

Cultural Resources E.I.S. Issue Paper

Sonoran Desert Conservation Plan

2002

Pima County, Arizona
Board of Supervisors
Ann Day, District 1
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County Administrator
Chuck Huckelberry



MEMORANDUM

Date: July 30, 2002

To: The Honorable Chair and Members
Pima County Board of Supervisors

From: C.H. Huckelberry
County Administrator 

Re: **Cultural Resources Issue Paper**

I. Background

The technical teams and members of the expert community have completed data collection and prioritized natural and cultural resources for the Sonoran Desert Conservation Plan. This fall the Steering Committee will recommend the approach they would like to see Pima County take in applying for a Section 10 permit. To facilitate development of the Environmental Impact Statement (EIS) which must accompany the Section 10 multi-species conservation proposal, a series of issue papers will be forwarded to the Board and interested members of the community during the next weeks. The attached study reviews the effect of five alternative permit strategies on the County's cultural resource base.

II. Priority Conservation Areas

Through an extensive study process involving a technical advisory team and more than three years of data gathering and synthesizing, Pima County has gained a comprehensive understanding of cultural resources within its jurisdiction. A summary of findings includes:

- Pima County has been continuously occupied for approximately 12,000 years from the end of the last Ice Age to the present day. Evidence of Archaic Period occupation is especially abundant in the Cienega Creek area and along the Middle Santa Cruz River.
- A total of 3984 sites archaeological sites are known in the county yet only 12.1% of the land base has ever been formally investigated. Most common are sites dating to the period from A.D. 750-1450 during which the Hohokam people occupied central and southern Arizona.
- More than 4000 historic buildings have been recorded, most of which are within Tucson city limits. In general, these represent settlement during the 19th and early 20th centuries when Tucson emerged from a fortified village to a major metropolitan center.
- There are 121 places listed on the National Register of Historic Places, the nation's honor role of historically important properties. Twenty-six of these are districts that contain multiple buildings or archaeological sites. The City of Tucson has 16 such districts alone, five of which are also city designated districts.

- There are ten historic communities, each of which is 50 years old or older: Silverbell, Marana, Rillito, Catalina, Redington, Vail, Continental, Sahuarita, Arivaca, Sasabe, and Tucson itself.
- Thirteen communities have been abandoned and are now ghost towns: Greaterville and Total Wreck in the Cienega Valley, Twin Buttes and Helvetia in the Upper Santa Cruz Valley, Cerro Colorado in the Altar Valley, the Silverbell mining camp in the Avra Valley, and Clarkstown on the west side of the Tohono O'odham reservation. These reflect the importance of mining silver, gold, lead and copper, in Pima County's history.
- There are three historically significant trails. The Anza Trail of 1775-1776 was used by Captain Juan Bautista de Anza in his excursions to the Pacific Coast. The Camino del Diablo linked Sonora with southern California during the 18th and 19th centuries. Finally, the Butterfield Trail, an overland mail route between St. Louis and San Francisco that was used between 1858 and 1861.
- Five traditional cultural places have been identified, four of which are important to the Tohono O'odham Nation and one that is important to the Mexican American community in Tucson. In general, all rivers, springs, and mountains are viewed as traditional cultural places by the Tohono O'odham people.

The Cultural Resource Technical Advisory Team narrowed the focus of the preservation strategies by identifying Priority Conservation Resources. Out of approximately 3900 archaeological sites and over 4000 historic buildings and structures, the Team identified 71 individual archaeological sites, 29 clusters or "complexes" of archaeological sites representing repeated use of the landscape over thousands of years, and 138 historic resources all built over the past two centuries. In total, 238 places have been identified as Priority Cultural Resources.

III. Alternatives

The first four sections of the *Cultural Resources EIS Issue Paper* present background information to define cultural resources and to explain the results of three years of effort to locate, characterize, evaluate and comparatively analyze cultural resources in eastern Pima County. Having established the best information available, the last section examines each of the four alternatives developed in the cost model and concludes with a brief assessment of the effect of the no action alternative on cultural resources.

The conclusions drawn for purposes of this discussion paper are of a general and comparative nature. When specific recommendations are forwarded by the Steering Committee or interested members of the community, the merits of each specific proposal can be weighed.

Ranch Alternative

Viewed generally, private ranch lands provide the best means of saving the highest number of known archaeological sites, as well as the largest area of any alternative with the potential to contain additional sites. Priority archaeological sites are relatively abundant and come in sizeable proportions.

Given their moderate size, this means it is more likely that larger portions of these sites could be acquired through outright purchase should this alternative be chosen. Priority archaeological site complexes on private ranch lands are even more numerous, contain a wide variety of important archaeological site concentrations, portions of which range in size from several acres to over 3600 acres.

Mountain Park Alternative

In general terms, Mountain Park Expansion is the second most beneficial alternative to cultural resources conservation. To begin with, a large number of archaeological sites already exist within the park system, along with sizeable quantities of land expected to contain even more. Existing park lands also contain priority archaeological sites, archaeological site complexes and even three priority historic sites. At one mile out from the existing park lands, vacant private and state lands offer opportunities to acquire portions of two important priority sites and those opportunities increase at five miles out.

The priority archaeological site complexes follow a similar pattern where the possibilities to conserve hundreds, even thousands of acres of land containing many significant concentrations of archaeological sites increases on state and private lands the farther away one goes from the existing parks.

Riparian Protection Alternative

Because of the linear and limited nature of the Riparian Protection and Restoration alternative, it is characterized by lower numbers of known sites and land potentially containing archaeological sites and there are no historic resources included in this alternative. However, large numbers of both priority archaeological sites and site complexes are included in the riparian zone. The size and proportion of priority sites is low reflecting the limitation of the riparian zone, as defined, to capture all but small fractions of archaeological resources.

Proportionately, the archaeological complexes are similarly low, but the acres of private land, and particularly state land, containing these dense areas of archaeological site concentrations is sizeable.

Northwest Tucson High Value Conservation Land

The High Value Conservation Land in Northwest Tucson alternative is not much better for the protection of cultural resources than the last alternative, the No Action scenario. Virtually no resources are known on private and state property that are characterized as High Conservation Value lands and the numbers of acres of land predicted to contain additional archaeological sites is small.

On Recovery Area lands, private property offers the best opportunity to conserve cultural resources but those resources are very limited. Even the acres available for the two priority archaeological sites complexes are small in size and proportionately minuscule.

No Action Alternative

The No Action alternative is the status quo. While this alternative includes all the known and potential cultural resources that are on the existing park lands, conservation opportunities in the future will be limited to those occasions when bond projects may be approved by the voters to acquire lands containing high value cultural resources.

The proactive approaches to conservation that are inherent in the four other alternatives are lacking in this alternative. This means that cultural resource will continue to be managed as part of the existing development review and approval process mandated under county law and policy. The results are predicted to favor consumption of cultural resources, particularly archaeological sites, over their conservation for the benefit of present and future generations.

IV. Conclusion

While the conclusions drawn for purposes of this discussion paper are of a general and comparative nature, the study supports a ranking of the alternatives from most beneficial to least beneficial to cultural resources as follows:

Rank	Alternative
1	Ranch Conservation
2	Mountain Park Expansion
3	Riparian Protection and Restoration
4	High Conservation Value Land in Northwest Tucson
5	No Action

The final recommendation for land to be included in the Section 10 permit will likely include a combination of lands from the ranch, mountain park, riparian and northwest areas. When a specific recommendation is forwarded by the Steering Committee or by interested members of the community, the merits of each specific proposal will be reviewed and published in light of considerations in the attached issue paper, and additional information that might be provided as part of future discussions.

Attachment



Cultural Resources Issue Paper
Prepared for the Sonoran Desert Conservation Plan Steering Committee
by Pima County Staff

July, 2002

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I. Introduction

Pima County is rich in history, culture, regional character, and diversity, all of which contribute greatly to our collective cultural heritage and community identity. Cultural and historical resources are those places that are created by and reflect upon the people who have lived for thousands of years in what is today Pima County. These places include archaeological sites of both prehistoric and historic times; buildings, structures and engineered features, as well as, historically defined landscapes; and places of traditional cultural importance to the beliefs, practices, and historical identity of traditional communities. The citizens of Pima County have long recognized the importance of preserving their cultural resources and understand the value of doing so. It is because of this that Pima County specifically included cultural resources as a planning element in preparing the Sonoran Desert Conservation Plan.

The purpose of this issue paper is twofold: to provide summary information on Pima County's efforts to date to conserve cultural resources; and, to provide analysis of the effects on cultural resources of five conservation alternatives developed by the county to meet the requirements of the Endangered Species Act. These alternatives resulted from an analysis of land costs and conservation value prepared by the county to model costs associated with securing a Section 10 permit under the Endangered Species Act issued by the U.S. Fish and Wildlife Service (Pima County, May 23, 2002). The permit will allow for "incidental take" of habitat in some areas provided that conservation of habitat can be achieved in others. In this manner, Pima County can manage development and conservation comprehensively. One of the requirements of the Section 10 permit is to demonstrate that the costs of conservation can be achieved, hence the cost modeling alternatives. This paper will analyze the effects of each of the five cost model alternatives on cultural resources in Pima County.

The alternatives are:

1. Ranch Conservation
2. Mountain Park Expansion
3. High Conservation Value Land In Northwest Tucson
4. Riparian Protection and Restoration
5. No action

The analysis will focus exclusively on vacant private and state trust lands in the eastern portion of unincorporated Pima County because these are the lands that Pima County will need to acquire for conservation to offset habitat "take" elsewhere.

To provide context, this study presents summary information on how Pima County defines its cultural resources, the results of its efforts to identify and evaluate these resources, policy recommendations that have been made for their protection, and finally, the analysis of the cost model alternatives along with some concluding remarks.

II. Background

The term cultural resources is used to broadly refer to three kinds of phenomena: archaeological sites, historic sites, and places of traditional cultural value. Pima County has defined each of these, as follows, for all of its studies on cultural resources (Pima County, August 2000).

Archaeological sites are any material remains of past human life or activities which are preserved in their original setting that are important to understanding prehistory or history. These sites or districts may include occupation sites, work areas, farming sites, burials and other funerary remains, artifacts, campsites, hearths, rock art, intaglios, trails, battle sites, religious or ceremonial sites, caves and rock shelters, the architectural or other remains of structures of all kinds, such as pit houses, pueblo rooms, adobe or rock foundations, and other domestic features, usually dating from prehistoric or aboriginal periods, or from historic periods at least 50 years old, for which only archaeological vestiges remain. This definition has been broadly applied to include prehistoric and historic sites of all time periods, functions and spatial distributions from the earliest human occupation some 12,000 years ago to the 20th century.

Historical sites are sites, districts, structures, objects, or other evidences of human activities that represent facets of the history of the nation, state, or locality. Also places where significant historical or unusual events occurred even though no evidence of the event remains, or places associated with persons significant in our history that have gained importance in the last 50 years. Historical sites include a wide variety of sites, buildings, structures, and objects, such as residences, commercial establishments, schools, churches, military forts, cemeteries, parks, and streetscapes, as well as, properties that are listed on the National Register of Historic Places either individually or as groups of properties defined as districts.

A traditional cultural place is a historic site or district that is important because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. The traditional cultural significance of an historic property is derived from the role the property plays in a community's historically rooted beliefs, customs, and practices. Cultural resources that meet this definition are typically identified as being significant to Native American communities, but not exclusively. These can include a place where traditional plants used in ceremony are gathered, a landscape feature associated with an event or figure that is important in creation myths, or a spring revered because of its life giving water, among others.

Examples of each of these cultural resources are known in eastern Pima County although much more is known about archaeological and historical sites than traditional cultural places. This is a result of different research histories. Archaeological sites in southern Arizona have been recorded for over 100 years. Architecture and other historic sites have been the subject of documentation for preservation purposes since the 1930s. The concept of traditional cultural places has only been in use since 1989. Moreover, research into these kinds of cultural resources typically requires working with traditional communities through informants who may be reluctant to discuss some of these places because of their sensitive nature. Despite these problems, there are five known traditional cultural places in Pima County, four of which are important to the Tohono O'odham and one that is important to the Hispanic community in the City of Tucson. None of these are on vacant private or state lands in unincorporated Pima County. In short, most of what is known about cultural resources in eastern Pima County is largely focused on archaeological and historic sites.

III. General Summary of Research on Cultural Resources for the SDCP

Over the past three years, the county has engaged in an intensive effort to collect and analyze data on its cultural resources assets for the purpose of developing recommendations for their protection and conservation. This effort has taken a phased approach: collection of baseline data on all

known cultural resources; identification of cultural resources of extraordinary importance (Priority Cultural Resources); and the comparison of cultural resources data against information on high value natural resources. Out of this process will emerge recommendations on the development and implementation of strategies for conserving cultural resources in Pima County.

To assist in this process, the county created a technical advisory team composed of experts in the fields of archaeology, history, architecture, and historic preservation chaired by Dr. Paul Fish, Senior Curator of archaeology at the Arizona State Museum, University of Arizona. Represented on the advisory team are personnel from the National Park Service, the U.S. Forest Service, the Arizona State Museum, the Tucson Chapter of the Arizona Historical Society, the City of Tucson, the Tohono O'odham Nation, a private archaeological consulting firm, and Pima County. Four ad hoc teams of experts were also created to help in modeling archaeological site locations, as well as to identify, evaluate, and recommend priority historic and archaeological sites for conservation. In all, 26 experts assisted in serving on one of the teams and 10 others were consulted. To facilitate this work, Pima County developed its own cultural resources data base for its Geographic Information System through an unprecedented arrangement with the Arizona State Museum that has allowed the county to copy the Museum's electronic files on archaeological sites and surveys. Over the course of the past three years, five background reports on the history and prehistory of Pima County have been prepared by a consultant under contract to Pima County, and nine technical and publically oriented reports on cultural resources were written by county staff. County staff has participated in public meetings, worked with the technical advisory teams, and informed county administration of the results of these efforts. Through this exhaustive process, Pima County has gained a comprehensive understanding of cultural resources within its jurisdiction. A summary of findings is presented below.

- Pima County has been continuously occupied for approximately 12,000 years from the end of the last Ice Age to the present day. Evidence of Archaic Period occupation is especially abundant in the Cienega Creek area and along the Middle Santa Cruz River.
- A total of 3984 sites archaeological sites are known in the county yet only 12.1% of the land base has ever been formally investigated. Most common are sites dating to the period from A.D. 750-1450 during which the Hohokam people occupied central and southern Arizona.
- More than 4000 historic buildings have been recorded, most of which are within Tucson city limits. In general, these represent settlement during the 19th and early 20th centuries when Tucson emerged from a fortified village to a major metropolitan center.
- There are 121 places listed on the National Register of Historic Places, the nation's honor role of historically important properties. Twenty-six of these are districts that contain multiple buildings or archaeological sites. The City of Tucson has 16 such districts alone, five of which are also city designated districts.
- There are ten historic communities, each of which is 50 years old or older: Silverbell, Marana, Rillito, Catalina, Redington, Vail, Continental, Sahuarita, Arivaca, Sasabe, and Tucson itself.
- Thirteen communities have been abandoned and are now ghost towns: Greaterville and Total Wreck in the Cienega Valley, Twin Buttes and Helvetia in the Upper Santa Cruz Valley, Cerro Colorado in the Altar Valley, the Silverbell mining camp in the Avra Valley, and Clarkstown on

the west side of the Tohono O'odham reservation. These reflect the importance of mining silver, gold, lead and copper, in Pima County's history.

- There are three historically significant trails. The Anza Trail of 1775-1776 was used by Captain Juan Bautista de Anza in his excursions to the Pacific Coast. The Camino del Diablo linked Sonora with southern California during the 18th and 19th centuries. Finally, the Butterfield Trail, an overland mail route between St. Louis and San Francisco that was used between 1858 and 1861.
- Five traditional cultural places have been identified, four of which are important to the Tohono O'odham Nation and one that is important to the Mexican American community in Tucson. In general, all rivers, springs, and mountains are viewed as traditional cultural places by the Tohono O'odham people.

Out of approximately 3900 archaeological sites and over 4000 historic buildings and structures, the Technical Advisory Team selected 71 individual archaeological sites, 29 clusters or "complexes" of archaeological sites representing repeated use of the landscape over thousands of years, and 138 historic resources all built over the past two centuries (Pima County, January 7, 2002). In total, 238 places have been identified as Priority Cultural Resources; these are high value cultural resources that because of their importance to the history and culture of the citizens of Pima County are deserving of conservation in the public interest.

The selected Priority Cultural Resources consist of ancient Native American villages, including some of the oldest sites with evidence of irrigation agriculture in North America; a Spanish Colonial church, the magnificent Mission church of San Xavier del Bac known the world over as one of the finest examples of Spanish Colonial ecclesiastical architecture; Mexican and U.S. Territorial era ranches, such as the Canoa Ranch in Green Valley; the 19th century ruins of Fort Lowell, a frontier military base that played an instrumental role in the "Indian Wars" of the mid to late 19th century before Arizona statehood; old mines, such as Kentucky Camp in the Cienega Valley; residences of both the local Sonoran style of architecture and the imported Victorian styles that followed the coming of the railroad to Tucson in 1880; churches, school houses, commercial establishments, bridges and other transportation related features that followed statehood in 1912; and several parks, including the Tucson Mountain Park created in 1929 and developed by the Civilian Conservation Corps. Together these priority cultural resources represent 10,000 years of settlement in what is today Pima County, and are a physical testimony to the struggle for survival of hundreds of generations of people who have made Southern Arizona their home. The result of all this study has allowed Pima County to draw some basic conclusions: 1) Pima County has within its boundaries a rich record of the past; 2) this record has value - aesthetic, scientific, educational, recreational, and even spiritual value; and, 3) the record of the past is worth saving for the benefit of present and future generations. The truth is, however, that the record of the past is threatened by a variety of sources, both natural and man made, but principally from land use and development. Threats are greatest where residential development has extended beyond the City of Tucson and into Pima County and the surrounding municipalities. Research shows that the majority of cultural resources considered to have extraordinary value are not in Pima County, but are located within the Tucson city limits as well as those of Marana, Oro Valley and to a lesser extent, Sahuarita. Even so, important cultural resources are located in unincorporated Pima County and are threatened by growth along the Santa Cruz River Corridor, the northwest side of Tucson, in the Avra Valley west of the Tucson Mountains, the Altar Valley south and west of the San Xavier District, and the Pantano Wash and Rincon Creek areas south of Saguaro National Park East.

IV. SDCP Policy Recommendations for Cultural Resources

The challenge before that county now is to develop strategies that will effectively protect the county's cultural resources for the benefit of future generations. That process has already begun as of this writing. An important part of this involves comparing the location of high value cultural resources with data on high value natural resources also collected for the Sonoran Desert Conservation Plan. Data layers mapping core biological, habitat and riparian areas were compared with the location of priority cultural resources to determine where they co-occur and where they are distributed separately. This was done to assist in identifying opportunities for and challenges to cultural resources conservation.

The analysis indicates that priority cultural resources co-occur with important riparian areas both within and outside the urban core. However, more of the priority archaeological sites are located within the urban core where natural resource values are low than in the rural countryside. For the archaeological site complexes, the reverse is true. Most historic resources are located within the Tucson Metropolitan area, although a small number are distributed in areas with high natural resource values in the rural countryside. It is also true that the majority of the priority cultural resources are located on private property or involve joint public/private ownership. This preliminary assessment indicates that high value cultural resources co-occur with high value natural resources in some places and not in others. Some are on private land and some are on lands that are publically owned.

By count, more priority cultural resources exist in the urban core that fall under the jurisdiction of other local governments. Some, including many of the archaeological complexes cover thousands of acres, whereas others, particularly the historic resources, are located on less than one acre. These realities will of necessity require the development and utility of a variety of conservation strategies employed on different scales and time frames. A listing of those envisioned for cultural resources conservation is presented below.

- Working cooperatively with federal, state, and local governmental entities towards achieving shared conservation goals.
- Developing a regional management strategy that is centered on adaptive management concepts.
- Purchasing land containing high value cultural resources when and if public monies become available.
- Creating incentive program to encourage private land owners to voluntarily protect cultural resources that are on their land or that compensate them for giving up rights to develop lands containing cultural resources.
- Using land use regulation to ensure that when private land is developed cultural resources are considered as a part of the development review approval process.
- Informing and educating the public about the past and engaging them in saving our collective heritage for the future.

V. Analysis of Impacts Under the Alternatives

The principal benefit of the research that Pima County has conducted on cultural resources over the past three years is that it gives the county the ability to conduct comparative analysis of different land conservation scenarios and their effects on cultural resources. The following analysis examines the five cost alternatives in relation to their potential benefit for conserving archaeological and historical sites. Traditional cultural places will not be included because information on these cultural resources is so limited and because none of the known places with these values are located on vacant private or state land in eastern Pima County. The variables used in the analysis are:

1. Numbers of archaeological sites - counts of all known archaeological sites from all time periods
2. Numbers and acres of priority archaeological sites - Frequency and size of all known archaeological sites the county has identified as having extraordinary importance to the history and culture of the citizens of Pima County
3. Numbers and acres of priority archaeological site complexes - Frequency and size of areas containing dense clusters of archaeological sites that have been identified as having extraordinary importance to the history and culture of the citizens of Pima County.
4. Numbers of priority historic sites - counts of all known historic sites that the county has identified as having extraordinary importance to the historic an culture of the citizens of Pima County..
5. Acres of archaeological sensitivity zone - the number of acres predicted to have high and moderate sensitivity (combined) for all archaeological sites.

A. Ranch Conservation

Under the Ranch Conservation alternative, private ranch lands are assumed to be the primary vehicle for achieving conservation. In Table A.1. below, summary information is presented on historic and archaeological sites by either count or size in acres. To begin with, 184 known archaeological sites are reported on private ranch lands in eastern Pima County and of these eight have been identified as having extraordinary importance. These priority sites are listed in Table A.2. As noted above, priority archaeological site complexes are areas that contain high concentrations of individual archaeological sites that collectively are determined to have high resource value. A total of 17 of these clusters are identified on private ranch lands in eastern Pima County and these are listed individually in Table A.3. No historic sites that meet the definition of a priority cultural resource are on private ranch lands. This is not surprising since most historic sites are located in Tucson, the region's largest and oldest historic settlement. While individual archaeological sites and site clusters can be identified, only a little more than 12 percent of eastern Pima County has ever been inspected for archaeological resources. To compensate for this lack of information on the county as a whole, Pima County projected where archaeological sites might be expected on the landscape by using a qualitative measure of site sensitivity. The acreage identified in the Archaeological Sensitivity Zone is a reflection of the size of the area within which Pima County expects high and moderate densities of archaeological sites to occur. On the private ranch lands, this area covers a total of 130 square miles. The regional average number of archaeological sites recorded per square mile in eastern Pima County is 7.6, or one site every 84.2 acres. At that rate, 992 sites could be located on private ranch lands.

A.1. Cultural Resources Within Private Ranch Lands	
Resource Type	Frequency
# of Archaeological Sites	184
# of Priority Archaeological Sites	8
# of Priority Archaeological Site Complexes	17
# of Priority Historic Sites	0
Acres of Archaeological Sensitivity Zone	83,589

Table A.2. lists the archaeological sites by name that have been identified as Priority Cultural Resources. Also provided are the number of acres of each site on private ranch lands, the total size of each site in acres, and the percentage of each site that is located on land in the private ranch land category. All of the site of Helvetia, a 19th century mining town in the Santa Rita Mountains, is available, as are significant portions of Bayless Ruin, a prehistoric Hohokam village in the San Pedro Valley, and the Rosemont Townsite, another 19th century mining town in the Cienega Creek. Smaller portions of Redington Ruin and Zanardelli, both prehistoric Hohokam village sites, are on private ranch lands. The former is also in the San Pedro Valley and the latter is located along Old Nogales Highway in the Santa Cruz Valley. While proportionally modest, 104.7 acres of the Pig Farm site are classified as private ranch lands; this is an exceptionally important Hohokam village site in the Avra Valley. In total, eight priority archaeological sites are located on approximately 216 acres of private ranch lands representing just over 20 percent of these resources.

Table A.2. Priority Archaeological Sites on Private Ranch Lands			
Site Name	Portion in Acres	Size in Acres	% of Site
Bayless Ruin	6.5	7.4	87.8
Davis Ruin	2.7	14.7	18.3
Helvetia	8.0	8.0	100
Pig Farm Site	104.7	714.2	14.6
Redington Ruin	37.4	104.8	35.6
Rosemont Townsite	16.6	17.9	92.7
Zanardelli Site	28.2	49.1	57.4
Zanardelli Site 2	12.8	99.9	12.8
Total	216.9	1,016	21.3

Priority Archaeological Site complexes, by definition, encompass areas that contain high densities of known individual sites. These areas cover large territories in defining groups or clusters of sites that appear to represent repeated uses of particular parts of the landscape overtime. As such, the scale of these resources is noticeably different from the individual sites previously discussed. In Table A.3 the 17 priority archaeological site complexes that fall within private ranch lands are listed along with information on how many acres of each is included, its full size, and its percentage. Again, the size of these areas is typically very large but it is also clear that with some exceptions, hundreds of acres of each of these complexes are on private ranch lands. In terms of their proportional representation, the complexes range from less than one percent to over 33 percent. In all, 9,380 acres of private ranch lands representing 17 distinct clusters of archaeological sites are included. Not surprisingly, these clusters are generally located in proximity to either a major drainage in lowland areas or in higher elevations on bajadas adjacent to springs. Typically, these clusters represent prehistoric occupations dating to the Hohokam time Period between approximately A.D. 700 to 1450, but several also contain both earlier Archaic sites (Gunsight Mountain) and later Historic Period sites (Canoa Ranch) as well. The Lower Cienega Creek complex has a record of human occupation that spans 10,000 years. Each of these areas is considered a valuable record of human land use in the past.

Table A.3. Priority Archaeological Site Complexes on Private Ranch Lands			
Complex Name	Portion in Acres	Size in Acres	% of Complex
Canoa Ranch	27.3	6,237	<1
Continental Madera	36.3	3,940	<1
Coyote Mountain	735.7	3,786	19.4
Davidson Canyon	121.0	7,144	1.6
Eastern Sierrita Mountain	822.7	6,377	12.9
Gunsight Mountain	110.4	4,630	2.3
Honeybee	95.3	4,447	2.1
Los Morteros	11.4	4,284	<1
Los Robles	232.7	5,635	4.1
Lower Cienega Creek	45.2	7,039	<1
Redington	3,617.5	10,790	33.5
Rincon Creek	1,842.7	11,334	16.2
Rincon Mountain	1.4	15,707	<1
Santa Rita	1.8	4,894	<1
Tanque Verde	520.3	11,082	4.6
Upper Sutherland Wash	193.2	6,638	2.9
Zanardelli	965.3	7,003	13.7
Total	9,380.2	120,967	7.7

In sum, the Ranch Conservation alternative contains within it a high number of known archaeological resources and a very large area within which additional archaeological sites are expected. There are no historic resources locate on private ranch lands, however. Of note is the relatively high proportion of priority archaeological sites, four of which are represented by more than 50% of each site (Bayless Ruin, Helvetia, Rosemont Townsite, Zanardelli Site). For the priority archaeological complexes, the total acreage figure is more meaningful than the percentages. Ten of the 17 complexes are represented by more than 100 acres and two of these, Rincon Creek and Redington, have more than 1000 acres apiece on private ranch lands. In total, over 9000 acres of land containing high concentrations of archaeological sites are included on private lands within the Ranch Conservation alternative.

B. Mountain Park Expansion

The Mountain Parks Expansion alternative includes five existing county properties: Canoa Ranch, Cienega Creek Preserve, Colossal Cave Park, Tortolita Mountain Park, and Tucson Mountain Park, as well as, the Catalina State Park. This part of the study looks at the cultural resources that are on lands contained within the existing mountain park system, plus those that are on private and state vacant lands within one mile and five miles of the parks. These are the lands that would be needed, should a decision be made to meet the conservation requirements by adding new lands to the existing mountain park system. As before, counts and acreage figures are provided for archaeological and historic sites in Table B.1.

There are 152 known archaeological sites within the parks system and five of these are considered to have extraordinary importance. These are listed in Table B.2. below. Site counts on vacant and private and state lands within one mile and five miles of the parks are also shown in the adjoining columns. There are two areas of high archaeological site density within park lands, three more on private and state lands within one mile, and even more exist on private and state lands within five miles. The priority archaeological site complexes are listed individually in Table B.3. below. Several priority historic sites are identified within the mountain park system as well, with a few more on private and state lands within the one mile and five mile buffers. These are discussed further at the end of this section. Lastly, over eleven thousand acres are identified as being archaeologically sensitive within existing park lands, and at one mile and five miles out, state lands contain more archaeologically sensitive areas than do vacant private land.

B.1. Cultural Resources within Mountain Park Expansion Areas by Buffer Area and Property Type					
Resources Type	Inside Existing Parks	1 Mile Private	1 Mile State	5 Mile Private	5 Mile State
# of Archaeological Sites	152	19	30	62	24
# of Priority Archaeological Sites	5	1	1	4	3
# of Priority Archaeological Site Complexes	2	3	3	8	6
# of Priority Historic Sites	3	1	0	2	0
Acres of Archaeological Sensitivity Zone	11,605	3,354	10,217	16,787	32,849

Table B.2. breaks down the priority archaeological sites by name, portion, site size, and the percentage of each site that is known on existing park lands, as well as on vacant private lands and vacant state lands within the one mile and five mile buffers.

The existing mountain parks include all of four priority sites, but only a trace of the fifth. Black Sheep Cave, a Hohokam Rock art site, the ruins of the 19th century Cienega Stage stop, and the 19th and 20th century ruins of the Pantano Townsite, are all on county lands. Romero Ruin, a Hohokam ballcourt village in Catalina State Park is also included in its entirety. Only a small portion of the Marsh Station Road site, a prehistoric village, is within the existing mountain parks; however, much more of this site is on vacant state lands within the one mile buffer. On private lands, some 45 acres of the West Branch site, an important Hohokam village site, is within one mile of the Tucson Mountain park. On private lands within five miles there are small portions of two sites, Hodges Ruin and the Loma Alta site, both of which are Hohokam settlements; a trace amount of the 19th century Sunset Lime Kiln on Silverbell Road; and, a moderate portion of the Total Wreck Mine, the famous 19th century mining town in the Cienega Valley. Much more of this site is on vacant state lands within the five mile buffer, as well as the Sutherland Wash Site, a Hohokam village north of Catalina State Park. Only trace amount of the Los Pozos site, an Early Agricultural Period village, are on state lands within this buffer area.

Table B.2. Priority Archaeological Sites within Mountain Parks Expansion			
Site Name	Portion of Site in Acres	Total Site Size in Acres	% of Site
● Sites Within Existing Parks			
Black Sheep Cave	0.2	0.2	100
Cienega Stage Stop	3.3	3.3	100
Marsh Station Road	5.2	119.0	4.3
Pantano	3.1	3.1	100
Romero Ruin	8.0	8.0	100
Total	19.8	133.6	14.8
● Sites Within 1 Mile - Private			
West Branch	45.8	283.8	16.1
● Sites Within 1 Mile - State			
Marsh Station Road	79.1	119.0	66.4
● Sites Within 5 Miles - Private			
Hodges Ruin	11.1	168.6	6.5
Loma Alta	9.1	23.9	3.8
Sunset Lime Kiln	0.01	0.2	<1

Table B.2. Priority Archaeological Sites within Mountain Parks Expansion			
Total Wreck Mine	7.8	28.6	27.2
Total	28.0	221.3	12.6
● Sites Within 5 Miles - State			
Sutherland Wash Site	88.6	97.6	90.7
Los Pozos	0.02	69.7	<1
Total Wreck Mine	17.8	28.6	62.2
Total	106.42	195.9	54.3

Table B. 3 below presents information on the archaeological site complexes that are within or close to the the current limits of the mountain park system. These are broken down in the same manner as the individual priority sites are in Table B.2. above. Because of their great size only pieces of these clusters are included in any one part of the system; however, the Lower Cienega Creek complex and Upper Sutherland Wash complex have many thousands of acres apiece within existing parks representing 41.1 and 48.8 percent of these complexes respectively. More acres of each are on vacant private and state lands within one mile of the Cienega Creek Nature Preserve and the Catalina State Park. At five miles out, a greater number of complexes in a wider variety of sizes are on state and private lands. The complexes also vary in age and condition and some are threatened more than others. For instance, those in the urban areas such as the Middle Santa Cruz complex and the River Confluence complex, which combined represent at least 5000 years of human occupation, have been heavily impacted through intensive development along the Santa Cruz River Corridor. Despite this, archaeological deposits within these areas are still producing new insights into the past. On the other hand, the Rincon Creek complex, a cluster of 1000 year old Hohokam sites, is still relatively intact but is experiencing growing pressure from development south of Saguaro National Park East.

Table B.3. Priority Archaeological Site Complexes within Mountain Parks Expansion			
Complex Name	Portion in Acres	Size in Acres	% of Complex
● Complexes Within Existing Parks			
Lower Cienega Creek	2,898.5	7,039	41.1
Upper Sutherland Wash	3,339.5	6,838	48.8
Total	6,238	13,877	44.9
● Complexes Within 1 mile - Private			
Lower Cienega Creek	199.2	7,039	2.8
Upper Sutherland Wash	300.9	6,838	4.4
West Branch	131.3	1,079	12.1
Total	631.4	14,956	4.2

Table B.3. Priority Archaeological Site Complexes within Mountain Parks Expansion

● Complexes Within 1 Mile - State			
Lower Cienega Creek	3,244.8	7,039	46.0
Upper Sutherland Wash	637.5	6,838	9.3
West Branch	14.2	1,079	13.1
Total	3,896.5	14,956	26.0
● Complexes Within 5 Miles - Private			
Honeybee	1.6	4,447	<1
Middle Santa Cruz	303.6	16,653	1.8
Rincon Creek	550.2	1,1334	4.8
Rincon Mountain	4.6	15,707	<1
River Confluence	460	8,842	5.2
Tucson Mountain A	204	1,282	15.9
Upper Sutherland Wash	67.3	6,638	1.0
West Branch	15.5	1,079	1.4
Total	1,606.8	65,982	2.4
● Complexes 5 Miles - State			
Honeybee	1264.4	4,447	28.4
Lower Cienega Creek	108.9	7,039	1.5
Middle Santa Cruz	9.1	16,653	<1
Rincon Creek	367.6	11,334	3.2
River Confluence	11.1	8,842	<1
Upper Sutherland Wash	845.9	6,638	12.7
Total	2,607	54,953	4.7

Three priority historic resources are identified on existing county owned land. Tucson Mountain Park itself is considered a historic resource because it is designed historic landscape that since its origin in 1929 has been used and maintained for recreational purposes. By area, the many thousands of acres of land included in the park, make it the largest historic resource in eastern Pima County. The other two historic resources include Colossal Cave, the county park on the east side of the Tucson basin built in the 1930s by the Civilian Conservation Corps, and the Cienega Bridge, built in 1921, which is within the Cienega Creek Nature Preserve southeast of Tucson.

Three more priority historic sites are in proximity to the mountain park system, all of which are on vacant private land. The first is the Rancho Las Lomas, a former guest ranch built in 1936, which is located on Speedway Blvd within 1 mile of the Tucson Mountain Park. The second is the San Xavier del Bac Mission, the 18th century mission church owned by the Catholic church located in the five mile buffer on the Tohono O’odham San Xavier District. The third priority historic site consists of three World War II era aviation hangers also located within the five mile buffer zone at the Tucson International Airport.

In sum, the Mountain Park Expansion alternative includes a high number of known cultural resources on land that is already owned by Pima County or the state of Arizona as park land. This includes over 11,000 acres that are expected to contain additional archaeological sites. Three important priority historic sites are also identified on existing park lands and three more are on private lands within one and five miles of the mountain park system. County park lands contain four priority archaeological sites in their entirety, and more than 50 percent of three other sites are located on state lands within one and five miles. Acreage figures for the priority archaeological sites show that the mountain park system already contains thousands of acres from two important site complexes: Cienega Creek and Sutherland Wash. Large amounts of private and state land containing these and other site complexes also exist within one and five miles of the mountain parks. Over 3000 acres of the aforementioned Lower Cienega Creek complex are on state lands within one mile of the existing Cienega Creek Nature Preserve. This complex contains the longest record of human settlement in eastern Pima County. In all, there are 13 instances in which archaeological site complexes are represented by more than 100 acres on vacant private and state lands that are outside the existing mountain parks system.

C. High Conservation Value Land In Northwest Tucson

This alternative was included in the cost model to determine the costs associated with purchasing land in the fast growing northwest side of the Tucson metropolitan area. Vacant private and state lands are potentially available in lesser amounts than in either the Ranch Conservation and Mountain Park Expansion alternatives. As indicated in the tables below, the number and kind of cultural resources are also more limited. Maps showing the distribution of archaeological sites and archaeologically sensitive lands, as well as the few priority cultural resources that are located on the high conservation value and recovery area lands in northwest Tucson are included at the end of the report.

Table C.1. Cultural resources within Northwest Tucson by Conservation Area and Property Type				
Resources type	HCV Private	HCV State	RA Private	RA State
# of Archaeological Sites	2	0	25	1
# of Priority Archaeological Sites	0		1	0
# of Priority Archaeological Site Complexes	0	0	2	0
# of Priority Historic Sites	0	0	0	0
Acres of Archaeological Sensitivity Zone	696	<1	1,302	456

HCV=High Conservation Value / RA=Recovery Area

Only two archaeological sites are known on lands classified as having High Conservation Value, and none of these are priority sites. On private land within the Recovery Areas, 25 archaeological sites are known, one of which is the Linda Vista site a priority archaeological site as indicated in Table C.2. below. Only one site is known on state lands within the Recovery Area. Portions of two archaeological site complexes representing clusters of sites are within the Recovery Area on private lands. These are listed in Table C. 3. No priority historic sites are within the High Conservation Lands in Northwest Tucson alternative area. The figures for acres of archaeologically sensitive land are similarly low in comparison to the alternatives discussed.

The one priority archaeological site identified within the High Conservation Value land in the northwest side of Tucson is the Linda Vista Hill site, a rare prehistoric Trincheras site of Hohokam origin that is located at the northern end of the Tucson Mountains. However, only 3.1 acres of the site is included in this area. While the full size of the site is unknown, it is likely to cover an area many times this figure indicating that only a small portion of the site is on private lands and might be available for purchase under this alternative.

Site Name	Portion of Site in Acres	Site Size in Acres	% of Site
Linda Vista	3.1	NA	NA

Portions of two priority archaeological site complexes are located on private property within the high conservation value land area in northwest Tucson: the Los Morteros complex and the Middle Santa Cruz complex. The former contains the well known Hohokam village site of Los Morteros and the latter is part of a large cluster of archaeological sites along the terraces adjacent to the Santa Cruz River. Both are represented by very low percentages of their total areas.

Complex Name	Portion in Acres	Size in Acres	% of Complex
Los Morteros	50.6	4284	1.1
Middle Santa Cruz	46.5	16,653	<1
Total	97.1	20,937	<1

In summary, the High Conservation Value Land in Northwest Tucson alternative contains only a few known sites and the areas where a high and moderate sensitivity for archaeological sites can be expected is also limited. There is only one priority archaeological site and two site complexes all of which are located on private lands within the Recovery Area, and each of these is small in size and proportional representation. No historic resources are on private or state lands within the area covered by this alternative.

D. Riparian Protection and Restoration

Riparian lands are important sources of biological diversity and a natural candidate for conservation as part of the Section 10 permit. This section looks at archaeological and historic sites that are contained within lands defined as “important riparian areas” by Pima County. Typically, these are lands that follow the existing drainages and are by nature linear in character. The figures in Table D.1. indicate that a moderate number of archaeological sites are known on both vacant state and vacant private lands within these riparian areas. Nine priority archaeological sites are on private lands and three are shown in the state land column. These are more fully discussed below in Table D.2. Portions of 16 archaeological site clusters are known on private lands and 15 are on state lands; these are further analyzed in Table D.3. No priority historic sites are on private or state lands within the riparian areas as defined, although portions of three such properties are located on county or City of Tucson lands. These are the A-7 Ranch, Agua Caliente Ranch and Canoa Ranch.

Many thousands of acres of archaeologically sensitive lands are indicated on both state and private property within the riparian zone. This is because the pattern of human settlement in eastern Pima County has favored intensive utilization of lands adjacent to sources of water through time. Site densities therefore tend to be high. At the regional rate of 7.6 sites per square mile as many as 87 sites may be on private lands and 236 sites may be on state lands. It is also fair to say that these sites will likely be the main residential settlements in the Tucson Basin, which tend to have been established in proximity to reliable sources of water. Maps showing the distribution of known archaeological sites and archaeologically sensitive lands, as well as those priority cultural resources that are located within the important riparian zone are included at the end of the report.

Table D.1. Cultural resources within Riparian Protection and Restoration Areas by Property Type		
Resources type	Private	State
# of Archaeological Sites	42	89
# of Priority Archaeological Sites	9	3
# of Priority Archaeological Site Complexes	16	15
# of Priority Hist Sites	0	0
Acres of Archaeological Sensitivity Zone	7,339	19,929

A total of 12 priority archaeological sites are contained within the riparian zone as indicated in Table D.2. below. These include Historic Period sites on private property, such as Greaterville, the 19th century mining town and the Sunset Lime Kiln, a 19th century industrial feature used for making lime mortar and plaster. The remaining seven sites are all prehistoric in origin including the Houghton Road site, a site that predates the emergence of the Hohokam culture. On state vacant land, there are three priority archaeological sites, all of which represent prehistoric Hohokam village occupations.

Table D.2. Priority Archaeological Sites within Important Riparian Areas			
Site Name	Portion of Site in Acres	Total Site Size in Acres	% of Site
● Sites on Private Land			
Greaterville	3.5	7.7	45.4
Houghton Road Site	.0009	12.0	<1
Loma Alta Site	.63	23.9	2.6
Sabino Canyon Ruin	4.7	54.6	8.6
Sunset Lime Kiln	.01	.2	<1
West Branch	1.1	283.8	<1
Whiptail Ruin	1.5	130.4	1.1
Zanardelli Site	.06	49.1	<1
Zanardelli Site 2	.25	99.9	<1
Total	11.75	661.6	1.7
● Sites on State Land			
Marsh Station Road	4.5	119.0	3.7
Sutherland Wash Site	.31	97.6	<1
Zanardelli Site 2	.002	99.9	<1
Total	4.81	316.5	1.5

What is notable about the information on priority archaeological sites presented in Table D.2. is that most sites have a very small percentage of their total size represented within the riparian area. Only the historic mining town of Greaterville is represented on private lands to any significant degree and even this is a small area at 3.5 acres. The Sabino Canyon Ruin is present on 4.7 acres of private vacant land but because of the size of the site this represents only 8.6 percent of the site as a whole. On state vacant land, 4.5 acres of the Marsh Station Road site is within the riparian area, but again this represents only 3.7 percent of the size of the site. In general, only small pieces of the remaining priority archaeological sites on both private and state land are included in the riparian zone. Human settlement tended to favor areas adjacent to, but set back from, the drainages in the region so as to avoid problems with flooding, among other things. As a consequence, the riparian alternative, while capturing many very important cultural resources, misses the bulk of those resources.

Table D. 3 below presents information on the priority archaeological site complexes that fall on state and private lands within the important riparian areas. Portions of 31 site complexes are included in the riparian zones, 16 on private land and 15 on state land.

Just as in the analysis of the individual priority sites in Table D.2 above, the most notable feature in the data is just how low the percentages are for most of these cultural resources. Only a few site complexes are represented at greater than 5 percent and many are below one percent. Again this is due to the fact that the riparian zones are long and narrow and the site complexes cover large, broad areas. With some exception, however, many more acres of each complex are captured within the riparian zone than the individual priority archaeological sites. Lastly, it is notable that more acres of these complexes representing a larger percentage of the total are available on state lands than on private lands. Beyond these details, the complexes themselves run the gamut in time and condition. Some of the most important concentrations of archaeological sites in eastern Pima County are represented including Los Robles in the Avra Valley, Redington in the San Pedro, Lower Cienega and Davidson Canyon in the Cienega Valley, West Branch and Middle Santa Cruz in the Tucson area, Coyote Mountain in the Altar Valley, and Honeybee in the Tortolita Mountains.

Table D.3. Priority Archaeological Site Complexes within Important Riparian Areas			
Complex Name	Portion in Acres	Size in Acres	% of Complex
● Sites on Private Land			
Canoa Ranch	5.1	6,237	<1
Continental Madera	8.6	3,940	<1
Coyote Mountain	0.3	3,786	<1
Honeybee	0.04	4,447	<1
Los Morteros	0.05	4,284	<1
Los Robles	85.2	5,635	1.5
Lower Cienega Creek	17.8	7,039	<1
Middle Santa Cruz	203.0	16,653	1.2
Redington	174.3	10,790	1.6
Rincon Creek	42.0	11,334	<1
River Confluence	177.5	8842	2.0
Tanque Verde Creek	218.0	11,082	1.9
Tucson Mountain A	6.0	1283	<1
Upper Sutherland Wash	82.0	6638	1.2
West Branch	24.6	1079	2.2
Zanardelli	10.9	7003	<1
Total	1,055	97,555	1.0

Table D.3. Priority Archaeological Site Complexes within Important Riparian Areas

● Sites on State Land			
Brawley Batamote	222.2	1053	21.1
Canoa Ranch	18.0	6237	<1
Continental Madera	13.0	3940	<1
Coyote Mountain	195.7	3786	5.1
Davidson Canyon	78.5	7144	1.0
Honeybee	105.7	4447	2.3
Los Robles	276.6	5635	4.9
Lower Cienega Creek	341.7	7039	4.8
Redington	592.2	10,790	5.4
Rincon Creek	60.5	11334	<1
Santa Rita	246.5	4894	5.0
Upper Cienega Creek	264.8	10854	2.4
Upper Sutherland Wash	88.1	6638	1.3
West Branch	2.1	1079	<1
Zanardelli	180.0	7003	2.5
Total	2,685.6	91,873	2.9

In summary, the Riparian Protection and Restoration alternative captures a moderate number of known archaeological sites but a substantial area within which additional archaeological sites can be expected. In both cases, state lands have the higher figures than private lands. The pattern is reversed for the priority archaeological sites with nine being located on private land and only three on state lands. The acreage of most of these is quite small and represent only a minute fraction of their full size. The one exception is the Greaterville mining town site, which has more than 45 percent of its 7.7 acres represented in the riparian zone. As mentioned, the pattern of small size and low percentages of the priority archaeological sites is a product of the linear nature of the riparian zones and the habit people have had of settling close to, but set back from, the region's drainages. The priority archaeological site complexes exhibit this same pattern of very low proportional representation. Nine of the 16 complexes on private land that are within the riparian area are represented by less than 1 percent of their total size. Interestingly, there are more site complexes on state lands than private lands where proportional representation is greater than one percent. State lands also contain a larger number of site complexes where the number of acres in the riparian zone is greater than 100. This suggests that state lands are a better source of property for conserving archaeological site complexes.

E. No Action

In the No Action alternative, the cultural resources that can be conserved for present and future generations are limited to those that are already on land owned by Pima County, such as county parks, plus any that may be acquired through bond funded initiatives. Bond programs can and do offer an opportunity to purchase land containing cultural resources for conservation or to restore and adaptively utilize historic buildings that the county owns or acquires in the future. In 1997, a bond approved by the citizens of Pima County included 11 cultural resources projects, five of which involve buying land containing high value archaeological sites: Los Morteros, Pantano Townsite, San Augustine Mission gardens, Tumamoc Hill, and the Valencia Site. As a strategy for conservation, however, dependence on bond funding will be affected by both funding limitations and the inconsistencies that are inherent in the bond election process.

In short, the No Action alternative is the status quo. While the costs associated with this alternative are the lowest of the conservation scenarios, doing nothing more than what is currently being done will provide only minimal opportunity for achieving cultural resources conservation in any proactive sense. Instead, Pima County's principal response to the effects of land use and development on cultural resources will continue to be reactive. Under existing policy and regulation, all county public works projects, as well as certain private land developments, are subject to cultural resources requirements as a part of the project review and approval process. In practical terms, once a project has gone to the design stage, the options to avoid and conserve cultural resources are either very limited or non-existent. Therefore, with few exceptions, most cultural resources that will be affected by proposed land use and development subject to county approval will only be recorded prior to their destruction.

VI. Conclusion

Research conducted for the Sonoran Desert Conservation Plan demonstrates that Pima County is blessed with an abundance of cultural resources particularly archaeological and historical sites, some of which are extraordinary in nature. These resources have scientific, educational, recreational, aesthetic and even spiritual values and Pima County recognizes the importance of saving them for the future. Cultural resources in Pima county have been, and continue to be threatened, most immediately in areas that are just developing or will be in the near future. The challenge before the county is to develop effective means of protecting and conserving these resources for the future. Part of that effort will be addressed by Pima County in seeking a permit under Section 10 of the Endangered Species Act. One of the principle conditions of Act is to prepare a conservation plan that details how habitat conservation will be achieved plus a financial strategy demonstrating that the county can pay for it. Pima County has developed a cost model examining the expenses associated with four possible conservation scenarios in order to define the cost parameters associated with the plan. The purpose of this issue paper has been to examine how those alternatives, plus a no action option, might benefit cultural resources.

In the first four sections of the paper background information is presented to define cultural resources and to explain the results of three years of effort to locate, characterize, evaluate and comparatively analyze cultural resources in eastern Pima County. Having established the facts on the ground, the last section examined each of the four alternatives developed in the cost model and concluded with a brief assessment of the effect of the no action alternative on cultural resources.

The findings of this study support a ranking of the alternatives from most beneficial to least beneficial to cultural resources as follows.

Rank	Alternative
1	Ranch Conservation
2	Mountain Park Expansion
3	Riparian Protection and Restoration
4	High Conservation Value Land in Northwest Tucson
5	No Action

Private ranch lands provide the best means of saving the highest number of known archaeological sites, as well as the largest area of any alternative with the potential to contain additional sites. Priority archaeological sites are relatively abundant and come in sizeable proportions. Given their moderate size, this means it is more likely that larger portions of these sites could be acquired through outright purchase should this alternative be chosen. Priority archaeological site complexes on private ranch lands are even more numerous, contain a wide variety of important archaeological site concentrations, portions of which range in size from several acres to over 3600 acres.

The Mountain Park Expansion is the second most beneficial alternative to cultural resources conservation. To begin with, a large number of archaeological sites already exist within the park system, along with sizeable quantities of land expected to contain even more. Existing park lands also contain priority archaeological sites, archaeological site complexes and even three priority historic sites. At one mile out from the existing park lands, vacant private and state lands offer opportunities to acquire portions of two important priority sites and those opportunities increase at five miles out. The priority archaeological site complexes follow a similar pattern where the possibilities to conserve hundreds, even thousands of acres of land containing many significant concentrations of archaeological sites increases on state and private lands the farther away one goes from the existing parks.

The third ranking goes to the Riparian Protection and Restoration alternative. This alternative is characterized by lower numbers of known sites and land potentially containing archaeological sites. There are no historic resources included in this alternative. However, large numbers of both priority archaeological sites and site complexes are included in the riparian zone. The size and proportion of priority sites is low reflecting the limitation of the riparian zone, as defined, to capture all but small fractions of archaeological resources. Proportionately, the archaeological complexes are similarly low, but the acres of private land, and particularly state land, containing these dense areas of archaeological site concentrations is sizeable.

The High Value Conservation Land in Norwest Tucson alternative is not much better than the last alternative, the No Action scenario. Virtually no resources are known on private and state property that are characterized as High Conservation Value lands and the numbers of acres of land predicted to contain additional archaeological sites is small. On Recovery Area lands, private property offers the best opportunity to conserve cultural resources but those resources are very limited. Even the acres available for the two priority archaeological sites complexes are small in size and proportionately minuscule.

The No Action alternative is the status quo. While this alternative includes all the known and potential cultural resources that are on the existing park lands, conservation opportunities in the future will be limited to those occasions when bond projects may be approved by the voters to acquire lands containing high value cultural resources. The proactive approaches to conservation that are inherent in the four other alternatives are lacking in this alternative. This means that cultural resource will continue to be managed as part of the existing development review and approval process mandated under county law and policy. The results are predicted to favor consumption of cultural resources, particularly archaeological sites, over their conservation for the benefit of present and future generations.

VII. References

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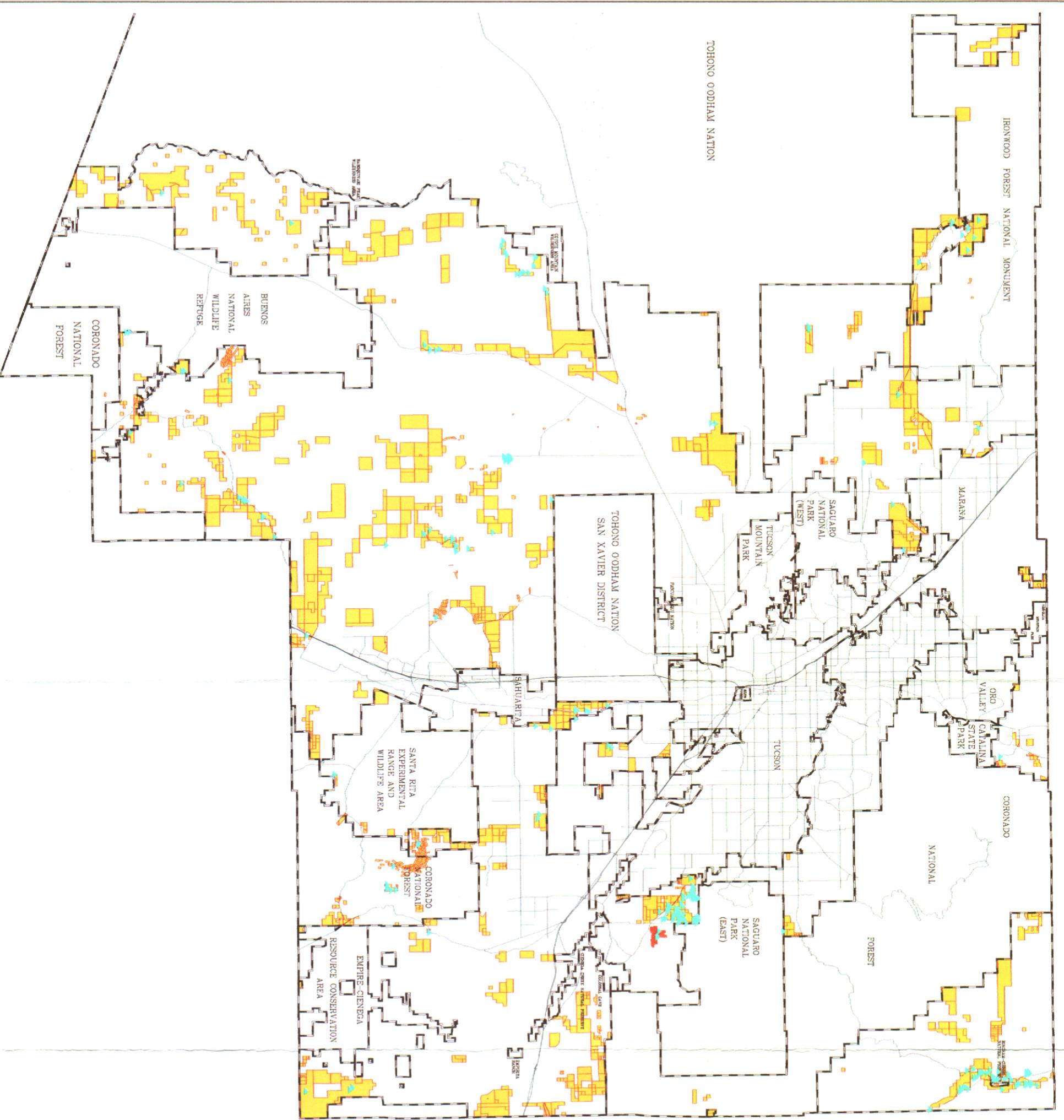
Pima County

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VIII. Maps

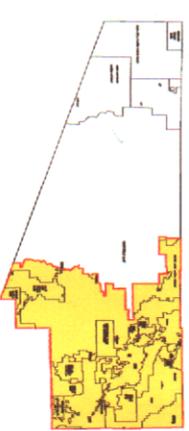
Private Ranch Lands And Archaeological Sites

-  Private Deeded Ranch Land
-  Major Streets
-  Administrative Boundaries
-  Archaeological Sites



D R A F T

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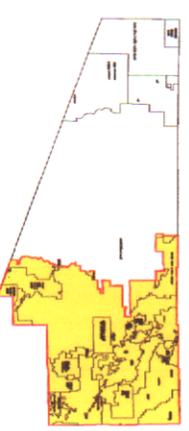
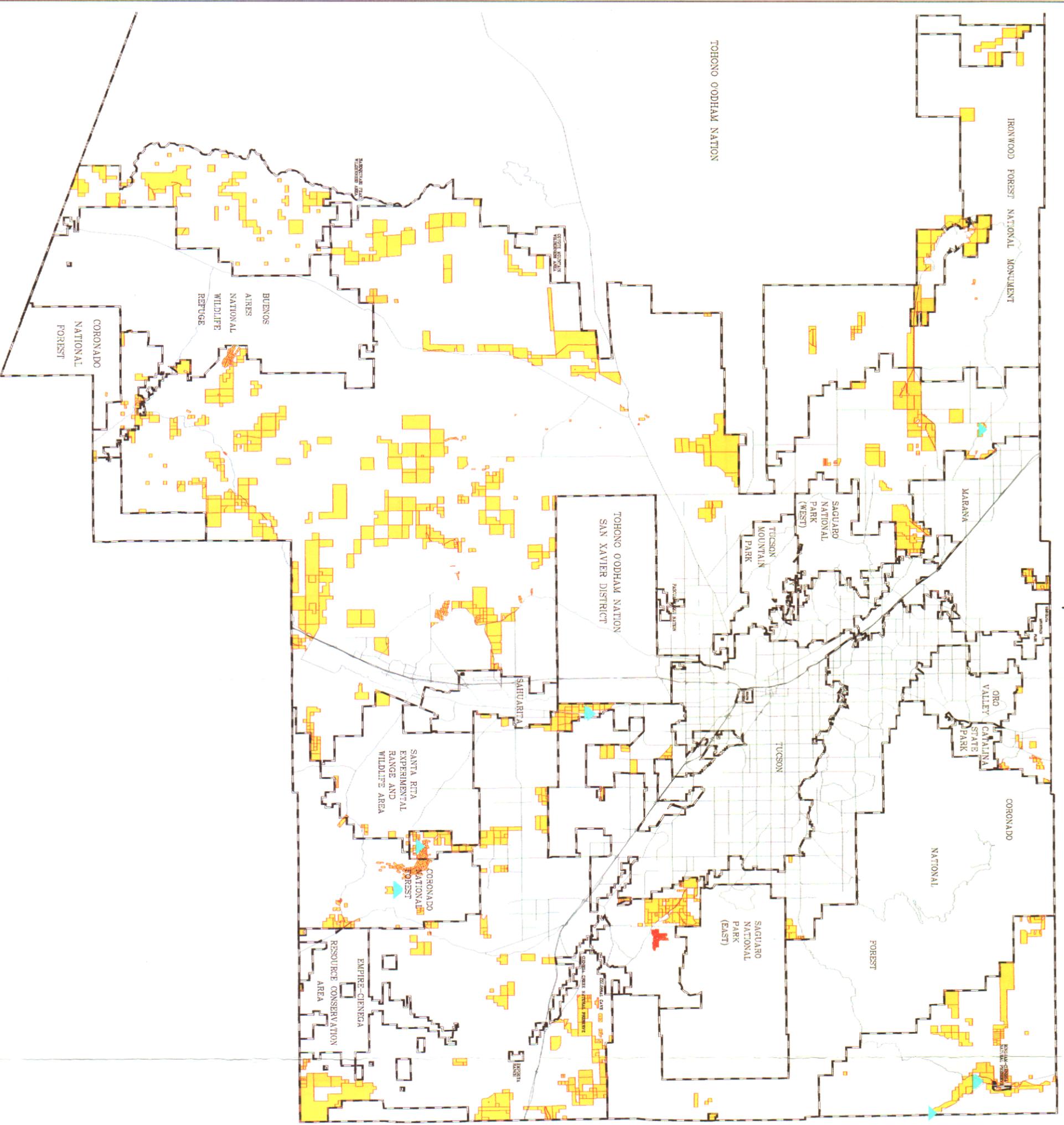

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Private Ranch Lands And Priority Archaeological Sites

-  Major Streets
-  Administrative Boundaries
-  Private Deeded Ranch Land
-  Archaeological Sites

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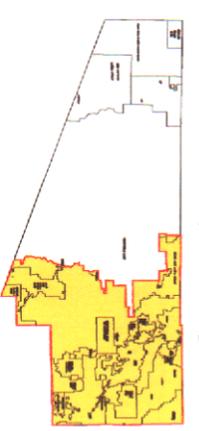
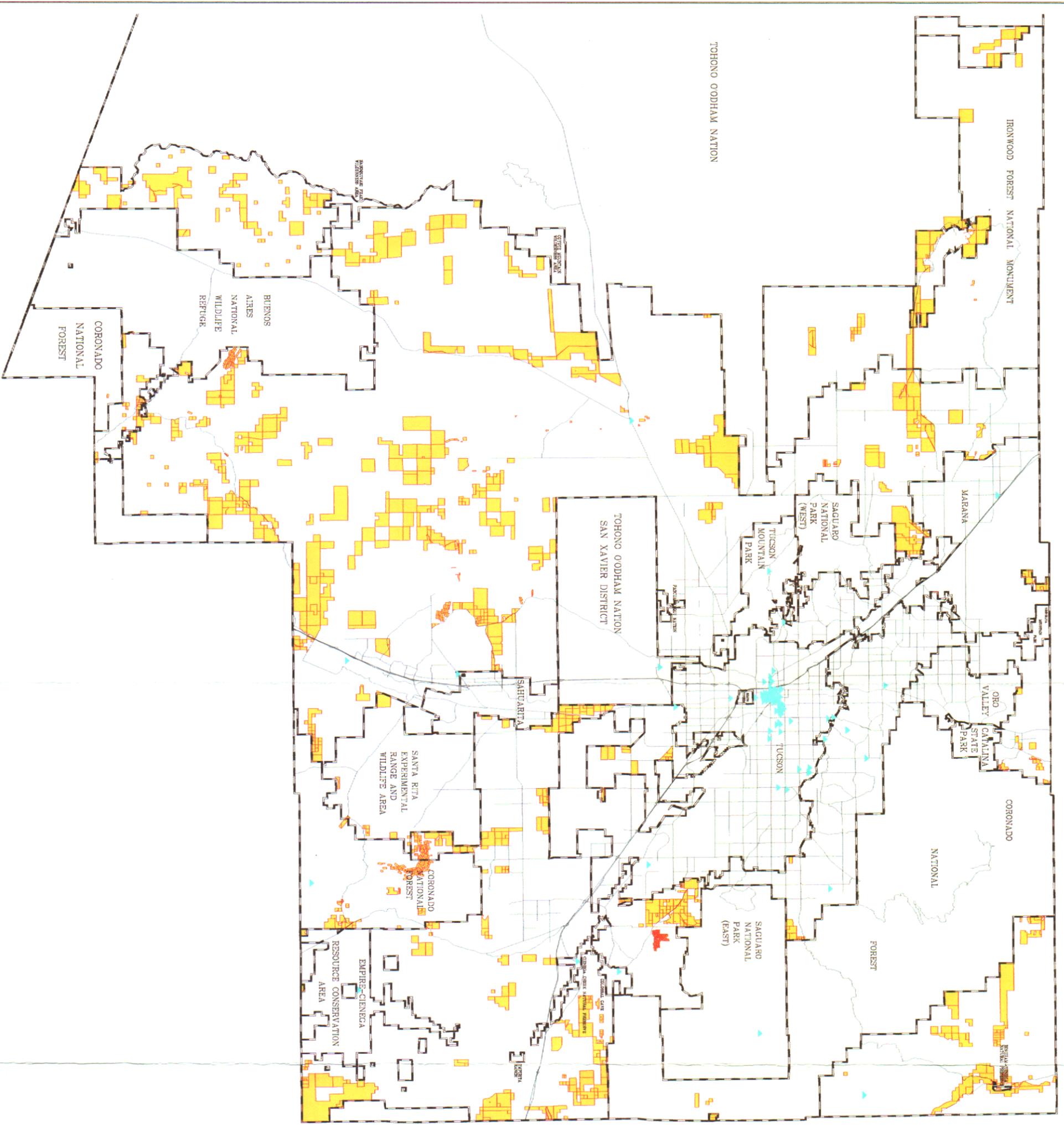
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Private Ranch Lands And Priority Historic Sites

-  Private Deeded Ranch Land
-  Major Streets
-  Administrative Boundaries
-  Priority Historic Site

D R A F T



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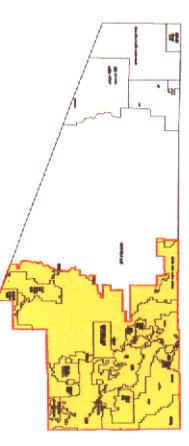
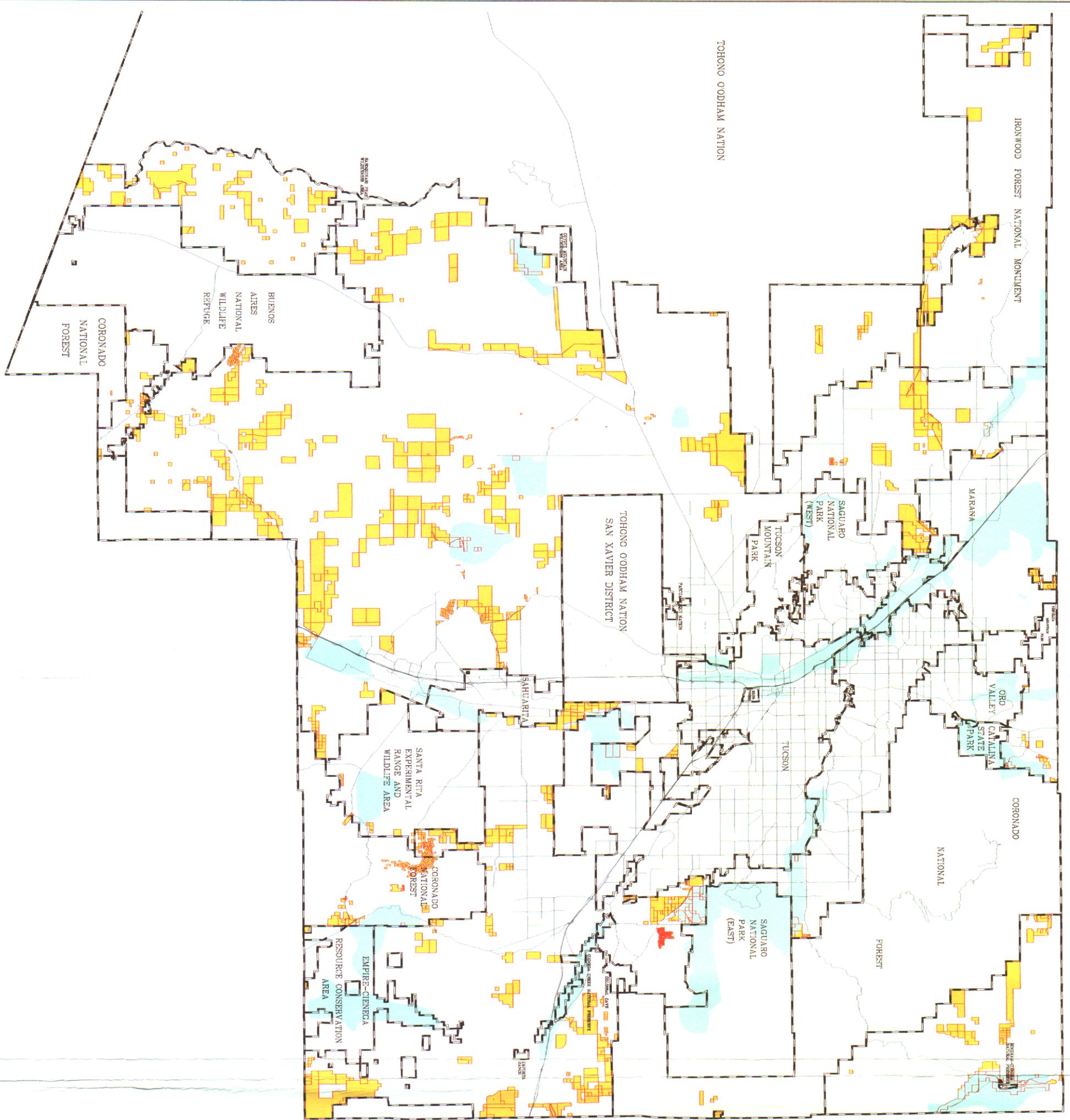
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Private Ranch Lands And Archaeological Site Complexes

-  Major Streets
-  Administrative Boundaries
-  Archaeological Site Complexes
-  Private Deeded Ranch Land

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Index Map Scale 1:1,500,000

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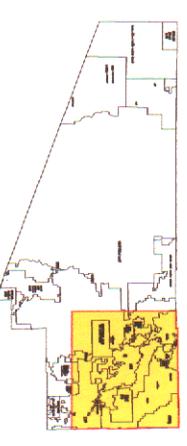


Mountain Park Expansions And Archaeological Sensitivity Zones

-  Major Streets
-  Administrative Boundaries
-  5 Mile Buffer
-  1 Mile Buffer
-  Mountain Parks
-  Private Vacant Parcels
-  State Vacant Land
-  Board Of Supervisor's Designated Park Expansion Area
-  Archaeological Sensitivity Zones

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Pinna County Index Map



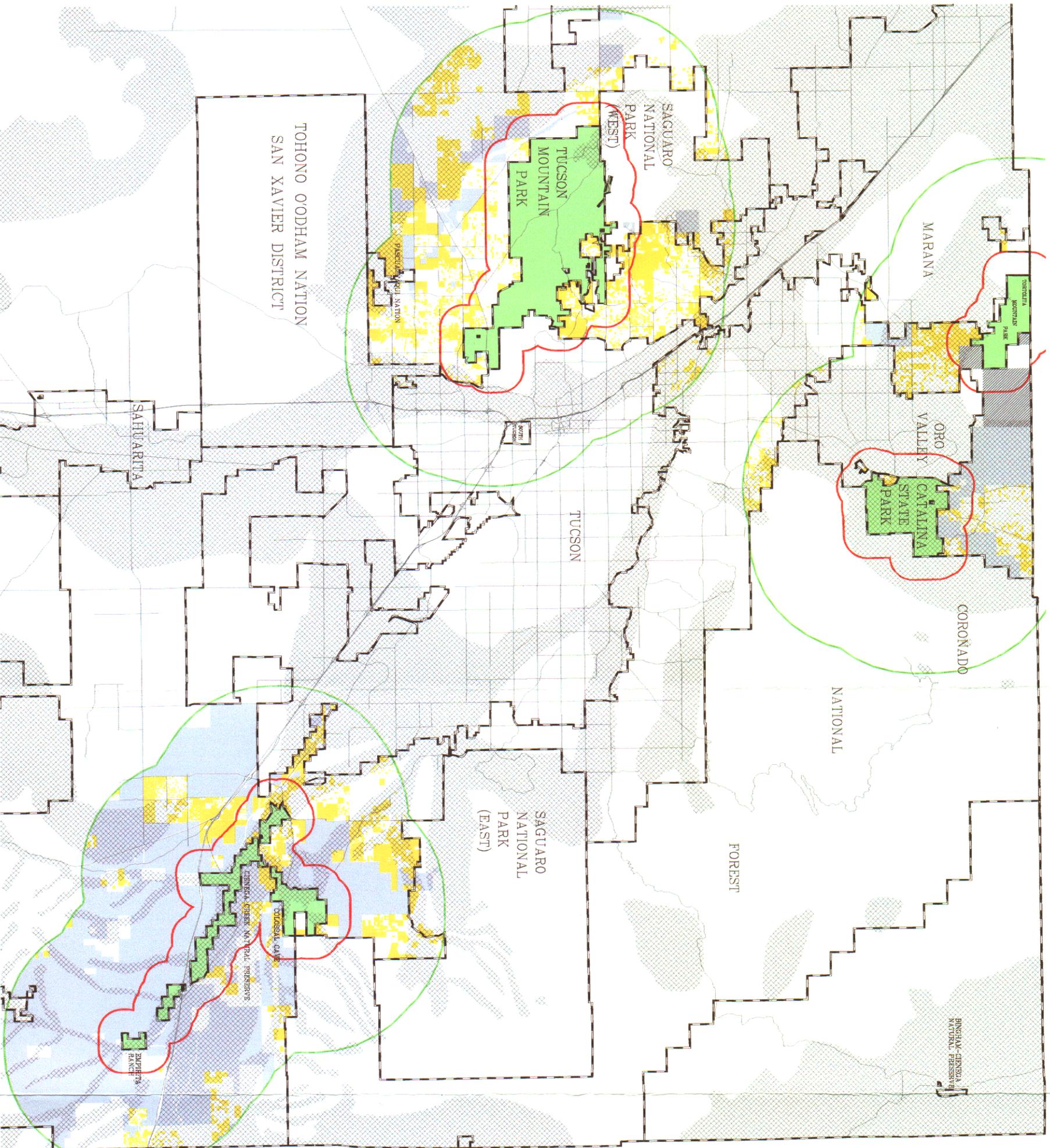
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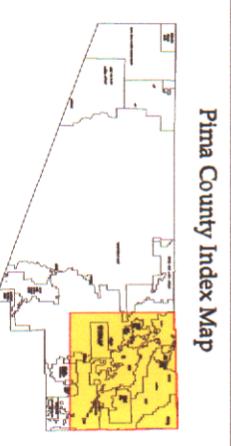
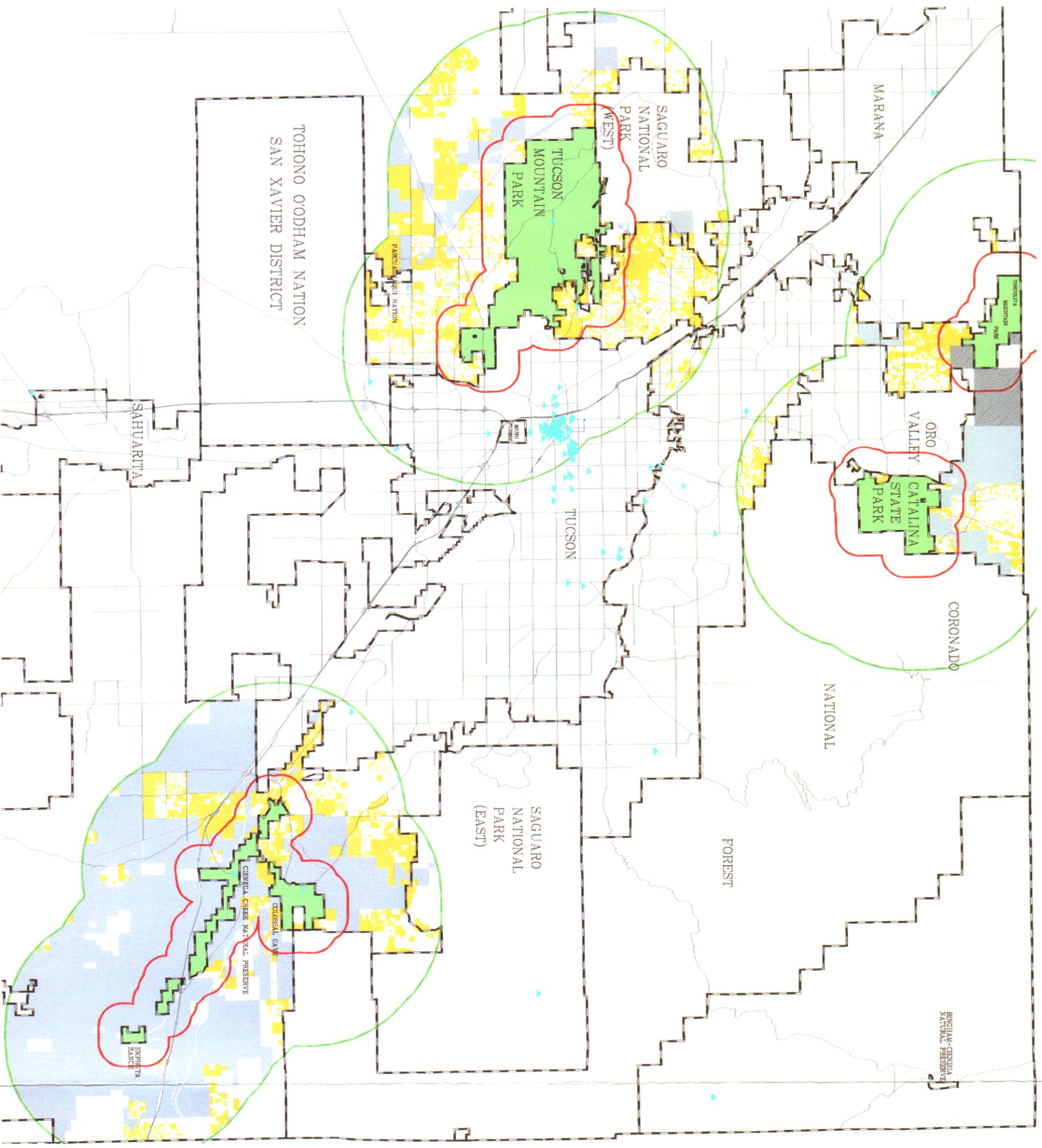
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Mountain Park Expansions And Priority Historic Sites

- Major Streets
- Administrative Boundaries
- 5 Mile Buffer
- 1 Mile Buffer
- Mountain Parks
- Private Vacant Parcels
- State Vacant Land
- Board Of Supervisor's Designated Park Expansion Area
- Priority Historic Site

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Index Map Scale 1:1,500,000

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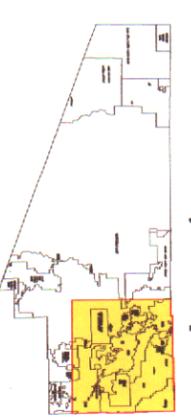
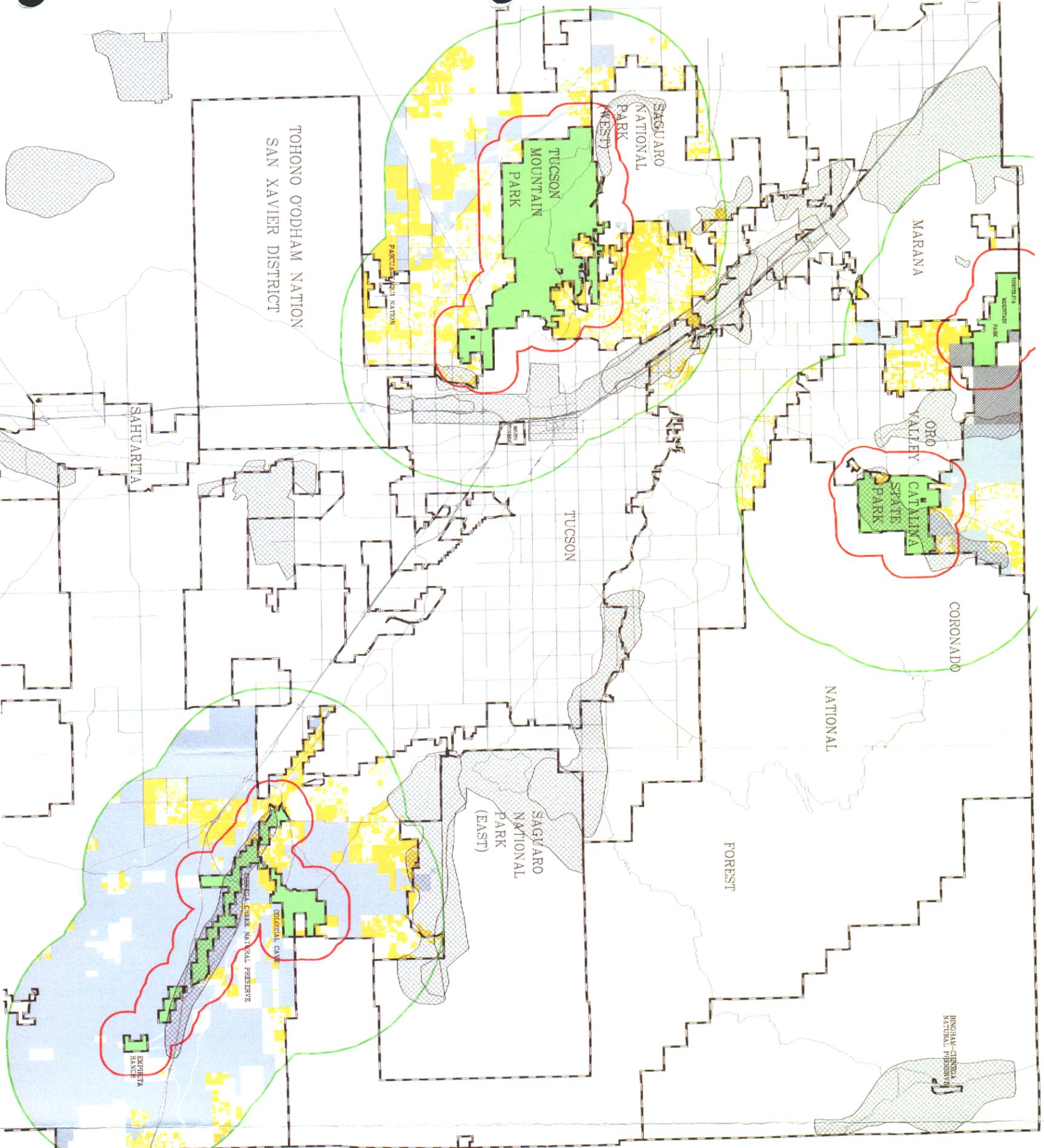
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Mountain Park Expansions And Archaeological Site Complexes

-  Major Streets
-  Administrative Boundaries
-  5 Mile Buffer
-  1 Mile Buffer
-  Mountain Parks
-  Private Vacant Parcels
-  State Vacant Land
-  Board Of Supervisor's Designated Park Expansion Area
-  Archaeological Site Complexes

D R A F T



Pima County Index Map
Index Map Scale 1:1,500,000

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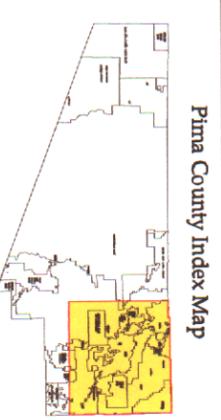
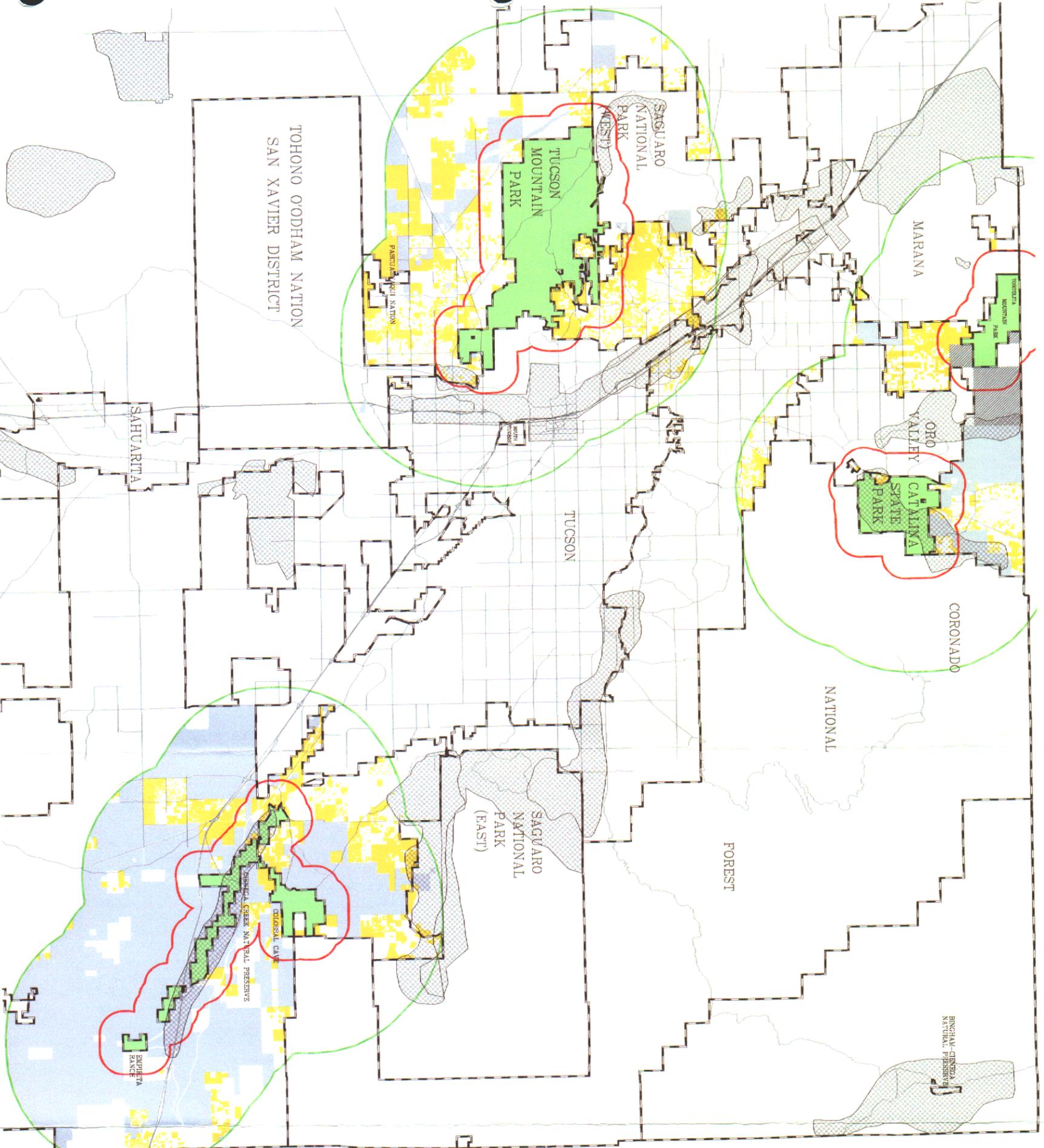
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Mountain Park Expansions And Archaeological Site Complexes

-  Major Streets
-  Administrative Boundaries
-  5 Mile Buffer
-  1 Mile Buffer
-  Mountain Parks
-  Private Vacant Parcels
-  State Vacant Land
-  Board Of Supervisor's Designated Park Expansion Area
-  Archaeological Site Complexes

D R A F T



Pima County Index Map
Index Map Scale 1:1,500,000

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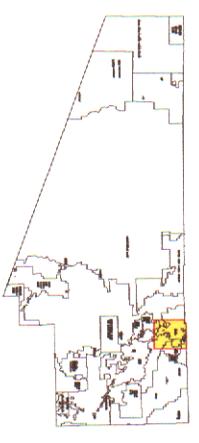
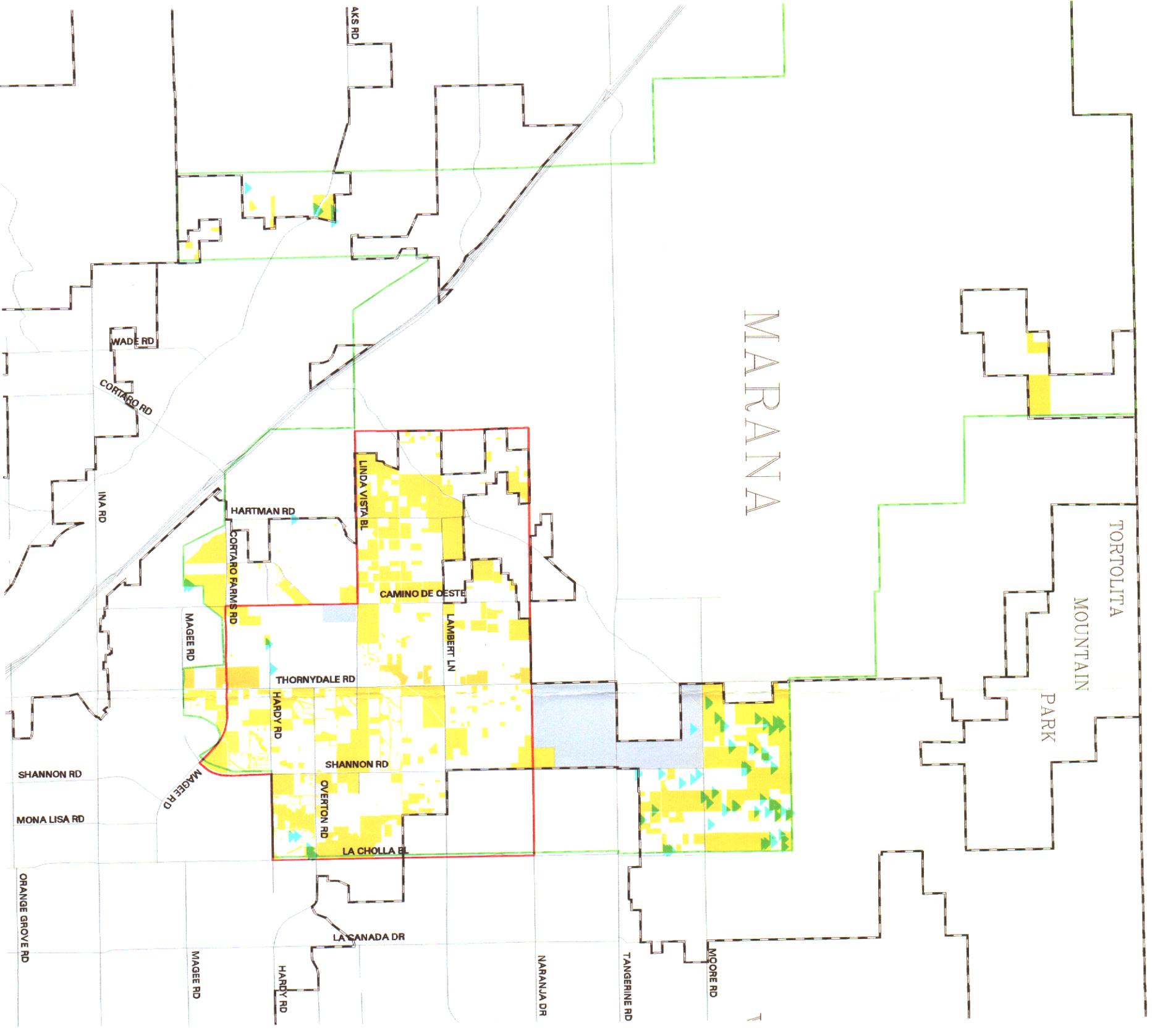


Northwest Recovery Area 3

And Archaeological Sites

-  Major Streets
-  Administrative Boundaries
-  Recovery Area
-  High Conservation Value Area
-  Private Vacant Parcels
-  State Vacant Land
-  Archaeological Sites

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Index Map Scale 1:1,500,000

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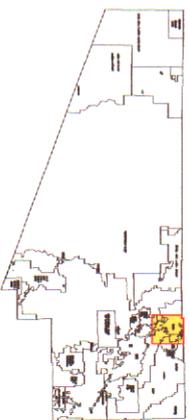
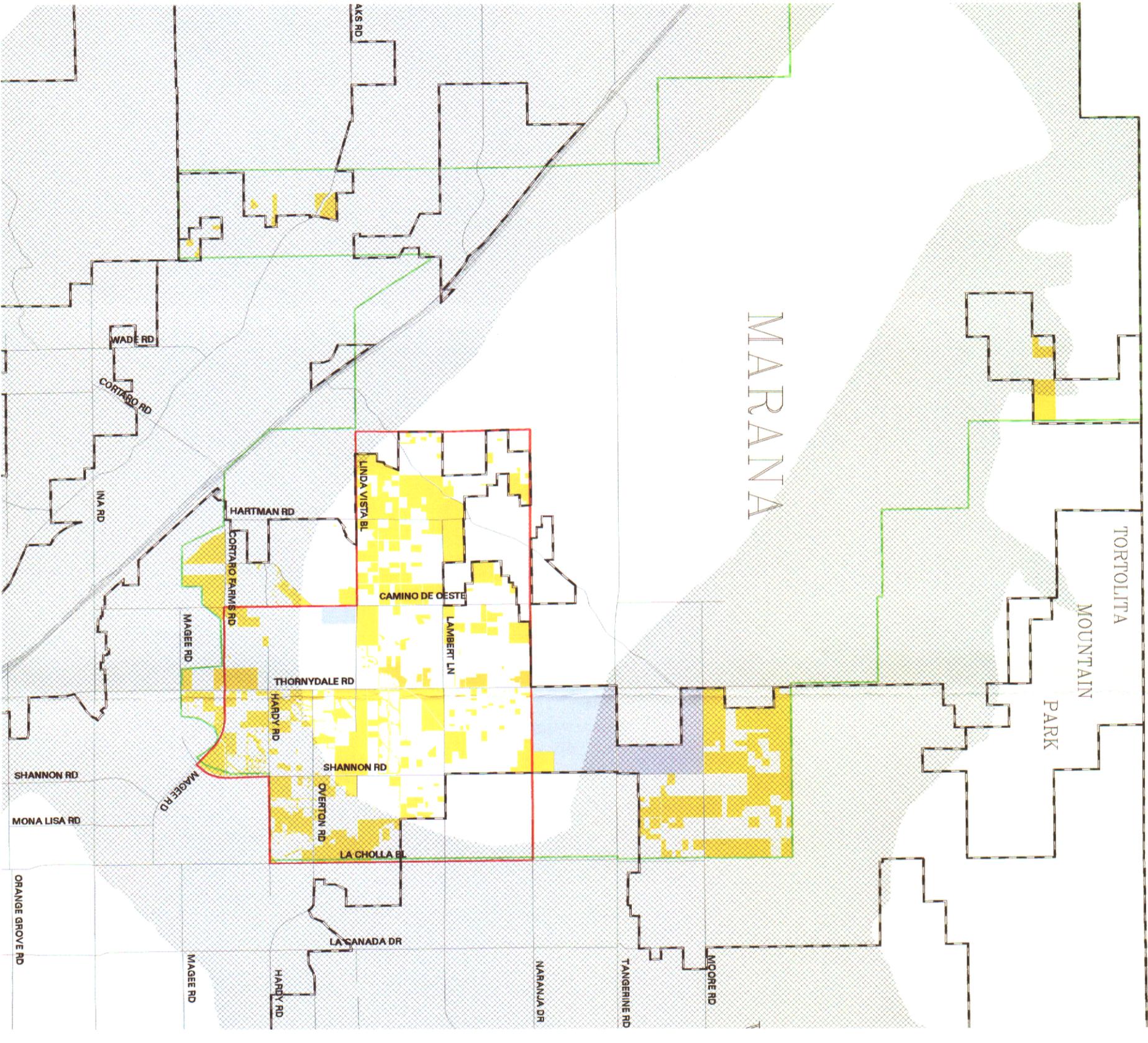
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Northwest Recovery Area 3 And Archaeological Sensitivity Zones

-  Major Streets
-  Administrative Boundaries
-  Recovery Area
-  High Conservation Value Area
-  Private Vacant Parcels
-  State Vacant Land
-  Archaeological Sensitivity Zone

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Index Map Scale 1:1,500,000

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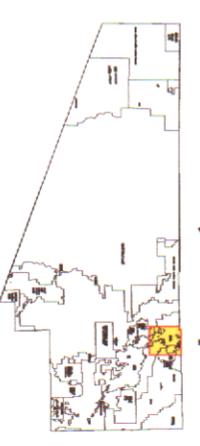
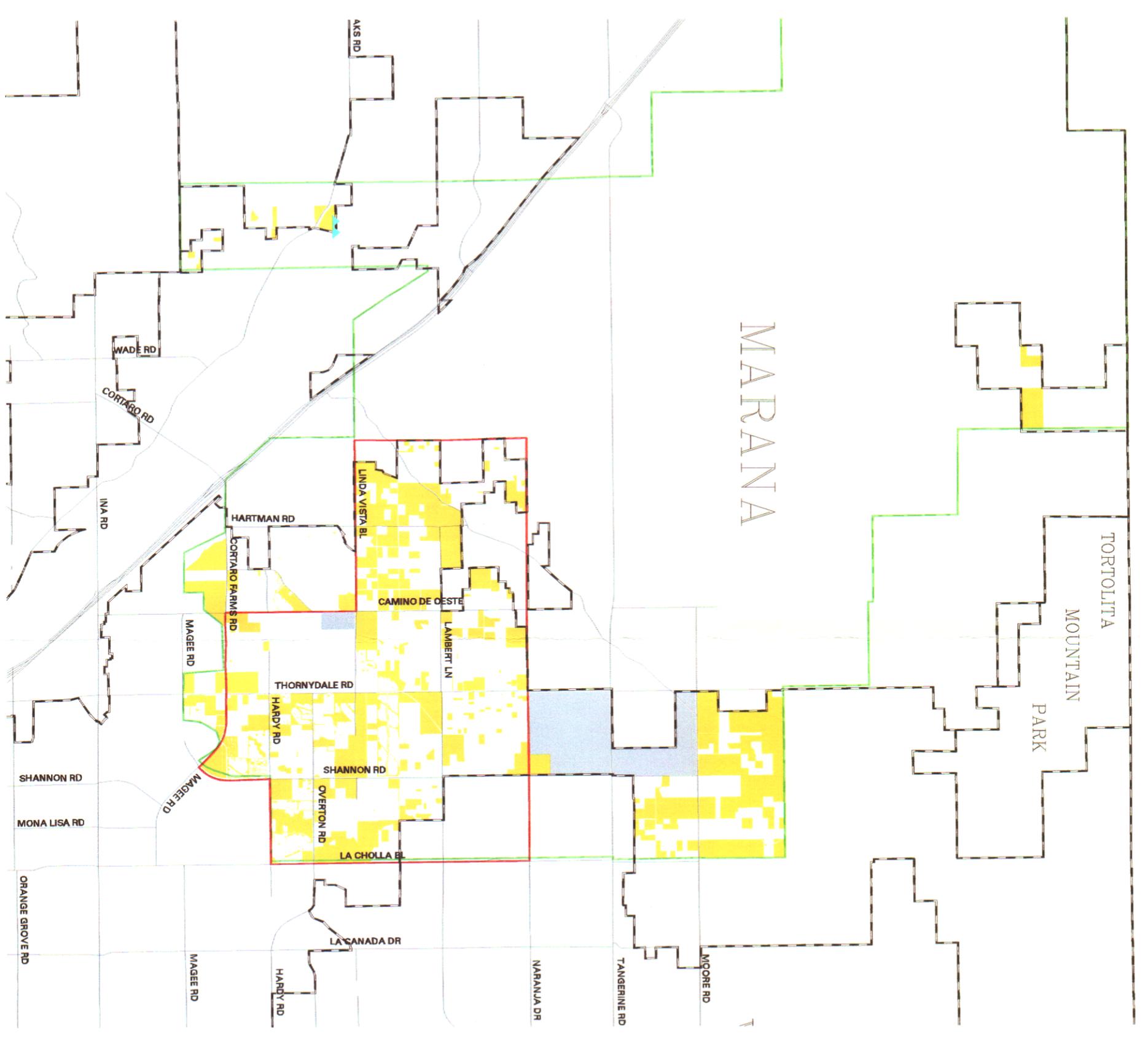
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Northwest Recovery Area 3 And Priority Archaeological Sites

-  Major Streets
-  Administrative Boundaries
-  Recovery Area
-  High Conservation Value Area
-  Private Vacant Parcels
-  State Vacant Land
-  Archaeological Sites

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Index Map Scale 1:1,500,000

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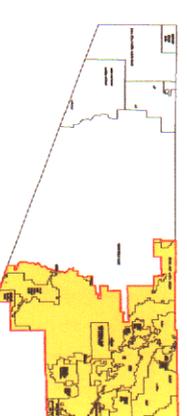


Important Riparian Areas And Archaeological Sites

-  Major Streets
-  Administrative Boundaries
-  Important Riparian Areas
In Eastern Pima County
-  Private Vacant Parcels
-  State Vacant Land
-  Archaeological Sites

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Pinna County Index Map



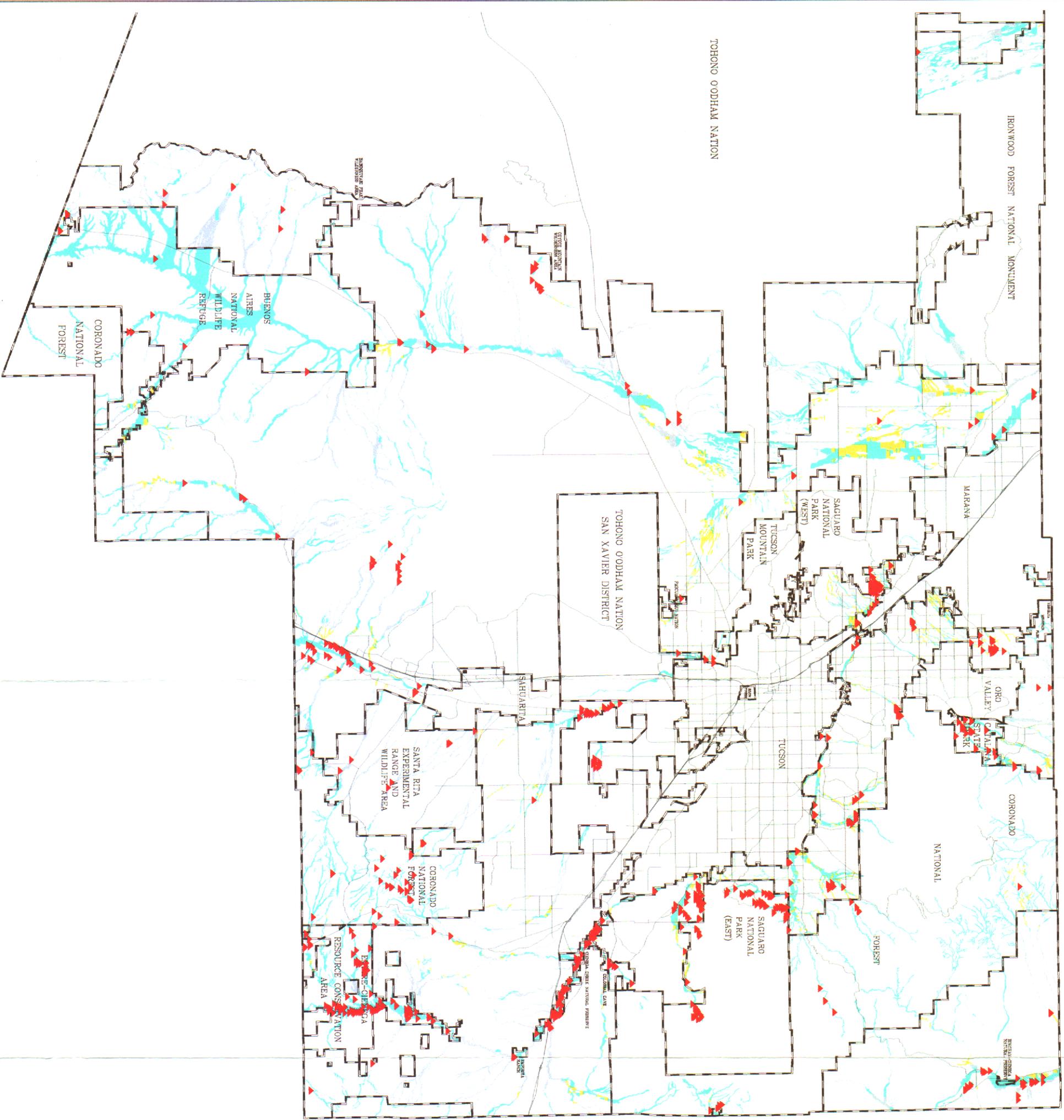
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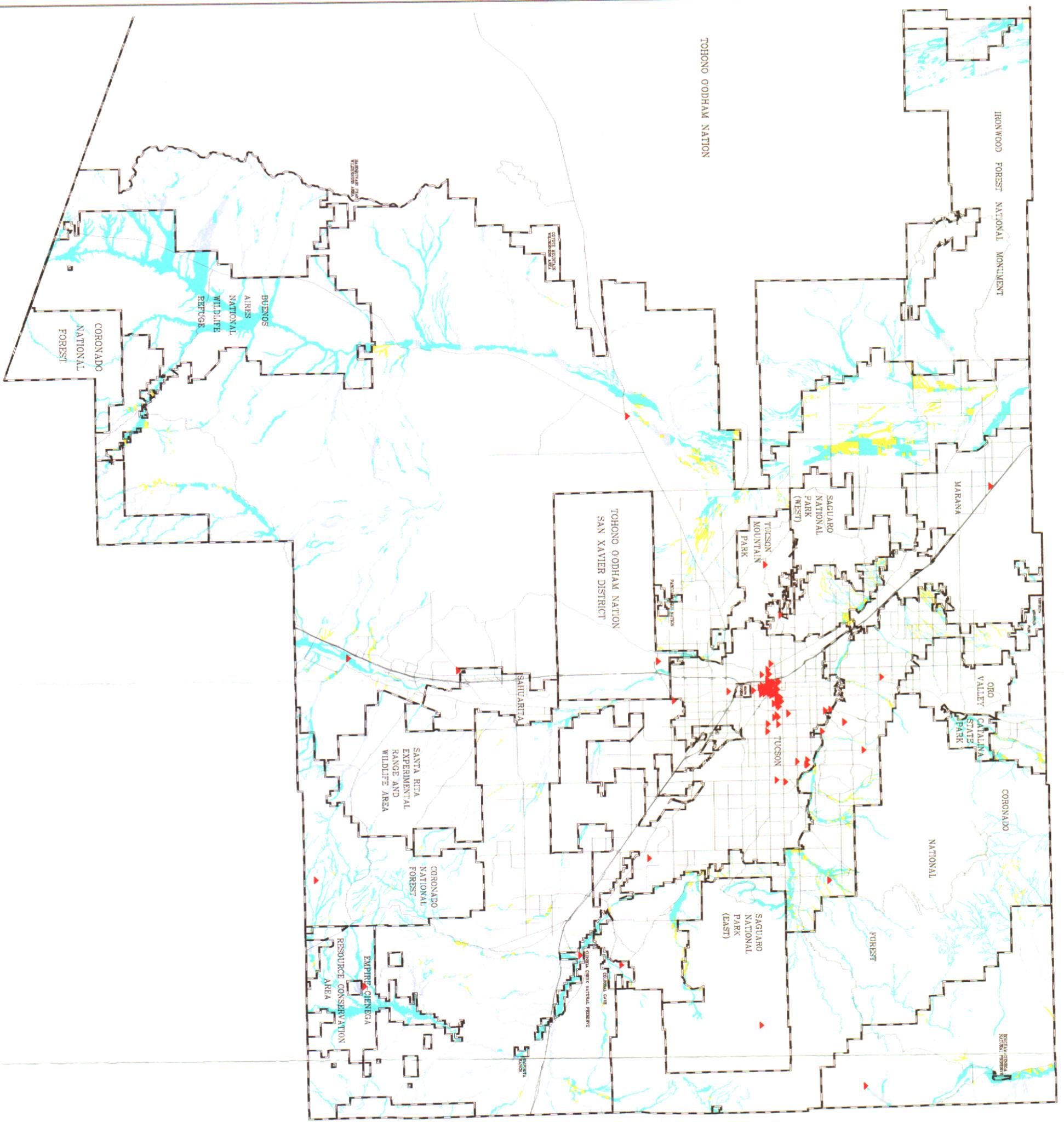


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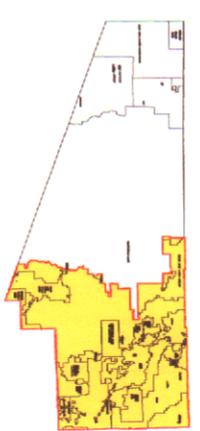
Important Riparian Areas And Priority Historic Sites

-  Major Streets
-  Administrative Boundaries
-  Important Riparian Areas In Eastern Pima County
-  Private Vacant Parcels
-  State Vacant Land
-  Priority Historic Site



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Pima County Index Map



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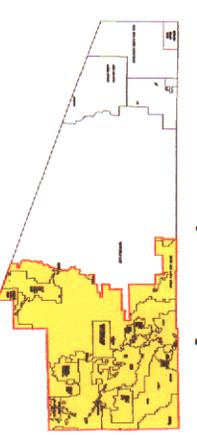
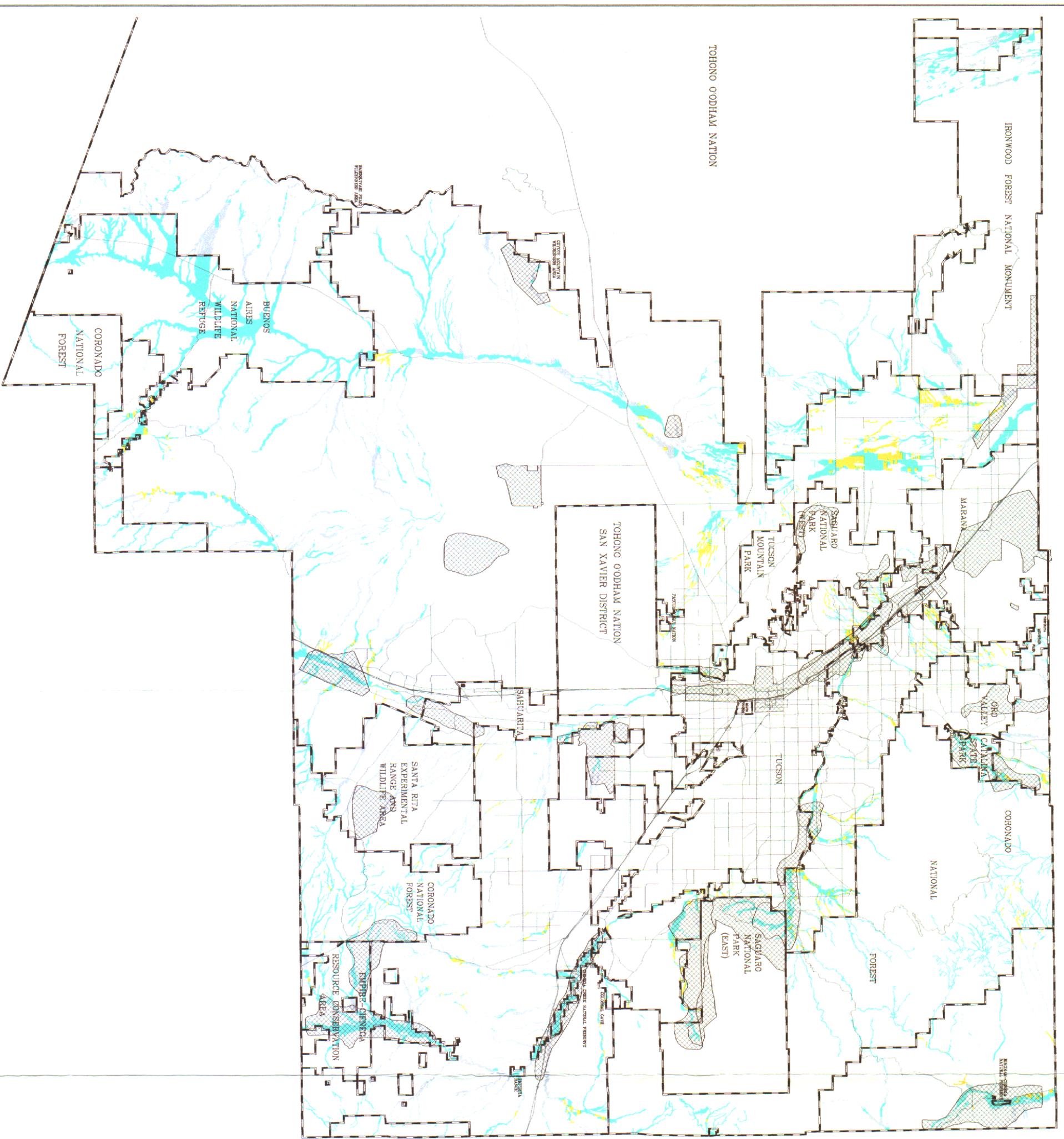
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Important Riparian Areas And Archaeological Site Complexes

-  Major Streets
-  Administrative Boundaries
-  Important Riparian Areas
In Eastern Pima County
-  Private Vacant Parcels
-  State Vacant Land
-  Archaeological Site Complexes

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