floodplain of Silvercroft Wash against the slope of Tumamoc Hill. Structure 1 measures 7 by 10 ft. in size, Structure 2 measures 8 by 11 ft. in size. Both are constructed from local unmodified tabular chunks of andesite. At the time Masse recorded these two structures, the walls were standing to a height of nearly 3 ft. No diagnostic artifacts were noted around either structure, but they are considered to be historic because their construction style is similar to the structures mentioned above.

Other Roads

There are historic road segments within the Tumamoc Hill Archaeological District that are not directly associated with the quarry operations. Masse noted that at least six wagon/automobile roads traversed his survey area, which focused on the bajada west of Tumamoc Hill. His field notes show roads running west to east on or near the top of ridges that are covered in prehistoric agave gardens. Based on associated trash, he inferred that three of these roads date from at least as early as 1890 to 1910; one is visible in a photograph of the area taken before 1909 (Masse 1979:147).

CURRENT AND PAST IMPACTS

The archaeological resources on Tumamoc Hill were not formally documented until 1974, when the Arizona Archeological and Historical Society systematically surveyed most of the 851.89 acres of the archaeological district. Numerous ground-disturbing projects had taken place prior to the survey and while the ground disturbance is somewhat still measurable, loss of archaeological resources is not.

Late nineteenth and early twentieth-century quarry operators blasted basaltic andesite and andesite tuff from outcrops on the west and southwest side of the hill near the summit and from four lesser quarries on the north side of the hill. The total area of disturbance from quarry activities is about 12.5 acres. Stone-quarry operators and citizens also collected portions of boulder fields. The total area of surface collecting is not measurable because not every stone was taken and

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many areas that look natural and untouched today were probably collected in the past. We can surmise from current knowledge of the distribution of petroglyphs that historic quarries and surface-rock collecting more than likely destroyed some rock art.

On the west side of the hill, one historic boulder collection area is obvious and truncates the lower portion of a talus slope containing historic Native American talus pits. The extent of boulder extraction is estimated to be one-quarter acre based on the presence of a haul road, a boulder chute, and obvious disturbance caused by collecting boulders. The number of talus pits that may have been present on the slope in this location will never be known.

By 1905 the Carnegie Institution of Washington purchased and leased the majority of Tumamoc Hill effectively ending quarrying and the harvesting of surface rock.

Between 1903 and 1940 the Carnegie Institution of Washington purchased 254 acres on Tumamoc hill and leased 640 acres of land on the north and west side of the hill. During its tenure, the institution built two stone buildings and two water cisterns on approximately 2½ acres on a flat north-trending ridge below the summit. On the north base of the hill, the institution built a shop. Infrastructure included a dirt access road, and various water, electric, and communication lines. The largest ground-disturbing project to occur during the institution's tenure was the 1933 Western Gas Company pipeline. After considerable debate about its impact on research a 30-ft.-wide gas pipeline was placed through the northwest quarter of the southeast quarter and the southwest quarter of the southeast quarter of section 10 (1930 ft. long).

The institution's impact on the archaeology of Tumamoc Hill includes the loss of about 1000 ft. of prehistoric trail that passes over the ridge selected by the institution for their laboratory complex. Also, the 1933 pipeline, shop, and other structures probably disturbed the general artifact scatter. Fortunately the soil in this area of the property is less than 8 inches deep before reaching hardpan; finding buried features is unlikely.

In 1940 the institution donated the Desert Laboratory to the U.S. Department of Agriculture, Forest Service (USDA). The chief forester took possession of the lands for the Southwest Forest and Range Experimental Station. The institution's private holdings totaled 254 acres. As a part of the donation, the USDA expressed interest in maintaining the 640 acres of leased state lands held by the institution. During its tenure, the USDA placed a wooden garage, a stone building, and several metal buildings adjacent to the main lab and granted 22 easements to communication companies and to federal and municipal agencies that were conveying power and petroleum across the state. At the entrance to the property are two residential structures with construction dates of 1948 and 1950. This parcel belongs to the Arizona Board of Regents (ABOR) today and is within the archaeological district, but it is not clear if the USDA built them.

The relationship between the Southwest Forest and Range Experimental Station and the state land commissioner remains unclear at this time because no lease agreement for the 640 acres of state lands has been found. Between 1940 and 1960 the state land commissioner allowed construction of an interstate oil-and-gas pipeline and an intrastate electric-transmission line over state lands. Clay was also being mined from the state lands along Silvercrock Wash, and the U.S. Marine Corps was allowed to build a small amphitheater on the state lands previously leased by the institution.

In 1960 the USDA sold the Desert Laboratory to the ABOR. The ABOR purchased 349.41 acres for the University of Arizona and acquired a special land-use permit and commercial lease from the Arizona State Land Department to protect the 640 acres of leased lands once held by the institution and later by USDA. Between 1960 and 1982, the university added four additional communication facilities and two astronomical observatories on top of Tumamoc Hill and allowed St. Mary's hospital to build a 380-ft.-long flood-control dike on Silvercrock Wash. In the early 1960s, the land commissioner allowed the university and the city of Tucson to reuse an abandoned clay pit on the south end of the leased lands as a refuse dump. Once the 29.59-acre refuse dump and barrow pit reached its capacity, it was capped.

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A cultural resources management plan has been written to address current and past impacts.

INTEGRITY

The liberal state and federal government policies that allowed for mixed-use facilities on the grounds of the Desert Laboratory had a definite impact to the archaeological resources on top of Tumamoc Hill and on the lowlands below the hill. As indicated previously, before 1974 there were no formal archaeological surveys. Although we do not know what may have been disturbed before 1974, we do know that a significant number of archaeological features were not affected and that the site overall appears to be largely intact with few, if any, serious impacts to cultural resources.

Unauthorized excavation within the archaeological district has not occurred, but surface collecting of ground stone and projectile points over the past two decades is noticeable on top of Tumamoc Hill, having been observed by researchers returning to previously recorded artifact scatters and features after 1974. As a means of protecting the remaining surface information, the ASM in 2005 systematically recorded artifact distributions on top of the hill and made collections of diagnostic artifacts. Archaeological research has resulted in the excavations of five prehistoric pithouses marked by surface stone outlines, and three pithouses without surface stone outlines, and three stone-outlined terraces on top of Tumamoc Hill.

There is extensive rock art throughout the district and, generally, it is in good condition. Gayle H. Hartmann and Peter Boyle headed up a survey of the rock art under the joint support of the AAHS and the ASM over two winter seasons between 2006 and 2008. Hartmann and Boyle recorded 395 outcrops, or boulders, composed of 958 individual rock-art elements. One noteworthy conclusion reached in the rock-art study, according to archaeo-astronomer John Fountain, is that there are at least four petroglyphs that undergo probable solar or solstice convergences or interactions. The large number of elements identified, more than twice the number recorded by Ferg (1979), results from two factors: some rock art was missed by the 1974-1975 survey and, more importantly, graffiti that had not been documented by the 1974-1975 survey was recorded this time. Of the elements recorded by Hartmann and Boyle, 642 are prehistoric and 316 are modern graffiti. Some graffiti is documented to overlie (in some cases, obliterate) or lie near some prehistoric elements. Theft of rock art elements recorded in 1974 has also been noted in two locations on the hill. Because the rock art has only been systematically recorded since the 1970s – and only incompletely until recently – it is impossible to calculate the total losses of design elements (thefts of rock-art boulders or chiseled removal of individual components) or estimate the damage to elements from the modern graffiti that have been inflicted on the rock art over the past one hundred years.

The footprint of the buildings and structures, utility easements, clay pits, the waste dump, the dike, and both dirt and paved roads built between 1903 and 2003 were digitized. The total area of ground disturbance over the 851.89-acre Tumamoc Hill Archaeological District is about 62.75 acres or 7 percent of the land surface. Forty-three noncontributing elements reside on the 62.75 acres, yet the district remains a relatively undeveloped island amidst much more intensive disturbance. In its location a little more than a mile from downtown Tucson, the property is surrounded by housing tracts and other developments.

There is no doubt that prehistoric archaeological features have been destroyed within the Tumamoc Hill Archaeological District, yet only a fraction of the overall site has been damaged. There are 160 prehistoric dry-laid house foundations and other stone enclosures visible on the summit, as well as numerous walls, trails, and other features. Archaeological excavations revealed still earlier buried features with intact cultural strata under some Tortolita houses and in terrace locations. The sides of Tumamoc Hill contain many prehistoric features, including terraces, and hundreds of rock art/petroglyph locations. The overall condition of the rock art is good and a plan is being implemented to assess its condition regularly. The dry-farming field that extends across nearly 220 acres is an excellent example of Hohokam

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agave farming. In the next few decades it will be the only example, as other fields are removed to make room for development across southern Arizona.

The prehistoric component of the Tumamoc Hill Archaeological District retains integrity of location and setting, essential to understanding its creation and use. The arrangement of features on the hilltop, slopes, and bajada still illustrate the original form, plan, and use of space critical to integrity of design. Integrity of materials and workmanship is evident at site, feature, and artifact scales: for example, the choice and combination of structural materials display the preferences and social organization of the builders, the agricultural features reveal essential components of the economy, and the unique variety of locally made Tortolita-phase pottery provides clues to early social interactions. Through its setting and the presence of 2,000-year-old walls and 1,500-year-old house foundations, thousands of agricultural features, and hundreds of petroglyphs, the Tumamoc Hill Archaeological District has the integrity of feeling necessary to convey the property's historic character. Finally, as a distinctive trincheras site with intact archaeological deposits, the site has integrity of association necessary to see and understand some pivotal eras of our past

The two historic O'odham talus pit sites and other isolated pits are in good condition though one cluster suffered damage from the harvesting of talus boulders for building materials in Tucson. The historic quarries are in good condition with no human impacts since their closure in 1905. The rock slides extending downslope on the southwest side of Tumamoc Hill resulting from historic tuff mining have received visitations from Cholla High School since the 1950s. There has been a relaxed policy of allowing graduating classes to rearrange painted rocks in one location of the rock-slide area to identify the year of graduation. This tradition ended in 2005.

PREVIOUS INVESTIGATIONS

Tumamoc Hill has been well known as an archaeological site at least since the beginning of the twentieth century. Geographer Ellsworth Huntington (1904, 1914) considered the hill to be a fortress due to its encircling terraces and walls. In 1919 the *Tucson Star* reported that Robert F. Gilder, a journalist, artist, and archaeologist affiliated with the University of Nebraska Museum, and Byron Cummings from the University of Arizona visited the summit and found the remains of a large reservoir and some 250 "room" outlines erected around a central plaza with "streets radiating from the central point like the spokes of a wheel" (Anonymous 1919). A prehistoric trail on the north side of the hill, looking, from a few miles away, like a paved road leading toward the mountain top, had drawn Gilder's attention to the site. The article suggests that Gilder believed the builders of the Carnegie Desert Laboratory had unknowingly dismantled prehistoric ruins, reusing the stone for the laboratory structures.

In the intervening years, many archaeological projects have been completed at the site. The first detailed archaeological work at the property was conducted in anticipation of the proposed construction of a University of Arizona observatory on the summit (Larson 1972). This work, while cursory, documented 4000 feet of rock walls and 60 rock enclosures, numerous mortars, cupules, petroglyphs, and artifacts. One enclosure was partially excavated, resulting in the recovery of two metate fragments, a shell bracelet fragment, and several plainware sherds. Tumamoc Hill was inferred to be a Classic-period Hohokam site, and the observatory site was moved to a previously disturbed area.

The Museum of Northern Arizona conducted work to determine the effects of proposed modifications to an existing Mountain State Telephone building (Lindsay and Metcalf 1973). Noted within the 1000-by-100-foot lease area were portions of a massive wall, disturbed remnants of one or two structures, several bedrock mortars, and scattered sherds and flakes. Upon recommendation, the project locations were adjusted to protect the archaeological remains.

The AAHS comprehensively studied the resource from 1974 to 1976, and published the results in *The Kiva* in 1979 (Wilcox and Larson; Wilcox; Hartmann and Hartmann; Larson; McLean and Larson; Ferg; Masse; and Wilcox, Larson, Masse, Hartmann, and Ferg). The AAHS recorded rock walls and terraces, 125 structures, a trail system, 460

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petroglyphs, and numerous other features and artifacts on the summit and slopes. On the western bajada the society recorded hundreds of dry-farming features.

In 1986, Paul Fish and Suzanne Fish of the Arizona State Museum (ASM) conducted limited test excavations to generate data for comparison with data recovered at the Los Morteros trincheras site (Fish et al. 1986). A trench across the terrace behind one of the massive summit walls yielded projectile points and corn dating to the Early Agricultural period (2100 B.C. to A.D. 50). Additional excavations adjacent to the trench and in 11 features elsewhere between 1998 and 2008 documented the chronology of the two major residential occupations at the site. Two structures date to the earlier residential occupation during the Cienega phase, preceding the widespread use of ceramics. Seven excavated structures and three small terraces date to a later ceramic occupation during the Tortolita phase (A.D. 500-650/700).

Over the past 25 years, several compliance-driven investigations within the property have been completed for existing and proposed utilities. A 1983 survey of an existing power line through the site by Complete Archaeology Service Associates recorded four isolated features (Hammack 1983). Two were rock piles associated with dry farming, one was a historical rock ring, and one was an old wagon road. Old Pueblo Archaeology Center completed a survey of 145 acres of state trust land in advance of a proposed land sale. Preliminary results (Jones 2000) confirmed the presence of dry-farming features, historical roads, a military training area, and historical features associated with the Desert Laboratory, as recorded during the AAHS survey (Masse 1979). The land sale was cancelled before the entire 312-acre state-land parcel was surveyed, and before site records were updated.

In 2002, William Self Associates (WSA) surveyed 5.7 acres and monitored gasoline-pipeline repairs (Allan et al. 2004). The WSA crew recorded three rock alignments, two check dams, six other rock features, and four lithic scatters, all apparently related to dry farming. Also in 2002, SWCA conducted a damage assessment of the effects of the construction of a new digital transmitter building, antenna, and parking area on the hill summit (Twilling 2002). Construction sand and debris were found to have been deposited on prehistoric features, and a new utility pole apparently was placed within a rock structure. New rip-rap rock was dumped adjacent to a trincheras wall, and a mortar was removed and is now stored at the Desert Laboratory. During an inspection conducted in 2007 as part of this nomination, pottery sherds were found eroding out of the cut bank behind the building, indicating that the leveling done for the construction had disturbed a buried cultural deposit.

Archaeologists from SWCA, surveying a 20-m-wide corridor along an existing natural gas line in the site's northeast portion (Hesse and Chenault 2003), recorded two sparse prehistoric artifact scatters and noted the presence of rock piles outside their survey area. Desert Archaeology completed survey and monitoring of a 20-m-diameter area around each of eight groundwater-monitoring wells around the Tumamoc landfill (Brack and Diehl 2002; Diehl 2002a, b); they identified no resources.

Harris Environmental Group (Fahrni and Twilling 2004) surveyed 5 acres within the site for improvements to the Silvercroft Wash flood-control berm, which fell mostly within one of Masse's dry-farming areas. They recorded 20 rock piles, a soil stain, and six prehistoric and two historic artifacts. Subsequent monitoring of geotechnical studies identified no additional resources (Twilling 2005). Tierra Right of Way Services (Klimas 2005) monitored the replacement of a power pole and the installation of a guy-wire anchor near the site's north boundary, encountering no resources.

Desert Archaeology surveyed a 6-m-wide corridor along an existing power line to the top of Tumamoc Hill (Whitney 2005). Desert recorded thirteen features, including a trail, a cairn, a rock alignment, a rock concentration, four petroglyph boulders, two rock enclosures, two rock wall alignments, and an abandoned building at the Desert Laboratory. The prehistoric features were concentrated in two areas, one on the lower slope and one on the upper slope and adjacent summit.

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The rupture of a buried gasoline pipeline crossing the site in July 2003 required archaeological work to determine the effects of the pipeline's repair and replacement. During the monitoring of the repair work, WSA (Estes et al. 2004), observed only disturbed fill. During a survey of a 200-foot-wide corridor along an existing gas line and the monitoring of the replacement pipeline, WSA recorded 88 rock alignments, 64 rock features, 4 artifact scatters, 30 plain sherds, 88 flaked-stone artifacts, 2 milling-stone fragments, 2 tabular knives, 28 historic artifacts, and 1 petroglyph along Tumamoc's lower slope and the western bajada (Allan et al. 2004; Estes et al. 2005). The archaeologists also noted a few military features and artifacts. They encountered no diagnostic prehistoric artifacts, but they considered some archaeological features, including a possible field house, to be a part of the site related to prehistoric farming. The original pipeline construction apparently created 61 rock alignments and 23 rock features. Other WSA work included total-station mapping of six areas encompassing 20 rock features, manual and mechanical excavation of 1 feature, collecting pollen samples from 6 features, and collecting all prehistoric artifacts encountered. During subsequent monitoring, 2 minimally used roasting pits were discovered.

Between 2005 and 2008, University of Arizona archaeological field schools under the direction of Paul Fish, Suzanne Fish, and Gary Christopherson conducted a mapping and survey project. With hand-held GPS receivers, the field participants recorded more than 1,000 modern and prehistoric features on the summit and slopes of the hill, including walls, houses, rock art, talus pits, trails, quarries, and wagon roads (Christopherson et al. 2005). A second field-school effort focused on detailed total-station mapping of features within a 50-m square grid placed over the summit. During this period, students also mapped all historic roads and features such as quarries, O'odham talus-pit sites, and a number of other features. This work provided data to develop and address research questions and to prepare a cultural resources management plan. As part of this research project, the AAHS, under the direction of Gayle Hartmann and Peter Boyle, rerecorded rock art, which will provide a more complete photographic archive, condition assessment, and precise location references for most of this resource.

NONCONTRIBUTING AND CONTRIBUTING RESOURCES

Noncontributing resources within the Tumamoc Hill Archaeological District include modern and historic buildings, communication facilities, roads, utility lines, a landfill and landfill monitoring devices, and clay pits. It is important to note that **noncontributing elements of the Tumamoc Hill Archaeological District** include unevaluated and contributing resources associated with the Desert Botanical Laboratory National Historic Landmark (NHL), the first facility of its kind devoted solely to arid-lands research. The 800-plus-acre laboratory has remained a permanent, natural ecological preserve dedicated to studies of plants, animals, and the environment of North American deserts.

Noncontributing Resources to the Tumamoc Hill Archaeological District

Buildings

1. Building 801, Main Laboratory, 1903 (extension 1906). 126-ft.-by-53 ft. C-shaped stone building with attached greenhouse. Contributing element of the Desert Laboratory NHL.
2. Building 802, Chemistry, 1915 (burned, rebuilt ca. 1941), 25-ft.-by-42-ft. stone building. Rebuilt by U.S. Forest Service. Contributing element of the Desert Laboratory NHL.
3. Building 811, Shop, 1908. 20-ft.-by-40-ft. stone and concrete building with slate roof. Located at base of hill. Contributing element of the Desert Laboratory NHL.

Site

4. Carnegie Institution Vegetation Study Plots, 1906 to 1940. Contributing element of the Desert Laboratory NHL.

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5. Two trash dumps separated by 1,862 feet represent the early twentieth-century trash of the Carnegie Desert Botanical Laboratory ca. 1900-1915. Both dumps are unevaluated elements of the Desert Laboratory NHL.

Structures

6. Structure, cistern, ca. 1908. Round structure, 12 ft. in dia, of concrete and rock construction, located just south of the main laboratory. Feed by rooftop runoff. Unevaluated element of the Desert Laboratory NHL.
7. Structure, reservoir, ca. 1906. University building 821. Circular in plan, 18 ft. diameter, constructed of concrete and rock. This is the original reservoir feed by water pumped from well near Santa Cruz River. Unevaluated elements of the Desert Laboratory NHL.
8. Structure, reservoir, 1919. A 20 ft. square, low profile water tank with a flat concrete roof. University building # 820. Excess water was pumped from the cistern at the main lab to this holding tank.
9. Original road, ca. 1903. Road trace. Unevaluated elements of the Desert Laboratory NHL.
10. Boundary fence, ca. 1906 (rebuilt ca. 1941). Concrete posts and barbed wire. Contributing elements of the Desert Laboratory NHL.

Other Noncontributing elements of the Tumamoc Hill Archaeological District (these are also noncontributing elements of the Desert Laboratory National Historic Landmark).

Buildings

11. A 37 ft. by 45 ft. office building constructed with local field stone with a flat roof and vigas constructed by U.S. Forest Service. Built ca. 1941. University building # 803.
12. An irregular-shaped 68 ft. by 80 ft. laboratory with storage rooms. A metal fabricated structure. Construction started by Research Fund Inc., New York. Built ca. 1945 (noted as uncompleted in 1957), University building # 804.

Structures

13. A 20-ft.-by-48-ft. metal garage. Constructed by Research Fund Inc., New York. Built ca. 1945, University building # 805.
14. An 18 ft. by 65 ft. wood-frame garage for eight vehicles. Built pre 1957, University building # 806.
15. A 12 ft. by 12 ft. metal storage building, construction started by Research Fund Inc., New York.
16. Built ca. 1945 (noted as uncompleted in 1957). University building # 807.
17. An abandoned 10 ft. by 10 ft. stone structure, 6½ ft. high, dug into hillside. Exterior concrete and stone stairs up to laboratory level. Construction date unknown. University building # 810.
18. A 12 ft. square pump house located at base of hill. Built 1969. On site of an earlier building. Remains of the earlier structure include a partial perimeter foundation 25 ft. by 100 ft. with a partial concrete slab at east end. University building # 812.

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19. A 10 ft. by 10 ft. metal storage building northeast of Building 804. Construction started by Research Fund Inc., New York. Built ca. 1945 (noted as uncompleted in 1957).
 20. A small metal building with propane tank and an adjacent tower on a separate concrete footing (footing have inscribed initials and 1977 date). Owner: Pima County Radio Repeater. Built 1951.
 21. A modular metal building with attached concrete slab tower foundation and adjacent propane tank. A microwave tower was added in 1973. Owner: Mountain States Telephone Radio Site. Built 1952.
 22. A concrete block building with adjacent tower on concrete pad foundation. Owner: City of Tucson Radio Station. Built 1953. A small metal building with adjacent tower on the same concrete pad foundation as the block building was included in 1955 by Niles Radio.
 23. A 12 ft. by 36 ft. stucco building with two adjacent towers on concrete slab foundations. Owner: General Communication Service. Built 1958.
 24. A small wood frame building with antennas. Owner: Channel 9. Pre-1961 construction.
 25. An L-shaped 24 ft. by 24 ft. concrete block building with attached concrete pad tower support. Owner: Channels 4, 6, 9 (Old KUAT Building). Pre 1961 construction.
 26. A 22 ft. by 32 ft. split-face concrete block building with an attached 8-ft-square concrete tower support and a separate 5 ft. square concrete tower support. Owner: KUAT Digital Transmitter. Built 2002.
 27. A small concrete block building with a metal dome. Contains a 14-in. Bailey Telescope. Built 1967.
 28. A two-story metal building with dome and exterior stairs. Contains a 21-in. Telescope. Built 1972 (replaced 16-in. telescope built in 1962). There is an adjacent concrete block and slab foundation with a metal framework.
 29. A concrete block building near Desert Laboratory entrance. Residence, 1948 construction.
 30. Concrete block with stucco building near Desert Laboratory entrance. Residence, 1950 construction.
 31. A 20 ft. by 50 ft. concrete slab located 25 ft. south of Building 811. Construction date unknown.
 32. A 20 ft. square, low profile, water tank with flat roof, on north-slope of hill, above Building 811. Similar to University building # 820. Pre 1966 construction date.
 33. An approx. 12 ft. in diameter metal water tank set on an 18 ft. square concrete slab. Adjacent to University building # 821.
 34. An outdoor oven with a small vault-roof constructed of concrete and fire brick, located 75 ft. south of University building 811. Construction date unknown.
 35. Tumamoc Hill Road. Originally constructed by U.S. Forest Service ca. 1941 (paved to top 1963).
 36. A metal frame for a fire lookout, Built by the USFS between 1940-1961.

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37. An amphitheater built of concrete and recycled brick. Presumed to be a U.S. Marine Corps structure. 1964 is inscribed into the concrete foundation.
 38. A concrete culvert headwall inscribed with "12TH CO ENG USMC" and "7TH ENGINEERS BN USMC." ca. 1964.
 39. A straight 450 ft. long alignment of widely-spaced rocks across the wash bottom noted by Masse (1979). Presumed to be built by the U.S. Marine Corps structure, ca. 1964.
 40. A 2 by 5 ft. oval rock outline in a sandy wash bed with a large metal pipe extruding from the south end (Hammack 1983). Presumed to be a U.S. Marine Corps structure, ca. 1964.
 41. Two fire rings recorded by WSA in 2005. The fire rings had two ration cans nearby suggesting use as a bivouac area (Estes et al. 2005). Presumed to be U.S. Marine Corps features, ca. 1964.
 42. A circular concrete pad with a large concrete equipment mount, possibly an observatory foundation. Unknown date.
 43. El Paso Gas Corporation Pipeline, 1933 (upgraded 1951). Underground.
 44. Western Area Power Administration Transmission Line, 1952. Overhead 115-kV double pole line.
 45. Trico Electrical Cooperative Transmission Line, 1952. Overhead 24.9-kV single pole line.
 46. Kinder Morgan Petroleum Pipeline, 1955 (replaced 2005). Underground.
 47. Sanitary Landfill, 1962-1964. Closed, was used by the City of Tucson and University of Arizona, 25.59 acres, with a 4 ac. barrow pit to west. Encompasses a former clay pit.
 48. Pima County Sewer Line, 1969. Underground.
 49. City of Tucson Water Anklam 1 Well, 1975. Cleared area with a well and booster pipes surrounded by a chainlink fence; a building depicted on the 1995 USGS map is now gone.
 50. Tucson Electric Power Transmission Line, 1980. Overhead 2.4-kV single pole line to summit
 51. Silvercroft Wash Flood-Control Levee, 1981. 400 ft. long rock-clad berm to protect St. Mary's Hospital.
 52. Goundwater Monitoring Wells, 2002. Seven, surrounding abandoned landfill.

Contributing Resources to the Tumamoc Hill Archaeological District

100. Rock walls/Terrace (trincheras): Late Cienega phase of the Early Agricultural period (400 B.C. to A.D. 50). Forty three terrace and wall segments encompass the top and upper sides of Tumamoc Hill.
101. Summit Trails: Cienega phase of the Early Agricultural period (400 B.C. to A.D. 50). Cleared paths through rocky slopes provided access to the top of Tumamoc Hill.
102. Dry-laid Stone Enclosures: Tortolita phase of the Hohokam Pioneer period (A.D. 500-650/700). One hundred

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sixty five stone outlines representing houses and work areas on the top of Tumamoc Hill.

103. Bedrock Milling Features and Cupules (Ground Stone): Late Cienega phase of the Early Agricultural period (400 B.C. to A.D. 50) through the Hohokam Early Classic period (A.D. 1150-1300). This includes 13 metates, 59 bedrock mortars and 43 cupules located on the top and upper slopes of Tumamoc Hill.
104. A Hilltop artifact scatter: Late Cienega phase of the Early Agricultural period (400 B.C. to A.D. 50) through the Hohokam Early Classic period (A.D. 1150-1300). Diverse artifact types like plain and decorated pottery, projectile points, ground stone, a stone bowl fragment, a pestle, turquoise beads, and shell jewelry are in direct context with the hilltop trincheras (not shown on map).
105. Rock Art: Late Cienega phase of the Early Agricultural period (400 B.C. to A.D. 50) through the Hohokam Early Classic period (A.D. 1150-1300). More than 460 petroglyphs, within 250 panels are distributed over the top, sides, and base of Tumamoc Hill and out onto the surrounding landscape.
106. Rock piles: Rillito phase of the Hohokam Colonial period (A.D. 850-950) through the Late Rincon phase of the Hohokam Sedentary period (A.D. 1100-1150). Thousands of rock piles associated with Agave farming lie in close proximity of the west and northwest base of Tumamoc Hill.
107. Rock alignments: Rillito phase of the Colonial period (A.D. 850-950) through the Late Rincon phase of the Hohokam Sedentary period (A.D. 1100-1150). Features include hundreds of contour terraces, channeling borders, and miscellaneous alignments interspersed among rock piles (feature type 59).
108. Check dam: Rillito phase of the Colonial period (A.D. 850-950) through the Late Rincon phase of the Hohokam Sedentary period (A.D. 1100-1150). Several dozen check dams were built to capture sediments and moisture moving through channels and swales in the same area as rock piles (feature type 59) and rock alignments (feature type 60).
109. Roasting pits: Rillito phase of the Colonial period (A.D. 850-950) through the Late Rincon phase of the Hohokam Sedentary period (A.D. 1100-1150). Twelve roasting pits interspersed among rock piles, rock alignments and check dams (feature types 59, 60 and 61).
110. Artifact Scatters: Rillito phase of the Colonial period (A.D. 850-950) through the Late Rincon phase of the Hohokam Sedentary period (A.D. 1100-1150). Numerous concentrations of plain and decorated pottery and stone tools found away from the base of the hill.
111. A general artifact scatter: Chiricahua phase of the Archaic period (3500-2100 B.C.) through the Hohokam Early Classic period (A.D. 1150-1300). This contributing resource is a light density scatter of pottery, flaked stone tools, and ground stone dispersed over the entire property but excludes the "Hilltop artifact scatter" (feature type 57) found in and amongst Trincheras (not shown on map).
112. Talus pits: Protohistoric period (A.D. 1450-1697) through the American Territorial period (A.D. 1856-1912). One hundred and fifty historic O'odham talus pits in two hill side concentrations.
113. Inscriptions: American Territorial period (A.D. 1856-1912) through the earlier part of the American State period (A.D. 1912-present). Created by later visitors to Tumamoc Hill and includes names of people, dates and various doodle.

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- 114. Quarries (surface rock procurement loci and quarries): American Territorial period (A.D. 1856-1912). About 12.5 acres of hillside quarried between 1880 and 1906. The total area of surface collecting cannot be calculated.
- 115. Roads: American Territorial period (A.D. 1856-1912). Thirty four dirt road sections assumed to be both wagon roads and later automotive roads. Most lead to quarry and stone collecting locations on Tumamoc Hill (circa 1880 to 1906).
- 116. Rock Chute: American Territorial period (A.D. 1856-1912). Narrow swaths of hillside cleared of rock and debris to aid in the procurement of building stone on Tumamoc Hill (circa 1880 to 1906).
- 117. Historic dry-laid structures dating to the American Territorial period. Four structures (circa 1880-1912) are in close proximity of quarry sites. Two small rectangular structures with diagnostic time sensitive artifacts constructed from local unmodified tabular chunks of andesite.

Table 1. Periods and Chronology of the Santa Cruz River Valley
Adapted from research conducted by the Center for Desert Archaeology

Periods	Phases	Date Ranges
Historic:	American Statehood	A.D. 1912-present
	American Territorial	A.D. 1856-1912
	Spanish and Mexican	A.D. 1697-1856
Protohistoric		A.D. 1450-1697
Hohokam Classic	Tucson	A.D. 1300-1450
	Tanque Verde	A.D. 1150-1300
Hohokam Sedentary	Late Rincon	A.D. 1100-1150
	Middle Rincon	A.D. 1000-1100
	Early Rincon	A.D. 950-1000
Hohokam Colonial	Rillito	A.D. 850-950
	Cañada del Oro	A.D. 750-850
Hohokam Pioneer	Snaketown	A.D. 650/700-750
	Tortolita	A.D. 500-650/700
Early Ceramic	Late Agua Caliente	A.D. 350-500
	Early Agua Caliente	A.D. 50-350
Early Agriculture	Late Cienega	400 B.C.-A.D. 50
	Early Cienega	800-400 B.C.
	San Pedro	1200-800 B.C.
	(Unnamed)	2100-1200 B.C.
	Chiricahua	3500-2100 B.C.
Archaic	(Occupation gap?)	6500-3500 B.C.
	Sulpher Springs-Ventana	7500-6500 B.C.
Paleoindian		11,500?-7500 B.C.

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SECTION 8: STATEMENT OF SIGNIFICANCE

SUMMARY

Located within an 854-acre expanse in central Tucson, Arizona, Tumamoc Hill is a prominent physical and cultural landmark. The Tumamoc Hill Archaeological District comprises 851.89 acres as measured by the extent of the Native American and Euroamerican prehistoric and historical-period archaeological remains associated with the hill. The district boundary is distinct from the Desert Laboratory National Historical Landmark boundary and the administrative boundary, both of which are subsumed within the 854 acres. The hill and adjacent areas constitute the largest remaining contiguous block of archaeological resources on relatively undeveloped lands within the city. Crowning the hill is a trincheras site, a term applied to a specialized type of prehispanic site on isolated volcanic hills throughout the U.S.-Mexico borderlands that has terraces, walls, and other features built of stone. Massive walls built about the hill summit offer the earliest example of "public architecture" in Arizona. Previous to their construction in the later part (ca. 400 B.C.-A.D. 50) of the Early Agricultural Period, such sustained and coordinated communal effort is evident only in the construction of canal networks along the Santa Cruz River.

Tumamoc has one of the most extensive complexes of such trincheras features in southern Arizona, consisting of the massive encircling walls and terraces, an elaborate trail system, smaller terraces in residential areas, numerous houses and other structures, large numbers of bedrock mortars and metates, and extensive petroglyphs. The trincheras constructions date to two major residential occupations, one during the later part (400 B.C.-A.D. 50) of the Early Agricultural period and one to the later Tortolita phase at the beginning of the Hohokam sequence (A.D. 500-650/700). Some, and likely most, of the massive walls requiring communal construction date to the preceramic/Early Ceramic occupation. The two occupations bridge the transition to an era of greater differentiation in the settlements and social organization of farming societies. Continuing nonresidential activities thereafter included the use of a large Hohokam agricultural system adjoining the hill with water harvesting features, rock-pile mulches for cultivating agave, and huge roasting pits for cooking the harvested plants. Post-contact indigenous use culminated with O'odham cemeteries. Nineteenth and early twentieth-century Tucsonans quarried building stone on Tumamoc's slopes and other historical archaeological resources reflect scientific, military, and civic activities at this location within a developing urban core.

The Tumamoc Hill archaeological district is significant under criterion D because it has yielded pivotal evidence regarding hilltop trincheras occupations and has related local Tucson developments to major patterns of cultural change throughout the region. Research of the last 10 years has reversed the previous Tumamoc chronology, recognizing early timing of two main residential occupations. Further chronological refinement is critical, however, to better distinguish the two early village plans and to improve timelines of continuing landmark visitation during the Hohokam sequence. Because Tumamoc Hill is a unique type of hill site occupied during the transition from initial farmers to increasingly differentiated Hohokam villagers, future investigations have the potential to influence archaeological perspectives on warfare, preferential use of elevated landforms for ritual and residence, and the development of settlement hierarchies. The Tumamoc Hill Archaeological District has great further potential to yield unique insights on aspects of Hohokam agriculture and to contribute to Tucson city history through poorly studied archaeological residues

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of urban resources and activities. The district also is culturally significant to the O'odham and Hopi as reflected in oral traditions, archaeological remains deemed ancestral, and the presence of substantial cemeteries.

TUMAMOC HILL RESEARCH CONTEXT AND CONTRIBUTIONS

Tumamoc Hill has long played a central role in trincheras site studies, although ideas about its chronology have changed drastically over the past decades. The first explanations for the summit walls focused on their defensive qualities (e.g., Huntington 1904, 1914). During an extensive survey and analysis conducted in the 1970s, Wilcox (1979; Wilcox et al. 1979) and his colleagues assumed that the huge walls and other remains at the site were built by the Hohokam of the late Sedentary period (AD 950-1150), on the basis of a handful of decorated sherds amidst large numbers of plainwares. After testing several hypotheses to explain the walls, they concluded that a defensive occupation was supported and attributed it to a Hohokam conflict between Tucson inhabitants and dominant intruders from the Phoenix Basin. Despite the fact that more recent evidence has dispelled a late Hohokam age for the major features and occupations and shown them to be much earlier, the arguments concerning the walls and broader conclusions about hills as defensive positions continue to be influential in interpretations of Tumamoc Hill and trincheras sites in general (e.g., Hard and Roney 2007; LeBlanc 1999; Wallace et al. 2007).

Time-sensitive projectile points show that Tumamoc Hill was visited by the Middle Archaic period, possibly as early as 3500 B.C. (Fish et al. 1986; Masse 1979:150). Although Archaic peoples may have hunted and gathered on the hill, corn older than 2000 years was discovered in an exploratory trench into a terrace supported by one of the massive encircling walls (Fish et al. 1986). Contrary to the tenet current in the 1980s, that corn and pottery became important in the Southwest at roughly the same time, Tumamoc Hill occupants clearly were farmers well before the everyday use of ceramics. The hill is ideally situated for the early and continuing practice of agriculture; bedrock substrate under the channel of the Santa Cruz River in the vicinity assures extended surface flows and prime opportunities for heading canals. In subsequent years, findings of corn predating pottery were widely replicated in the Tucson area and dates for initial agriculture were extended much further back in time (Doolittle and Mabry 2006).

The nature and intensity of the Tumamoc occupation producing this corn of the Early Agricultural period was not clarified until 1998, when further excavation revealed that it came from a small pithouse of the Cienega phase. The structure, dug into the terrace fill, demonstrated that this lengthy segment of the encircling walls had to have been built before its construction. In view of the continuous layout of the massive walls around the top of the hill and the upper slopes, most or all were probably built during the Cienega phase. Such dating would make them the earliest known "public architecture" in Arizona in the sense that their scale of construction necessitated coordinated communal effort (Fish et al. 2007: 4-5; Wallace et al. 2007). The 2008 discovery of a large Cienega-style community structure, cut 70 cm into the solid caliche substrate in the summit center, adds to the likelihood that it and the smaller pithouse on the terrace are part of an Early Agricultural village associated with the walls. Recent research in northern Chihuahua has found that even earlier cultivators of the Early Agricultural era lived on terraces with massive walls at Cerro Juanaquena and neighboring trincheras sites (Hard and Roney 1998, 2004), suggesting the Tumamoc occupation reflects broader regional trends.

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Other Early Agricultural sites recorded to date in the Tucson Basin are located on the floodplain and low terraces of the Santa Cruz River as well as in lower bajada and upland settings along the Tortolita and Santa Catalina Mountains (Fish et al. 1992; Gregory 2001; Mabry 1998; Roth 1996). Canal irrigation of the floodplains was practiced as early as 1200 B.C. (Ezzo and Deaver 1998; Mabry 1999). Large agglomerations of early agricultural structures occur within what Jonathan Mabry (2008) has termed "settlement districts" along the river, containing numerous ordinary houses and occasional large community structures. The numbers of houses and their spatial arrangement within the district at any given time are open to question, perhaps shifting in response to river dynamics and other factors. The Cienega phase occupation on Tumamoc Hill fits a pattern of settlement concentration along the most favorable stretches of the Santa Cruz River, but is unique in its hilltop setting and impressive stone constructions. Motivations for the unusual location and unprecedented investment of labor in massive walls and terraces remain speculative with the limited evidence at hand.

No substantial use of Tumamoc Hill has been documented for the time immediately after the Early Agricultural period. This period (including the Agua Caliente phase, from ca. A.D. 50 to 500) is marked by the introduction of undecorated ceramics for storage, but house design, social patterns, and exchange and production systems appear little changed from the preceding period until about A.D. 450, when rectangular house shapes appear among and eventually supercede the earlier round and bean-shaped forms (Wallace et al. 2007:50).

Many researchers consider the subsequent Tortolita phase, around A.D. 500 to 650/700, to mark the beginning of the constellation of material culture and social relationships that characterize the Hohokam. Settlement shifted from the floodplain and first terraces to the second terraces and increased in all other zones. Trough metates were adopted, possibly in conjunction with a new floury strain of corn. Large pottery vessels became abundant and were used for cooking for the first time and a variety of forms proliferated. Most communities made their own pottery, but some level of specialization may have developed in shell and stone jewelry production. Population aggregation occurred in some cases, perhaps correlated with the expansion of existing canal systems (Wallace et al. 2007:50-54).

The distribution of the more than 150 rock rings or enclosures on the Tumamoc summit defines one of the largest villages of the Tortolita phase. These predominately circular rock outlines throughout the summit previously were interpreted as various feature types, including "sleeping circles." Excavations in 1998 and again in 2008 revealed that they were mostly the basal walls of pithouses containing Tortolita-phase ceramics and some were the walls of small terraces with other residential uses; a few additional Tortolita pithouses may have lacked the rock enclosures permitting surface visibility (Wallace et al. 2007:47). As with the earlier trincheras walls, the Tortolita-phase pithouses and residential terraces required substantial investments of construction labor. They were cut into rocky soils and compact substrates. In many cases, retaining walls were built and filled to create level space for house construction and activity areas (Wallace et al. 2007:56). It is possible that the Tortolita-phase residents reused earlier house locations and pits of the Cienega phase; both the two currently identified Cienega structures, the small pithouse in the large terrace and the central community structure, were reused in Tortolita times. A full range of domestic and nondomestic artifacts suggests a substantial and seasonally extended Tortolita occupation.

Based on the surface indications, the pithouses range in floor area from just over 6 to nearly 35 square meters. Wall gaps often reveal entrances. A small proportion of houses, particularly the large ones, are more rectangular. Several

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smaller excavated pithouses had bent-pole superstructures covered with hardened mud above low basal walls of stone. One large excavated structure had a bowl-shaped hearth and large postholes. Many groups of houses have connecting basal walls, and low walls that partition residential space within the village further link sets of structures. Basal walls connect groups of up to 10 structures, strongly suggesting they were occupied by kin. Houses appear to be arrayed about a central open area or plaza. A few of the larger structures are near the village plaza margins, but others are dispersed among outlying dwellings, perhaps serving special purposes. A broad, well-constructed trail descends from the summit along the north side of the hill and there are smaller formal trails on other slopes.

The setting of the Tumamoc Hill village occupations is, at least so far as is presently known, unique in the Tucson Basin. No other Cienega or Tortolita-phase settlement has yet been identified on a hilltop, surrounded by massive terraces and walls. Additionally, temper analysis has shown basinwide sources for Tumamoc vessels contrast with largely local ceramics at all other Tortolita-phase sites in the Tucson Basin. Clustering near summit edges, numerous petroglyphs denote concentrated ritual behavior of a sort that, again, sets the Tumamoc village apart. These unique aspects of the Tumamoc settlement have been seen as supporting both the more traditional interpretation that trincheras sites were primarily defensive and the more recent perspectives that elevated landforms were selectively used for differentiated habitation and ritual practices. In either case, Tumamoc research contributes importantly to the growing realization that many larger trincheras sites of different periods represent extended residential occupations.

Both the Cienega and Tortolita-phase inhabitants may have chosen the location for its defensive qualities. Wallace (Wallace et al. 2007) suggests that the location on a hill in conjunction with terraces/walls could reflect Tortolita-phase strife associated with population aggregation and intensified use of prime agricultural land. Farmers could have sought refuge on the Tumamoc summit during raids by more mobile, outlying populations as well. On the other hand, Fish and Fish (Wallace et al. 2007) suggest that Tumamoc Hill was a large and prominent hilltop village distinguished from other contemporary settlements in part by heightened visibility and ritual activities. The wide trail on the north side, for example, provides easy access to the summit and would seem compatible with ceremonial processions. The unique diversity of pottery sources in Tumamoc Hill's Tortolita-phase assemblages may reflect the congregation of people on the hill for trade, rituals, and other social interaction, or reflect the unusually expansive social ties of hill residents.

After the Tortolita phase, there is little evidence for residential occupation of any extent or duration. Artifacts and occasional features from all subsequent prehistoric periods, however, point to Tumamoc Hill's enduring qualities as an iconic element of Tucson Basin cultural landscapes. During the Canada del Oro/Rillito and Rincon phases (A.D. 750-1150) and into the Classic period (A.D. 1150-1450), as indicated by the decorated pottery sherds found on the surface, Tucson Basin residents continued to visit the hill. The petroglyphs appear to corroborate this long period of continued use. Time depth is indicated by different degrees of patination and the superpositioning of elements (Ferg 1979). Spatial distinctions in design elements, with some designs concentrated near the Cienega and Tortolita-phase villages on top and some concentrated near a Hohokam village at the base (Ferg 1979), may reflect differences in chronology or function.

Agricultural fields with extensive water-control features on the bajada or gently sloping land west of Tumamoc Hill appear to postdate the summit villages by centuries. Features designed to capture and conserve surface runoff consist of thousands of cobble mulches, termed "rockpiles," and linear alignments that served as contour terraces, check dams,

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and diversions. Interspersed among them are large roasting pits, consistently found elsewhere in Hohokam territory to have served for the roasting of cultivated agave (e.g., Fish et al. 1985,1992). The majority of decorated Hohokam sherds in the fields date to the Rincon and Tanque Verde phases (A.D. 950-1350), fitting the pattern of the proliferation of such cultivation throughout southern Arizona during this time (Fish and Fish 2004). The Hohokam farmers who constructed these fields undoubtedly were also irrigators on the prime agricultural land adjacent to Tumamoc Hill.

Apparently during the time after Spanish contact, visitors to the hill dug more than 140 pits into volcanic boulder flows, primarily on the north and west slopes of the hill. Called "talus pits," these cavities made by removing boulders frequently contain undecorated ceramics, some of which have been identified as historic types (Madsen 1993). Although a variety of functions including storage facilities and hunting blinds have been suggested (e.g. Hartmann and Hartmann 1979: 59-60), the pits closely resemble burial pits in historic Tohono O'odham cemeteries (Madsen 1993) and seem to be referenced in late-1800s accounts in the *Arizona Daily Star* of O'odham and Apache burials on Tumamoc Hill (Howell 2007). Use of the hill for burials implies long-term continuity in its status as a distinctive place in a cultural landscape.

Tumamoc Hill's attractive qualities did not end with the coming of Euroamericans to the region. As a prominent local landmark, Tumamoc Hill continued to serve economic and symbolic functions into the nineteenth and early twentieth centuries. Later inhabitants of the Tucson Basin left their marks. In 1862 or 1863, a soldier of Company C, 32nd Infantry, inscribed his name and company on a rocky outcrop on the west side. Other inscriptions include names, dates, and musings of a variety of Tucson residents.

The historical archaeology of Tumamoc Hill includes stone quarries that provided symbolic, physical, and economic contributions to the modern city of Tucson's creation. From the 1880s to 1907, Hispanic teamsters quarried basaltic andesite and tuff from outcrops on the slopes; rudimentary stone structures and trash deposits indicate these workers may have stayed on the hill from time to time (Wilcox and Larson 1979:7). Massive rock-walled chutes and loading areas indicate the scale of the operations. The stone formed the foundations or walls for many Tucson buildings (Howell 2007).

Other developments on Tumamoc Hill date to the twentieth century and are noncontributing elements of this nomination. The Carnegie Institution of Washington, starting with 40 acres in 1903, ultimately acquired 884 acres of the hill and surrounding land by 1940. Accepting the donated property from the institution in 1940, the U.S. Forest Service and Rocky Mountain Experimental Station occupied Tumamoc until 1961, when the present owner, the University of Arizona, took over ownership and occupancy. Each of these owners added buildings and facilities, some now more than 50 years old and others more recent. Some, such as the buildings and structures associated with the Desert Laboratory, are already listed in the National Register for their historical significance. A natural-gas pipeline (now also listed in the National Register) was placed across the base of the hill in 1933 and a second crossed the property in 1955, and the first communication building was erected on top of the hill in 1951. A fire-lookout frame was erected sometime during the Forest Service's tenure, between 1940 and 1961. Observatories were constructed in 1962 and 1967. In the early 1960s, the U.S. Marine Corps built a small amphitheater and improved roads within the archaeological district. The large clay pit, in the southern part of the archaeological property, was used as a trash dump

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from 1962 to 1964. These developments illustrate the continued use of the Tumamoc Hill archaeological district, but did not occur during the district's periods of historical significance.

SUMMARY OF TUMAMOC HILL'S SIGNIFICANCE UNDER CRITERION D

Archaeological study of Tumamoc Hill has yielded information important in prehistory and history at local to national levels and has engendered critical questions that can be answered by future research. As particularly demonstrated in discussions of site chronology and research history, successive studies have both built upon and reversed previous findings. Central questions such as the role of defense in Tumamoc occupations call for further testing and are not yet matters of scholarly consensus. Categories of National Register significance include agriculture, architecture, industry, religion, defense, and funerary. Research at Tumamoc Hill has a confirmed potential to contribute to archaeological and historical understanding of the following areas:

1. Roles of elevated landforms in prehispanic cultural landscapes of southern Arizona and the binational borderlands.

Settlements on elevated landforms with distinctive stone architecture, such as on Tumamoc Hill, can be viewed as elements of culturally constructed landscapes, embodying cultural concepts about both natural features and symbolic architectural forms. Archaeologists recognize these sites' special status in past cultural landscapes of the southwest U.S./northwest Mexico borderlands by the designation "trincheras sites." The cultural significance of hills and other elevated landforms continued into post-contact times among the indigenous peoples of this region. For example, in 1699, the Piman-speaking residents of San Xavier, south of Tumamoc Hill, told the Spanish explorer Mange (1927) about another trincheras site hill that harbored winds of tempest strength. Among many other groups in the binational borderlands region, hills also were places of defensive retreat, homes to supernatural forces, locations for burial, and places of dedicated ritual in ideological systems.

As a highly visible peak amidst prime agricultural land, Tumamoc Hill is a natural landmark that offers unparalleled vistas across the Tucson Basin and beyond. It is one of two best-studied trincheras sites in Arizona and the only one with Early Agricultural and Tortolita phase occupations, although the excavated data represent a very limited sample. Remains dating to most prehistoric and historic intervals imply Tumamoc Hill's enduring cultural meaning for successive Tucson populations, but that meaning undoubtedly changed through time. With the recent revelation that residential and village-scale occupations occurred before the Hohokam sequence, it can be asked how the summit settlements differed from all other sites of similar age in the basin below. The pre-Hohokam sequence was poorly defined in southern Arizona during Tumamoc investigations of prior decades, but information is now available to view Cienega phase and Tortolita phase hill occupations in a comparative settlement and societal context. Such frameworks are necessary to reveal Tumamoc Hill's changing role as a landmark and unique element in culturally perceived landscapes from ancient to present times.

The archaeology of trincheras sites in general has been overwhelmingly investigated through surface remains (Downum et al. 1994; Fish et al. 2007). University of Arizona Archaeological Field Schools after 2000, in conjunction with Arizona

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Archaeological and Historical Society findings published in 1979, have comprehensively recorded the surface distributions of prehistoric and historic features on and around the hill. Maps and related digital data now offer an outstanding opportunity to sample the various feature types knowledgeably and to target chronologically relevant remains through informed research design. Questions about the unique nature of hilltop occupations that require architectural, artifactual, and biological information from excavated proveniences have great potential to refine interpretations and resolve key issues raised in previous trincheras studies.

2. Massive walls and terraces around the summit.

Although the chronology of their overall construction is still imprecise, the massive walls and terraces about the upper reaches of Tumamoc Hill are unchallenged for the designation of earliest public architecture in the U.S. Southwest. Not coincidentally, the only earlier communal constructions of such walls and constructions are atop similar volcanic hills in northwest Chihuahua and predate those on Tumamoc by a few centuries (Hard and Roney 2004, 2007). Southern Arizona's Early Agricultural societies cooperated in building canals, but never before had come together for other public works of a communal scale. If widespread terrace segments behind the massive walls are shown to contain additional Cienega pithouses, the huge communal constructions as a whole clearly precede the plaza-oriented village of the fully ceramic Tortolita phase. Why this common effort arose and how it was organized are important questions for the developmental dynamics of early farmers, with implications for societies in the Southwest and Neolithic societies worldwide.

Further detailed study of the walls' physical attributes can supplement initial efforts to estimate parameters such as their effectiveness as a physical barrier, wall height, size, weight and volume of stone, amount and distribution of retained fill, hydrological characteristics, construction methods, and building sequences. What was the scale of effort required for construction and did it proceed in a single stage or through incremental additions? These questions are basic to an organizational assessment of this first public architecture. Terrace excavations are key to chronological discriminations and functional interpretation, promising to reveal densities of residential use or possible features related to defense.

3. Scale and organization of the Cienega-phase settlement.

The inference of a Cienega-phase settlement is based on the presence of diagnostic projectile points, confirmed construction of at least one massive terrace segment at this time, and the chance discovery of a small residential pithouse and a larger community structure unmarked by stone outlines. Community structures of this sort are known only at a few of the largest Cienega-phase sites and sometimes appear to be associated with open spaces, suggesting a precursor to later formal plazas. The momentary size of Cienega settlements on floodplains is difficult to discern among the extensive agglomerations of pithouses of uncertain contemporaneity. It is probable that the Tumamoc Cienega settlement was of a relatively limited duration and more specialized function than the agglomerative arrays of numerous floodplain sites. If so, it should provide a clearer picture of Cienega-phase layout and structure.

The scope of the Cienega settlement is a basic question in evaluating whether hill residents alone could have constructed the massive walls or whether it required a wider basin initiative and how it could have been coordinated. How territorially dispersed might the builders have been? Again, the primary purpose of the walls and terraces is a

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paramount question in terms of the developmental trajectories of Cienega society, whether they were defensive barriers, public works communicating differentiated status in settlement pattern or hierarchy, as patterned hilltop constructions reflecting regional ideology, or as some combination of these possibilities.

4. Scale and organization of the Tortolita-phase settlement.

Tumamoc Hill archaeology holds the promise for illuminating Tortolita-phase society in response to some of the same questions posed for the Cienega-phase occupation. The chronology of massive wall and terrace construction offers clues: excavation evidence could confirm or negate the possibilities of Tortolita-phase modifications or appreciable additions to existing segments and reveal whether Tortolita villagers regularly resided on the terraces. Efforts to strengthen the defensive qualities of existing walls could support hypotheses that agricultural expansion and consolidation of canal systems created occasions for conflict during Tortolita times. Thorough excavations in large Tortolita villages on the basin floor have produced little direct evidence of conflict, and much of the argument for the threat of warfare as a dominant social force rests on the interpretation of Tumamoc Hill as a defensive settlement. These are important issues in understanding the organizational changes in settlement pattern and the development of larger plaza-oriented villages leading up to the emergence of a pervasive Hohokam culture in southern Arizona.

In addition to the appearance of central plazas, the occupations that initiated the earliest central villages of the Hohokam sequence at Snaketown (Wilcox et al. 1981; Cable and Doyel 1987) in the Phoenix Basin and at Valencia Vieja (Wallace 2003) in the Tucson Basin both had patterns of larger, specialized structures among ordinary houses. Detailed mapping has recorded a similar range of house shapes and sizes in the rock enclosures that mark the basal walls of Tumamoc Tortolita structures. A limited number of complete and partial excavations of the Tumamoc structures show corresponding differences in construction investment. Future excavations can test whether structural differences and arrangements in these other two prominent early villages are largely duplicated in this unique hilltop location. Larger excavated assemblages can further test evidence such as elevated proportions of projectile points consistent with warfare, artifacts and biological residues suggesting seasonal versus extended residence, and artifactual or architectural indications of ritual observances. Ceramic sourcing has already shown that Tumamoc pottery was much more geographically diverse than that of any other contemporary Tucson settlement (Wallace et al. 2007). A larger, systematic sample from houses across the site could shed light on differential exchange relationships within the settlement and disclose any biases in size and shape related to imported ceramic function.

The rock outlines of Tumamoc Tortolita houses provide an unusual window on village social structure at a crucial point in the transition to Hohokam culture. The number and arrangement of houses closely linked by shared basal walls appear related to kin groupings. The majority of Tumamoc enclosures share walls with one or more adjacent structures, and these clusters likely include ordinary houses, some storage structures, and activity areas and gardens on small residential terraces. Tumamoc residential arrangements do not, however, follow the predominant arrangement of later Hohokam courtyard groups; doorways in groups of enclosures often show opposing orientations rather than common inward openings onto a courtyard or shared central space. In the Tumamoc village, these patterns of house orientation are discernible without the disturbance and superpositioning of numerous later structures, as in most other large Tortolita villages that continued into Hohokam times. These visible groupings provide starting points to investigate architectural and artifactual indicators of increasingly differentiated domestic and communal organization.

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5. Nonirrigated Hohokam fields and agricultural intensification.

The well-mapped rock pile and contour terrace complex beginning on the lower slopes and extending west of Tumamoc Hill is the best-preserved example of such fields in the Tucson Basin and as such should be preserved at all costs. Individual features are largely intact due to the exclusion of cattle since the beginning of the twentieth century. Rock pile fields have been recorded and studied in many instances, but the Tumamoc fields are conveniently located within Tucson for the kinds of long-term technical investigation that will advance the understanding of biotic and environmental factors. Experimental plantings of agave on a small scale have already yielded preliminary information on the suitability of different species, growth characteristics, and moisture effects of the planting features.

Rigorous mapping of both planting features and interspersed large roasting pits provide a firm basis for the future study of the organization of planting, harvest, and processing activities. The construction of extensive complexes of rock pile fields has been viewed as a response to the need for intensified agricultural production under increased population densities in the latter part of the Hohokam sequence. The Tumamoc fields offer the opportunity to test some of these assumptions by providing the fine-grained data needed to estimate effort and yields.

6. Post-contact history of Tucson and growth of the present city.

In contrast to the great majority of the central urban core of Tucson, the land surrounding Tumamoc Hill preserves a relatively undisturbed record of resources and activities as the city developed. Beginning primarily in the 1800s, extractive, commercial, and industrial activity is evident. Tumamoc Hill had an ongoing economic and symbolic importance into the late nineteenth and early twentieth century as well, as demonstrated by inscriptions pecked onto boulders and the commercial quarries and related infrastructure. The hill's geological resources contributed to the growth and physical character of some of Tucson's historic neighborhoods and districts. The quarries and associated constructions are an untapped archaeological resource that may provide important information about local economic development, extraction enterprises, and historic architecture. The stone foundations, characteristic features, and other material remains of these quarries can provide additional evidence for the commercial removal of the tuff, andesitic, and rhyolitic rock from the hill in the late 1800s up to 1906, when Carnegie for practical purposes ended the quarry operations by fencing the property. Additional research needs to be done to establish the exact quarry source of the rock material used in the architecture and wall features found throughout the downtown area of central Tucson. Questions remain about whether quarries on Sentinel Hill or Tumamoc Hill supplied the building material in any given construction instance. Source and other studies of the rock material that is seen in the decorative treatment of the building façades and numerous rock walls in Tucson could be combined and contrasted with a similar examination of the rock types used for the more functional and less esthetic building foundations and plainer walls about the city. For example, it may be that rhyolite was preferred for some constructions and that tuff or andesite was preferred for others. Finally, the features and artifacts that the quarry workers left behind on the hill slopes can inform us about the social milieu and working conditions that they experienced. The archaeological evidence can be supplemented in many cases by newspaper accounts and various observer records.

The location of the Desert Laboratory, already listed in the National Register, is itself an indication of the enduring landmark status of Tumamoc Hill in Tucson's cultural landscape of the twentieth century. The City of Tucson made land

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at the bottom of the hill available as well, yet the laboratory was built on a prominence overlooking the city, despite inconveniences in access and water supply.

7. Cultural significance of Tumamoc Hill for the O'odham and Hopi people.

Today the Tohono O'odham and Akimel O'odham retain a strong connection to Tumamoc Hill, and like the Hopi, claim affinity to the prehistoric people that once lived on the summit. The word "Tumamoc" is derived from the O'odham language meaning horned lizard. The strongest evidence for historic use of the hill by O'odham peoples is found in the association of "Piman" pottery with hillside talus pits. Though Pima pottery is not well dated we can say with some certainty it dates from the later end of the Spanish and Mexican period (A.D. 1697-1856) into the American Territorial period (A.D. 1856-1912). Talus pits have a strong resemblance to historic crypt like cemeteries on hills near O'odham communities through out their lands in southern Arizona and Mexico. In addition, nineteenth century newspaper accounts suggest that the O'odham buried their dead on the slopes of Tumamoc Hill.

LEVEL OF SIGNIFICANCE

The Tumamoc Hill archaeological district should be added to the National Register of Historical Places because of its significance at local, regional, and national levels under Criterion D.

NATIONAL:

The cultural remains of unique early Native American settlements on the hill have yielded and can continue to yield information of national significance on the transition from initial farming societies to the more differentiated and complex societal forms of later Southwestern peoples. The massive walls and terraces about the walls and summit illuminate the social context of the earliest Southwestern efforts in monument-scale construction. Tumamoc findings have implications for understanding comparable developmental trajectories among early agricultural societies in other parts of the world. The hill's national level of significance also is represented in its capacity to resolve major questions about the enduring roles of elevated landforms among the prehispanic cultures of the borderlands of the United States and Mexico.

Regional:

Tumamoc Hill talus-pits embody distinctive characteristics of a type of cemetery construction used by the O'odham people of southern Arizona and northern Mexico. Talus pits may likely yield detailed information on period(s) of use, method of construction and more specific information on the Piman groups (perhaps even Apaches as noted in early newspaper articles) who used the hill over time.

Local:

The additional information preserved in the stone quarries and the contribution of the quarried stone to Tucson's historic character, ensure the hill's local (e.g., the City of Tucson) significance as well. Together with indications for continuous special use into the early twentieth century, the diverse archaeological resources of the district register the continuing central role of Tumamoc in the changing cultural landscapes of southern Arizona and the borderlands, and justify its singular significance.

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SECTION 9: REFERENCES CITED

- Allan, James, Kyle Brown, Allen Estes, Kyle Kearney, and William Self
2004 Preliminary Report on Data Recovery: Tucson Pipeline Project, Phases III and IV, Pima County, Arizona. William Self Associates, Orinda, California.
- Anonymous
1919 Evidence of Ancient Civilization Are Found West of Tucson. *Tucson Star*: 23 February. Paul Fish of the ASM provided a copy of this article; the precise date of the article, however, has not been confirmed.
- Baldwin, Kerry L., Stanley K. Brickler, Paul B. Dumond, John H. Skibinski
1974 *An Environmental Study Area Plan for Tumamoc Hill, Tucson, Arizona*. A project of the Tumamoc Hill Committee, Natural Resource Recreation, College of Agriculture, University of Arizona, Tucson.
- Bowers, Jan E., and Ray M. Turner
1985 A revised vascular flora of Tumamoc Hill, Tucson, Arizona. *Madroño* 32:225-252.
- Brack, M.L., and Allison C. Diehl
2002 *A Cultural Resources Survey of 12 Ground Water Monitoring Wells and Access Routes Around 5 Existing Landfills in Tucson, Pima County, Arizona*. Project Report 02-105. Desert Archaeology, Tucson.
- Burton, Jeffery F.
1988 Prehistoric Rock Art of the Southeast Arizona Uplands: A Formal Record of 53 Rock Art Sites on the Coronado National Forest. MS, U.S. Forest Service, Coronado National Forest, Tucson.
- Chippindale, Christopher
2004 *The Figured Landscapes of Rock-Art: Looking at Pictures in Place*. Cambridge University Press, Massachusetts.
- Christopherson, Gary, Paul Fish, Suzanne Fish, John Chamblee, and Phillip Leckman
2005 Integrating ArcGIS and ArcPAD in an Archaeological Field School. Paper presented at the 25th Annual ESRI Conference, San Diego, California. <<http://gis.esri.com/library/userconf/proc05/abstracts/a1429.html>>.
- Diehl, Allison C.
2002a *Archaeological Monitoring of the Drilling of Groundwater Monitoring Wells at AZ AA:16:6 (ASM) and AZ BB:13:17 (ASM) in Tucson, Pima County, Arizona*. Project Report 02-116. Desert Archaeology, Tucson.
2002b *Cultural Resources Assessment of Five Proposed Monitoring Well Locations at Tumamoc Landfill, Tucson, Pima County, Arizona*. Project Report 02-152. Desert Archaeology, Tucson.
- Doolittle, William E., and Jonathan Mabry
2006 Environmental mosaics, agricultural diversity and the evolutionary adoption of maize in the American Southwest. In *Histories of Maize: Multidisciplinary Approaches to the Prehistory, Linguistics, Biogeography, Domestication, and Evolution of Maize*, edited by J. Staller, R. Tykot, and B. Benz, pp. 109-121. Elsevier Academic Press, Boston.
- Doyel, David
1993 Prehistoric Non-Irrigated Agriculture in Arizona: A Component of the Arizona Historic Preservation Plan. Arizona State Historic Preservation Office, Phoenix.

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Tumamoc Hill Archaeological District
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- =====
- Estes, Allen, Aimee Arrigoni, Jenni Price, Kyle Kearney, James Allan, and William Self
2004 *Cultural Resources Survey and Monitoring Report: KMEP 12 Anomaly Digs, Line Section 53/54, Maricopa, Pinal, and Pima Counties, Arizona*. William Self Associates, Orinda, California.
- Estes, Allen, Morgan Reider, Kyle Brown, Kyle Kearney, Aimee Arrigoni, Tom Young, Adam Marlow, James Allan, and William Self
2005 *Final Data Recovery and Monitoring Report: KMEP Tucson Pipeline Replacement Project, Phases III and IV, Pima County, Arizona*. William Self Associates, Orinda, California.
- Ezzo, Joseph A., and William L. Deaver
1998 *Watering the Desert: Late Archaic Farming at the Costello-King Site*. Statistical Research Technical Series 68. Tucson.
- Fahrni, Grant, and Shannon Twilling
2004 *A Class III Cultural Resource Survey of Approximately Five Acres near the Intersection of West Anklam Road and North Camino Santiago, Tucson, Pima County, Arizona*. Harris Environmental Group, Tucson.
- Ferg, Alan
1979 The Petroglyphs of Tumamoc Hill. *The Kiva* 45:95-118.
- Fish, Paul
2005 Tumamoc Hill and University Indian Ruin. In *Cross-cultural Vernacular Landscapes of Southern Arizona: A Field Guide for the Vernacular Architecture Forum, 25th Anniversary Conference, Tucson, Arizona*, edited by L. Hollengreen and R. Jeffery, pp. 219-226. Vernacular Architecture Forum, Harrisonburg, Virginia.
- Fish, Paul, and Suzanne Fish
2007 Tumamoc Hill Revisited: New Data and Alternative Perspectives on Early Trincheras Sites. *Glyphs* 57:8. Arizona Archaeological and Historical Society, Tucson.
- Fish, Paul, Suzanne Fish, Austin Long, and Charles Miksicek
1986 Early Corn Remains from Tumamoc Hill, Southern Arizona. *American Antiquity* 51:563-572.
- Fish, Suzanne K., and Paul R. Fish
2004 Unsuspected magnitudes: non-irrigation Hohokam magnitudes. In *The Archaeology of Global Change*, edited by C. Redman, S. James, P. Fish, and D. Rogers, pp. 284-206. Smithsonian Institution, Washington, D.C.
- Fish, Suzanne K., Paul R. Fish, and Gary Christopherson
2007 Early occupations on Tumamoc Hill. *Archaeology Southwest* 21: 4-5.
- 2008 Tumamoc Hill Archaeological Data Base. Consists of maps, locational data, drawings, photos, field notes, and forms. Data base to be added to AZSite Data Base at the Arizona State Museum, University of Arizona.
- Fish, Suzanne, Paul Fish, and John Madsen
1992 *The Marana Community in the Hohokam World*. Anthropological Papers of the University of Arizona 56. Tucson.
- Fish, Suzanne, Paul Fish, Charles Miksicek, and John Madsen
1985 Prehistoric Agave Cultivation in Southern Arizona. *Desert Plants* 7:107-112.

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Tumamoc Hill Archaeological District
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Gregory, David A.

1999 *Excavations in the Santa Cruz River Floodplain: the Middle Archaic Component at Los Pozos*, edited by D.A. Gregory. Center for Desert Archaeology Anthropological Papers 20. Tucson.

2001 *Variation and Trend During the Early Agricultural Period*. In *Excavations in the Santa Cruz River Floodplain: The Early Agricultural Period Component at Los Pozos*, edited by D.A. Gregory, pp. 255-280. Center for Desert Archaeology Anthropological Papers 21. Tucson.

Hammack, Nancy S.

1983 *Cultural Resource Assessment, Tucson-Apache 115kV Transmission Line*. Complete Archaeological Service Associates, Cortez, Colorado.

Hard, Robert J., and John R. Roney

1998a *Massive Terraced Village Complex in Chihuahua, Mexico, 3000 Years Before Present*. *Science* 279(5357):1661.

2004 *Late Archaic period hilltop settlements in northwestern Chihuahua*. In *Identity, Feasting, and the Archaeology of the Greater Southwest*, edited by B. Mills, pp. 276-294. University Press of Colorado, Boulder.

2007 *Cerros de trincheras in northwest Chihuahua*. In *Trincheras Sites in Time, Space, and Society*, edited by S.K. Fish, P.R. Fish, and E. Villalpando, pp. 11-52. The University of Arizona Press, Tucson.

Hartmann, Gayle H., and William K. Hartmann

1979 *Prehistoric Trail Systems and Related Features on the Slopes of Tumamoc Hill*. *The Kiva* 45:39-70.

Hedges, Ken, and Anita McDaniel

1986 *A Sampler of Hohokam Rock Art*. In *Rock Art Papers*, Vol. 3, edited by K. Hedges, pp. 117-128. San Diego Museum Papers 20. California.

Heidke, James

1990 *Ceramic Analysis*. In *Archaeological Investigations at the Lonetree Site, AA:12:120 (ASM)*. Institute for American Research, Technical Report 88-3. Tucson.

Hesse, S. Jerome, and Mark L. Chenault

2003 *A Cultural Resource Survey of Eighteen Construction Sites along EPNG Line 1007 in Tucson, Pima County, Arizona*. SWCA Environmental Consultants, Tucson.

Howell, R. Emerson

2007 *A Preliminary Report on the Historic Archaeological Resources at Tumamoc Hill*. MS, Arizona State Museum, University of Arizona, Tucson.

Huckell, Bruce B., and Lisa W. Huckell

1984 *Excavations at Milagro, a Late Archaic Site in the Eastern Tucson Basin*. Arizona State Museum, University of Arizona, Tucson.

Huntington, Ellsworth

1904 *Field Notes*. Yale University Library Archives, New Haven, Connecticut.

1914 *The Climatic Factor in Arid North America*. Carnegie Institution of Washington Publication 192.

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=====

Jones, Jeffrey T.

2000 Cultural Resources Survey of 145 Acres of State Trust Land West of Tumamoc Hill in Tucson, Arizona. Letter Report No. 2000.049. Old Pueblo Archaeology Center, Tucson.

Klimas, Thomas

2005 *Monitoring of AZ AA:16:6 (ASM) and AZ AA:16:51 (ASM): Replacement of One Utility Pole and Placement of One Guy Wire on Tumamoc Hill, Pima County, Arizona.* Tierra Right of Way Services, Tucson.

Larson, Stephen M.

1972 Tumamoc Hill Site near Tucson. *The Kiva* 38:95-102.

1979 The Material Culture Distribution on the Tumamoc Hill Summit. *The Kiva* 45:71-82.

LeBlanc, Steven A.

1999 *Prehistoric Warfare in the American Southwest.* The University of Utah, Salt Lake City.

Lee, Bryan

2003 Joggers and walders get a rise out of the scenery and serenity of Tumamoc Hill. *Tucson Citizen* 30 October.

Lindsay, Alexander J., Jr., and Michael N. Metcalf

1973 Archaeological Clearance Investigations, Mountain States Telephone and Telegraph Company, 1973 Kitt Peak Tucson Radio Project, Arizona State Land-University of Arizona, Pima County, Arizona. MS, Museum of Northern Arizona, Flagstaff.

Mabry, Jonathan B.

1998 Architectural Variability and Site Structures. In *Archaeological Investigations of Early Village Sites in the Middle Santa Cruz Valley: Analyses and Synthesis*, edited by J. Mabry, pp. 209-244. Center for Desert Archaeology Anthropological Papers 19. Tucson.

1999 Summary and Interpretations. In *Prehistoric Uses of a Developing Floodplain: Archaeological Investigations on the East Bank of the Santa Cruz River at A-Mountain*, edited by J. Mabry, M. Lindeman, and H. Wöcherl, pp. 88-98. Desert Archaeology Technical Report 98-10. Tucson.

2008 *Las Capas: Early Irrigation and Sedentism in a Southwestern Floodplain.* Center for Desert Archaeology Anthropological Papers 28. Tucson.

Madsen, John H.

1993 Rock Cairn and Talus Pit Features in the Los Robles Community. In *Between Desert and River: Hohokam Settlement and Land Use in the Los Robles Community*, edited by C. Downum, pp. 96-105. Anthropological Papers of the University of Arizona 57. Tucson.

Martyneec, Richard J.

1986 A Comparative Analysis of Rock Art at Trincheras Sites in the Tucson Basin. In *Rock Art Papers*, Vol. 3, edited by K. Hedges, pp. 103-116. San Diego Museum Papers 20.

Masse, W. Bruce

1979 An Intensive Survey of Prehistoric Dry Farming Systems near Tumamoc Hill in Tucson, Arizona. *The Kiva* 45:141-186.

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=====

Post, Donald, David Hendricks, and M.L. Richardson

1973 *The Soils of Tumamoc Hill*. Unpublished report, University of Arizona, Tucson.

Roth, Barbara J.

1996 *Regional Land Use in the Late Archaic of the Tucson Basin: A View from the Upper Bajada*. In *Early Formative Adaptations in the Southern Southwest*, edited by B. Roth, pp. 37-48. Monographs in World Archaeology. Prehistory Press, Madison, Wisconsin.

Shreve, Forest

1951 *Vegetation of the Sonoran Desert*. Carnegie Institution of Washington, D.C.

Steadman, David W.

1980 *Birds of Tumamoc Hill*. MS, Department of Geosciences, University of Arizona, Tucson.

Thiel, J. Homer

1995 *Rock Art in Arizona: A Component of the Arizona Historic Preservation Plan*. Arizona State Historic Preservation Office, Phoenix.

Twilling, Shannon D.

2002 *Post-Construction Site Damage Assessment of the KUAT-TV Digital Conversion Project on Tumamoc Hill, Tucson, Arizona*. Cultural Resource Report 02-30. SWCA Environmental Consultants, Tucson, Arizona.

2005 *Archaeological Monitoring of Geotechnical Investigations within the Limits of AZ:16:6 (ASM) and AZ:16:51 (ASM), Tucson, Pima County, Arizona (Revised)*. Harris Environmental Group, Tucson.

Underhill, Ruth M.

1939 *Social Organization of the Papago Indians*. Columbia University Press, New York.

Wallace, Henry D.

1983 *The Mortars, Petroglyphs, and Trincheras on Rillito Peak*. *The Kiva* 48:137-246.

Wallace, Henry D., Paul R. Fish, and Suzanne K. Fish

2007 *Tumamoc Hill in the Context of Early Ceramic Occupations of the Tucson Basin*. In *Enduring Traditions: Trincheras Sites in Time, Space and Society*, edited by S. Fish, P. Fish, and M. Villalpando. University of Arizona, Tucson.

Wallace, Henry D., and James P. Holmlund

1986 *Petroglyphs of the Picacho Mountains, South Central, Arizona*. Institute for American Research Anthropological Papers 6, Tucson.

Whitney, Gregory J.

2005 *Cultural Resources Survey of a Proposed Overhead Fiber Optic Line along the Northern Slope and Summit of Tumamoc Hill, Tucson, Arizona*. Project Report 05-144. Desert Archaeology, Tucson.

Whittlesey, Stephanie M., Richard S. Ciolek-Torrello, and Matthew A. Sterner

1994 *Southern Arizona the Last 12,000 Years: A Cultural Historic Overview for the Western Army National Guard Arizona Training Site*. Statistical Research Technical Series 48. Tucson.

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=====

Wilcox, David R.

1979 Warfare Implications of Dry-Laid Masonry Walls on Tumamoc Hill. *The Kiva* 45:15-38.

Wilcox, David R., and Stephen M. Larson

1979 Introduction to the Tumamoc Hill Survey. *The Kiva* 45:1-14.

Wilcox, David, Stephen Larson, Bruce Masse, Gayle Hartmann, and Alan Ferg

1979 A Summary of Conclusions and Recommendations of the Tumamoc Hill Survey. *The Kiva* 45:187-195.

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SECTION 10: GEOGRAPHY DATA

UTM REFERENCES

	Zone	Easting	Northing
1	12	498100	3565380
2	12	499540	3565369
3	12	499540	3565480
4	12	499909	3565500
5	12	499900	3565360
6	12	500080	3565380
7	12	500080	3564940
8	12	499940	3564960
9	12	499940	3564560
10	12	499820	3564560
11	12	499820	3564380
12	12	499700	3564365
13	12	499700	3563404
14	12	498100	3563360

VERBAL BOUNDARY DESIGNATION

The nominated district is bounded by Anklam Road on the north, by West 22nd Street on the south, and Greasewood Road on the west. Sentinel Peak Park borders the east side of the nominated district. The boundary of the nominated district is also delineated by the polygon whose vertices are shown on the accompanying USGS map.

BOUNDARY JUSTIFICATION

The boundary of the district has been established on the basis of archaeological survey and detailed inventory inside the century old protected open space identified as the Desert Laboratory. Set aside in 1903 for ecological research the Desert Laboratory had, and continues to have, a beneficial consequence to historic preservation, thousands of cultural features are preserved. Today this open space is bounded on the north, west, and south by residential, neighborhoods, commercial development and public schools. The east edge of the nominated district is bounded by a large open space called Sentinel Peak Park. Sentinel Peak Park has not been systematically examined for cultural resources.

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Parcels by legal description:

S1/2 SE1/4 EXC W75' FOR ROAD **77.71 AC** SEC 9 T14S-R13E AZ State Land Department (ASLD)

SW1/4 SW1/4, EXC N150' W80' E160' & EXC N30' **38.92 AC**, SEC 10 T14S-R13E (ASLD)
SE1/4 SW1/4 & SW1/4 SE1/4, **80 AC** SEC 10 T14S-R13E AZ Board of Regents (ABOR)
E509.97' OF NE1/4 SW1/4 LYG S OF ANKLAM RD, **3.10 AC** SEC 10 T14S-R13E (ABOR)
PART OF FRAC LOT 2 IN NW1/4 SE1/4 S OF ANKLAM RD, **4.94 AC** SEC 10 T14S-R13E (ABOR)

W1/2 NW1/4, **80 AC** SEC 15 T14S-R13E (ASLD)
E1/2 NW1/4, **80 AC**, SEC 15 T14S-R13E (ASLD)
W1/2 NW1/4 NE1/4, **20 AC**, SEC 15 T14S-R13E (ABOR)
N 500' W 350' SW1/4 NE1/4, **4.02 AC** SEC 15 T14S-R13E (ABOR)
SW1/4 EXC S 150' FOR RDS **151.04 AC** SEC 15 T14S-R13E (ABOR)

E1/2 EXC RDS **312.16 AC** SEC 16 T14S-R13E (Pima County)

851.89 ACRES

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13	12	499700	3563404
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Parcels by legal description:

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PART OF FRAC LOT 2 IN NW1/4 SE1/4 S OF ANKLAM RD, **4.94 AC** SEC 10 T14S-R13E (ABOR)

W1/2 NW1/4, **80 AC** SEC 15 T14S-R13E (ASLD)
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W1/2 NW1/4 NE1/4, **20 AC**, SEC 15 T14S-R13E (ABOR)
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E1/2 EXC RDS **312.16 AC** SEC 16 T14S-R13E (Pima County)

851.89 ACRES

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SECTION 10: GEOGRAPHY DATA

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SW1/4 SW1/4, EXC N150' W80' E160' & EXC N30' **38.92 AC**, SEC 10 T14S-R13E (ASLD)
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PART OF FRAC LOT 2 IN NW1/4 SE1/4 S OF ANKLAM RD, **4.94 AC** SEC 10 T14S-R13E (ABOR)

W1/2 NW1/4, **80 AC** SEC 15 T14S-R13E (ASLD)
E1/2 NW1/4, **80 AC**, SEC 15 T14S-R13E (ASLD)
W1/2 NW1/4 NE1/4, **20 AC**, SEC 15 T14S-R13E (ABOR)
N 500' W 350' SW1/4 NE1/4, **4.02 AC** SEC 15 T14S-R13E (ABOR)
SW1/4 EXC S 150' FOR RDS **151.04 AC** SEC 15 T14S-R13E (ABOR)

E1/2 EXC RDS **312.16 AC** SEC 16 T14S-R13E (Pima County)

851.89 ACRES

United States Department of the Interior
National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section Photos Page 49

Tumamoc Hill Archaeological District
name of property
Pima, Arizona
county and State

=====

Statement: Item 5, Location of original negative: All photographs are on file at the Arizona State Museum archives and copies are retained at the Desert Laboratory on Tumamoc Hill.

Photograph 1

Item 3 Name of photographer: Jeff Burton

Item 4 Date of photography: 03/03/2007

Item 6 View to west showing one of several prehistoric enclosures on the top of Tumamoc Hill (Labeled as 1W on printed map)

Photograph 2

Item 3 Name of photographer: John Madsen

Item 4 Date of photography: 01/25/2007

Item 6 View looking south at a portion of the trincheras wall on the west edge of Tumamoc Hill. This wall surrounds the entire edge of the hill top (labeled as 2S on printed map).

Photograph 3

Item 3 Name of photographer: Jeff Burton

Item 4 Date of photography: 03/03/2007

Item 6 View looking south at a portion of a massive rock terrace located on the east edge of the hill top (labeled as 3S on printed map).

Photograph 4

Item 3 Name of photographer: John Madsen

Item 4 Date of photography: 01/25/2007

Item 6 View looking north at an example of Hohokam rock art. Note concentric circles surrounded by other prehistoric rock art elements (labeled as 4N on printed map).

Photograph 5

Item 3 Name of photographer: Jeff Burton

Item 4 Date of photography: 03/21/2007

Item 6 View looking north at Hohokam rectilinear, zigzag and other prehistoric design elements. This panel includes examples of more recent graffiti (labeled as 5N on printed map).

Photograph 6

Item 3 Name of photographer: Jeff Burton

Item 4 Date of photography: 02/28/2007

Item 6 View looking north at an example of Tumamoc Hill rock art. Sun Disk design (labeled as 6N on printed map).

United States Department of the Interior
National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section Photos Page 50

Tumamoc Hill Archaeological District
name of property
Pima, Arizona
county and State

Photograph 7

Item 3 Name of photographer: Jeff Burton
Item 4 Date of photography: 03/02/2007

Item 6 View looking southeast into the Hohokam agricultural field on the west side of Tumamoc Hill. This rock pile (lower center) represents one of several hundred in this field. The Hohokam planted agaves in mounded piles of rock and dirt. The rock piles retained moisture and promoted plant growth (labeled as 7SE on printed map).

Photograph 8

Item 3 Name of photographer: Jeff Burton
Item 4 Date of photography: 03/02/2007

Item 6 View looking southwest into the Hohokam agricultural field on the west side of Tumamoc Hill. This rock alignment represents one of several dozen in this field. The Hohokam build rock alignments on slopes and dammed small drainages to capture sediments and moisture. The Hohokam planted agaves and other crops up slope and behind these features (labeled as 8SW on printed map).

Photograph 9

Item 3 Name of photographer: John Madsen
Item 4 Date of photography: 02/26/2007

Item 6 View looking east at a dark colored andesite talus slope on the west face of Tumamoc Hill. The O'odham Indians used rocky slopes to bury their dead during the historic period. Numerous talus pits on this slope resemble O'odham grave locations. In the late 1800s residents of Tucson harvested talus boulders for building stone on this talus slope and might have removed some talus pits. The two parallel lines of boulder in the lower left side of the photo represent a bolder shoot use to roll rocks down slope to a staging area (labeled as 9E on printed map).

Photograph 10

Item 3 Name of photographer: Jeff Burton
Item 4 Date of photography: 03/13/2007

Item 6 View looking north across the talus slope shown in photograph nine. The grassy locations are talus pits with some soil buildup (labeled as 10N on printed map).

Photograph 11

Item 3 Name of photographer: R. Emerson Howell
Item 4 Date of photography: 02/21/2007

Item 6 View facing east at a collapsed-in talus pit. The photograph arrow is pointing north (labeled as 11E on printed map).

Photograph 12

Item 3 Name of photographer: John Madsen
Item 4 Date of photography: 03/06/2007

Item 6 View looking south at one of several small andesite quarries used between 1870 and 1902. The quarry is center and the tailings extend below the pit (labeled as 12S on printed map).

United States Department of the Interior
National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section Photos Page 51

Tumamoc Hill Archaeological District
name of property
Pima, Arizona
county and State

=====

Photograph 13

Item 3 Name of photographer: Jeff Burton
Item 4 Date of photography: 03/13/2007

Item 6 View looking east/southeast at a large andesite tuff quarry in the center of the photograph. A boulder shoot extends down-slope through the tailings. This quarry was used in the late 1800's (labeled as 13ESE on printed map).

Photograph 14

Item 3 Name of photographer: John Madsen
Item 4 Date of photography: 03/14/2007

Item 6 View looking east at a boulder shoot located on the west flank of Tumamoc Hill. Loose rock and debris on the slope were removed down to bedrock so larger talus boulders up slope could be rolled down to the staging area where they were loaded onto wagons (labeled as 14E on printed map).

Photograph 15

Item 3 Name of photographer: John Madsen
Item 4 Date of photography: 03/14/2007

Item 6 View looking south at a short segment of wagon road leading to a quarry on the west side of Tumamoc Hill. This segment is typical of many wagon roads on the slope and base of the Hill (labeled as 15S on printed map).

Photograph 16

Item 3 Name of photographer: John Madsen
Item 4 Date of photography: 03/05/2007

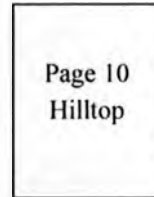
Item 6 View looking west at a prehistoric trail on the north side of Tumamoc Hill between the prehistoric agricultural fields and the St. Mary's Hospital.

Tumamoc Hill Archaeological District Map Key

Map Reference Grid

The Tumamoc Hill Archaeological District map is divided into nine grids. Each grid is numbered as in the figure below beginning with 1 in the top left corner and continuing to the right. These map grids are found on nine following pages. A tenth page shows details of the Tumamoc hilltop.

1	2	3
4	5	6
7	8	9



Contributing Resources (Resource Number)

- | | | |
|-----------------------|----------------------------|---------------------------------|
| ■ Enclosure (102) | ⊙ Talus Pit (112) | ----- Rock Wall/Terrace (100) |
| ● Clearing (102) | ☐ Artifact Scatter (110) | Rock Alignment (107, 108) |
| † Ground Stone (103) | ☛ Roasting Pit (109) | --- Trail (101) |
| ★ Rock Art (105, 113) | ☞ Quarry (114) | Rock Chute (116) |
| ▲ Rock Pile (106) | ☒ Historic Structure (117) | Dirt Road (115) |

Noncontributing Resources

1. Main Lab, 2. Chemistry building, 3. Shop building, 4. Vegetation study plots, 5. Carnegie trash dumps, 6. Cistern, 7. Reservoir, 8. Reservoir, 9. Original road, 10. Boundary fence, 11. Office building, 12. Lab with storage, 13. Garage, 14. Garage, 15. Storage building, 16. Building, 17. Structure, 18. Pump house, 19. Storage building, 20. Pima County radio repeater, 21. Mountain States Telephone radio, 22. Niles Radio, 23. General Communication Service, 24. Channel 9, 25. Television tower and building, 26. Digital transmitter, 27. Building and telescope, 28. Building and telescope, 29. Residence, 30. Residence, 31. Concrete slab, 32. Water tank, 34. Oven, 35. Tumamoc Hill Road, 36. Fire lookout, 37. Amphitheater, 38. Culvert, 39. Rock alignment, 40. Rock outline, 41. Fire rings, 42. Concrete pad and equipment mount, 43. El Paso Gas pipeline, 44. WAPA transmission line, 45. TG&E transmission line, 46. Kinder Morgan pipeline, 47. Sanitary landfill and barrow pit, 48. Pima County sewer line, 49. City of Tucson water well, 50. TEP transmission line, 51. Levee, 52. Monitoring well

Cartographic Information

Projection and Coordinate System: UTM Zone 12 - NAD 83, Contour Interval 20 feet

Database Design: Todd A. Pitezel - University of Arizona, Arizona State Museum; Gary Christopherson - University of Arizona, Center for Applied Spatial Analysis

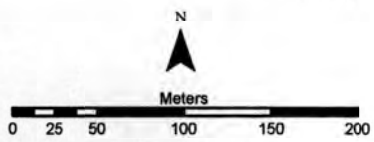
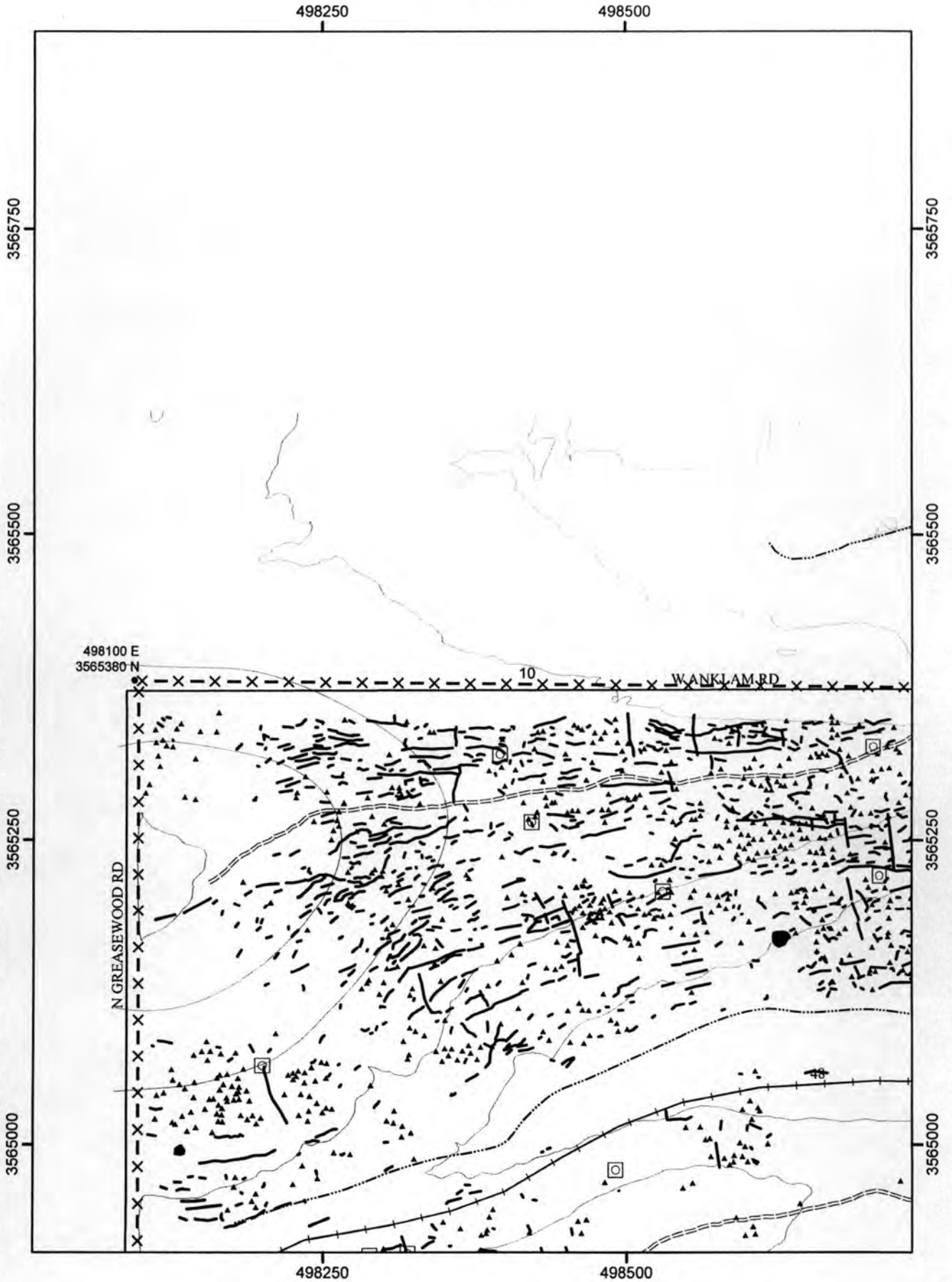
Cartographic Composition: Todd A. Pitezel, 2009

Data Sources: Arizona State Museum Tumamoc Hill Project, University of Arizona Archaeological Field School (1999, 2005, 2007); University of Arizona, Center for Applied Spatial Analysis; Pima County Department of Transportation

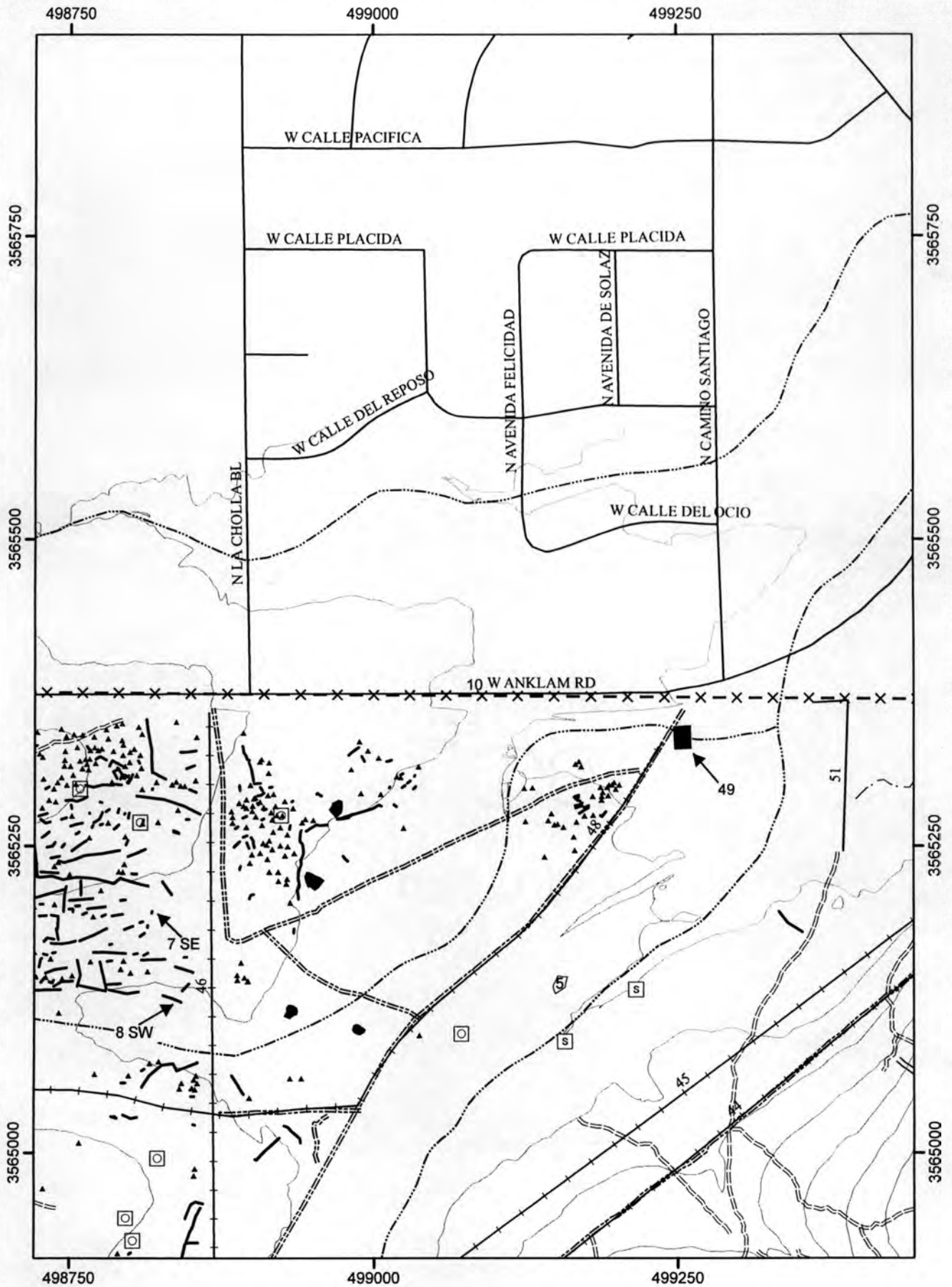
Sponsorship

This project was made possible through the Arizona State Parks Historic Preservation Heritage Fund.

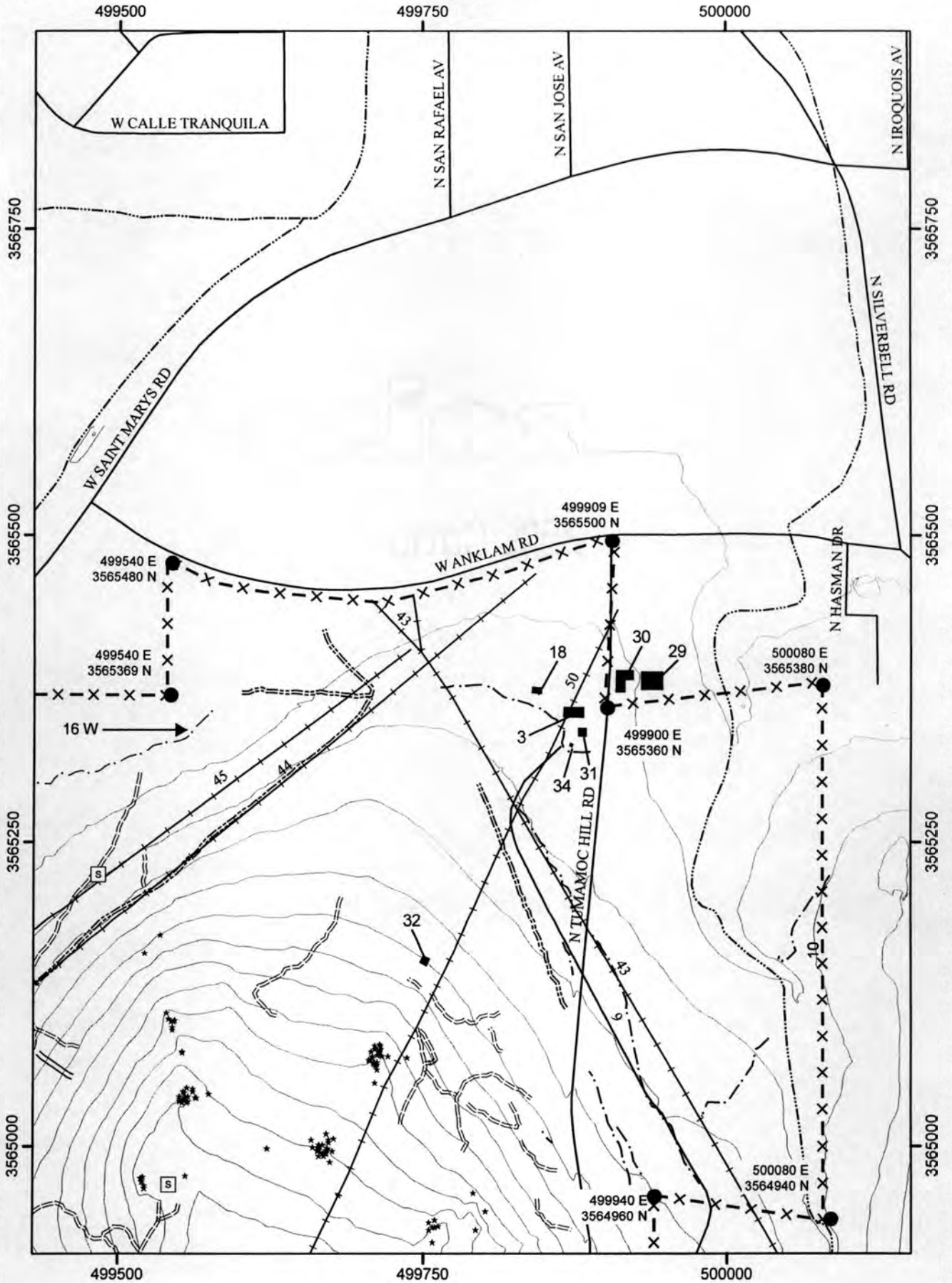
Tumamoc Hill Archaeological District



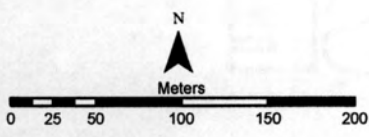
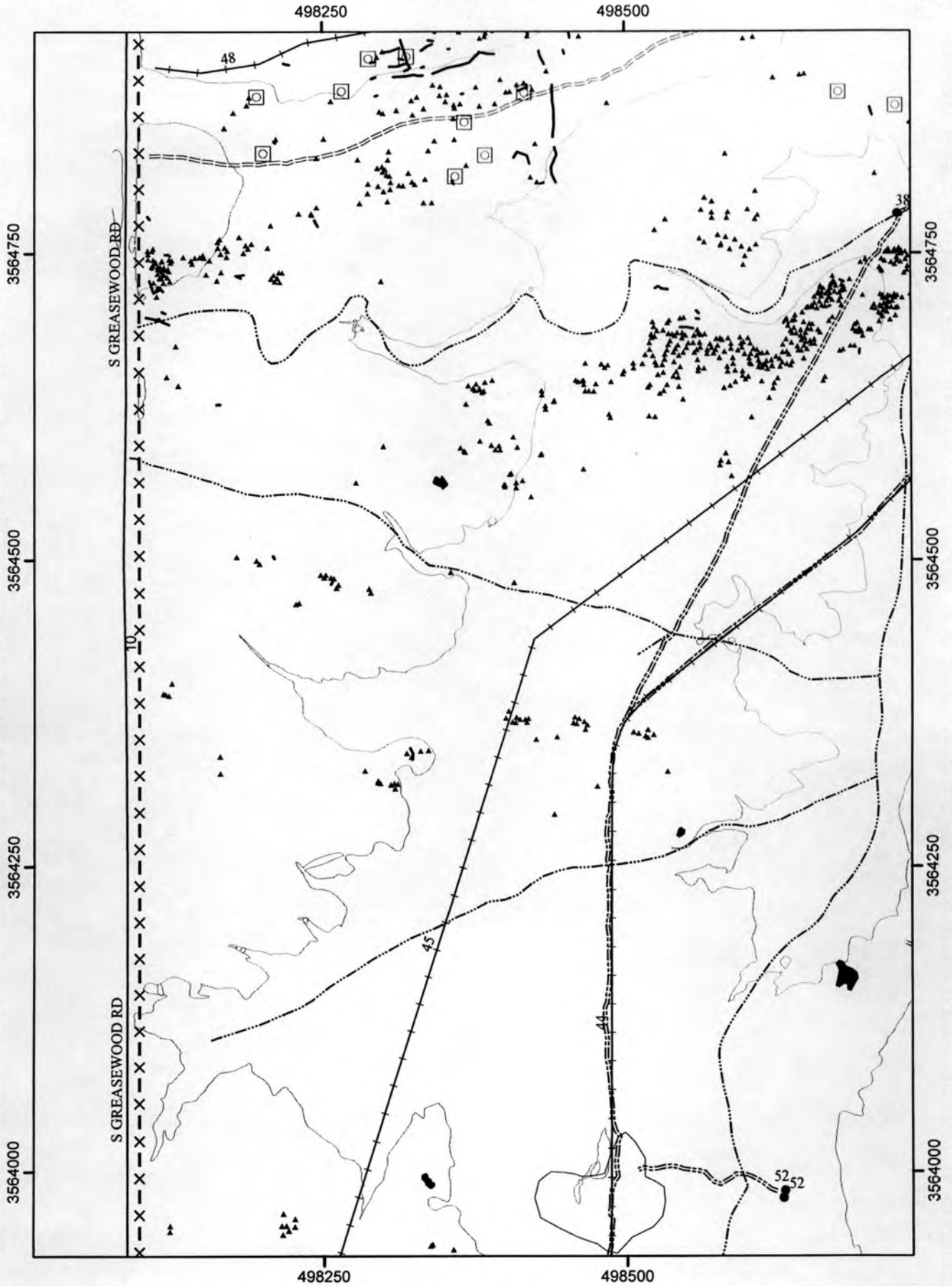
Tumamoc Hill Archaeological District



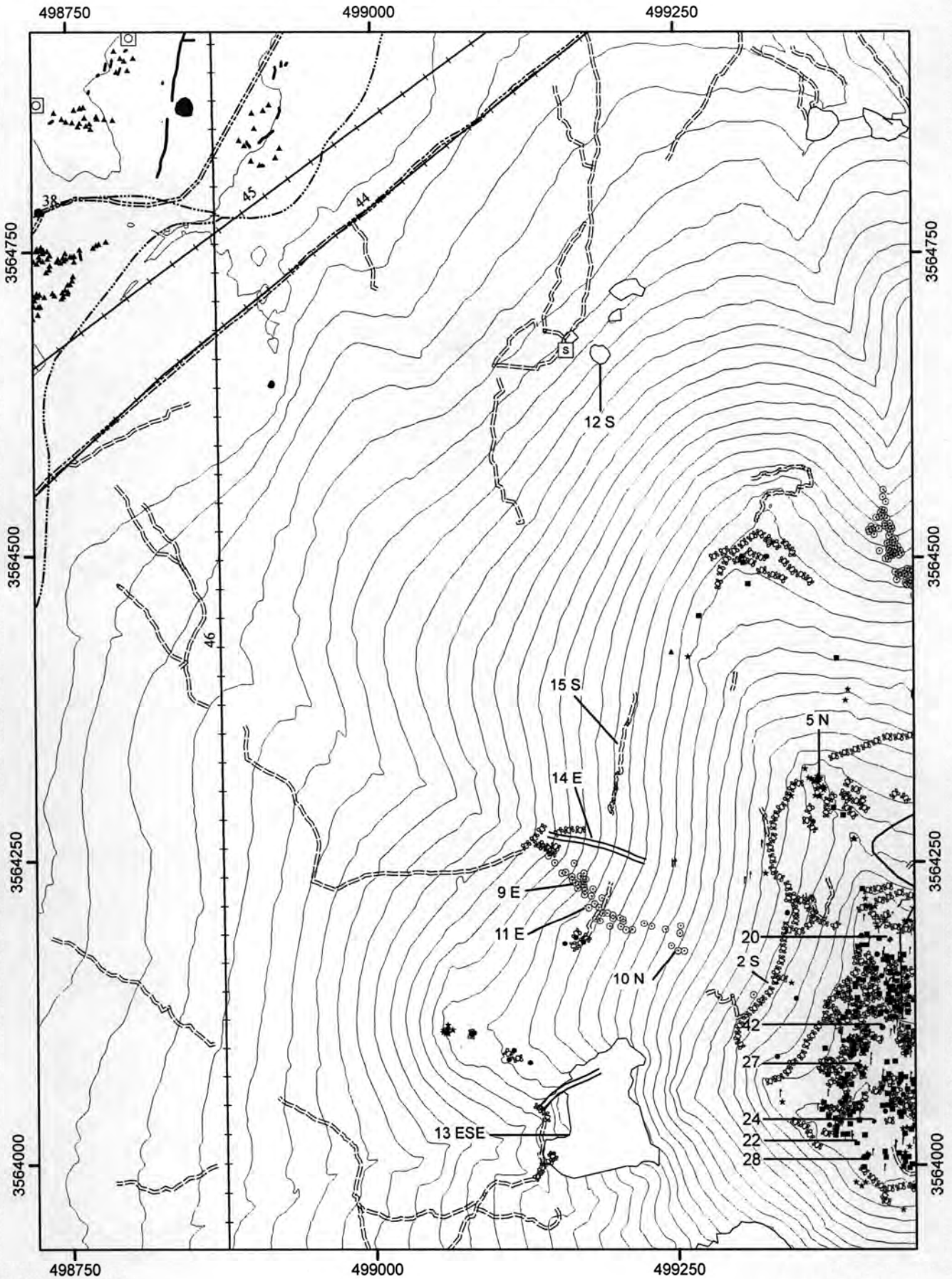
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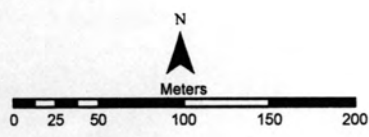
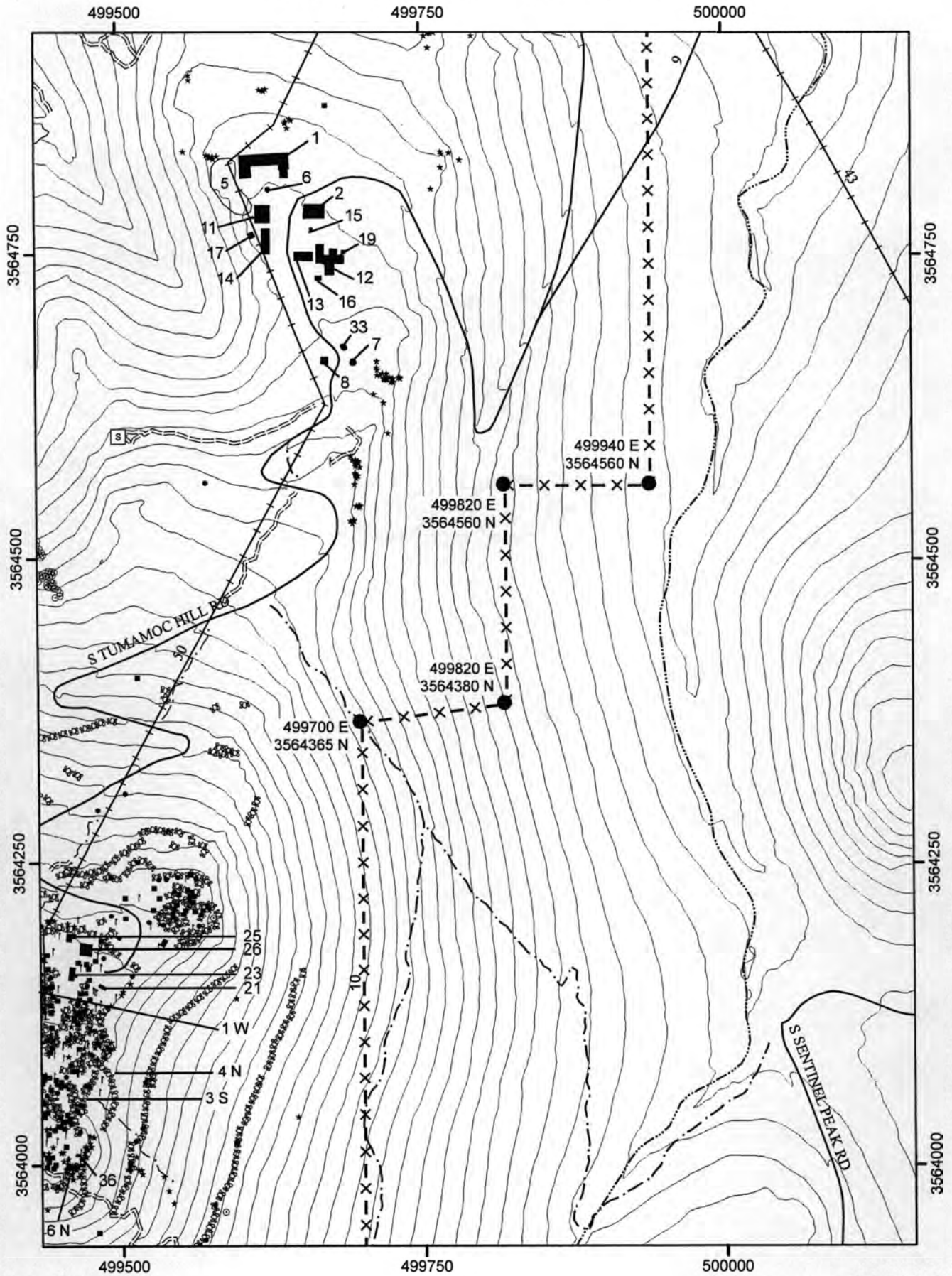
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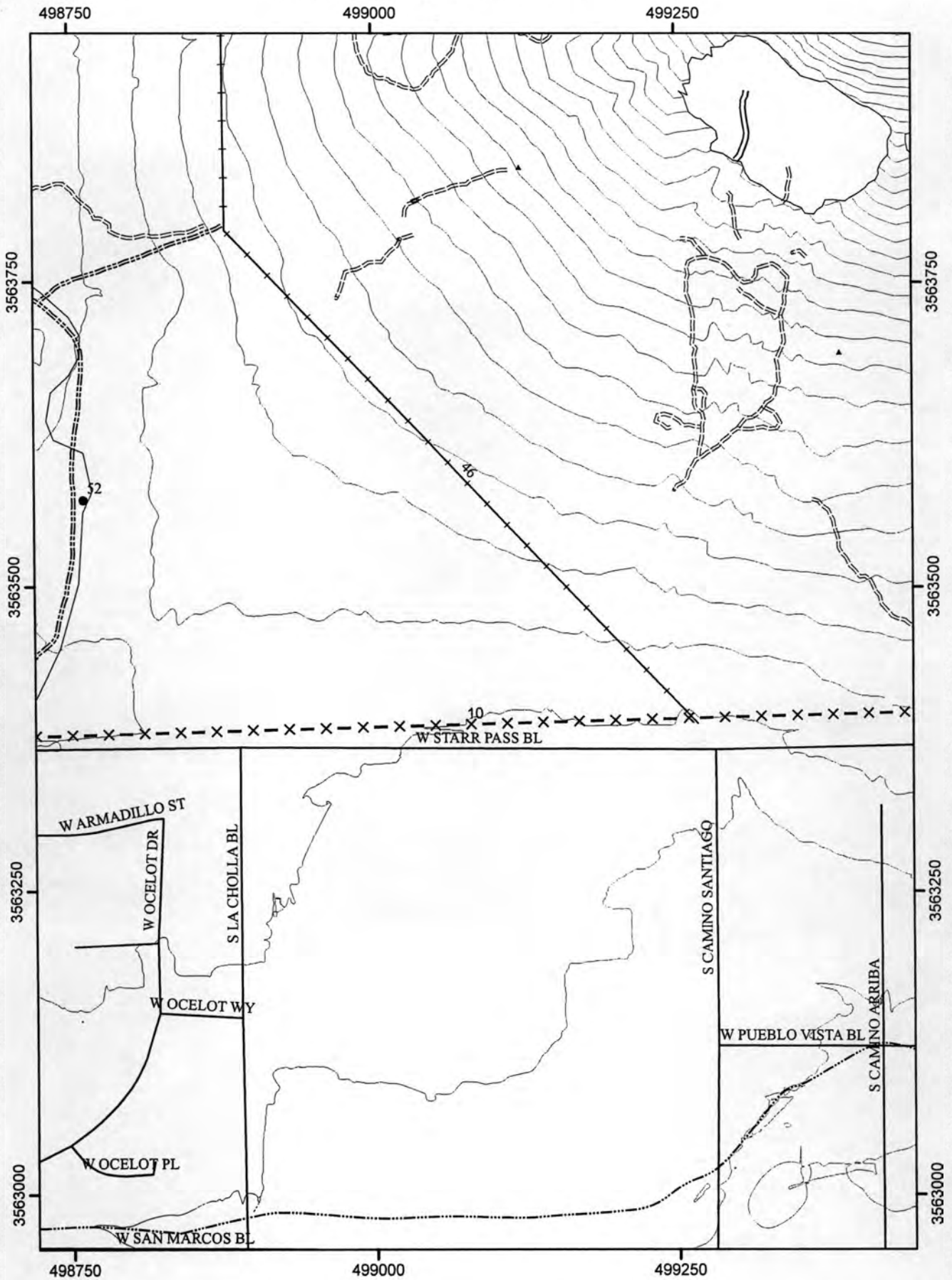
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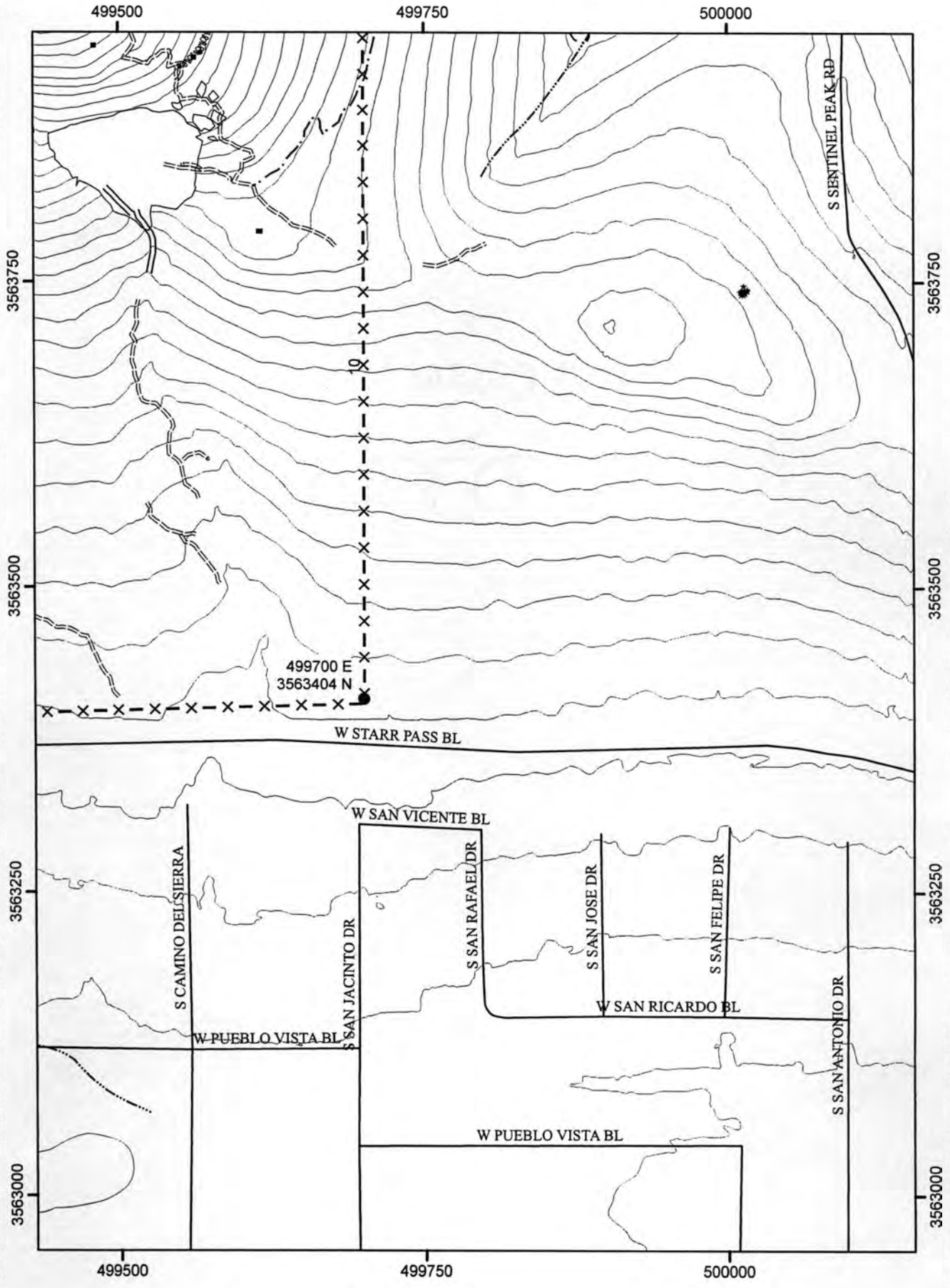
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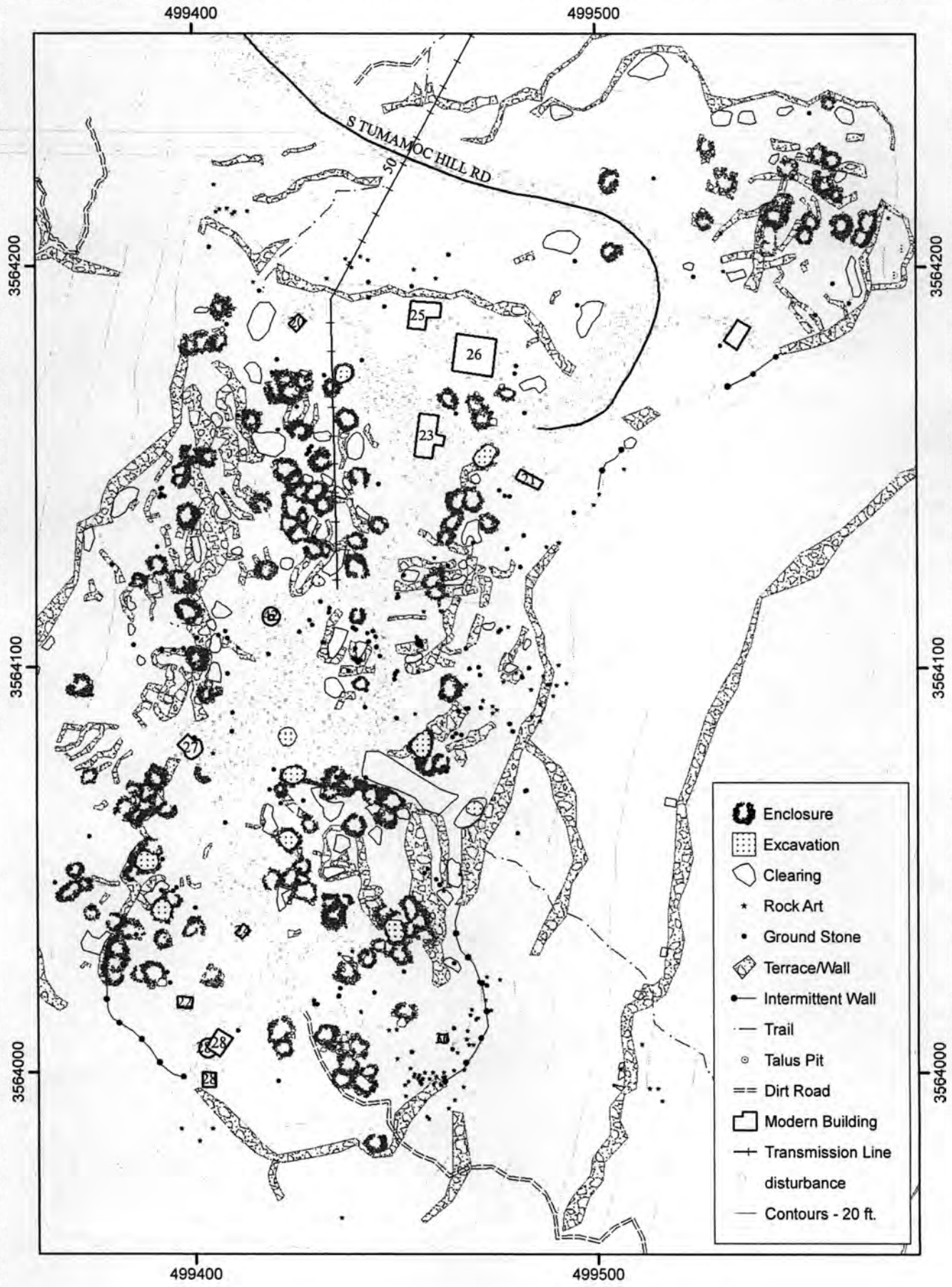
Tumamoc Hill Archaeological District



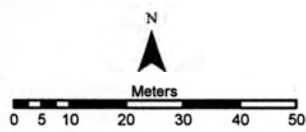
Tumamoc Hill Archaeological District



Tumamoc Hill Archaeological District - Hilltop



- Enclosure
- Excavation
- Clearing
- Rock Art
- Ground Stone
- Terrace/Wall
- Intermittent Wall
- Trail
- Talus Pit
- Dirt Road
- Modern Building
- Transmission Line
- disturbance
- Contours - 20 ft.



UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY NAME: Tumamoc Hill Archeological District, The

MULTIPLE NAME:

STATE & COUNTY: ARIZONA, Pima

DATE RECEIVED: 2/19/10 DATE OF PENDING LIST: 3/04/10
DATE OF 16TH DAY: 3/19/10 DATE OF 45TH DAY: 4/05/10
DATE OF WEEKLY LIST:

REFERENCE NUMBER: 10000109

REASONS FOR REVIEW:

APPEAL: N DATA PROBLEM: N LANDSCAPE: N LESS THAN 50 YEARS: N
OTHER: N PDIL: N PERIOD: N PROGRAM UNAPPROVED: N
REQUEST: Y SAMPLE: N SLR DRAFT: Y NATIONAL: Y

COMMENT WAIVER: N

ACCEPT RETURN REJECT _____ DATE

ABSTRACT/SUMMARY COMMENTS:

*Please pursue an amendment and add
Criterion C when appropriate*

RECOM./CRITERIA D

REVIEWER Subert

DISCIPLINE Archaeology

TELEPHONE _____

DATE 4/5/10

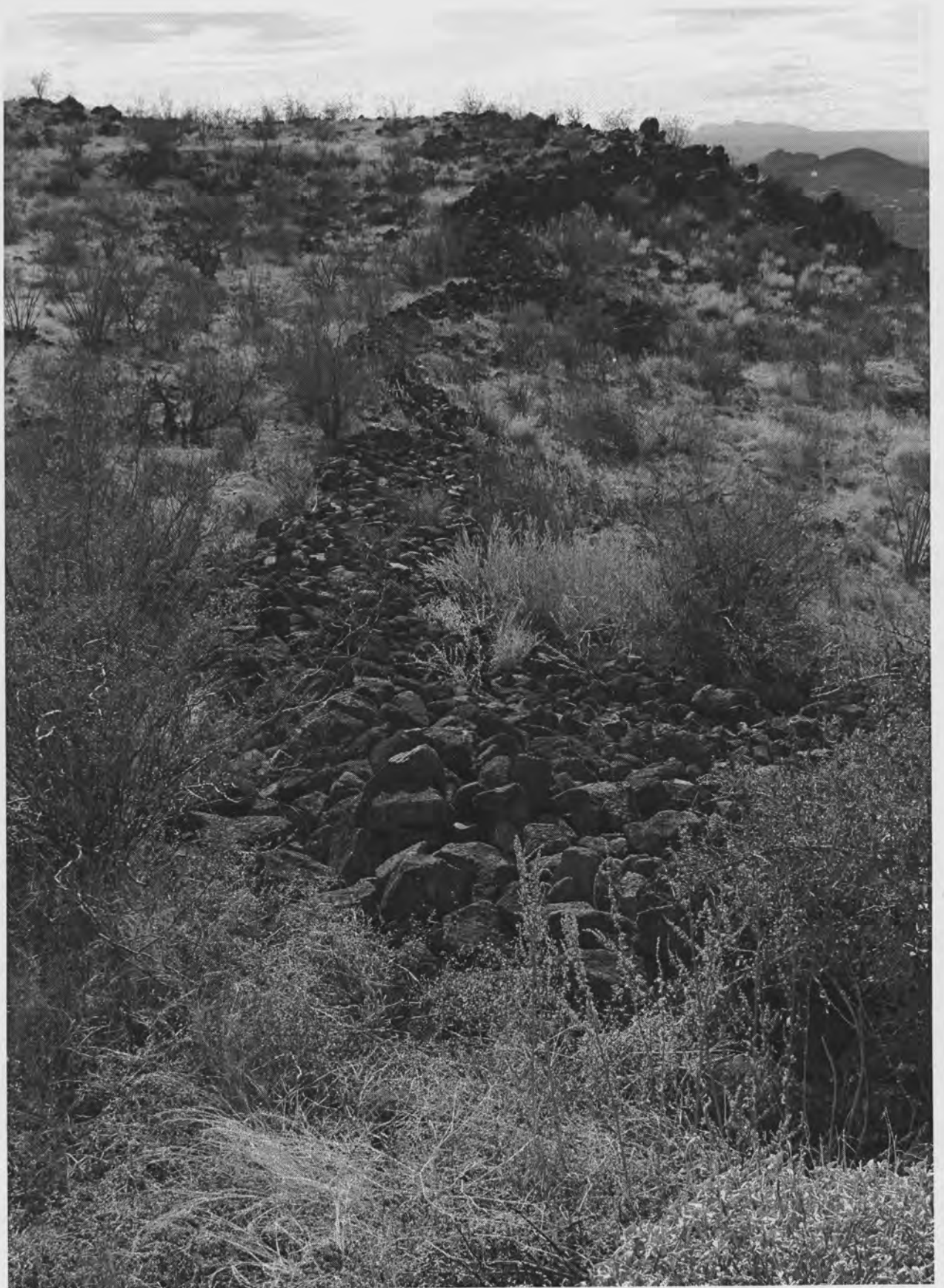
DOCUMENTATION see attached comments Y/ see attached SLR Y/

If a nomination is returned to the nominating authority, the nomination is no longer under consideration by the NPS.



1. THE TUMAMOC HILL ARCHAEOLOGICAL DISTRICT
1675 W. ANKLAM ROAD, TUCSON
2. PIMA COUNTY, AZ
7. PHOTOGRAPH 1.





1. THE TUMAMOC HILL ARCHAEOLOGICAL DISTRICT
1675 W. ANKLAM ROAD, TUCSON
2. PIMA COUNTY, AZ
7. PHOTOGRAPH 2



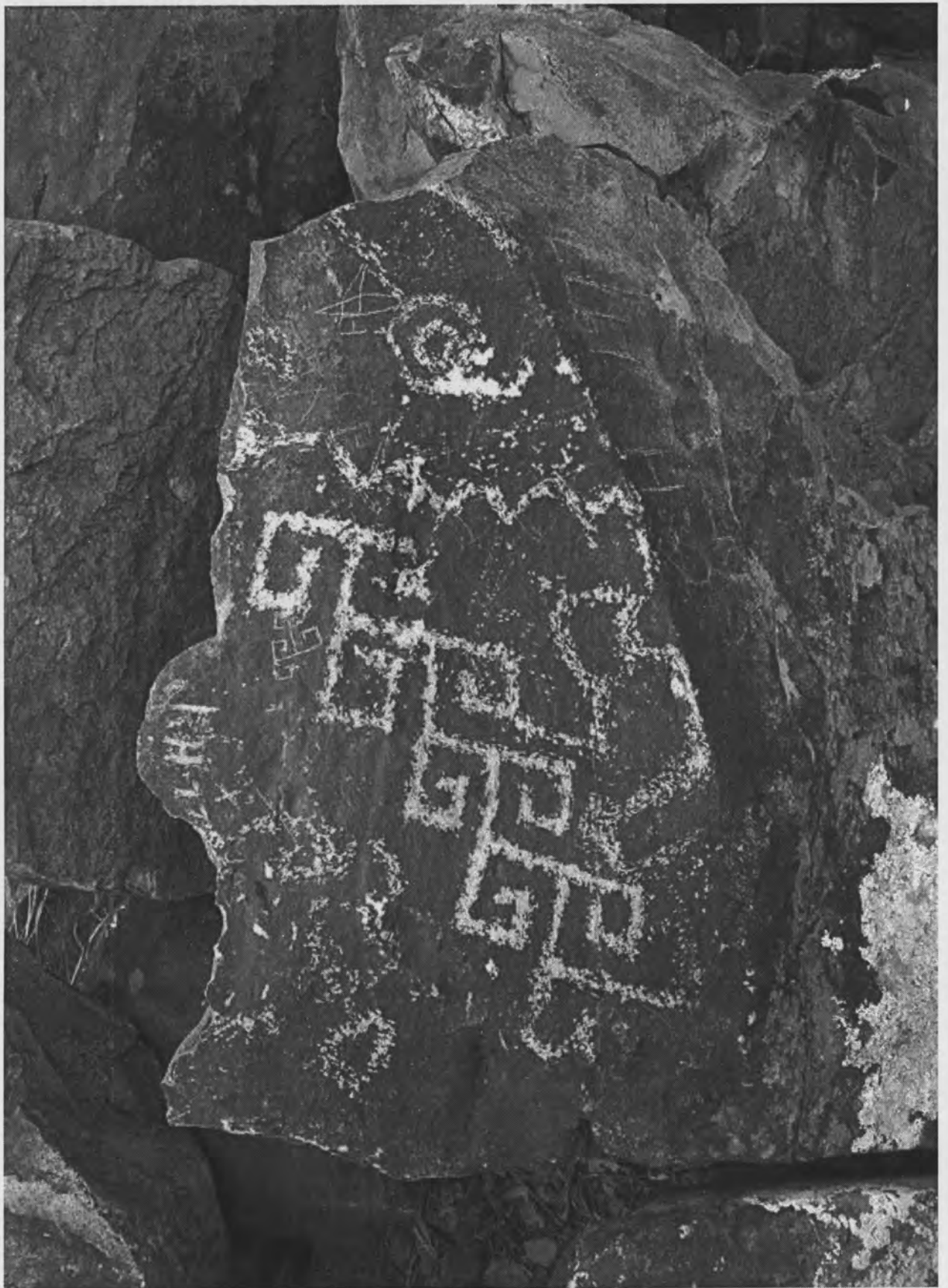


1. THE TUMAMOC HILL ARCHAEOLOGICAL DISTRICT
1675 W ANKLAM ROAD, TUCSON
2. PIMA COUNTY, AZ
7. PHOTOGRAPH 3



1. THE TUMAMOC HILL ARCHAEOLOGICAL DISTRICT
1675 W. ANKLAM ROAD, TUCSON
2. PIMA COUNTY, AZ
3. PHOTOGRAPH 4





1. THE TUMAMOC HILL ARCHAEOLOGICAL DISTRICT
1675 W ANKLAM ROAD, TUCSON
2. PIMA COUNTY, AZ
7. PHOTOGRAPH 5



1. THE TUMAMOC HILL ARCHAEOLOGICAL DISTRICT
1675 W. ANKLAM ROAD, TUCSON
2. PIMA COUNTY AZ
7. PHOTOGRAPH 6

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1. THE TUMAMOC HILL ARCHAEOLOGICAL DISTRICT
1675 W. ANKLAM ROAD, TUCSON
2. PIMA COUNTY, AZ
7. PHOTOGRAPH 7





1. THE TUMAMOC HILL ARCHAEOLOGICAL DISTRICT
1675 W. ANKLAM ROAD, TUCSON
2. PIMA COUNTY, AZ
7. PHOTOGRAPH 8





1. THE TUMAMOC HILL ARCHAEOLOGICAL DISTRICT
1675 W. ANKLAM ROAD, TUCSON
2. PIMA COUNTY, AZ
7. PHOTOGRAPH 9



1. THE TUMAMOC HILL ARCHAEOLOGICAL DISTRICT
1675 W. ANKLAM ROAD, TUCSON
 2. PIMA COUNTY, AZ
 7. PHOTOGRAPH 10
-
-



1. THE TUMAMOC HILL ARCHAEOLOGICAL DISTRICT
1675 W. ANKLAM ROAD, TUCSON

2. PIMA COUNTY AZ

7. PHOTOGRAPH 11



1. THE TUMAMOC HILL ARCHAEOLOGICAL DISTRICT
1675 W. ANKLAM ROAD, TUCSON
2. PIMA COUNTY, AZ
7. PHOTOGRAPH 12.

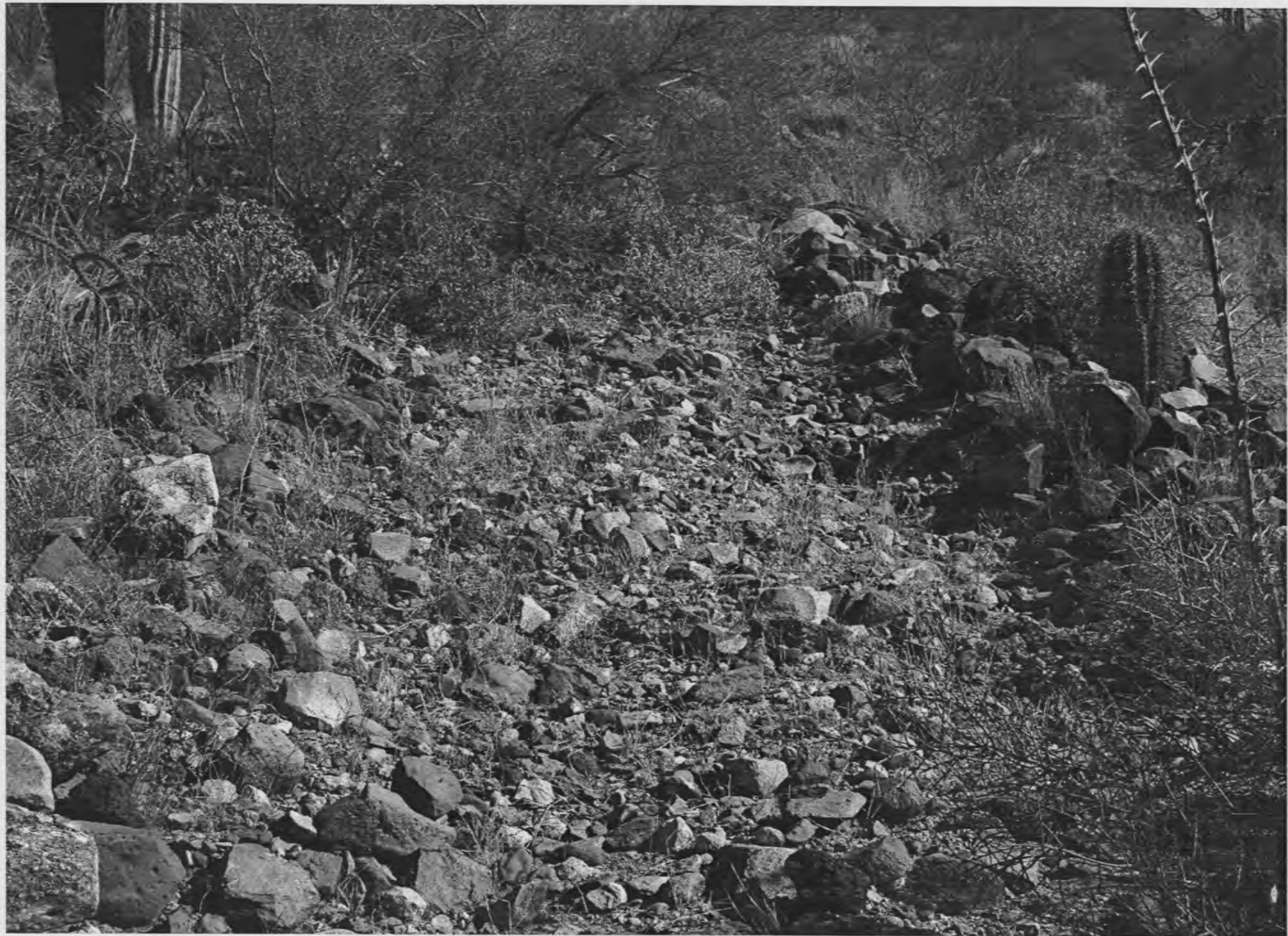


1. THE TUMAMOC HILL ARCHAEOLOGICAL DISTRICT
1675 W. ANKLAM ROAD, TUCSON
2. PIMA COUNTY, AZ
7. PHOTOGRAPH 13



1. THE TUMAMOC HILL ARCHAEOLOGICAL DISTRICT
1675 W. ANKLAM ROAD, TUCSON
2. PIMA COUNTY, AZ
7. PHOTOGRAPH 14



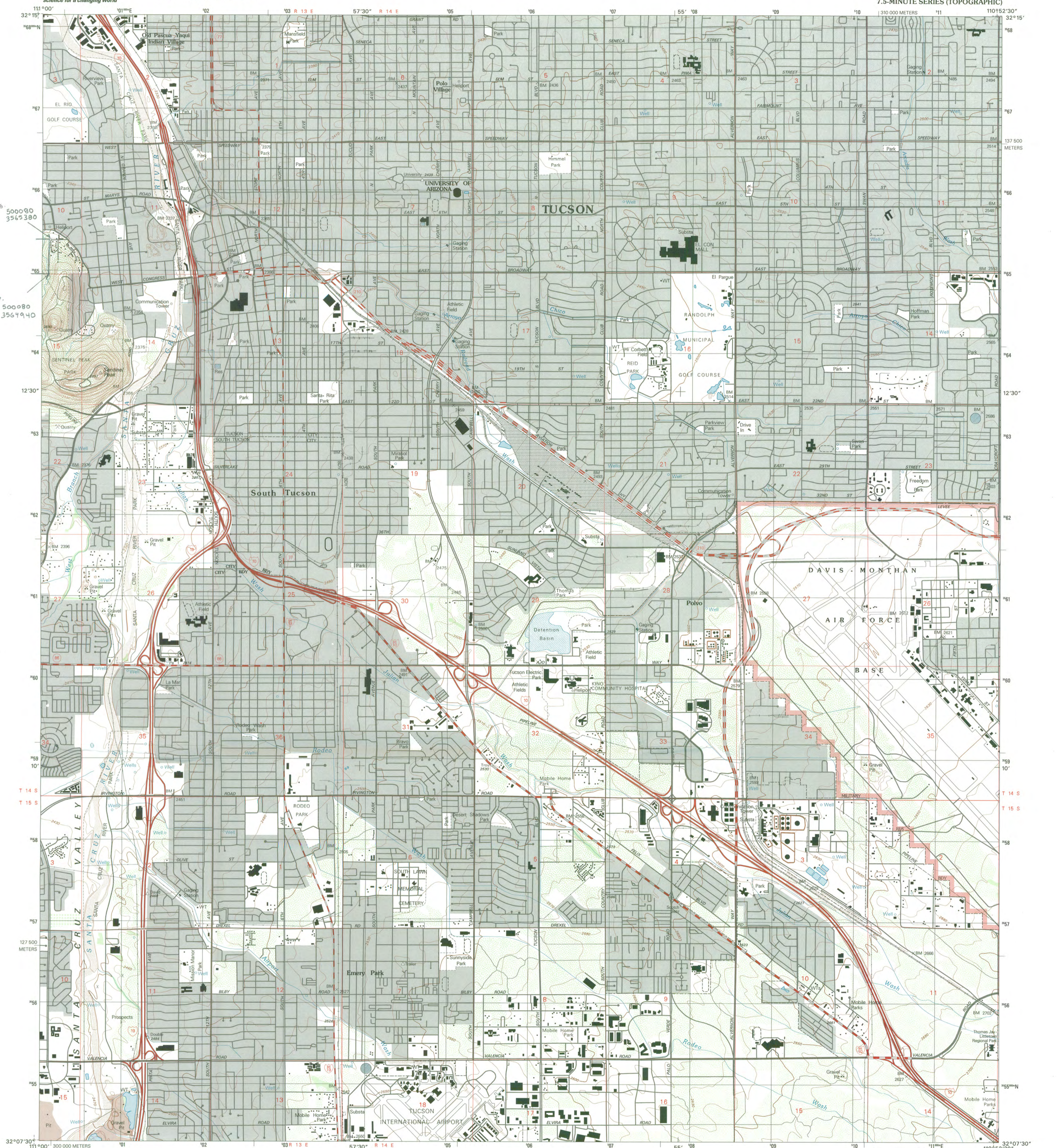


1. THE TUMAMOC HILL ARCHAEOLOGICAL DISTRICT
1675 W. ANKLAM ROAD, TUCSON
2. PIMA COUNTY, AZ
7. PHOTOGRAPH 15



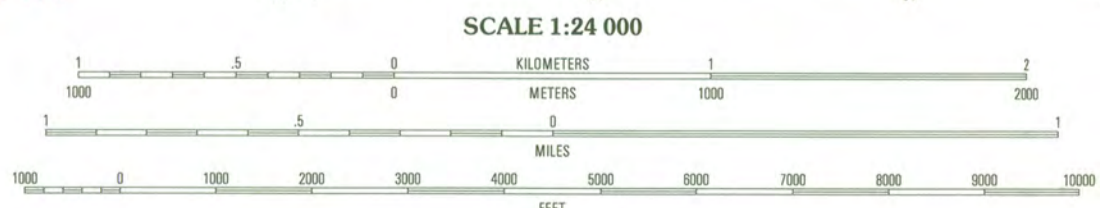
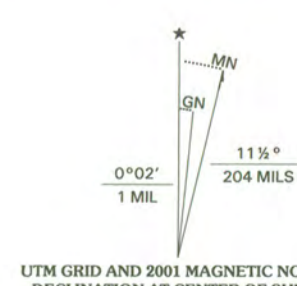
1. THE TUMAMOC HILL ARCHAEOLOGICAL DISTRICT
1675 W. ANKLAM ROAD, TUSON
2. PIMA COUNTY, AZ
7. PHOTOGRAPH 16



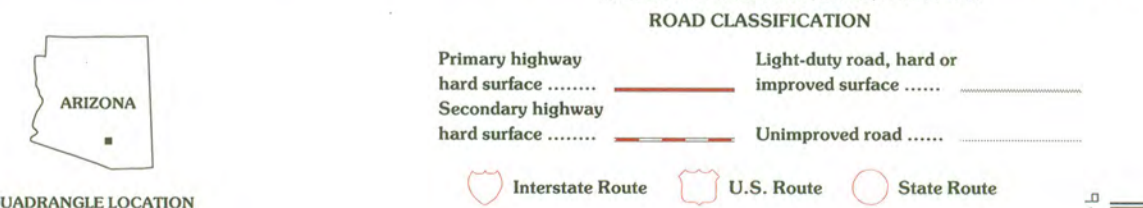


6 500090 356330
7 500080 356490

Produced by the United States Geological Survey
Topography compiled 1954. Planimetry derived from imagery taken 1996 and other sources. Public Land Survey System and survey control current as of 1981. Boundaries current as of 2000. North American Datum of 1983 (NAD 83). Projection and 1 000-meter grid: Universal Transverse Mercator, zone 12. 2500-meter ticks: Arizona Coordinate System of 1983 (central zone).
North American Datum of 1927 (NAD 27) is shown by dashed corner ticks. The values of the shift between NAD 83 and NAD 27 for 7.5-minute intersections are obtainable from National Geodetic Survey NADCON software.
There may be private inholdings within the boundaries of the National or State reservations shown on this map.
Houses of worship, schools, and other labeled buildings verified 1981.



CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
TO CONVERT FROM FEET TO METERS, MULTIPLY BY 0.3048



ADJOINING 7.5' QUADRANGLE NAMES

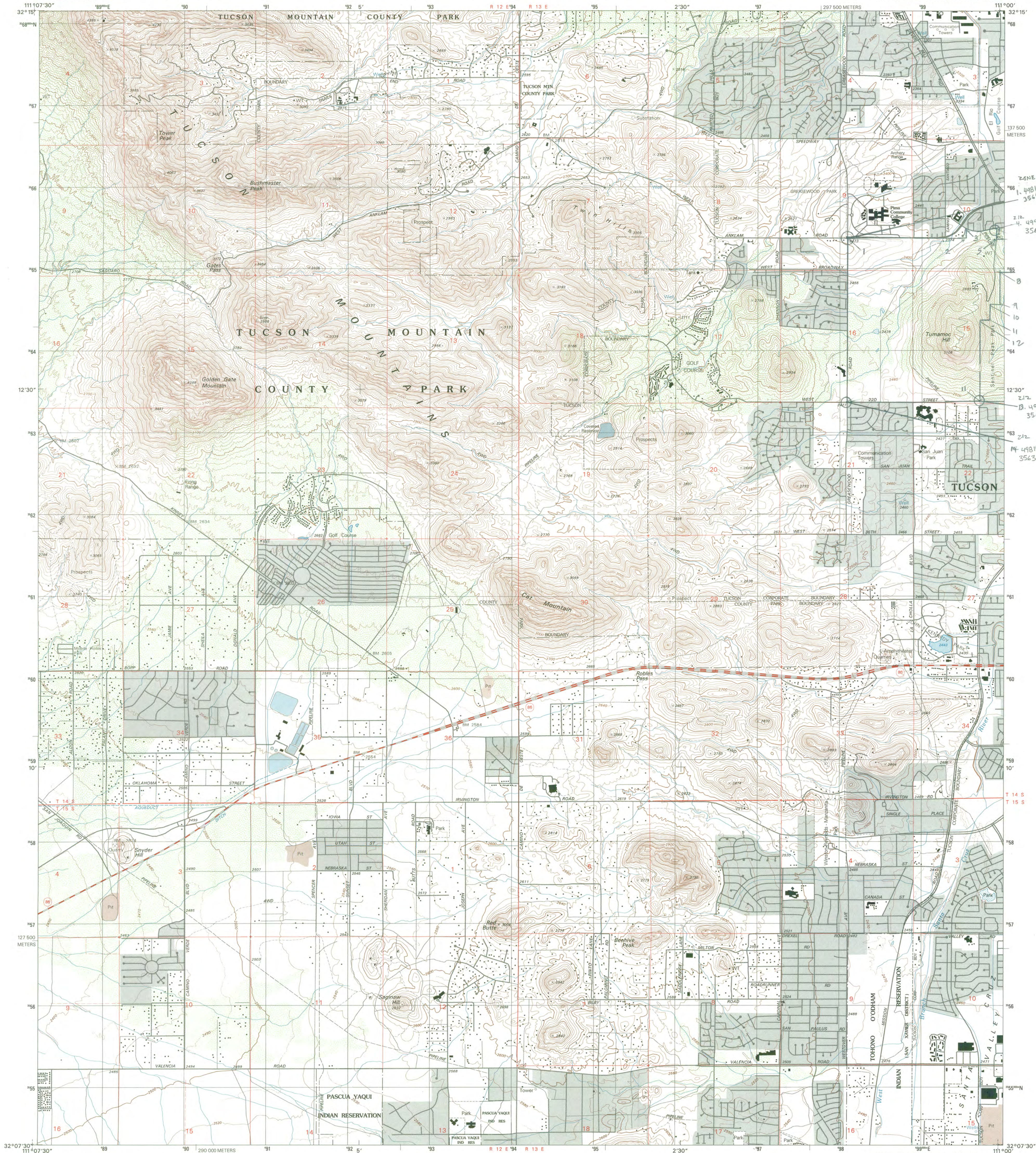
1	2	3
4	5	6
7	8	9

1 Jaynes
2 Tucson North
3 Babino Canyon
4 Cat Mountain
5 Tucson East
6 San Xavier Mission
7 Tucson SW
8 Tucson SE

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

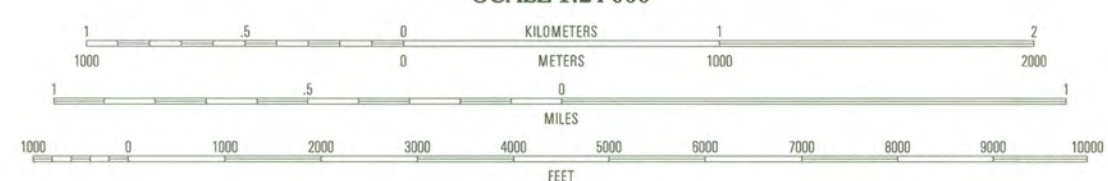
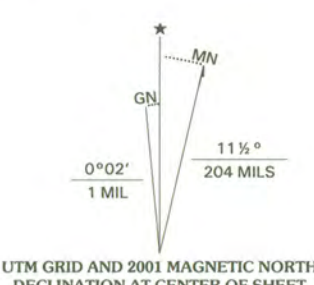
TUCSON, AZ
1996
NIMA 3848 III NW-SERIES V898



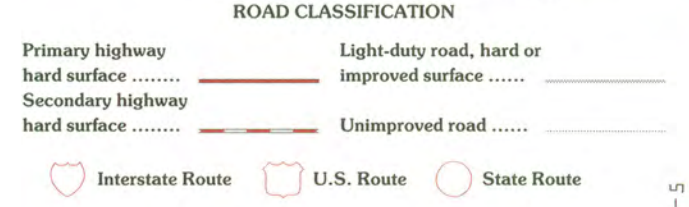


Handwritten elevation notes: 212-1.448100 3565380, 212-4.499700 3563304, 212-13.499700 3563304, 212-14.498100 3563360

Produced by the United States Geological Survey Topography compiled 1966. Planimetry derived from imagery taken 1996 and other sources. Public Land Survey System and survey control current as of 1968. Boundaries current as of 2000 North American Datum of 1983 (NAD 83). Projection and 1 000-meter grid: Universal Transverse Mercator, zone 12 2 500-meter ticks: Arizona Coordinate System of 1983 (central zone) North American Datum of 1927 (NAD 27) is shown by dashed corner ticks. The values of the shift between NAD 83 and NAD 27 for 7.5-minute intersections are obtainable from National Geodetic Survey NADCON software Houses of worship, schools, and other labeled buildings verified 1968



SCALE 1:24 000 CONTOUR INTERVAL 20 FEET SUPPLEMENTARY CONTOUR INTERVAL 10 FEET NATIONAL GEODETIC VERTICAL DATUM OF 1929 TO CONVERT FROM FEET TO METERS, MULTIPLY BY 0.3048



QUADRANGLE LOCATION

Table with 3 columns and 3 rows showing grid coordinates for the quadrangle location.

ADJOINING 7.5 QUADRANGLE NAMES

CAT MOUNTAIN, AZ 1996

NIMA 3748 II NE-SERIES V898



THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS FOR SALE BY U.S. GEOLOGICAL SURVEY, P. O. BOX 25286, DENVER, COLORADO 80225 A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST





February 15, 2010

Carol Shull
Keeper of the National Register
National Park Service
1201 Eye Street, NW 8th Floor (MS 2280)
Washington, D.C. 20005-5905

RE: **Tumamoc Hill Archaeological District**
Pima County
National Register nomination

Dear Ms. Shull:

I am pleased to submit a National Register of Historic Places nomination form for the property referenced above. This nomination includes three contributing sites. Noncontributing resources include 5 buildings, 2 sites, and 45 structures generally associated with the Desert Laboratory of the Carnegie Institute National Historic Landmark, which shares a portion of the hill along with the prehistoric resources described in this nomination.

This archaeological district is nominated under Criterion D. There is also a feeling that the property may also be eligible under Criterion C, although that justification is not formally stated. We request that your staff, while reviewing this nomination, please examine certain aspects of the text and suggest whether it might be worthwhile to pursue an amendment at a later date to justify eligibility under Criterion C. Because of current development threats, we feel that it would be better to have the property listed under Criterion D now, and to follow up with additional documentation when the opportunity allows. Specific references in the text that suggest Criterion C significance can be found in the following locations:

1. Section 7, p. 7; description, summary, last sentence in 1st paragraph, 2nd and 3rd paragraphs.
2. Section 7, p. 11; Time Period of Occupation or Use, chronology of the prehistoric occupation, 2nd and 3rd paragraphs.
3. Section 7, p. 12; 3rd paragraph (unique Tortolita phase settlement).
4. Section 7, p. 15; Physical Characteristics of the Prehistoric Component, Rock Walls and Terraces (Trincheras Features). (How do they compare in scale to other identified Trincheras sites?)
5. Section 7, p. 16; Summit Trails; Dry Laid Stone Enclosures; Bedrock Milling Features and Cupules; and Rock Art.
6. Section 7, p. 17; Agricultural-related Features; Rock piles; and Rock alignments.
7. Section 7, p. 18; Check Dams, Roasting Pits.
8. Section 7, p. 19; Physical Characteristics of the Historical Resources; Historic Resources of European Origin; Surface rock procurement loci and quarries, wagon roads, and chutes.
9. Section 7, p. 22; Integrity, 3rd and 5th paragraphs.



Janice K. Brewer
Governor

State Parks
Board Members

Chair
Reese Woodling
Tucson

Tracey Westerhausen
Phoenix

Larry Landry
Phoenix

Walter D. Armer, Jr.
Vail

Arlan Colton
Tucson

William C. Scalzo
Phoenix

Maria Baier
State Land
Commissioner

Renée E. Bahl
Executive Director

Arizona State Parks
1300 W. Washington
Phoenix, AZ 85007

Tel & TTY: 602.542.4174
AZStateParks.com

800.285.3703 from
(520 & 928) area codes

General Fax:
602.542.4180

Director's Office Fax:
602.542.4188



C. Shull
2/12/10
p. 2

10. Section 7, p. 23; 2nd paragraph.
11. Section 8, p. 31; Statement of Significance; Summary, 2nd paragraph
12. Section 8, p. 32; Tumamoc Hill Research Context and Contributions, 3rd paragraph.
13. Section 8, p. 33; 2nd paragraph.

Accompanying documentation is enclosed, as required. If you have any questions or concerns you may contact me at wcollins@azstateparks.gov.

Sincerely,



William S. Collins, Ph.D.
Deputy State Historic Preservation Officer
State Historic Preservation Office

encl.

Recommendation: SLR Return

Action: SLR Return None

Documentation Issues-Discussion Sheet

State Name: AZ County Name Pima Resource Name Tumacac Hill Arch. Dist.

Reference No. 10-109 Multiple Name _____

Solution: _____

I didn't see any missing.

Problem: Natl - Missing page from cover docs. including
secs 7, 8 & 9.
Should this be not for publication?

not needed, an NHL entry

Resolution: _____

SLR: Yes No

Database Change: _____