SOUTHWEST REGIONAL
ARCHEOLOGICAL INVENTORY AND SURVEY PLAN

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TABLE OF CONTENTS

Introduction.....Page 1

Part I: The Parks and the Region.....Page 3
Figure 1: EPA Southwest Eco-Systems.....Page 4
Ecological Ordering of Regional Properties.....Page 5
Figure 2: NPS Southwest Cultural Regions.....Page 10
Summarizing Park Classes and Sampling Strategies.Page 11
Non-Arid Regions and Parks.....Page 14
Arid Regions and Parks.....Page 27

Part II: Research Orientations and Designs.....Page 59
Summary of Survey Types.....Page 59
RAIP Project Procedures.....Page 65
RAIP Field Procedures.....Page 68
Cultural and Historical Research,
A Modular Approach.....Page 72
Region-wide Management Problem Areas.....Page 74

Part III: Issues.....Page 75

Appendices .....Page 78

1. Acronyms for Southwest Region Park Units.....Page 78
A. Park Archeological Survey Status Sheet.....Page 79

List of Tables
1. Federal and Non-Federal Acreage.....Page 5
2. SWR Parks and Their Critical Resources.....Page 13
3. Status of Archeological Survey, Lower
Mississippi River Valley Parks.....Page 15
4. Status of Archeological Survey, Arkansas
River Valley and Adjacent Highlands Parks.....Page 17
5. Status of Archeological Survey, Southern
Great Plains Parks.....Page 19
6. Status of Archeological Survey, Texas
Lowlands Parks.....Page 20
7. Status of Archeological Survey, Southern
High Plains Parks.....Page 27
8. Status of Archeological Survey, Southern
Basin and Range Parks.....Page 32
9. Status of Archeological Survey, Middle
Rio Grande and Adjacent Highlands Parks.....Page 42
10. Status of Archeological Survey, Eastern
Colorado Plateau Parks.....Page 47
11. Status of Archeological Survey, Western
Colorado Plateau Parks..... .....Page 53
12. Summary of Survey Conditions and Cultural
Resources, ...Page 62

INTRODUCTION

This plan is the culmination of approximately seven years of thought regarding a Regional survey program, and two years of actually implementing one. An initial mission statement and long-term plan for the Branch of Cultural Research, an organizational unit within the Division of Anthropology, was developed in response to a management evaluation in 1986. Archeological survey activities were the backbone of the original plan, which also included excavation projects drawn from resource management plans and the funding requests they contained. This original plan was revised and updated in 1991. The revision of 1991 summarized a number of issues drawn from several years' experiences of trying to do archeological research outside of a rapid-responsive cultural resources management milieu. It also included a series of management recommendations. The revision also was used by the Systemwide Archeological Inventory Program (SAIP) task force in framing national guidelines (Aubry et al.:1992).

The goals of this survey plan are to evaluate the status of information and the nature of the archeological resources in the Southwest Region. The plan also sets forth the qualitative and quantitative standards and approaches that can be used to guide a regional survey program that can reasonably be expected to last two to three decades, at minimum.

The plan's contents conform to SAIP guidelines, the Management Policies, the Cultural Resources Management Guidelines (NPS-28), and the Secretary's Standards and Guidelines for Archeology and Historic Preservation (Federal Register Vol. 48, No. 190). These are nationally recognized and used standards. Regional standards are also important, and often they may exceed those of the SAIP and other national ones. Our objective in this area is two-fold:

To develop an program that integrates various survey data and products with fully professional standards, regardless of whether funded by the SAIP program or other funding sources. The net effect is to standardize all data collection within a number of cultural areas that can be developed for the Southwest Region;

To retroactively and proactively better manage the archeological data base (site files and base maps), whether consisting of graphic, tabular, or narrative information, and whether the data were collected previously, or will be obtained as part of new projects.

These goals will facilitate rapid response to park staff and other clienteles with the best data that exist.

When the revision was written, the Southwest Region's Division of Anthropology consisted of three branches: Cultural Research (the long-range research survey unit), Cultural Resources Management (the rapid-response survey and mitigation wing), and Archeological Data Management (the repository for archeological data, site files, base maps, etc). Recent reorganization of the Division has combined the former two units, which will better address the first objective noted above because personnel will be pooled. The Archeological Data Management Branch now has a somewhat larger staff and an increased focus on electronic data manipulation, including image archiving and use. We believe that this change will better address the second objective. Additionally, a final unit now consists of ethnographic activities, which should play a role in the design of archeological survey projects, as well as making survey work more relevant to associated populations.

Organization of this regional plan is somewhat different than the previous plans, reflecting the approaches introduced by the SAIP standards and guidelines document, but includes much the same information.

PART I: The Parks and the Region

Regional Summary

The Southwest Region consists of 40 units of many different sizes. The smallest unit is Chamizal National Memorial, at 54.9 acres, and the largest is Big Bend National Park, with over 800,000 acres. A listing of the units and their acreage is given in Table 1. All of these units except Chamizal contain known archeological resources; 25 of the remaining 39 units were set aside for their cultural or historical resources. Many of the other 14 parks contain significant cultural resources whose importance was not explicitly stated in language that established them as part of the System. An example is Amistad National Recreation Area, with its outstanding but largely undocumented polychrome pictographs. The Southwestern Region's units can be summarized as follows:

national recreation areas: 3
parks associated mainly with Euroamerican
military history and settlement: 10
parks associated mainly with
Native American culture: 15
parks with large natural resource areas: 11

Although merely a summary, these figures suggest some ways of viewing the park population in the Southwest Region. Table 1

provides a listing of all parks within the region, with the acreage managed by the NPS or other Federal agencies, acreage held by non-Federal entities (local government or private landholdings), and
the total acreage.

FIGURE ONE: EPA SOUTHWEST ECO-SYSTEMS

TABLE ONE: FEDERAL AND NON-FEDERAL ACREAGE, NPS SOUTHWESTERN REGION HOLDINGS

PARK UNIT	FEDERAL ACREAGE	NON FEDERAL ACREAGE	TOTAL ACREAGE
Alibates Flint Quarry	1079.23	291.74	1370.97
Amistad	57,292.44	1,207.56	58,500
Arkansas Post	389.18		389.18
Aztec Ruins	31.54	287.93	319.47
Bandelier	32,737.20		32,737.20
Big Bend	774,939.95	26,223.26	801,163.21
Big Thicket	85,617.91	10,945.29	96,563.20
Buffalo River	91,788.35	2,430.20	94,218.55
Canyon de Chelly	83,840.00		83,840.00
Capulin Volcano	792.84		792.84
Carlsbad Caverns	46,427.26	339.19	46,766.45
Chaco Culture	31,084.74	2,889.55	33,974.29
Chamizal	54.90		54.90
Chickasaw	9,925.59	4.50	9.930.09
El Malpais	106,307.42	7,969.53	114,276.95
El Morro	1,039.92	238.80	1,278.72
Fort Davis	460.00		460.00
Fort Smith	34.85	40.15	75.00
Fort Union	720.60		720.60
Gila Cliff Dwellings	533.13		533.13
Guadalupe Mountains	76,647.27	9,768.70	86,415.97
Hot Springs	4,563.47	979.47	5,542.94
Hubbell Trading Post	160.09		160.09

PARK UNIT	FEDERAL ACREAGE	NON FEDERAL ACREAGE	TOTAL ACREAGE
Jean Lafitte	9,729.97	10,290.03	20,020.00
Lake Meredith	44,977.63		44,977.63
Lyndon Johnson	550.90	1,021.03	1,571.93
Navajo	360.00		360.00
Padre Island	130,355.46	78.81	130,434.27
Palo Alto		3,357.42	3,357.42
Pea Ridge	4,278.75	21.60	4,300.35
Pecos	5,978.10	591.89	6,569.99
Petroglyph	1,246.24	4,016.06	5,262.30
Poverty Point		910.85	910.85
Rio Grande		9,600	9,600
Salinas Pueblo	943.43	166.21	1,109.64
San Antonio Missions	258.26	561.29	819.55
Sunset Crater	3,040.00		3,040.00
Walnut Canyon	2,011.62	237.84	2,249.46
White Sands	143,732.92		143,732.92
Wupatki	35,253.24		35,253.24
TOTAL ACREAGE, SWR	1,789,184.40	94,468.90	1,883.653.3

Ecological and Cultural Ordering of Regional Parks

Creating order from among the myriad cultures and environmental conditions occurring in Southwest Region parks requires a two-stage approach. The first stage entails ordering the natural environments of the region. We have selected a scheme used by the Environmental Protection Agency, partially because it has already been articulated with the Region's GIS data base. Figure 1, a map of the EPA's "Southwest Eco-Regions," reflects broad-based, strictly environmentally-determined **ecoregions**. These use widespread vegetation associations as their main criteria, but also reflect soil, climatological and topographic factors as well. Parenthetically, we believe that the scale of vegetative associations is appropriate for segmenting the Southwest Region, even though we have already rejected vegetation distinctions as a means of segmenting local areas that may include

individual parks.

Figure 1 supplies data that serves as a point of departure for the second stage, in which these ecological data have been combined with prehistoric and historic cultural patterns in order to define of Geographic Zones, Eco-cultural Regions, and Cultural Sub-Regions, shown in Figure 2. Essentially, these are hierarchical units that segment a continuum in which research moves from primarily non-culturally to culturally defined units. The terms are defined as follows:

Geographic Zone. These are the two major divisions of the region, and although primarily non-culturally based, still reflect the archeological cultures inhabiting it, as well as the archeological methods needed for adequate survey. The zones are the **Arid Zone** and the **Non-arid Zone**. They are separated by the rainfall isohyet of XXX cm. Basically, the former zone is found in the southern and western portion of the Region, and the latter is found in the eastern and northern portion of the Region. The approximate separation line runs through central Texas (Figure 2).

Ecocultural Region. Each geographic zone contains a number of these mid-level units, which are geographically extensive, topographic units whose relatively discrete environmental parameters gave rise to unique, large-scale cultural adaptations over long periods of time. While many cultural and environmental similarities may be found between ecocultural regions, their ecologies usually differ enough to be reflected in the archeological record. For example, although the prehistoric inhabitants of the Southern Great Plains (Cultural Region) participated in the late prehistoric Mississippian System, the more arid environment they occupied discouraged the formation of large nucleated agricultural settlements characteristic of Mississippian core areas such as the Lower Mississippi River Valley. This resulted in each region articulating differently within the Pan-Regional system, which in turn resulted in fundamentally different archeological records for each ecocultural region during that period. Ecocultural regions thus reflect environmental conditions found in EPA Ecoregions, even though a given cultural region may be found in several Ecoregions. The nine ecocultural regions are shown in Figure 2, and can be listed summarily as:

NON-ARID ZONE ECOCULTURAL REGIONS:

The Lower Mississippi River Valley Lowlands
The Arkansas River Valley and Adjacent Highlands
The Southern Great Plains
The South and East Texas Lowlands

ARID ZONE ECOCULTURAL REGIONS

The Southern High Plains
The Southern Basin and Range
The Middle Rio Grande Valley and Adjacent Highlands
The Eastern Colorado Plateau
The Western Colorado Plateau

Cultural Sub-Region. These illustrate an increase in culturally-derived units, although environmental criteria are still implicit drivers for creating the units, and each cultural subregion also within the more inclusive, partially environmentally-based ecocultural regions. By way of example, the environment of the Middle Rio Grande Valley is quantitatively and qualitatively different from that of the surrounding areas, strongly shaping the evolutionary development of cultural adaptation over a period lasting for 2000 years. Environmental variables have limited the variety and nature of suitable responses such that those of prehistoric Puebloan and other adaptations are similar to those of historic Hispanic socio-economic strategies. Because of the complexities of the various ecocultural regions and the numbers of cultural sub-regions, they are discussed later rather than being listed here; geographic distribution is shown in Figure 2.

Because of size or location, some parks are in "ecotonal" areas at the juncture of two or more geographic zones, ecocultural regions, or cultural subregions. These may be difficult to pigeonhole, especially given lengthy evolutionary time spans during which external relationships changed. Amistad National Recreation Area, is at the crossroads of the EPA's Southern Desert, Central Texas Plateau, and Southern Texas Plains ecoregions (Figure 1), each of which has traditionally been associated with a distinct archeological trajectory. Because of environmental fluctuations and other sociocultural factors, peoples in the Amistad area had closer ties with populations from Central Texas, Northeastern Mexico, or the American Southwest as time progressed. Its inclusion in our scheme with the latter area reflects the environmental and cultural conditions for most of the last millennium. Valid arguments, however, could be made to either include it as part of the South and East Texas Lowlands region, or as its own 'Coahuiltecan' area.

Comparable situations exist for Carlsbad Caverns (at the juncture of the Lower Pecos River Valley and the Guadalupe Mountains), Fort Union and Capulin Volcano (both at the 'cusp' of the Southern Rocky Mountains and Southern High Plains), and Bandelier (at the edge of both the Southern Rocky Mountains and the Middle Rio Grande Valley). Pecos National Historic Park is at the cross-roads of four areas; the Southern Rocky Mountains, the Middle Rio Grande Valley, the Central New Mexican Highlands, and

the Southern High Plains. One park, Walnut Canyon, is actually within an area, the Mogollon Rim, that lies almost entirely out of the Southwestern Region; for the purposes of this plan, it is included as part of the nearby Little Colorado River area.

Descriptions of Individual Geographical Zones, Ecocultural Regions, and Cultural Sub-regions

Non-arid Zone, Ecocultural Regions, and Cultural Subregions

These actually encompass areas of southern Texas and western Oklahoma that are usually termed semi-arid. Such areas are, however, usually characterized by greater cultural and environmental similarities with adjacent non-arid regions than with neighboring, more arid environments. The level of detail used in derivation of these areas is somewhat reflective of the relative numbers of park units they contain. The vast region of the Southern Great Plains, encompassing most of Oklahoma, and much of Texas, contains only one unit (Chickasaw National Monument). For the purposes of this plan, therefore, greater environmental and cultural variability is subsumed within the single designation "Southern Great Plains" than would be the case in an area containing several parks; the Colorado Plateau, which contains 10 parks in the Southwest Region alone, is here divided into two regions, the Western and Eastern, and six subregions.

Given these qualifiers, lands within the Southwest Region, and the parks therein, are further separated into the following cultural/environmental areas, which are keyed to Figure 2:

A. The Lower Mississippi River and Adjacent Lowlands: Jean Lafitte, Poverty Point, and Arkansas Post. This region contains two sub-regions: the Lower Mississippi River Valley (A1) and the Mississippi Delta (A2).

B. The Arkansas River Valley and Adjacent Highlands: Fort Smith, Buffalo River, Hot Springs, and Pea Ridge. This region contains the sub-regions of the Ozark Mountains (B1), the Ouachita Mountains (B2), and the Lower Arkansas River Valley (B3).

C. The Southern Great Plains: Chickasaw. Subregions include the Central Oklahoma-Texas Plains (C1), and the South-Central Great Plains (C2).

D. The South and East Texas Lowlands: Big Thicket, Lyndon Johnson, San Antonio Missions, Palo Alto, and Padre Island. Subregional divisions consist of the South Central Plains (D1), the Western Gulf Coastal Plain (D2), the South Texas Plains (D3), the Edwards Plateau (D4), and the East Texas Plains (D5).

Arid Zone, Ecocultural Regions, and Cultural Subregions

This zone includes actual arid (desert) and semi-arid regions, as well as isolated non-arid environments found in major mountain ranges, plateaus, and river valleys. The overall climatic conditions, and the past adaptive responses they engendered, are however dominated by xeric conditions. Within the Southwest Region, parks within the arid zone can be found in the following cultural/environmental areas:

A. The Southern High Plains: Alibates, Lake Meredith, Fort Union, and Capulin Volcano. Subregions are: The Western High Plains (A1), and the Southwestern Tablelands (A2). As shown in Figure 2, The Western High Plains are bisected by the Southwestern Tablelands.

B. The Southern Basin and Range: Amistad, Rio Grande, Big Bend, White Sands, Gila Cliff Dwellings, Carlsbad Caverns, Guadalupe Mountains, and Fort Davis. Subregions are: the Pecos-Rio Grande Canyonlands (B1), the Trans-Pecos Basin and Range (B2), the Lower Pecos River Valley (B3), The Guadalupe-Sacramento Mountains (B4), the Lower Rio Grande Valley (B5), the Southwestern Basin and Range (B6), and the Gila Mountains (B7).

C. The Middle Rio Grande Valley and Adjacent Highlands: Pecos, Salinas Pueblo, Bandelier, and Petroglyph. Subregions are: The Middle Rio Grande Valley (C1), the Central New Mexican Highlands (C2), and the Southern Rocky Mountains (C3). The latter are split by the Middle Rio Grande Valley (See Figure 2).

D. The Eastern Colorado Plateau: Aztec, Chaco Canyon, El Malpais, and El Morro. Subregions consist of the Upper San Juan Basin (D1), the Cibola-Acoma Highlands (D2), and the West Central New Mexican Highlands (D3).

E. The Western Colorado Plateau: Canyon de Chelly, Hubbell Trading Post, Navajo, Sunset Crater, Wupatki, and Walnut Canyon. Subregions are the Chinle Wash Drainage (E1), the Little Colorado River Basin (E2), and the Kayenta Highlands (E3).

These regional groupings also reflect the potential for inter-regional interactions within the Park Service. For example, the strongest potential for future cooperative efforts with the Southeastern Region exists in the Lower Mississippi River Lowland Area of the Non-Arid Zone. Other suggested regional interactions include:

The Midwest Region: The Arkansas Valley and Adjacent Highlands, Southern Great Plains.

The Rocky Mountain Region: The Southern High Plains, Middle Rio Grande Valley and Adjacent Highlands, the Eastern Colorado Plateau, and the Western Colorado Plateau areas.
The Western Region: The Western Colorado Plateau and the Basin and Range areas.

On an international basis, cooperation with the Mexican National Park System or other governmental agencies may be appropriate at parks within the Eastern and Southern Texas Lowlands, the Basin and Range and the Middle Rio Grande Valley and Adjacent Highlands, due to important environmental, archeological, historical, and cultural commonalities.

Summarizing the Size Classes of Parks and Sampling Approaches

The 40 units within the Southwest Region can be separated into four groups, based on their total acreage. Each group will require its own level of survey coverage. As originally described in the 1991 Revisions to the Long Term Plan, these sample categories are:

Small parks (1500 acres or less): 100% survey coverage
Medium parks (1501 to 10,000 acres): 80% survey coverage
Large parks (10,001 to 100,000 acres): 40% survey coverage
Huge parks (over 100,001 acres): 20% survey coverage

This plan continues to utilize these original guidelines, but modifies them for sampling purposes.

One approach traditionally used by archeologists working in the Southwest is to utilize current environmental zonation to structure the sampling of study areas. Since we believe that this approach has been uncritically applied, generally sampling will not be guided by current vegetation zones unless both of the following conditions can be met: 1) only relatively minor changes in vegetative associations have occurred in the last two hundred years or more, and 2) adequate historical information is available to document past conditions and adaptive patterns. This approach is incorporated into factor 3, given below.

We propose to replace the emphasis on vegetative zones with the following criteria, although additional factors may pertain in some cases:

1. Abundant reliable surface, or readily available subsurface, freshwater sources

2. Significant amounts of arable land

3. Relatively stable, and abundant non-domestic biotic resources (faunal and floral species)

4. Major transportation routes (mountain passes, river valleys, or marine estuaries)

5. Abundant and readily available lithographic resources (including salt)

6. Cultural factors (Belief or ideographic systems, mercantile, state or other non-subsistence systems that find expression in settlement and subsistence practices)

7. Miscellaneous factors (geologic/topographic conditions allowing for the formation of alcoves/rockshelters, thermal springs, etc).

We believe that these factors more universally mirror a complex set of conditions and constraints that archeological populations must have addressed, whether Paleo-Indian, Puebloan, or Historic Euro-American. We also believe, however, that the relative importance of these factors will vary based on various parks and the nature of relevant populations and archeologically recognized groups. By way of example, the importance of a seasonal water source (and its catchment, probably a preferred resource zone) will obviously vary from park to park, depending on climatic conditions, topography, or other resources. Similarly, the importance of arable land may be much less in an area ill-suited for agriculture such as Malpais National Monument when compared to locales like Pecos National Historical Park.

In order to conduct research that is responsive to park needs, these research factors must be integrated with management-driven concerns specific to each park, such as natural and artificial impacts to cultural resources, intensity of visitation, or future development needs, in deriving a final and comprehensive sampling strategy for RAIP projects.

Since the archeological cultures found in various parks differ and the relative importance of each criterion/factor vary, it is important to somehow rank each factor for individual parks and the attendant RAIP survey projects. Table 2 lists all 40 parks in the region, and identifies each criterion as either of primary or secondary importance, based on current understandings of background data. Cells in the table with no entry are those of no recognizable survey design application for work at a particular park.

Table 2: Southwest Region Parks and Their Critical Resources

PARK	WATER	ARABLE LAND	WILD RESOURCES	TRANSPORTATION ROUTE	LITHIC SOURCES	CULTURAL SYSTEMS	OTHER FACTORS
Alibates	Primary	Secondary	Secondary	Secondary	Primary		
Amistad	Primary		Primary	Primary	Secondary	Primary	Primary
Arkansas Post		Secondary	Primary	Primary		Primary	
Aztec Ruins	Primary	Primary	Primary	Secondary		Secondary	
Bandelier	Primary	Primary	Primary			Secondary	Secondary
Big Bend	Primary	Secondary	Primary	Secondary	Secondary	Secondary	Secondary
Big Thicket		Secondary	Primary	Primary			
Buffalo		Primary	Primary	Secondary		Secondary	Primary
Canyon de Chelly	Primary	Primary	Primary	Secondary			Primary
Capulin Volcano	Primary				Secondary		Secondary
Carlsbad Caverns	Primary		Primary		Secondary		Secondary
Chaco	Primary	Primary	Secondary	Secondary		Primary	
Chamisal	Primary	Primary	Primary	Primary			
Chickasaw	Primary	Primary	Primary				Secondary
El Malpais	Primary	Secondary	Secondary	Secondary	Primary		Secondary
El Morro	Primary	Primary	Secondary	Primary		Secondary	Secondary
Fort Davis	Primary	Primary	Secondary	Primary		Primary	
Fort Smith		Primary	Primary	Primary		Primary	

PARK	WATER	ARABLE LAND	WILD RESOURCES	TRANSPORTATION ROUTE	LITHIC SOURCES	CULTURAL SYSTEMS	OTHER FACTORS
Fort Union	Primary	Secondary		Primary		Primary	
Gila Cliff	Primary	Primary	Primary				Secondary
Guadalupe Mountains	Primary	Secondary	Primary	Secondary	Secondary	Secondary	
Hot Springs		Secondary	Secondary		Primary	Secondary	Primary
Hubble Trade Post	Primary	Primary	Secondary	Secondary		Primary	
Jean Lafitte		Primary	Primary	Primary		Primary	
Lake Meredith	Primary	Primary	Primary	Secondary	Primary		
Lyndon Johnson		Secondary	Primary			Primary	
Navajo	Primary	Primary	Primary				Primary
Padre Island			Primary	Primary		Secondary	
Palo Alto		Secondary	Primary	Secondary		Primary	
Pea Ridge	Primary	Secondary	Primary	Primary		Primary	
Pecos	Primary	Primary	Secondary	Primary		Primary	
Petroglyph		Secondary	Secondary	Primary	Primary	Primary	Primary
Poverty Point		Primary	Primary	Secondary		Primary	
Rio Grande	Primary	Secondary	Primary	Primary		Primary	Secondary
Salinas	Primary	Primary	Secondary	Primary	Primary	Secondary	
San Antonio	Primary	Primary	Primary	Secondary		Primary	
Sunset Crater				Secondary	Primary		Primary

PARK	WATER	ARABLE LAND	WILD RESOURCES	TRANSPORTATION ROUTE	LITHIC SOURCES	CULTURAL SYSTEMS	OTHER FACTORS
Walnut Canyon	Primary	Primary	Primary				Primary
White Sands	Primary	Secondary	Primary	Primary	Primary	Secondary	
Wupatki	Primary	Primary	Primary	Secondary	Primary	Primary	Primary

NON-ARID REGIONS AND PARKS

The following will deal with each Geographic Zone and Ecocultural Region separately. Pertinent data are summarized in a table for each region (Tables 3-11). Previous survey and other data collection projects have been performed for most parks; in some cases changing standards will necessitate re-survey of some of the properties listed as 100% surveyed in Tables 3-11. Currently only Aztec Ruins, Chaco Canyon, Fort Davis, Gila Cliff Dwellings, Hubbell Trading Post, Navajo, Walnut Canyon and Wupatki are not scheduled for further survey in the forseeable future.

Of the 40 units, 27 will need additional study in order to meet criteria pertaining to the Classified Structure Inventory Program. This is also detailed in Tables 3-11. In terms of the quality of the overall data base for each park, 15 units are known only to the lowest, most inadequate level (rating 1). Four parks are at the next highest, but still inadequate level 2 rating, eight are rated at level 3, six at level 4, and only six others can be rated at the preferred rating of 5. (See Tables 3-11 for these ratings). Clearly, more work will be necessary before the cultural resources contained in the various Southwest Region parks have been assessed.

A. The Lower Mississippi River Valley Lowlands

Table 3. Status of Archeological Survey Data, Lower Mississippi River Valley Lowlands Parks.

Park	Survey Sample	Recorded Sites	Est. Sites	Est. Total Sites	Upgrade for CSI?	Overall Quality
Arkansas Post	100%	1	2	3	Yes	4
Jean Lafitte	25%	55	545	600	Yes	2
Poverty Point	100%	1	0	1	No	4

Arkansas Post National Memorial

Arkansas Post commemorates the first permanent French settlement in the lower Mississippi Valley, founded in 1686, as well as the subsequent Spanish occupation, the American western movement, and an important battle of the Civil War.

The first fort of the settlement was established a short distance downriver from its present location by Henri de Tonti in 1686. The Native American Quapaw, who occupied the area, welcomed the French traders; this amicable relationship continued through the pre-American period. It was occupied intermittently until 1751. The site of the fort was then moved up the Arkansas River to the area of the present National Memorial. It remained there for five years and then was reestablished on a site much nearer the Mississippi River in 1756. Here, in 1766, it became a Spanish military post when the Louisiana Territory was transferred from France to Spain. Under Spain, the fort was returned to the present location in 1779, where it has remained. Arkansas Post played an important role in Spain's alliance with the United States during the American Revolution; aided by the Quapaw, it repelled an attack by British forces on April 17, 1783.

After the transfer of the territory to the United States in 1803, an American garrison remained at Arkansas Post until 1812, when it became a civilian town with no military establishment. With the creation of Arkansas Territory in 1819, the territorial capital was first located here, before being moved to Little Rock in 1821. A strategic point near the confluence of the Arkansas and Mississippi Rivers, the town was again fortified at the outbreak of the Civil War. It was the site of the Battle of Arkansas Post in 1863 as Union naval and army forces took the fort, opening up the Arkansas River for the North. The town, in serious decline since 1821 was abandoned shortly afterward. The site became a National Historic Landmark in 1960.

Jean Lafitte National Historical Park and Preserve

This Historical Park and Natural Preserve was established in 1978. It consists of four detached units spread across southern Louisiana. The Acadian unit in Lafayatte contains the Acadian Cultural Center, which focuses on Cajun culture and history. The Baratarian unit, south of New Orleans protects the natural resources of the lowland forests and swamps. The Chalmette portion, east of New Orleans, commemorates the scene of the 1815 Battle of New Orleans, and the French Quarter unit, in the oldest section of New Orleans, interprets the diverse ethnic populations of the area.

The archeological record of southern Louisiana is poorly-known prior to 2000 BC, the beginning of the Neoindian stage, which lasted until the beginning of the Historic Period, c. AD 1600. The earliest known sites in the park date to the Tchefuncte period (500 BC to AD 100), when the Baratarian area was occupied by small hunting and fishing groups. The Marksville period (AD 0 to AD 300), the local expression of the wide-spread Hopewellian system, saw the formation of small villages centered on burial mounds. This pattern continued through the Baytown period (AD 300-700) and intensified in the Coles Creek period (AD 700-1000), with the settling of larger villages containing multiple mounds, some of which were ceremonial pyramid structures apparently inspired by larger examples from the MesoAmerican area.

The subsequent Plaquemine/Mississippian Period (AD 1000-1700) saw the total number of sites in the area decrease, perhaps due to increasing salinization of this portion of the Mississippi delta. Integration of local groups within the wider Mississippian 'world' however seems to have intensified, and tradewares (and probably other goods) were exchanged with Mississippian groups as far afield as the Florida Gulf Coast. It is felt that the Historic Tunica and Chitimacha tribes encountered by the first explorers were descended from the Plaquemine period populations.

Many poorly-known Native American groups were documented by the early French explorers of the region in the eighteenth century. Most were severely affected by contact with Europeans and withdrew into the inner swamps; less remote areas were settled by European, African, and other groups from 1719 on, including thirty families of Canary Islanders brought in by the Spanish Colonial government in 1778, the French having relinquished control of Louisiana in 1763.

Barataria was the principal base of the pirate Jean Lafitte's black market empire from 1803 until 1815. That same year saw the end of the 1814-1815 invasion of the area by the British, who were routed by U.S. forces, aided by Lafitte, at the Battle of New Orleans in the Chalmette Unit. The later history of the park saw the rise and fall of the large sugar plantation industry (1800-1880), followed by a similar boom-and bust cycle in cypress lumbering (1880-1950) and the still on-going fur-trapping industry after 1900.

Archeological research in Jean Lafitte has included a number of surveys and excavations from 1975 on. The small Acadian unit, which was 100% surveyed in 1989, contains one site (16LF164), the remains of a number of late-nineteenth to early-twentieth century building foundations in a heavily disturbed area. The Baratarian unit, on the east shore of Lake Salvador, has been the scene of most of the archeological work in the park. Here sites ranging from the Baytown Period through the twentieth century have been recorded; the most significant are probably six eighteenth century sites associated with the Canary Island colonists and the nineteenth century Christmas Plantation.

Archeological research in the Chalmette Unit has, as might be expected, focussed on the 1815 battlefield. These have included test excavations of the battle trenches and batteries of the American line as well as stabilization of the 1833 Beauregard House. No archeological work has been done in the French Quarter unit; given the continuous occupation of the Quarter since 1718, significant resources are sure to underlie many of the historic structures for which have made the French Quarter famous.

Poverty Point National Monument

This area contains 911 acres, almost all of which feature some manifestations of the Poverty Point mound and village complex. Poverty Point was occupied very early by Archaic peoples, but reached its heyday between 1500 and 600 BC. By that time, it had become an immense regional center that is posited as a true chiefdom. The Poverty Point Culture extends to about 30 other groups of sites, showing that the influence of the site was widespread among other large villages, but generally Poverty Point is viewed as the epicentric.

Situated near the confluence of the Ouachita and Mississippi
Rivers, the site consists of many parts, the principal one a large village comprised of six concentric earthen mounds and other scattered but still impressive mounds. Mound A is among the largest known in North America, measuring 200 meters long and 23 meters high, and has an elevated access ramp.

Work has been done on Poverty Point by many institutions since about 1950, but because the unit has but recently been added to the National Park System, records will need to be compiled prior to knowing what kind of survey will be needed. Probably the entire Monument will be treated as a single site with many features; it may be desirable to determine which parts of the site have been damaged or are otherwise excluded from the park it order to form a comprehensive picture of what the site was once like.

B. The Arkansas River Valley and Adjacent Highlands

Table 4. Status of Archeological Survey Data, Arkansas River Valley and Adjacent Highlands Parks

Park	Survey Sample	Recorded Sites	Est. Sites	Est. Total Sites	Upgrade for CSI?	Overall Quality
Buffalo	30%	300	1025	1325	Yes	1

Fort Smith	100%	2	0	2	No	3
Hot Springs	33%	8	12	20	Yes	3
Pea Ridge	2%	2	8	10	Yes	1

Buffalo National River

This watercourse meanders through the Arkansas Ozarks, an area of dense vegetation growing from a limestone substrate which weathers to form caves and rockshelters ranging from only a few meters in depth to elaborate systems. Along with the second terraces adjacent to the river, these dry shelters were preferred residences for the Native Americans who lived in the region. Many caves have thick stratified deposits that chronicle eons of human history.

At the bottom of these stratigraphic columns are found the remains of the Archaic cultures, hunting and gathering people who lived in the area from about 6000 BC until AD 1. The Woodland culture supersedes them, lasting up until about AD 1000. During that period, ceramics and agriculture are added to the cultural picture, and somewhat late in that sequence, elaborate inter-regional trading networks are formed. The degree of preservation in the shelters has led to early botanical studies that show a rather complex agricultural assortment of species, many of which are normally thought of as non cultigens. Nevertheless, such species as cheno-ams and marshelder were apparently grown.

The Mississippian period that follows shows a population increase for the park, but sites are predominantly shell middens, as opposed to the larger villages found to the east. Most of the total site population, however, cannot be assigned to any period because of the lack of diagnostic materials. Historic Native American groups in the area included the Osage; they and such transitory 'residents' of the area as the Cherokee and Shawnee were replaced in the 1830's by Euro-American settlers. These conducted subsistence agriculture and foresting, supplemented by large-scale mining in the Rush area, until the Great Depression of the 1930's when much of the area's population abandoned the land. Since then, recreation has assumed an ever-greater role in the still-rural local economy.

The earliest archeological work done in the Arkansas Ozarks was excavation, searching mostly relics of the "bluff-dwellers", in caves. Systematic survey at Buffalo is difficult because of the vegetation, and was not done extensively prior to the 1960s. Writing an archeological assessment in 1979, Dan Wolfman noted that 242 sites had been discovered and recorded to some degree, generally by the Arkansas Archeological Survey. Of that number, over 200 were on terraces, with almost all of those remaining in caves or shelters. Since that date, many new sites have been discovered, but the exact number is not known. An estimate is about 100. Records are retained by the Arkansas archeological survey.

The challenges of working at Buffalo are predominantly a function of heavy undergrowth, which normally requires shovel testing or test grid excavation as part of the site discovery or site definition package. With respect to threats, unfortunately, many sites have been extensively damaged by looters. Others, situated on terraces, have been impacted by repeated cultivation and plowing during the current century, as well as by impacts from periodic flooding.

Fort Smith National Historic Site

This park commemorates one of the first U.S. Military posts in the Louisiana Territory, purchased from France in 1803. The Fort served as a base of operations for the enforcement of federal Inidan

policy from 1817 until 1871. It was also the center of law enforcement in Indian Territory (Oklahoma) and Arkansas from 1872 to 1896.

The park contains the remains of two frontier military forts and a federal court. The first fort was built on Belle Point at the confluence of the Arkansas and Poteau Rivers in 1817 to control the Cherokee and Osage west of the Mississippi. A second, much larger fort was begun in 1838. It was a five-pointed bastioned fortification of stone, intended to protect the local settlers from possible attack from the Indian Territory. Many of the 'Five Civilized Tribes' from the Southeast were in the process of being relocated there at the time, and part of the 'Trail of Tears' passed through Ft. Smith.

The tension accompanying this forced migration had eased by 1842 and construction on the fort was halted. In 1845 this new fort was made a supply depot for U.S. forces further south and west and three of the five bastions were converted to storage facilities. It served as a supply depot for the Mexican War and subsequent western expansion. At the outbreak of the Civil War the fort was occupied by Confederate troops from 1861 to 1863. It was a supply and defensive fort for the Confederacy, and after 1863, resumed these roles for the U.S. Army. By 1871, the frontier had moved too far west for the fort to fulfill its role, and it was closed.

In 1872 the fort became the home of the United States District Court of the Western District of Arkansas, the only court with legal jurisdiction over non-Indians in the virtually lawless Indian Territory. From 1875 until removal of this territorial authority in 1895 the court was presided over by Judge Isaac C. Parker, the famous (or infamous) 'Hanging Judge'. The court made use of many of the surviving fort buildings from 1872 until the site was given to the city in 1896. The site was named a National Historic Landmark in 1960, and authorized as a National Historic Site in 1961. It has been 100% surveyed by the NPS; the two forts are the only sites known from the park; although prehistoric materials are known to exist in the area of the first fort.

Hot Springs National Park

Hot Springs National Park is in the Zig Zag Mountains on the eastern edge of the Ouachita Range. The mountaintops are the erosion-resistant remnants of folded layers of sandstone and novaculite, the latter stone a type of chert greatly prized by both aboriginal and Euro-American groups. The naturally occurring hot springs, now encompassed by historic bathhouses, are on the lower western side of hot Springs Mountain. Dense forests of oak, hickory, and short-leaf pine dominate this region.

The focus of the 5,543 acre park is the historic district of Bathhouse Row, on Central Avenue within the town of Hot Springs. The district consists of eight late 19th-early 20th centuries bathhouses, one of which (the Buckstaff) is in operation as a park concession. During the 1980s local citizens and the NPS began a program that would return all of the bathhouses to the splendor, if not the function, of Hot Springs in its heyday at the turn of the century. Consequently, three of the buildings are presently undergoing, or have undergone, renovations. The ultimate goal for the park is the adoption of a number of new uses for these buildings under the auspices of a historic property leasing program.

The park also maintains a campground in Gulpha Gorge, located 2 miles northeast of the downtown district, and Hot Springs Mountain Observation Tower, located on the top of Hot Springs Mountain. The tower, 216 ft high, is operated year round by a concessioner. The park also contains other cultural resources including several prehistoric novaculite quarries and habitation sites, a Civil War skirmish site, and the archeological remains of an African American village.

To date, however, very little archeological work has been conducted within the park. Although the novaculite quarries are eligible for the National and State Registers of Historic Places, they have not been officially recorded. During the 1970's the Arkansas Archeological Survey conducted a reconnaissance inventory of Hot Springs. The resultant 1975 report by Charles Baker provided a literature review, a summary of cultural resources known for the region, a summary of cultural resources and their research within the park, and recommendations for further archeological work. Eight prehistoric sites were recorded within the park at that time. In 1994, NPS Charles Haecker surveyed a recently discovered, ca. 1896-1914 sauna "cave" associated with the Hale Bathhouse.

Pea Ridge National Military Park

The Battle of Pea Ridge was the largest (in terms of numbers of participants) fought west of the Mississippi River. The Federal victory in March 8, 1862 held Missouri for the Union. There were two separate and distinct actions in the battle: the fight for Leetown at the extreme west end of the park; and the action fought around Elkhorn Tavern on the east side. Pea Ridge National Military Park was established by an Act of Congress in July 20, 1956. The park is located seven miles east of the town of Pea Ridge, Arkansas, in the foothills of the Ozarks. Pea Ridge Mountain is within the park, with the remaining park area on a plateau at the base of the ridge. The immediate vicinity consists of forests interspersed with hay fields.

The 4,300 acre park contains a number of historic cultural resources associated with the battle: the reconstructed Elkhorn Tavern, traces of the historic road, remains of trenches, house sites, fences and geographic features. Monuments erected by veterans of the battle also constitute cultural resources of the park. The park maintains a modest collection of Civil War documents, photos, and artifacts, most of which were donated by local residents.

A detailed overview of the history of Pea Ridge NMP was developed in 1965 by NPS Historian Edwin Bearss. In 1978 Jane Scott prepared an annotated bibliography relating to the history and prehistory of the park. This planning document recommended no further historic documents study of the Civil War aspect of the park. However, it further recommended there should be a program that would identify all historic and prehistoric resources at Pea Ridge NMP.

In fact, very few archeological investigations have been undertaken within the park, although significant subsurface remains from the historic period are likely present. In 1965 Rex Wilson conducted a testing program to gather locational and structural data for interpretation and park development. Wilson tested the site of an historic tanyard, Leetown, Elkhorn Tavern, and the believed location of a Civil War mass burial. (This latter feature proved to be a modern disturbance).

Prehistoric sites are known to exist in the park but, to date, only three prehistoric sites have been professionally investigated: one large lithic site recorded in 1980 by Michael Sierzchula; and, in 1987, Roger Coleman recorded two prehistoric sites as a result of a survey of a proposed trail corridor within the park. In 1993 James Harcourt surveyed the proposed location of an equipment storage facility. No cultural resources were identified as a result of this most recent survey within the park.

C. The Southern Great Plains

Table 5. Status of Archeological Survey, the Southern Great Plains Parks

Park	Survey Sample	Recorded Sites	Est. Sites	Est. TotalSites	Upgrade for CSI?	Overall Quality

Chickasaw	5%	21	399	420	Yes	2

Chickasaw National Recreation Area

Centered on the small Arbuckle Mountain range, this park is surrounded by the southern Great Plains of Oklahoma and contains the man-made Lake of the Arbuckles. The park includes both low-lying areas with plant and animal life characteristic of the Great Plains and small elevated hills with woodland fauna and flora more typical of eastern deciduous forests. Along with the abundant fresh-water and mineral springs of the Arbuckles, the varied biotic resources of this area have long made it a popular oasis in the relatively harsh surrounding plains, from prehistory to the present.

The unique series of micro-environments afforded by the Arbuckle Mountains has long attracted groups normally resident elsewhere for temporary or seasonal occupation. Prehistorically, it was on the margins of two well-developed agricultural societies, the Washita River and Henrietta Foci, which flourished from about AD 1000 until at least AD 1450. Historically, various Caddoan-speaking groups from the Southern and Central Great Plains used the area on a seasonal basis. In 1851, nearby Fort Arbuckle was founded to serve the many groups migrating in and out of the area. These were principally engaged in bison-hunting and included such far-flung tribes as the Wichita, Apache, and Comanche.

EuroAmerican settlement began in the 1890's and was centered on ranching. Other economic pursuits soon followed; oil exploration, agriculture, and recreation. The archeological record of Chickasaw, while sparse, is indicative of the variety of prehistoric and historic groups inhabiting, or passing through, the area. Currently, only 5% of the park has been surveyed, with 21 sites recorded. Most of this was done from 1958 to 1960, and in 1964 in the areas now flooded by the Lake of the Arbuckles. These were primarily small artifact scatters, ranging in date from the Archaic through Historic Periods. Small-scale surveys by the NPS in the 1980's and 1990's have yet to find any other archeological sites, though further work is likely to document many more.

D. South and East Texas Lowlands

Table 6. Status of Archeological Survey Data, South and East Texas Lowlands Parks

Park	Survey Sample	Recorded Sites	Est. Sites	Est. Total Sites	Upgrade for CSI?	Overall Quality
Big Thicket	10%	12	108	120	Yes	1
Lyndon Johnson	0%	2	38	40	Yes	1
Palo Alto	7%	1	99	100	Yes	1
Padre Island	5%	25	975	1000	Yes	1
San Antonio	50%	25	25	50	Yes	3

Big Thicket National Preserve

This natural resource area consists of six discontinuous units in the east Texas woodlands. The largest parcel runs along the Neches River and Little Pine Island Bayou; others are along Menard, Big Sandy, Hickory Beech and Turkey Creeks, all tributaries of the Neches. These heavily vegetated, low-lying areas are at the cross-roads of several biotic provinces, and floral and faunal species from areas as disparate as the Southwestern deserts, the Central Plains, the Eastern woodlands and the Coastal Southeastern Swamps share the Big Thicket area.

Prehistorically, the earliest known occupation of the Big Thicket area came in the Early Archaic, c. 6000 BC, though the subsequent Middle (4000 to 1000 BC) and Late Archaic (1000 to 200 BC) periods are much better-known. Adaptation seems to have involved small, mobile groups exploiting the many plant and animal resources of the area. This hunting and gathering lifeway persisted into the early Ceramic Period (100 BC to AD 900), though such Mississippian influences as burial mounds with exotic grave good assemblages are also attested.

The Late Ceramic Period (AD 900-1400) is characterized by continuity with previous

periods, although populations in the Big Thicket area do seem to have become integrated, to a slight degree, in the wide-spread Caddoan system to the north and northeast. This is reflected in the first sedentary villages, some of which may have engaged in horticulture. The absence of large agricultural systems with extensive mound complexes and social stratification, typical of the Caddoan heartland, underscores the marginal role occupied by the Big Thicket area groups in late Prehistory.

Data on the historic Native American occupants of the area is sorely lacking. The small groups of Atakapan-speakers encountered by the initial European explorers of the area in the seventeenth century seem to have been the descendants of the prehistoric inhabitants, but little information was gathered prior to their destruction in the nineteenth century, primarily from epidemics of European-transmitted diseases. Intrusive Native American groups, mostly remnant bands of Alabama and Koasati from the east, entered the area from 1806 on; already disrupted by contact with Europeans, they were assimilated by the tide of Euroamerican settlers entering the area in the mid-nineteenth century. The Alabama still occupy a nearby 1280-acre reservation granted them in 1854, the last, distinct Native American inhabitants of east Texas.

Archeological investigations in the Big Thicket National Preserve have been sporadic and limited. This is due, in part, to the difficulty in performing fieldwork in the low-lying, often flooded heavily-wooded terrain. National Park Service surveys from the 1970's and 1980's have shown that cultural resources tend to be on elevated landforms such as terraces and levees. To date, app. 10% of the park has been surveyed, with only 13 sites recorded. These include 12 prehistoric sites identified by the initial sample survey in 1975 and an historic (possibly pre-Civil War) ferry boat recorded by James Bradford in 1992. Work in adjacent areas indicates that many more sites are probably present, though hidden beneath vegetation, alluvium, and water.

Lyndon B. Johnson National Historical Park

This park is due west of Austin, in the hill country of central Texas. The park was established as a historic site in 1969 and redesignated a historical park in 1980 to commemorate the boyhood community and ancestral ranch of the 36th president of the United States. The park consists of two units: the first, is the Johnson City Unit containing the boyhood home of President Johnson and the Johnson Settlement where his grandfather

homesteaded the Hill Country. The other unit is the LBJ Ranch where Lyndon was born and schooled and spent the later years of his life. Together, the units contain the core historical structures and acreage in which the settlement of the Hill Country is interpreted, the effects the area had on the Johnson family and the effects that family had on the Hill Country.

Johnson City, and the LBJ Ranch to the west, are both located at an elevation of 1200 feet on the extreme eastern end of the Edwards Plateau, a subunit of the High Plains and Plateaus physiographic region of west and central Texas. Prehistoric occupation of the central Texas area is known from Paleoindian period (9200-600 B.C.) through the Early, Middle, Late and Transitional Archaic (6000 B.C. to A.D. 700). The Late Prehistoric Period dates from A.D. 700 to 1600 when the first Europeans entered the general area. Historic settlement of the area languished until the 1850s when primarily German immigrants began homesteading. The most significant period, of course, is that of the Johnson years from about the turn of the century through the 1960s.

Four prehistoric sites are known to be within the park boundaries: three on the LBJ Ranch and one along the banks of Town Creek in Johnson City. Only the latter has yielded diagnostic artifacts, dating its use to the Middle Archaic. Historical archeology has been conducted at the Johnson Settlement in Johnson City, and at the LBJ birthplace and the Junction school on the LBJ Ranch.

A formal archeological survey of the park units has never been conducted. Other prehistoric sites probably occur, particularly in the vicinity of the Johnson settlement and the LBJ Ranch; however, much of the earlier deposits have been impacted by the establishment and development of both Johnson City and the Ranch.

Padre Island National Seashore

Padre Island is a part of the barrier island system found along the coastal Gulf Plain of Texas. The National Seashore is about 80 miles long, and ranges from about 3 miles in width at the north end, to only about one mile wide at the southern end, although these dimensions may vary substantially based on the tides. The National Park Service also has management responsibility for submerged lands up to two fathoms (6 feet) in depth on the Gulf side of the island, but has none for the Laguna Madre, a brackish lagoon found between

the island and the mainland. The Intercoastal Waterway cuts across the Laguna Madre.

The island is predominantly composed of sand dunes, with a foredune ridge formed on the eastern side, and many smaller and active dunes created in the lee of this ridge. Toward the northern end, these dune fields receive more rainfall, and the resultant vegetation tends to stabilize the dunes, but at the southern end of the island, an area known as the Mansfield Pass gets little rainfall, and vegetation is rare. This end is more heavily impacted by storms, that in some cases may wash across the entire island. Because of this aridity, human occupation of the islands seems to have been very sporadic and ephemeral.

Archeological survey work has found about 20 sites, almost all at the northern end of the island, where vegetation has stabilized the area to a degree. From the Native American standpoint, these are limited to lithic scatters. Although shell middens are known from the vicinity and testify to the importance of oyster and conch in the diet, no middens have been found on the island. Since the island only began to form about 3000 BC, such materials are no earlier than the Archaic, and even such lithics as have been found are predominantly of later vintage.

The Archaic period is known at the northern end as the Aransas Phase or Focus (3000/1000 BC to AD 1000), and is identified predominantly based on projectile point types such as Ensor, Ellis, and many others. Shell mounds near Padre Island proper are about 600 sq meters in size, and at a maximum of 2 meters in depth. Archaic sites in the Mansfield Pass area are unknown.

Neoamerican Period sites (AD 1000-1550), have been termed Rockport Phase at the northern end, and Brownsville/Barril at the southern end. Arrowpoints and ceramics are the hallmark of the former, and site 41KL 60, the Padre Island site most extensively studied, dates to this period. Brownsville and Barril sites represent two parallel traditions that have been portrayed as having some shared and some unique material cultural items. Although the corpus of expected materials for Padre Island has been created, no Neoamerican sites have been found at the southern end. What materials have been found throughout the island indicate a mixed shellfishing strategy.

When Euroamerican populations arrived, ethnic groups were identified as Karankawa and Coahuiltecan. The former were coastally adapted peoples focussing on the northern end of the island. The latter are much less specifically known, having a broad-based arid lands

adaptation that seems much less associated with Padre Island. Descriptions lead to some knowledge of Karankawan lifeways, from which some archeological inferences are feasible.

Euroamerican use of the island included a few Spanish exploration and military forays, and a later cattle ranching industry, but by far the most attention for archeological materials at Padre Island has come from underwater: the Spanish plate fleet sinkings of AD 1554.

This event has been studied extensively since some of the three ships were discovered in the early 1970s by private salvors. The state of Texas then acquired much of the collection in court, and state Marine Archeologist J. Barto Arnold has since done additional excavation of the sites and published extensively on the materials recovered. Two ships were located, and the general whereabouts of the third is known. The National Park Service and the State of Texas worked together in the mid 1980s to do additional work in this area. A submerged resource reconnaissance was done, and a manuscript is in hand. A continual effect of the degree of public knowledge of the fleet is a high degree of artifact searching that happens near the Mansfield Pass area of the park.

Terrestrial survey at Padre Island is difficult, because sites may be covered by shifting sands often, and later re-exposed. Virtually all that is known about Native American archeology comes from the north end, where about 25 sites have been found. Sample surveys farther down the island yielded no substantive results, and logistically the island is difficult to work on because of accessibility problems.

Underwater surveys have supplied fairly intensive coverage within the stretch of shoreline within twenty miles of the Mansfield Pass. North of the area, little is known about shipwreck distribution, and there are no anchorages, necessitating extensive daily boat trips to get to the survey area. For these reasons, saturation survey coverage of park lands and waters is not recommended at this time. What is suggested is to intensify the level of non-invasive documentation for known epicenters of human activity, such as at known northern Native American sites, at the survivors'/salvors' camp from the AD 1554 plate fleet sinking, or at the Nicaragua, a wreck situated in the surf line that sank around the turn of the century.

Palo Alto Battlefield National Historic Site

The battlefield of Palo Alto, the first battle of the Mexican-American War, is located on the southern tip of Texas, within the Lower Rio Grande Valley. As is typical of riverine deltas, the area of the battlefield is nearly flat, with two old river meanders flanked by low levees providing the only relief. Native vegetation cover consists primarily of Gulf seagrass and mesquite forest. Approximately 15 percent of the park has been affected by ranching and agricultural land modifications.

The park focuses primarily on the battlefield, but other cultural resources are present including the remains of a small, mid-nineteenth century frontier community. Historic documents also suggest that, somewhere within the park, there may exist evidence of nineteenth century Hispanic and Anglo-American homesteads.

The first official recognition of Palo Alto as a historic landmark occurred in 1893, when a group of local citizens placed a stone marker on the battlefield. In 1938, Palo Alto battlefield was recorded in the National Survey of Historic Places and Buildings. In 1960, the battlefield was designated as a National Historic Landmark by the NPS under the authority of the 1935 Historic Sites Act. The Act of November 10, 1978 (P.L. 95-625) authorized the establishment of the Palo Alto Battlefield NHS with a boundary of 50 acres and the requirement that NPS conduct " a study and recommend...such additions as are required to fully protect the integrity of the battlefield..." The Palo Alto Battlefield NHS Act of 1991 (P.L. 102-304), dated June 23, 1992, established the NHS with a boundary that encloses 3,357 acres. The park purpose also was expanded, and a general management plan was required within three years. The Act authorized the appropriation of funds for acquisition of lands; however, as of February, 1994, no lands have been purchased from private landowners.

A reconnaissance survey of Palo Alto battlefield was done in 1979 by Texas A&M archeologists under contract with NPS. This survey delineated the approximate location of the battlefield, the information used by NPS to determine adequate boundaries around the site. The report also recommended additional documentary and archeological research to delineate battle lines. the areal increase of the park in 1992 required additional surveys. Accordingly, NPS archeologist Charles Haecker conducted sample surveys in 1992 and 1993, the resultant report to be published in 1994. The report identifies a significant portion of the Mexican battle line; however, the U.S. battle line could not be identified, presumably due to land alterations by land owners. Relic collectors, especially those using

metal detectors, have had an immeasurable effect on battlefield artifact patterning. Nevertheless, the 1994 report provides both documentary and physical evidence regarding the conduct of the battle.

San Antonio Missions National Historical Park

This historic property was first declared a national Park in 1978, though it was not established until 1983. It contains over 819 acres in four units, each of which is centered on an eighteenth-century Spanish mission. A contemporary acequia system, portions of which are still in use, is within the Espada Unit of the Park. The Missions, which are on either side of a 9.5 km. length of the San Antonio River were founded to consolidate and acculturate the many disparate Coahuiltecan tribes of south Texas by the Franciscan Order and the Spanish Government.

The first, Mission San Jose, was founded in 1720 and remains in use today. The current church, built in the 1740's is often regarded as the finest example of Colonial architecture in Texas and is the largest of the churches. The other three were all founded in 1731, as the Spanish and their Indian converts relocated from their original sites in East Texas. Mission Concepcion to the north of San Jose, and Missions San Juan and Espada to the south. In 1740 the 15 mile-long acequia system, which includes the Espada Dam, was completed. The missions thrived until 1775, when the large populations they served began to be weakened by disease and raiding Apache and Comanche. This decline continued until their secularization by the Mexican government in 1824, when their vast agricultural lands were redistributed among the missions' inhabitants.

The Park Service, in conjunction with several local organizations, has conducted a number of small-scale archeological investigations in and around the Missions since 1980. This has documented 25 sites. These include several small, heavily-disturbed prehistoric ones and more, better-preserved historic locales. These include a Civil War-era powder mill and numerous late nineteenth and twentieth century homes, bridges and stores. As approximately 50% of the park has yet to be surveyed, an equal number of unrecorded sites are thought to be present.

ARID ZONE REGIONS AND PARKS

A. Southern High Plains

Table 7. Status of Archeological Survey, Southern High Plains Parks

Park	Survey Sample	Recorded Sites	Est. Sites	Est. Total Sites	Upgrade for CSI?	Overall Quality
Alibates	50%	54	54	108	Yes	3
Capulin Volcano	0%	0	20	20	Yes	1
Fort Union	3%	3	77	80	Yes	1
Lake Meredith	50%	222	222	444	Yes	2

Alibates Flint Quarries National Monument

Adjacent to Lake Meredith on the Canadian River of the Texas Panhandle is an exposure of agatized dolomite that was mined and traded between Native American groups throughout the Southwest and Texas for about 10,000 years. These millennia of mining formed the Alibates flint quarry. Near the quarry is a ruin of the Texas Panhandle Culture, called Alibates Ruin. About 50 sites are situated within the boundary that defines an area of 1371 acres, but principles of archeological systematics have not been applied for the last two and one-half decades.

Floyd Studer, J. Alden Mason, and WPA crews of the 1930s initiated the work with excavations, and in 1946 Alex Krieger's synthesis of the Panhandle Aspect and Antelope Creek Focus became the seminal work on the archeology of this area. What little is known about the archeology of Alibates comes from this period, between AD 1250 and 1450. Precursors to these people may have been a western incursion of Plains Woodland, but no such sites are now

known to be on the Monument.

During the Panhandle Aspect period, people pursued a mixed subsistence strategy of hunting bison and other medium to large game, wild plant food gathering, and farming corn beans and squash, while exchanging flint for obsidian. They lived either in large multi-roomed pueblos built of "stacked" upright slabs, or in outlying communities of generally discontiguous semi-subterranean houses footed on upright slabs of dolomite surmounted by masonry.

The identities of Panhandle Aspect people are largely unknown; possible donor populations for this area include the Southwestern pueblos, the Caddo to the east, or the Apishapa or Graneros Focus peoples of northeastern New Mexico and Southeastern Colorado. It is surmised that these various peoples may have entered the area in response to environmental changes (primarily fluctuations in precipitation) at various times. By and large, however, this is a question that is answered best by digging, not by survey.

Good, solid archeological survey work that addresses the issue of site structure (i.e. whether the quarry is one site or comprised many) should be re-addressed in light of more recent work, even though local park staff with archeological backgrounds have for years collected information when they could.

Capulin Volcano National Monument

Capulin Volcano National Monument (known as Capulin Mountain National Monument until 1992) was established on August 9, 1916 and contains 775 acres. The focus of the monument, Capulin Volcano, is a 1,082 ft-high cinder cone that rises above the level plain of northeastern New Mexico. Capulin Volcano is significant as the youngest and most perfectly formed cinder cone in the Raton-Clayton volcanic field. The monument includes the cone, along with most of the boca--the area from which the lava flows. The irregular rim of the volcano is about one mile in circumference, and the crater is about 415 feet in depth, as measured from the highest part of the rim. A geological study indicates the volcano was active about 7,000 years ago.

Three prehistoric sites, all in lava-tubes, are known to be within the Monument, but only one ('Indian Cave') has been formally recorded. Many more unrecorded sites are known

to exist in the general vicinity. An inventory survey of the nearby upper Dry Cimarron River documented 74 sites. Because of the systematic nature of this survey, it probably represents the true nature and density of prehistoric sites in the region. Other than the Folsom site, approximately 15 miles to the northwest of the Monument, none of the cultural resources in this region have received detailed study or evaluation. Information, therefore, is lacking for determining their eligibility to the National Register of Historic Places.

Capulin Volcano may have served as a landmark for European explorers as early as 1541, when Vasquez de Coronado traversed the area. Immigrants, traders, and military expeditions followed the nearby Santa Fe Trail. In the 1860s and 1870s, Charles Goodnight led massive cattle drives through the area, blazing trails for advancing railheads and northern pastures. The Goodnight Trail passes directly between Capulin Volcano and the Raton Mesa on the way to trinchera pass. Cattle ranching began on the land surrounding the volcano in the 1870s, and dryland farming by homesteaders had a tentative beginning in the 1890s. There are several homestead sites in the area around the Monument, with several structures possessing cultural integrity.

Fort Union National Monument

Congress authorized Fort Union National Monument in 1954, and the Department of Interior officially created the park in 1956. Fort Union National Monument preserves the ruins of Fort Union, New Mexico, established in 1851 to serve as headquarters for the Department of New Mexico. The first fort buildings were built of unseasoned logs west of the present standing ruins, but were being replaced by more substantial frame buildings on stone foundations when the Civil War stopped all improvements.

In 1861, fear of an invasion of New Mexico by Confederate forces from Texas forced the U. S. Army at Fort Union to concentrate their efforts on building a defensible position within a star-shaped earthworks, now called Second Fort. When the threat of invasion faded after the Battle of Glorieta Pass in 1862, construction began on a more permanent fort and supply depot, now called Third Fort. The principal buildings of this new construction were completed by 1866.

The post was an important storage and redistribution point for U. S. military forces in

New Mexico, as well as critical for the protection of traffic along the western end of the Santa Fe trail. Its usefulness began to fade with the arrival of the railroad in 1879; it was ultimately closed in 1891.

Most of the principal Third Fort buildings were excavated and stabilized soon after acquisition by the National Park Service. The area of First and Second Forts were intensively surveyed for the Historic Base Map in 1991-92, resulting in the relocation of most of the early fort buildings. To date, the rest of the park (97% of its area) has not been investigated archeologically, and it is estimated several dozen prehistoric, and other, sites are present.

Lake Meredith National Recreation Area

This park in the Texas Panhandle was established in 1965 when the Canadian River was dammed to create Lake Meredith, which consists of 7768 land acres, and includes about 37,000 additional acres that are now submerged. The river seems to have been an important east-west conduit connecting the Southwest with the Plains for 10 millennia, and Alibates silicified dolomite appears in collections in many parts of the Southwest as well as on the Plains. It is likely that Paleoindian, Archaic, and Plains Woodland sites are present within the boundaries of the recreation area, but it is the Panhandle Aspect sites that are well documented.

The occupation of Panhandle Aspect peoples is limited to AD 1250-1450, during which a mixed hunting, foraging, and horticultural subsistence was practiced. Twenty room pueblos were used as residences, as were smaller discontiguous rooms half dug into the ground. The relationship between these two kinds of domiciles is not known: do they reflect seasonal changes, different populations, or different time periods?

The study of this area began around the turn of the century, with site excavations done by W.K. Moorehead, J. A. Mason, Floyd Studer, and W.C. Holden extending up through the 1930s. Similar work continued by Hulda Hobbs, E.B. Sayles, and others during the 1940s, and in 1946 Krieger's synthesis was published: the Panhandle Aspect, Antelope Creek Focus was codified. Following other excavations during the next decade, W. A Davis published the first survey work, a reconnaissance done antecedent to the reservoir impoundment. Several sites were salvaged as a consequence of Davis' findings.

The archeological assessment written in 1974 lists about 200 sites within the park, in addition to about another 50 that are listed as part of Alibates Flint Quarries National Monument. In 1981, Bureau of Reclamation archeologist Meeks Etchieson surveyed additional areas when studying the impacts that off-road vehicle traffic were having on the sites. This upgraded the information available on the previously known sites in the Blue Creek and Rosita Creek areas, and added about 50 additional sites to those already known in these areas. The sites are of these types: village sites (groups of slabhouses), campsites (hearths and fire-cracked rocks), lithic scatters, quarries and workshops, shelters, tipi rings, and pictograph/petroglyph sites.

Overall, in spite of much good archeological survey having been done at Lake Meredith, many areas have not been surveyed. The quality of information is good for those sites that we know about.

B. The Southern Basin and Range Region

Table 8. Status of Archeological Survey Data, Southern Basin and Range Parks

Park	Survey Sample	Recorded Sites	Est. Sites	Est. Total Sites	Upgrade for CSI?	Overall Quality
Amistad	15%	200	1000	1200	Yes	4
Big Bend	2%	540	9460	10000	Yes	1
Carlsbad	15%	120	674	794	Yes	1
Fort Davis	100%	9	0	9	No	5
Gila Cliff Dwellings	100%	105	0	105	No	5

Park	Survey Sample	Recorded Sites	Est. Sites	Est. Total Sites	Upgrade for CSI?	Overall Quality
Guadalupe Mountains	80%	315	75	390	No	3
Rio Grande	0%	0	200	200	Yes	1
White Sands	20%	76	424	500	Yes	1

Amistad National Recreation Area

Amistad Lake was formed in 1969 by the damming of the Rio Grande just below its confluence with the Devil's River, a major tributary. The Recreation Area contains over 59,000 acres, 57,000 of which is submerged. For the most part, the non-lake portions of the park are limited to a narrow strip of coastline 30' above the normal lake level. The surrounding countryside is characterized by low limestone hills with deeply-entrenched canyon systems in places. The region is at the juncture of three biotic provinces: the Tamaulipan, the Balconian and the Chihuahuan. This has led to a wide variety in the plant and animal life in what, at first glance, appears to be a harsh and arid environment.

Archeological investigations first took place in the Amistad area in the 1920's and 1930's, when pioneering survey and excavations were conducted by a number of researchers from several organizations, principally the Smithsonian and Witte Museums. Research was focused primarily on the many rockshelters in the three river drainages; excavations centered on those sites with well-preserved deep midden deposits, while other researchers documented the many shelters with polychromatic pictographs.

Pre-inundation archeological studies flourished in the Amistad area from 1958 to 1969. These consisted of extensive surveys as well as large-scale excavations of sites scheduled for inundation by the lake. The most significant of the latter include the Devil's Mouth Site, Parida Cave, Arenosa Shelter, the Perry Calk Site, Coontail Spin Shelter, Conejo

Shelter, Cueva Quebrada, Eagle Cave, and Bonfire Shelter. This research quickly established the archeological record of the Amistad area as one of the most significant in North America.

Human occupation was shown to have begun as early as 12,500 BC; from 7000 BC until the first recorded entry of the Spanish, in 1590, the area was characterized by remarkable stability in the adaptive patterns of the prehistoric populations. These centered on the exploitation of the wild floral and faunal resources of the three principal river valleys (the Rio Grande, the Devils, and the Pecos), their many tributaries and the surrounding upland areas of plateaus and hills.

The area is still best-known for the hundreds of sites with well-preserved, often monumental, pictographs. These were done in several styles or traditions. The most well-documented and widespread was the Lower Pecos River Style, which flourished from about 7000 BC until at least AD 600. Other pictograph styles in the area were the Red Linear, Bold Line Geometric, Red Monochrome, and those of Historic Native American groups. These included Lipan and Mescalero Apache, Comanche, Kiowa and local (and now-extinct) Coahuiltecan groups.

Although the history of the Amistad area begins with the entry of the Spanish explorer Costano de Sosa in 1590, the area remained a poorly-known fringe of the Spanish, then Mexican, frontier until 1848, when it became part of the United States. Elimination of the last groups of Lipan, and construction of the second transcontinental railroad, both in 1882 near the mouth of the Pecos, marked the end of the frontier period in the Amistad area. Since then, the region has been settled first by ranchers, and since construction of the lake in 1969, by sportsmen and retirees.

Archeological work has progressed since incorporation of Amistad into the National Park Service in 1969. During the 1970's and 1980's these involved small-scale projects such as salvage excavations of burials, surveys of hunt areas and stabilization of a few severely looted sites. In 1992 and 1993 Jim Mayberry conducted a survey of over 4000 acres in or immediately adjacent to Amistad for the NPS. This recorded 390 sites ranging in age from the Paleo-Indian Period to the 1940's. Results of the survey have been used to identify over 270 sites that will be acquired by the Park in the future.

Current concerns and research topics of the archeology of Amistad National Recreation are varied. One over-riding issue is the mitigation of artificial impacts caused, at least

in part, by the formation of the lake. One prime concern is the preservation of the rapidly-deteriorating pictographs, whose natural weathering is accelerated by the increased moisture levels caused by the lake in the porous limestone bedrock they are contained in. Another is the wide-spread looting and vandalism of formerly remote rockshelters now easily accessible by boat.

Further refinement of dating techniques is greatly needed, both for the various pictograph styles, and the many projectile point types that are the basis for the several (conflicting) relative chronologies for the area. Other topics for future research include the refinement of models for the adaptive and integrative systems of previous populations; the role played by the area's populations in wider regional and inter-regional systems; the influences of various environmental changes on past behavioral systems; the role played by native groups in the historical developments of south Texas and northeastern Mexico; and changes in the Euro-American adaptations to the area. The association, if any, between the historic Native American residents of the area and modern groups such as the Mescalero Apache, Kiowa or Seminole should also be investigated.

Big Bend National Park

Big Bend National Park is in a triangular section of land in an elbow of the Rio Grande, 270 miles southeast of El Paso. Established first as a state park, Big Bend was authorized as a national park in 1935 but did not become a reality until 1944. The park is a remote area of spectacular desert beauty with deep limestone canyons of the Rio Grande, craggy igneous peaks of the Chisos Mountains, barren highlands of sedimentary rock, and sweeping vistas with 100-mile-distant horizons.

Plants common to the Chihuahuan desert are found in the lower lands while juniper, piñon and ponderosa pine, and aspen are found in the highlands. Elevations range from about 1700 feet at the Rio Grande on the east end of the park to Emory Peak at 7835 feet. The starkness of the park prompted astronauts, preparing for the first moon landings, to come here in 1963 and 1964 to study the rocks and practice moving about on the rocky terrain.

Although the evidence is slight, there are indications that man inhabited the Big Bend area since the Paleo Indian Period, over 12,000 years ago. During the later Archaic Period (6000 BC to AD 900), nomadic groups lived in the caves and open pithouses. These groups

utilized native plants, such as the yucca, to make sandals, mats, and baskets, hence the name "Basketmakers". They also left hearths, grinding pits, burial sites, petroglyphs, and numerous artifacts. During the Chisos Focus groups settled along the river after AD 800 and grew corn, beans, and squash. This pattern continued until their probable descendants, the Chisos Indians, were driven into the Chisos Mountains by the Mescalero Apaches by 1700. The Comanche, having defeated the Apache in the eighteenth century, passed through Big Bend annually in the eighteenth and early nineteenth centuries enroute to raiding Mexico.

Alvar Nuñez Cabeza de Vaca may have been the first European to pass through the area, though current research indicates he probably passed just to the south. Shipwrecked on the Texas coast in 1528 and enslaved by Indians, he and two companions eventually made their way overland to the Spanish towns in Mexico. For the rest of the Hispanic Period (AD 1528?-1845) the area was a scene of frequent conflict between Native Americans and Europeans; much of it centered on the several presidios constructed along the south side of the Rio Grande. After the Mexican-American War, the United States War Department sent surveyors to the region and shortly thereafter army officers formulated plans to protect Texas settlements from hostile Indians, the last of whom were exterminated in the 1870's.

The park also was the site of an experimental use of Bactrian camels by the U.S. Army. Although the camels did well, the experiment came to an end with the beginning of the Civil War began and the camels were released to fend for themselves. Mining of mercury began in the Terlingua area in the 1890s and at Mariscal Mountain; the production at Terlingua from 1896 to 1940 represented a quarter of all the mercury produced in the United States. A few farmers and ranchers settled along the Rio Grande where they were able to grow cotton and livestock feed. Warm springs along the river became a haven for invalids.

Prior to the inception of the park in 1944, archeological excavations were performed in several caves in the 1920's and 1930's, primarily by researchers from the Smithsonian and Witte Museums. Archeological surveys by the NPS and others since then have covered only about two percent of the park. This, however, has resulted in the recording of 540 archeological sites. Most of these are small artifact scatters, but many significant Prehistoric and Historic sites have been documented as well.

Carlsbad Caverns National Park

Proclaimed a national monument in 1923 and established as a national park in 1930, Carlsbad Caverns is part of the Capitan fossil reef that forms nearby Guadalupe Mountains National Park but is much lower in elevation, ranging 3600-6500 feet in elevation. Unlike the Guadalupe Mountains, the landform at Carlsbad Caverns is a rolling plateau, dissected by numerous canyons. Nearly all its caves were created by the dissolving of soluble bedrocks by acidic groundwater solutions (carbonic or, far less commonly, sulphuric). Such solutions seep into cracks in the bedrock and dissolve it, forming larger and larger cavities over time. Evidence suggests that the sulphuric acid process was probably responsible for the spectacular large rooms at Carlsbad Caverns.

Carlsbad Caverns has three basic levels. The highest is at the bat cave 200 feet underground. This part of the caverns contains over 300,000 Mexican Free-tail bats for part of the year. The middle level includes the Big Room, and Lunch Room at -775 feet and Kings Palace, the Lower Cave and neighboring rooms at -800 feet. The lowest level includes chambers 1027 feet below the surface. In addition to the famous caverns, 70 other caves are known in the park.

Above ground the park offers a variety of terrains, vegetation, and wildlife. On the desert floor are the creosote bush and desert shrubs. In the canyons, where there is more moisture, desert willow, black walnut, oak, and hackberry prosper, while the canyon walls and ridgetops plants include agave, yucca, ocotillo, sotol, and desert grasses. At still higher elevations piñon pine, juniper, and Texas madrone can be found. Animal life is as varied, and almost as elevational dependant, as the flora.

Archeological resources at Carlsbad Caverns National Park are not well documented. The first professional research within the park occurred in 1930 with the excavation of several caves and other sites by University of Pennsylvania and the Laboratory of Anthropology. Other excavations and surveys were performed in the 1930's and 1950's under the auspices of the NPS. Small-scale and sporadic research continued from the 1960's through the 1980's.

Only 15 percent of the park has been archeologically surveyed but some 120 sites have been recorded. Many mescal roasting pits have been found in the park, one within a few feet of the entrance to Carlsbad Caverns. Pictographs have also been recorded near that entrance and human bones, moccasins, and other cultural remains were reported by early cave explorers. Deep within one of the other caves pictographs that date stylistically to the Archaic period have been found. It seems likely that early peoples had also occupied the

area but there is no direct evidence for that.

Europeans took little notice of the caverns until the 1890s when it was realized that the guano deposits in the bat cave could be mined. Six different firms tried to mine the caverns but, although taking out as much as 50 feet of guano, the ventures were never profitable. One of the miners, Jim White, who worked on five of the ventures, explored deep into the caverns. Although initially disbelieving his descriptions of the wonders he had seen, local people started having him lead tours into Carlsbad Caverns. Quickly the reputation of the caverns grew, leading its park status.

Fort Davis National Historic Site

The National Park Service created Fort Davis National Historic Site in 1961 to maintain and interpret the well-preserved ruins of this west Texas fort. Fort Davis was established in 1854 as part of the network of forts intended to protect the westward expansion of the United States after the Mexican War. Its principal purpose was the protection of settlers and road traffic in the region.

The U. S. Army originally placed the fort in Hospital Canyon, just to the west of the present parade ground. The structures were built of green lumber and rapidly deteriorated, making the maintenance of the post a continuous problem for the Army. The fort was abandoned in 1861 at the beginning of the Civil War, but was reoccupied briefly by the Confederate Army. It was abandoned towards the end of 1862 and stood empty through the rest of the war. In 1867 the post was reactivated, and construction began immediately on new garrison buildings of adobe on stone foundations, arranged around the present parade ground. The fort was occupied continuously from that year until its closure in 1891.

Until 1885 the post was the home of the famed Ninth U.S. Cavalry, one of the 'Buffalo Soldier', all-black regiments. It played a key role in the subjugation of the Mescalero and Warm Springs Apaches, culminating in the defeat of Victorio by troops from Ft. Davis in 1881. The surviving buildings of the fort have been stabilized, and several of the first fort buildings have been relocated by archeological survey, which has covered all of the park.

Gila Cliff Dwellings National Monument

This area of 533 acres, separated into two units, is found in the Mogollon rimland along the Gila River. Its most salient cultural resources are a cliff dwelling occupied by between AD 1280 and 1300, and the TJ Ruin, a large open pueblo/pithouse site of about 200 rooms and several plazas. The monument is in the unique position of conjoint management between the National Park Service and the US Forest Service. Although small groups inhabited the area as early as the Early Pithouse Phase (c. AD 550) and sporadic occupation is thought to have continued under Historic Apache groups, these large sites were undoubtedly associated with the most intensive occupation of the area.

Excavation of the cliff dwelling was the predominant activity up until the 1960s, normally coupled with stabilization efforts. Keith Anderson reported on several decades of excavation and stabilization documentation findings in 1986. Systematic survey of the Monument and the Forest Service lands around it were done by Don Morris in the 1960s also, recording 60 sites.

In support of general management plan research, intensive archeological survey directed by James Bradford compiled all previous survey information and covered all ground within the Monument in 1988 and 1989; the report was published in 1992. Bradford's crews documented and/or discovered 45 sites within the boundary. These are arrayed in the following categories: pithouse sites, pithouse/pueblo sites, pueblo sites (small pueblos, field houses, large pueblos), rockshelters, artifact scatters, and a few others. Generally, these site types reflect the change from pithouses to pueblo residences, and show at least some increases in site size through time. Most of the sites fall into the Mimbres, Animas, and Salado Phases between AD 1200 and 1450. The survey for this area is viewed as completed, and no serious impacts to the monuments archeological resources are anticipated.

Guadalupe Mountains National Park

Authorized in 1966 but not established until 1972, Guadalupe Mountains National Park is a place of contrasts, from the starkness and aridity of the Chihuahuan desert to the lush, hidden oases around springs to the relict forest of the uplands. Straddling the Texas-New Mexico border, the Guadalupe Mountains are part of one of the largest fossil barrier reefs in the world, the Capitan Reef. Four hundred miles long, this limestone reef once formed

the edge of the Delaware Basin, a lobe of a Permian era sea. Eventually the sea disappeared, the area was uplifted, and rains eroded away the overlying sediments, exposing portions of the reef as mountain chains in several places including the area of the Guadalupe mountains and Carlsbad Caverns National Park.

The desert areas below the mountains at elevations of 4,000-5,000 feet are arid and often extremely hot with typical desert flora and fauna: agave, creosote, and cacti, coyote, badger, skunks, deer, lizards and other reptiles. Around Manzanita, Smith, and other springs, the desert gives way to lush growth of willows, ponderosa pine, walnut, maple, and oak. These areas teem with birdlife. An area 2500 feet higher up called the Bowl is a large, heavily-timbered basin that can not be seen from below. The Bowl contains unique vegetation: Douglas fir and limber and ponderosa pine--a relict forest left behind from the last glacial periods. Fauna here, including elk (re-introduced), bear, cougar, mountain chickadee, nuthatch and warbler, are often at the southern end of their ranges. Above the Bowl are yet higher peaks such as Guadalupe Peak (8749 feet, the highest point in Texas).

As evidenced by middens, utilized rockshelters and caves, and open campsites, Guadalupe Mountains National Park has seen human occupations for at least 10,000 years. Over 80 percent of the park has been surveyed for archeological remains and 315 sites have been recorded. Twenty-nine of those have been considered for nomination to the National Register of Historic Places. Three sites have been accepted on the register, the Piney Stage Station on the Butterfield Overland Mail route, the Walter Pratt Stone Cabin, and the Frijole Ranch House. Three other sites, Pratt's Ship of the Desert, the Glover complex, and segments of the Emigrant Trail, are being considered.

The historic occupations of the park are far better known than are prehistoric. The Apaches were already a presence in the Guadalupe Mountains when the Europeans arrived and they discouraged travel in the area. While the Spanish explorers probably passed the area, they generally stayed near watercourses. The name, Guadalupe, shows up on maps as early as 1828, but no real effort was made to explore the area until 1849, when surveys were conducted in an attempt to find possible wagon routes. Captain John Pope tried to establish a post on the lower Pecos River to the southeast in 1855 and the Butterfield Stage Line maintained the stage stop at the Piney from 1858 to 1859. Both failed for lack of water and personnel and Indian troubles. In 1869 the US Army drove the Apache from their camp at Manzanita Spring in the first of many military encounters that lasted until 1879, when the Mescalero Apache were driven from the Guadalupe Mountains and moved onto a reservation.

Archeological investigations within the park began in the late 1930's with the excavation of Williams Cave and other sites by Ayers and Mera. In 1965 the NPS excavated Pratt Cave, and in 1970 the Texas Archeological Society surveyed app. 30% of the park. This survey was continued throughout the 1970's by Texas Tech College, accounting for another 30% of the park area. In 1985 John Roney, under contract with the Park Service, recorded another 111 sites in the Rocky Arroyo drainage, as well as excavating Hooper Canyon Cave. Few artificial impacts to the monument's cultural resources are projected.

Rio Grande Wild and Scenic River

This wilderness area runs for 191 miles along the north shore of the Rio Grande, from the southeastern boundary of Big Bend National Park to the western edge of Val Verde County, just west of Amistad National Recreation Area. Designated as a unit of the Park Service in 1978, no physical improvements or facilities have yet been developed and all 9600 acres within the park are non-federally owned.

As yet, no archeological investigations have been performed in the Rio Grande Wild and Scenic River. Information from Big Bend to the west, and Amistad N.R.A. to the east, however, indicates that significant resources are likely to be exist. These probably include many cave and rockshelter sites with evidence of occupation ranging from at least the Early Archaic (and possibly the preceding Paleo Indian Period) through the late nineteenth century. Historically the area was home to several poorly-known Coahuiltecan groups, the equally enigmatic Chisos Indians, and from the seventeenth through nineteenth centuries, the Mescalero and Lipan Apache. A rough estimate of 200 sites within the Park has been suggested.

Since the destruction of local Apache groups in the 1870's and 1880's, the area has been essentially uninhabited. Small-scale ranching has occurred but the area's isolation has discouraged almost all forms of economic exploitation, other than the age-old organized smuggling endemic to such remote stretches of the American-Mexican border.

White Sands National Monument

This park, in the center of the Tularosa Basin, an large, enclosed intermontane basin, was established in 1933 to protect its unique natural resources, primarily the White Sands, an extensive active gypsum dune field. Research by, and for, the Park Service since then has shown it also contains significant natural resources, historic and prehistoric. Only a portion of the park is covered by the dunes; the northwestern portion is an extensive alkali flat, the western edge the lower bajada of the San Andreas Mountains, and the southwestern corner contains an intermittent body of water, Lake Lucero. Prior to the onset of modern climatological conditions (i.e. the Holocene) all of the park area, and most of the Tularosa Basin it is within, were submerged beneath the waters of Lake Otero. Today the Tularosa Basin is an arid expanse flanked by the San Andres Mountains to the west and the larger Sacramento Mountains to the east.

Although Paleoindian materials have been found to the north and south of the monument, the oldest known archeological sites within it date to the Archaic Period, c. 2000 BC. Many of these early sites are unique "stabilized hearths" formed when the gypsum of the white sands is vitrified by heat. These are concentrated in the eastern edge of the parabolic dunefield. This same area contains similar sites associated with later Puebloan and Apachean populations.

More extensive cultural remains are found in the area of Lake Lucero and the San Andres Mountain bajada. Sites here date from the Archaic through the early twentieth century. The largest, and best-known are the Huntington and Lucero Lake Sites, prehistoric pueblos associated with local agriculturalists. The bajadan community is by far the richest park area biotically, and was the focus of the Puebloan (AD 600-1400) and later Apachean populations. Historic sites, Apachean and EuroAmerican are also common around the lake. The pure gypsum salts easily mined from its margins were an important trade resource during the Historic Period. A small but bloody conflict, the 'Salt War' was fought in 1854 between rival groups from El Paso for control of the lake.

Following the forced removal of the Mescalero Apache in the 1870's, the White Sands area was intensively grazed, until drought conditions in the early twentieth century severely curtailed the area's productivity. Since World War II, the park has been surrounded by the White Sands Missile Range. Approximately 20% of the Park is considered to have been surveyed, mostly by Human Systems Research in the 1970's. Seventy-six sites have been recorded, and many more are projected in the rest of the park. Due to the inaccessibility of the park, in the middle of a military reservation, the cultural resources of White Sands

are considered to be in exceptional condition.

C. The Middle Rio Grande Valley and Adjacent Highlands

Table 9. Status of Archeological Survey, Middle Rio Grande Valley and Adjacent Highlands Parks

Park	Survey Sample	Recorded Sites	Est. Sites	Est. Total Sites	Upgrade for CSI?	Overall Quality
Bandelier	43%	2000	2445	4445	No	5
Pecos	15%	200	200	400	Yes	1
Petroglyph	40%	200	300	500	Yes	3
Salinas	35%	30	132	162	Yes	1

Bandelier National Monument

Established in 1916 to preserve "certain prehistoric aboriginal ruins . . . of unusual ethnologic, scientific, and educational interest" (Presidential Proclamation 1322), Bandelier National Monument covers fifty-one square miles of the southern Pajarito Plateau. A volcanic tableland sandwiched between the Rio Grande and the Jemez Mountains, the plateau climbs from the river in the southeast corner of the park to Cerro Grande in the northwest. Within this 13 mile, 5000' gradient, the plateau contains plant and animal life of the Upper Sonoran, Transition, and Canadian life zones. Incised by deep canyons separated by long mesas, the middle elevations of both mesa tops and canyons were intensively used by the Anasazi.

Bandelier contains an estimated 4500 archeological sites. Over 80% are Anasazi, although Paleoindian, Archaic, and Historic remains are also present. The Anasazi sites range from small masonry pueblos occupied during the Developmental (A.D. 1150-1200) and

Coalition (A.D. 1200-1325) periods, to large pueblos (masonry and cavate) and numerous fieldhouses built during the Classic period (A.D. 1325-1600). Bedrock trails, petroglyphs, eagle traps, reservoirs, great kivas, lithic scatters, quarries, and shrines round out the list of significant features.

First visited by Adolph Bandelier in the early 1880s, the Pajarito has long been a focus of archeological investigation. Hewett conducted extensive excavations at several Classic period sites (Tyuonyi, Group E, Long House, and Frijolito) between 1908-1912, but left little documentation. Open rooms at these sites were badly deteriorated by the early 1930s when a stabilization program was begun by Jerome Hendron.

Minor excavations in the 1940s by Hendron at Group M and Potsu'ii II, and by Onstott at Tyuonyi provided the first stratigraphic excavation of Coalition and Classic period materials. The 1948-50 excavation of Rainbow House by Worman provided a second opportunity to document a large Classic period pueblo, but due to the poor quality of the fieldwork little was learned. A survey of the detached Otowi unit was conducted by Turney in 1952, a decade before much of this tract, including the large Classic period pueblo of Otowi, was ceded to the Atomic Energy Commission.

During 1974-75, 23 sites along the park's Rio Grande boundary were excavated by Hubbell and Traylor in advance of the rising waters of Cochiti Lake. The results of this project and a later survey of sites damaged during suppression of the 1977 La Mesa fire (also reported by Traylor) provide the first substantial information on small pueblos and fieldhouses.

Most recently, a sample inventory survey of 43% (14,086 acres) of the park has identified a total of 1,959 sites. The survey data, reported by Powers and Orcutt, indicate rapid population growth in the late 1200s, followed by population aggregation in 1300s. Supporting the survey's attempts to determine why aggregation occurs, Kohler has excavated five Coalition and Classic period pueblos occupied during the transition to aggregation. Although both studies are still in progress, preliminary results suggest that aggregation may have provided the necessary social infrastructure needed to protect land use rights and obtain food during a period of intense resource competition.

Pecos National Historical Park

This area now consists of about 5500 acres, of which about 360 were added to the National Park System when a state monument and surrounding lands of the Forked Lightning Ranch came into Federal ownership. The final configuration of the park resulted from additions of a much larger parcel of surrounding Forked Lightning ranchlands, and two units associated with the Civil War Battle of Glorieta Pass (the Pigeon's Ranch and Canoncito parcels). These were added in 1990.

Originally, the "monument" was established to preserve the ancestral Puebloan ruins of Pecos Pueblo and the Spanish mission church. The former was continuously occupied from about AD 1300 until 1838, when the last few residents moved to live with Towan speaking relatives at Jemez Pueblo, which still retains a keen interest in the management of the park along with several other modern Rio Grande pueblos. The Spanish mission, a cruciform church and large convento made from adobe bricks, was built sometime around AD 1620, used up until the Pueblo Rebellion of 1680 when it was destroyed, and then rebuilt (on a much-smaller scale) in about 1705, continuing in use throughout most of the rest of the 18th century. Previous, less well-known occupations of the area include Archaic, Basket Maker and early Puebloan groups. Pecos' unique position at the southern end of the Rock Mountain massif has long led to its role as a point of contact between Plains Indian populations and more settled Puebloan groups to the west.

The long and well documented duration of puebloan occupation led Dr. A. V. Kidder to initiate excavations into the pueblo from about 1915 until about 1927. This effort, conducted during the nascent period of Southwestern archeology, culminated in the Pecos Conference, an informal get-together of archeologists that has since become an annual event. The role of Pecos excavations in shaping archeology is thus paramount. Kidder's reports were extensive, and included separate volumes on glaze-painted and other kinds of pottery, stone and bone implements, and architecture.

During the 1930s and 1940s, additional work was done as part of the Civilian Conservation Corps, primarily centering on preservation and excavation of the mission complex, but also including similar activities for the South Pueblo, an elongate house mound comprising part of the pueblo. The site was then managed by the state of New Mexico until 1965, and stabilization of the mission's melting adobe walls remained as a primary focus when the site was acquired by the National Park Service in 1966. Major work continued until 1976.

The focus of archeology changed from excavation to survey work that examined site distributions and the relationship of archeological sites to natural and social contexts in 1976, when Larry Nordby undertook a survey of the 360 acres then comprising the monument, along with a reconnaissance of Forked Lightning ranchlands that would subsequently be added to the park. This work examined site morphology and feature typology, and compiled preliminary information regarding the distribution of natural resources throughout the larger area. The result has been a complete inventory of about 120 sites within the smaller area, and a general idea of the nature of sites scattered across the ranchlands, about 70 of which are known and recorded to some extent.

Although about 5 or 6 of these sites are large 20-40 room pueblos, most are small "field houses", minimal architecture of one or two rooms believed to have been associated with agricultural work such as field tending. Generally, the occur in fairly level broad expanses, and date between AD 1300 and 1550. A number of large lithic scatters, adorned with a few projectile points of late Archaic or Developmental Pueblo projectile points, were also encountered by surveyors atop ridges, especially along the Pecos River. Some of these scatters may have been left by Apache bands who traded at Pecos pueblo from AD 1500 to 1700 or so.

There has been no systematic survey of either the Canoncito or Pigeon's Ranch units, and site distribution and characteristics are unknown. These areas are spatially removed from the Pecos Pueblo area, and were set aside because of their association with the Civil War, perhaps requiring the use of historical research, magnetometry or metal detectors to help locate important features.

Current survey plans call for an inventory of all uninventoried Pecos National Historical Park parcels. This inventory will take several years, and will be based on environmental variables. Because this park is a new unit, many natural resource inventories are now underway or recently completed, and digital information is available. These data have already been manipulated with a GIS system, and maps generated for the area. These will form the corpus of information used for designing the work, which will address issues of demographics and settlement strategies. The first year of survey funding is 1994, and is used for design and piloting.

Petroglyph National Monument

Petroglyph National Monument, established in 1990, is unusual in that it is immediately adjacent to a large, metropolitan area--Albuquerque, New Mexico. It covers nearly 7200 acres of that city's West Mesa. It is also unusual in that it is jointly managed by the National Park Service and the City of Albuquerque. Elevations range from 5,120 to 6,073 feet. The vegetation is typical of the Sonoran desert--shrubs and grasses and juniper trees along intermittent drainages on the mesa top.

Although established primarily for its cultural resources--nearly 15,000 petroglyphs on a 17-mile long lava flow edge, it contains prime examples of vulcanism not seen in other National Park Service areas. There appear to have been six episodes of eruption about 110,000-120,000 years ago. Many of the craters display lava, spatter, and cinders within the same cones. There are five major volcanic cones and numerous smaller ones dotting the landscape and two geologic windows formed by the lava flowing around gravel hills that subsequently eroded away. At least four small lava tubes are known in the monument.

A dozen archeological inventory or reconnaissance surveys have been done in or near the monument since the 1940s. They vary greatly in the quality and quantity of archeological data they provide. The most complete of them, in addition to the two seasons of the on-going National Park Service's (SAIP) survey have covered approximately 75 percent of the monument. The SAIP surveys have shown that much more activity had occurred on the mesa top than had previously been realized. In these two seasons 146 sites were recorded. The other six surveys whose methodology and data were considered acceptable had recorded 152. Of those sites, two were extremely significant--a suspected Pueblo II pithouse village and the Piedras Marcadas ruin, dating possibly from 1300 to 1600 A.D.

While Paleo-Indian materials have been found outside the monument, the earliest occupations thus far reported within it date to the early Archaic period. Puebloan use of the area, other than the escarpments, seems to have varied in its intensity and duration. In the Historic period, land grants were given by the king of Spain and the Mexican government, and sheep and cattle herding continued up to the twentieth century. The present-day Pueblos maintain their religious ties to the area as well.

Salinas Pueblo Missions National Monument

This park of three discontinuous units is in the semi arid high desert east of the Rio Grande. Gran Quivira was the first site added to the system (in 1909), augmented by the New Mexican State Monuments of Quarai and Abo in 1981. The total acreage is 1074. With respect to these units, the primary resources are similar for each, consisting of the ruins of Piro and Tompiro pueblos who lived in the region up until about AD 1675, along with at least one seventeenth century Spanish mission church/convento complex.

In each case, the church buildings are of massive construction and were excavated and stabilized sometime between the late 1930s and the 1970s. At each, the roofs are missing. By contrast, the puebloan ruins are generally demarcated only by earthen mounds containing the lower stories of Piro and Tompiro residences. The primary exceptions include Mound 7 at Gran Quivira, excavated by Al Hayes between 1965 and 1967; it is now on display to the public. A major interpretive feature of Mound 7 is the superimposition of a rectanguloid pueblo atop an earlier circular building. Gordon Vivian also excavated at Gran Quivira, including some work in House A and the missions.

As has occurred throughout the Southwest in the late 1960s and later decades, the focus of archeological activity shifted to survey. A reconnaissance of Gran Quivira and the area around it were carried out by Tom Caperton in 1967. Patrick Beckett conducted an inventory of that same park in the 1970s, and information on site location and characteristics is quite good.

During the early 1980s, Jim Trott, Larry Nordby and Jim Bradford surveyed the other two units as part of General Management and Land Protection Plan research. Identification of site location that would permit facility planning was the focus. The sites were staked with aluminum rod, and plotted on very accurate one-foot contour interval maps. GPS positions on the stakes were collected in 1993. Although it is known that most sites are small field structures or lithic/mixed scatters, what is missing for the survey of Abo and Quarai units is any information on the nature of the sites, including individual site maps with feature designations. Collecting this information will be done as part of the regional survey activity package as soon as funding is available.

D. The Eastern Colorado Plateau

Table 10. Status of Archeological Survey, Eastern Colorado Plateau Parks

Park	Survey Sample	Recorded Sites	Est. Sites	Est. Total Sites	Upgrade for CSI?	Overall Quality
Aztec Ruins	100%	40	0	40	No	5
Chaco Culture	100%	3111	0	3111	No	4
El Malpais	0%	30	300	330	Yes	2
El Morro	100%	140	0	140	No	4

Aztec Ruins National Monument

In recognition of its "great antiquity and historical interest" Aztec Ruins National Monument was established in 1923 to preserve the Aztec Ruin (West Ruin) "for the enlightenment and culture of the Nation" (Presidential Proclamation 1650). The present monument, totalling 319 acres, preserves a ceremonial core area consisting of the West Ruin and 11 surrounding structures and a ceremonial and residential area of 40 pueblo structures located a short distance to the north. Both the ceremonial center and the northern complex are remnants of a large Chacoan outlier community occupied between A.D. 1090 and 1150. Prehistoric road segments to the west and north link the community with neighboring Chacoan outliers.

The monument extends from the west bank of the Animas River, northward across the valley floor to low Pleistocene cobble terraces marking the flood plain boundary. Deciduous trees and shrubs form dense riparian growth along the river margin, but this riverine bosque is replaced on the valley margins and terraces by xeric Upper Sonoran shrubs and grasses. Much of the monument has been heavily impacted by 20th century developments, leaving little sense of the prehistoric scene.

Aztec's archeological features are dominated by the massive West Ruin, an enormous three story, D-shaped Chacoan greathouse containing 400 rooms, 28 kivas and a reconstructed great kiva. Tree-ring dates (A.D. 1110-1120) indicate construction during the Chacoan apogee, but as with other Chaco era buildings at Aztec, the West Ruin was extensively reoccupied and remodeled by 13th century "Mesa Verdian" occupants.

Also in the core are the very substantial East Ruin, the Hubbard Site, the Earl Morris Site, and Mounds A through F. The largely unexcavated East Ruin is also a greathouse. The Hubbard tri-wall, a kiva surrounded by concentric walls, is one of the few excavated examples of this poorly understood structure type. Mounds A and F also appear to tri-walls. On the terraces northwest of the core are 40 additional features, including residential pueblos, several probable great kivas, four small greathouses, and several prehistoric road segments.

Although the Aztec Ruins have long been famous, research at the complex has focussed almost exclusively on the West Ruin itself. The site was initially described by Newberry (1859), and then visited and mapped in 1879 by Morgan. In the second decade of this century the site was purchased by the American Museum of Natural History. Under the Museum's aegis, Earl Morris conducted extensive excavations from 1916-1921, and again in 1927. Morris' report describes the stratigraphy, architecture and material culture, and importantly, recognizes that the West Ruin was built by Chacoans but subsequently occupied by Mesa Verdian people.

Later work has been limited to excavation of the Hubbard tri-wall (Vivian), and pre-stabilization excavation in the East Ruin (Richert), and around the exterior of the West Ruin (Maxon, Nordby). Critiques of the dating of the East Ruin and Hubbard tri-wall by Lekson, Powers, and Stein and McKenna, suggest that these buildings are also Chacoan. Stein and McKenna's reconnaissance survey of the north terrace sites has transformed understanding of the entire monument. Added to the monument in 1988, the north terrace complex should be the subject of future study.

Chaco Culture National Historic Park

The area was first designated a national monument in 1907 after intensive lobbying by

Edgar Hewett to protect the cultural resources from looting. In 1980, Congressional decree (Public Law 96-550) changed the status to a park, enlarged the boundaries, and encouraged a wider role for research of the Chacoan prehistory of the park and areas throughout northwestern New Mexico.

The Anasazi culture that blossomed in Chaco Canyon between AD 900 and 1300 was a complex system dominated by aggregates of small-house communities associated with monumental architecture of public buildings, irrigation ditches, a road network, and visual communication systems. The long history of archeological work at Chaco Canyon, the training of several generations of Southwestern archeologists, the development of archeological techniques and theory, and the role of Chaco in archeological preservation, all give the park a prominent role in the history of American archeology and the prehistory of the region.

Early investigations at Chaco began at Pueblo Bonito with the Hyde Expeditions in 1896-1899 by George Pepper and Richard Wetherill, the latter a prominent figure in the discovery and investigations in Mesa Verde and Grand Gulch. Later work in the 1920s by the National Geographic Society at Pueblo Bonito and Pueblo del Arroyo, and by the School of American Research at Chetro Ketl continued the exploration of the large sites. Between 1929 and 1948, the University of New Mexico held field schools in Chaco Canyon with a focus on the small houses. After a lapse in research, the Chaco Project of the 1970s conducted the first inventory of the over 3000 sites in and around the canyon and began research into the road network, small-house occupations, archaic and Navajo occupations, and investigations at Pueblo Alto.

Future problems in Chaco focus on documentation and the stabilization of the exposed prehistoric architecture, as well as the preservation of exposed sites. In addition, research continues on the development of the Chacoan system in the park area as well as in the greater San Juan Basin and beyond. Currently, 3111 sites have been documented within the park, which is one of the few in the Southwestern Region to have received 100% survey coverage.

El Malpais National Monument

Created in 1987, El Malpais National Monument is in the Mount Taylor volcanic region of

western New Mexico. The name "El Malpais", Spanish for "bad country" is very appropriate for this national monument. Much of it is covered by one of three lava flows (the Zuni Canyon, Laguna, and McCartys flows). Sandstone bluffs on the eastern edge of the flows provide excellent vistas of the moonscape. El Malpais, under the name "Grants Lava Flow" was made eligible for natural landmark status in 1969.

The oldest flow, the Zuni Canyon, is most obvious in the northwest part of the monument and may date back 30,000 years. The second oldest flow, the Laguna, is the largest, and contains a large number of volcanic features, including some of the largest and most extensive lava tubes in the United States. Also present are many symmetric cinder cones; and some amazingly magnificent ice caves, filled with ice stalagmites, crystalline ceilings, and other unusual formations.

Many small, unique features, such as lava tube sinkholes (large water ponds within the flow) and shark's-tooth projections (formations angled in different directions in opposite directions on adjacent walls of a lava tube) have not been reported anywhere else in North America. The McCartys flow is the youngest flow, dating to 1000 years ago but possibly as recent as 400-600 years ago. In contrast to the Laguna flow, which is mostly aa lava, the McCartys flow contains great expanses of the smooth pahoehoe as well as aa. Spatter cones are also found in the McCartys flow.

Vegetation in the monument ranges from bulrushes and cattails in the sinkholes to grasses on the plains and Douglas fir, piñon and ponderosa pine, juniper, and other dominant forest species at the higher elevations. A forest of twisted, dwarf ponderosa pine is found on the McCartys flow.

Less than 2 percent of the monument has been surveyed archeologically. Still, more than 110 prehistoric and historic sites are known to be located within the monument's boundaries and more than a 900 sites have been recorded adjacent to the park.
Although no Paleo-Indian sites have been recorded within El Malpais, some nearby may be as old as 11,000 years. Archaic period sites are not uncommon within the monument and Puebloan sites are numerous. One noteworthy site is the Chacoan community of Las Ventanas. The present-day Pueblo community of Acoma, occupied since 1200 A.D., is 15 miles to the east of the monument.

The first archeologist to visit the area was Adolph Bandelier who followed an ancient

trail across the lava flows, supposedly the same trail used by Hernando de Alvarado as he travelled from Acoma to Zuni in 1540. More recent research in the area was conducted by the Laboratory of Anthropology (Museum of New Mexico) in the 1930s, Ruppe and Dittert in the late 1940s and early 1950s, and surveys by the School of American Research, the Laboratory of Anthropology, and the Bureau of Indian Affairs in the 1970s. The National Park Service has conducted some small compliance surveys since the monument was established.

While this monument needs an archeological inventory badly, there will be strong opposition to such an undertaking from Native American groups, particularly Acoma Pueblo and possibly Ramah Navajo, located 35 miles to the west. Since Zuni Pueblo already has its own archeological research program in place, it is unlikely they will object. Given the conditions in the lava flows, an inventory survey will be very difficult and potentially dangerous. Areas outside the lava flows will be more easily surveyed and can be expected to have high site densities.

El Morro National Monument

Created in 1906, this park is centered on a massive sandstone bluff, with a large, permanent pool at its base. Nestled in the southern flank of the Zuni Mountains, between the Colorado Plateau to the west and north and the Rio Grande Valley to the east, the area has been a landmark for hundreds of years. While materials dating to the Paleo Indian and Archaic Periods have been found nearby, the oldest known sites in the Monument date to the Early and Middle Formative Periods (AD 650-1000). After a hiatus in the area's occupation, the subsequent Late Formative Period witnessed settlement of small pueblitos at El Morro from about AD 1225 to 1250.

The height of the prehistoric use of the area apparently came in the terminal Muerto Phase of the Late Formative, from AD 1276 to 1300. During this time seven large (500 rooms or more) pueblos were built in an around the monument, including one, Atsinna, constructed on the mesa top over-looking the pool and Inscription Rock. This population aggregation however, seems to have exceeded the area's resource base and the puelbo's inhabitants are thought to have relocated to the Zuni pueblos to the west.

Although the El Morro area was effectively abandoned until the mid-nineteenth century, Zuni continued to exploit the area's resources until at least 1750, in addition to

travelling through it to the Rio Grande pueblos. Beginning in 1605 Spanish explorers, priests, and other travellers began to leave inscriptions, some of them large and elaborate, on the soft sandstone outcrop known as Inscription Rock, drawn by the perennial pool at its base. While Spanish expeditions probably passed El Morro as early as 1540, the earliest reliable inscription is that of New Mexico's first Colonial governor, Juan de Onate, on April 16, 1605. Over the next 170 years many other Spanish travellers left their marks as well.

From 1774 until the next definite inscription in 1827 the area was inhabited, on at least a seasonal basis, by Navajo groups, though no physical evidence of this is yet known from within the park. From 1827 to 1898 numerous Anglo and Mexican-American traders, ranchers, and later soldiers literally "left their mark" at El Morro as the area was gradually explored, then brought under the control, of the U.S. government.

The archeology of El Morro, principally the ruins of Atsinna, attracted the attention of many of the pioneer researchers of the American Southwest. These included Adolph Bandelier in 1888, Jesse Fewkes in 1890, and F.W. Hodge in 1912. The first survey was conducted by Leslie Spier in 1916, followed by Theodore Amsden in 1934. From 1953 until 1973, the NPS has sponsored or conducted a number of archeological excavations and surveys; these have covered all of the park area and recorded 140 sites. Due to developments in the discipline in the last 20 years however, it is felt re-survey and more detailed documentation of all of the park's cultural resources is in order.

E. Western Colorado Plateau

Table 11. Status of Archeological Survey, Western Colorado Plateau Parks

Park	Survey Sample	Recorded Sites	Est. Sites	Est. Total Sites	Upgrade for CSI?	Overall Quality
Canyon de Chelly	50%	700	700	1400	Yes	3

Hubbell Trade Post	100%	12	0	12	No	4
Navajo	100%	27	0	27	No	5
Sunset Crater	0%	0	200	200	Yes	1
Walnut Canyon	90%	230	23	253	No	4
Wupatki	100%	2669	0	2669	No	5

Canyon de Chelly National Monument

This area is in the heart of the Colorado Plateau, where Chinle Wash has cut canyons deep into the de Chelly sandstones. The Monument is renowned for its spectacular canyon walls and alcovate ancestral Puebloan sites. The lands in the canyon bottom have been the homes of Navajo farmers since these Athabascan peoples arrived at about AD 1400, and subsistence farming and herding are still practiced there today. All lands within the Monument belong to the Navajo Nation, and the National Park Service has been entrusted to manage the cultural resources since the formation of the Monument in 1931.

The Monument consists of three major canyons linked in dendritic drainages: Canyons de Chelly and del Muerto, and Monument Canyon. Each of the three has many smaller tributaries. The landscape is rugged, with drainage bottoms formed of alluvial terracing bordered by steep talus slopes and boulder fields. These slopes are themselves truncated by sheer cliffs in most cases several hundred feet high. Typical pinyon-juniper forest predominates.

As noted, these cliffs hold alcoves that house hundreds of ruins used for residences, storage facilities, and ceremonial purposes, dating between AD 950 and 1300. These range from only a single room to over 100 rooms, but one key factor is that because of their locale, the sites are often well-preserved and have standing architecture with usable tree-ring dates. Basketmaker slab cists and houses are among the earliest known in the Southwest, dating as early as AD 300. Pictograph panels, prehistoric and historic, are

often complex and of outstanding preservation.

Besides famous alcovate sites such as White House, Mummy Cave, and Antelope House, other site classes include Navajo hogans, farmsteads, and toehold trails that link rim with canyon bottom. Along the terraces are Pueblo I slab houses dating between AD 650 and 950, a period little known. Within the one-half mile radius of the canyon rims, an area within the Monument, are a few Archaic and Navajo homesteads.

Archeological work at Canyon de Chelly was begun in the late nineteenth century; one era of focus was with the work of Earl Morris in the 1930s, who dug at and stabilized Mummy Cave and White House, among many others. Dr. Morris was seeking to demonstrate the chronological relationship between Basketmaker and ancestral puebloan peoples, and so most often dug Basketmaker remains, which unfortunately were often buried below later pueblos that he removed in order to get at earlier materials.

Systematic survey work got underway with David deHarport, who surveyed in Canyon de Chelly in the 1940s, and with Don Morris, representing the Western Archeological and Conservation Center. In the early 1970s, he surveyed the area around Antelope House, which he also dug and stabilized, and conducted reconnaissance work elsewhere in Canyon del Muerto.

In the later 1980s and early 1990s, Scott Travis expanded on Morris' reconnaissance work in del Muerto, compiling all previous data. This intensive work identified many more sites, probably increasing the total site population for the areas he worked by up to a tenfold factor. This survey represented several improvements over past work in that research and management "sectors" were conceptually linked as the units for both study and management. In an attempt to maximize the efficiency of this survey, different intensities of documentation were collected in a programmed manner. For example, architectural information strategies were refined for sites with major amounts of standing wall. This work continued beginning in 1994, for the upper reaches of the Canyons, where no work has ever been done, and for Monument Canyon, which similarly has never been surveyed. Because of the difficulty of working at the Monument, work will proceed slowly.

The potential impacts of threats to the resources at Canyon de Chelly are magnified by the fact that the Service does not own the land. As the pressure for more visitation increases, so will the impacts of vehicular traffic, which has already accelerated erosion to the point where major classes of resources have been damaged. Harvesting tribal timber

in the area above the rim is another potentially damaging action.

Hubbell Trading Post National Monument

This area is within the Colorado Plateau, in a broad basin west of the Defiance Plateau with its expanses of tall ponderosa pines, but east of more arid grasslands. The environment is essentially arid scrub and sageland that has been used by Native American peoples since at least AD 700. Although the remains of ancestral puebloan people are found at this unit, the cultural resource of primary interpretive focus is the trading post established in 1876 by Lorenzo Hubbell along with residences and outbuildings. The post was established mainly to trade with the Navajo.

An intensive archeological survey was conducted in support of an archeological assessment in 1978. All sites visible were inventoried, documented, plotted, and mapped. Each site is described in the assessment written by Dan Scurlock, who also summarized the survey information given by previous workers.

The total site population for Hubbell is 17, including the trading post complex. The other large site at the Monument is Wide Reed Ruin, a large Pueblo III house block, which was dug by James Mount in the 1960s. Other sites are of the following kinds: artifact scatters, generally of little depth; cists with a few artifacts; a possible hogan; and one trashy mound including several burials.

The primary threat to these sites is erosion, in a highly arid and little vegetated area. Sheet erosion attacks some, with Wide Reed Ruin and the Sand Dune site actually subjected to severe arroyo side-cutting. Scurlock recommended no further work at any of the sites unless they might be damaged by construction or developments.

Navajo National Monument

This area is along the Southwestern margins of the Colorado Plateau, where large canyons have eroded into sandstone mesas. The landscape is spectacular and rugged, but the parcels of land comprising the Monument are small, totalling only 360 acres. Surrounding lands are owned by the Navajo Nation. The main interpretive locations are three well preserved cliff

dwellings characteristic of what has been termed Kayenta Anasazi: Betatakin, Keet Seel, and Inscription House. The latter has been closed since 1968 because of its fragility.

The three major sites have been known since the last century and were closely involved in the development of tree-ring dating processes. Excavation and stabilization work have been conducted since the 1930s, such as the work done by Julian Hayden with the Work Projects Administration at Keet Seel. This unique linkage of architecture and tree ring studies culminated in Jeff Dean's landmark study on village growth patterns of Tsegi Phase sites dating between AD 1100 and 1300 or so.

Systematic survey work was directed by Scott Travis in 1988, and about 15 other sites were found and/or documented more intensively on the parcels surrounding each of the primary ruins. These include Navajo homesteads, ceramic and lithic scatters, and a couple of other smaller cliff dwellings, Snake House and Owl House. The first draft of this manuscript is complete, it has been through external peer review, and comments are now being addressed by Travis. The level of information is very good, and contextual commentary has also been provided.

Sunset Crater National Monument

Located less than eight miles north of Flagstaff, Arizona, Sunset Crater National Monument represents only a small part of the 2,000 square-mile San Francisco volcanic field that covers much of the southwestern Colorado Plateau. Still, it illustrates the larger area with its dramatic cinder cone, Sunset Crater, rising a thousand feet above the forest and the aa lava fields that surround the crater, believed to have first erupted around 1064-1065 A.D.

The forces that had created the San Francisco volcanic field violently sprayed molten rock high into the air through a narrow crack in the ground. The molten rock quickly cooled and fell back to earth as small cinders or large bombs. Eruptions probably continued over the next hundred years and the heavier debris built up to form the crater seen today. Around the base of Sunset Crater, gas vents opened suddenly and lava spouted out to form spatter cones.

Subsequent lava flows in AD 1150, and AD 1220 destroyed all living things in their paths. As the lava drained from the tunnels through which it had flowed, small caves or

lava tubes were created. At least one of these now contains ice and probably served as a source of water for the animals and humans in the area. Part of the roof of this cave collapsed in 1984 and the cave was closed to the public. The trail that spirals up to the top of Sunset Crater passed the cave. The final burst of activity, occurring in the early 1220s, sent lava rich in sulphur and iron into the air. These yellow and red cinders created the aura of the sunset on the crater and, hence, the its name. Elevations in the monument range from 6,960 feet at the visitor center to 8,029 feet on the rim of Sunset Crater. Ponderosa pine is the dominant tree in the area and other plants common to the desert/mountain interface are also present.

There has been no archeological survey at Sunset Crater National Monument but surveys have been done just to the west in the Coconino National Forest and 100 percent surveys were conducted at Walnut Canyon and Wupatki National Monuments, 15 miles south and 18 miles north, respectively. There is little reason to expect the archeology at Sunset Crater to differ greatly from those other areas, although much of the monument's archeology may have been buried by the ash and cinder eruptions and the Bonito and Kana-a lava flows. Thermographic studies done in the late 1960s of an area 12 miles east of Sunset Crater and slightly north of Merriam Crater revealed the existence of prehistoric agricultural fields created after the eruptions on the lava flows. A similar study of Sunset Crater National Monument might prove to be a profitable adjunct to any archeological inventory survey done there.

Walnut Canyon National Monument

Situated in the pinon and ponderosa forests of north Central Arizona, Walnut Canyon houses the remains of Sinagua Culture, generally in the form of low single-story cliff dwellings perched atop narrow ledges. The deep entrenchment of small canyon arms and steep defiles combine to isolate segments of still-remaining mesas. These are termed "fortresses," and are surrounded on all sides by canyon. The fortresses are the landform adorned by a number of the cliff units, although sites are found in other situations as well. Surveys to this date have recorded 242 sites on the Monument, which contains 2,250 acres, 90% of which have been surveyed (all but the canyon floor).

Systematic archeological survey started in 1954, and lasted up until the 1980s; in 1986 a comprehensive survey report that integrated all of the previous work was written by Ann

Baldwin and Michael Bremer. It traces the cultural developments at the park from Cinder Park up through the Clear Creek Phase (post-AD 1300). Most of the sites in the park date to the period following the eruption of Sunset Crater in AD 1066, with a peak population running between AD 1120 and 1200, during the Elden Phase. These sites include small hamlets and farmsteads, field houses, and a few larger villages, in addition to the better known cliff units.

Since the data acquired during the latest survey are very good, and other data have been synopsized in the report, the survey for this park is essentially complete. There are movements to increase the size of this park by several thousand acres, however. If so, additional survey, mostly on the rims but also adjacent to a couple more of the fortresses, will be needed. Much of this land is already in Federal hands.

Wupatki National Monument

Wupatki National Monument was established in 1924, primarily for its cultural resources, the extensive ruins occupied by the Sinagua (Spanish for "without water") people, but it also has many noteworthy natural resources as well. Located 25 miles north of Flagstaff, Arizona, and 18 miles north of Sunset Crater National Monument, it is in an area of volcanics, sedimentary rock bluffs, and badlands similar to those at Painted Desert National Monument, farther east.

Much of the western quarter and small portions of the southwest and eastern parts of the monument show evidence of the vulcanism of the general area, pressure ridges on the mesa tops and escarpments along the edge of lava flows. The remainder of the monument are limestones and sandstones of Permian age. Three interesting features found in these sedimentary formations are large sinkholes, fissures or earth cracks, and blowholes. Two sinkholes are outside the monument, Arrowhead Sink (140 feet deep) and Wupatki Sink (130 feet deep) but one, Citadel Sink (175 feet deep) is within the monument.

The deepest of the earth cracks is 500 feet deep. Associated with the earth cracks are blowholes. During the night and early morning hours, cooled air enters the cracks through these holes and is expelled in the warmer afternoon hours, sometimes with great force. Elevations are lower than at Sunset Crater National Monument, 4300 feet at the Little Colorado River on the east and 5650 feet on the western boundary of the monument. As a

result, the flora and fauna are those of the Upper Sonoran desert. At least five springs and several seeps are known within or near the monument. The Little Colorado River may not have been a major source of water since it contains high amounts of dissolved salts and gypsum.

All of Wupatki National Monument has been surveyed archeologically. Types of sites that have been recorded at Wupatki National Monument include: pithouse villages, field houses, unit pueblos, rock art, hearths, rockshelters/overhangs, burials, cists, terraces (built either of red sandstone, yellow limestone, or black basalt) , dams and reservoirs, walls, depressions, isolated kivas, catchments, lithic scatters, pottery scatters, combinations scatters, community rooms, a ball court, checkdams, quarries, windbreaks, enclosures, field systems, borrow pits, shrines, camps, slab pens/small corrals, fences, cairns, hogans, ramadas, sweatlodges, squaw dance areas, corrals, trading post, childrens' playhouses, highway dumps, and earth cracks.

Only 10 of the 2669 known archeological sites at are thought to have pre-dated the eleventh century eruptions at Sunset Crater. After the eruptions it appears the Sinagua, the Kayenta Anasazi, and the Cohonino peoples, previously trading partners, may all have settled in the Wupatki area. Archeological studies began in the late 1800s or early 1900s when Jesse Fewkes photographed and mapped the ruins in the Wupatki area. Dr. Harold S. Colton began his studies of the area in the first two decades of the twentieth century and continued into the 1960s. By 1933 the Museum of Northern Arizona had started its program of survey and excavation at Wupatki National Monument. Between 1981 and 1987 the National Park Service conducted its own survey of the entire monument.

PART TWO: RESEARCH ORIENTATIONS AND DESIGNS

Summary of Survey Types

Four basic levels of cultural resource research projects are used in the Regional Program, three of them involving survey. They are:
Reconnaissance Survey: A non-intensive field study that develops a sense of the kinds of resources present. Used to support early or baseline planning efforts. These will be

performed only during pilot studies, usually in the first year of each SAIP project.

Inventory Survey without test excavations: A field study that methodically searches for all sites within a given area.
Used to meet Section 110 (National Historic Preservation Act) requirements in arid environments or where site content can be determined from surface evidence. Most parks in arid areas that are less than 1500 acres will receive this type of coverage in 100% of their areas.

Inventory Survey with test excavations: A field study that locates all visible sites within a given area, and conducts evaluative test excavations when appropriate. Used to meet Section 110 requirements in areas where site content cannot be determined from surface manifestations only. Small (less than 1500 acres) parks in non-arid settings will be scheduled for this type of effort under SAIP guidelines.

Sample Survey: An inventory survey of a given area, in
conjunction with a projection of site characteristics onto unsurveyed areas to which management mandates apply. Satisfies SAIP and Section 110 requirements for areas within only the sample units. Most parks in the Southwest Region are scheduled for this type of effort under the RAIP.

Non-Survey Data Recovery Studies: Excavations or tests, generally as part of problem oriented research or mitigation/salvage efforts. This level exceeds Section 110 requirements but provides desired information for interpretive, research, or other management aspects. These types of studies may be performed in conjunction with the RAIP as required by specific project needs or in response to management or preservation concerns.

Due to poor ground visibility caused by heavy vegetation, seasonal flooding, or alluviation, subsurface testing will be a necessary component of all SAIP projects in parks in the Non-Arid Zone. The type and intensity of such testing will be determined on an individual basis for each park. Portions of some properties in the Arid Zone will also require subsurface testing, among them: Pecos, Guadalupe Mountains, and Canyon de Chelly. This will be limited, for the most part, to those areas with pine duff ground cover, although limited testing will be performed at sites in active alluvial flood plains, such as in the floor of Canyon de Chelly or the alluvial fans along the western edge of White Sands National Monument.

Table Twelve summarizes the cultural resources mentioned in each park's enabling legislation (if any); its setting (rural, suburban or urban); physical accessibility of park areas and sensitivity of cultural resources to contemporary ethnic groups; actual survey conditions, and the proposed sample size to be surveyed. In some cases the latter will include areas to be re-surveyed, as well as discussing anticipated needs for subsurface or other testing activities.

Table 12. Summary of Survey Conditions and Cultural Resources

PARK	CULTURAL RESOURCES IN ENABLING LEGISLATION	SETTING	ACCESSIBILITY AND CULTURAL SENSITIVITY	SURVEY CONDITIONS	PROPOSED SURVEY COVERAGE
ALIBATES FLINT QUARRIES	Preserve a large concentration of unique flint quarries used for 12,000 years, as well as other cultural resources.	Rural	Easy, on foot and by road.	Good: Open, rolling terrain, good ground visibility.	Intensive survey of 100% of the park area.
AMISTAD	Protect and preserve prehistoric & historical resources.	Rural	Easy by boat, easy to difficult by road, easy to difficult on foot.	Varied: canyons are difficult, elsewhere is easy, except for areas of heavy vegetation.	Intensive coverage to expand sample to 40% from current 15%.
ARKANSAS POST	Preserve and commemorate the site of the first European settlement of the Lower Mississippi Valley.	Rural	Easy by road and boat, difficult on foot.	Poor: difficult due to heavy vegetation & seasonal flooding.	Intensively re-survey 100% of the park.
AZTEC RUINS	Preserve Aztec Ruin and associated sites due to their historical and scientific interest.	Rural and Suburban	Easy on foot and by road. Sensitive to Puebloan, Navajo and Ute groups.	Good: easy on terraces, and in plowed fields, difficult in the floodplain bosque.	None- adequate 100% coverage already achieved.
BIG THICKET	None	Rural and Suburban	Easy to difficult by road, difficult on foot.	Poor: difficult due to heavy vegetation, flooded terrain.	Intensive survey of 40% of the park area.
BUFFALO	None	Rural	Easy by boat, easy by road, easy to difficult on foot.	Poor to fair: difficult in heavily wooded areas. Two large wilderness areas.	Intensive survey of a 40% sample; extensive subsurface testing.
CARLSBAD CAVERNS	None	Rural	Easy by road, easy to difficult on foot. Sensitive to Mescalero Apache.	Good: open, terrain, good ground visibility	40% intensively surveyed sample of park area.
CANYON DE	Care, maintain, preserve and restore prehistoric ruins or other features of	Rural	Difficult on canyon, slopes, easy in canyon bottom and on the rim. Sensitive to Navajo	Fair to Very Good: terrain is often difficult but ground	40% intensively surveyed

PARK	CULTURAL RESOURCES IN ENABLING LEGISLATION	SETTING	ACCESSIBILITY AND CULTURAL SENSITIVITY	SURVEY CONDITIONS	PROPOSED SURVEY COVERAGE
CHELLY	scientific or historical interest.		(who still occupy canyon) and to Hopi groups.	visibility is good.	sample of the park.
CAPULIN VOLCANO	None	Rural	Easy by road, somewhat difficult on foot.	Good: difficult terrain, but good visibility.	Intensively survey 100% of the park.
CHICKASAW	Administer historic values, and sites and properties, and commemorate the Chickasaw Indian Nation.	Rural and Suburban	Easy by road and on foot. Sensitive to Chickasaw and other Oklahoman Native Americans.	Good: open terrain, ground visibility variable.	Intensively survey 100% of the terrestrial park area.
EL MALPAIS	Preserve and protect the Las Ventanas Chacoan archeological site and other cultural resources.	Rural	Easy to difficult by road, difficult to very difficult on foot. Sensitive to Navajo, Zuni, and Acoma.	Fair to Good: rugged, often dangerous terrain. Good ground visibility.	Intensively survey a 20% sample of the park area.
EL MORRO	Protect "the rocks known as El Morro and Inscription Rock…due to their great historical value."	Rural	Easy by road and on foot. Sensitive to Navajo, Zuni, Acoma, and other Puebloan groups.	Good: open terrain, good ground visibility.	None- 100% of park adequately surveyed
FORT DAVIS	Preserve and interpret historic sites, buildings, and antiquities of national significance.	Rural	Easy by road and on foot.	Very Good: open terrain, good ground visibility.	None- 100% of park has been adequately surveyed.
FORT SMITH	Preserve the site of the first and second Fort Smiths, and other cultural resources.	Urban	Easy by road and on foot.	Good: open terrain, ground visibility fair to poor	Resurvey 100% of park, some subsurface testing.
FORT UNION	Preserve and protect historic 'old Fort Union'.	Rural	Easy by road and on foot.	Very Good: open terrain, good ground visibility.	Intensively survey 100% of the park area.
GILA CLIFF DWELLINGS	Preserve 'Gila Hot Springs Cliff Houses' due to their scientific and educational interest.	Rural	Easy by road, and on foot. Sensitive to Apachean groups.	Good: rugged terrain, ground visibility varies from good to fair.	None- 100% of the park has been adequately surveyed.
GUADALUPE MOUNTAINS	None	Rural	Easy to difficult by road, difficult to very difficult on foot. Sensitive to Mescalero Apache.	Good to Fair: rugged terrain, generally good ground visibility.	80% of park already surveyed, but to sample 40% intensively.

PARK	CULTURAL RESOURCES IN ENABLING LEGISLATION	SETTING	ACCESSIBILITY AND CULTURAL SENSITIVITY	SURVEY CONDITIONS	PROPOSED SURVEY COVERAGE
HOT SPRINGS	None	Urban and Rural	Easy by road and on foot.	Good: hilly terrain, fair to poor ground visibility.	80% of park will be intensively surveyed.
HUBBLE TRADING POST	Preserve & protect Hubbell Trading Post and continue to operate it in its traditional manner.	Rural	Easy by road and on foot. Sensitive to Navajo and Hopi groups.	Very Good: open terrain, good ground visibility	None- 100% of park has been adequately surveyed.
JEAN LAFITTE	Preserve the historical resources that portray the cultural diversity of the area.	Urban and Rural	Easy to difficult by road and boat, difficult on foot.	Poor to Fair: heavily vegetated and flooded terrain, poor ground visibility.	Intensively survey 80% of the park; extensive subsurface testing.
LAKE MEREDITH	Protect the scientific and cultural resources of the area.	Rural	Easy by road, boat, and on foot.	Very Good: open terrain, good ground visibility.	Intensively survey a 40% sample of the park.
LYNDON JOHNSON	Preserve & interpret historically significant properties associated with the life of President Lyndon B. Johnson.	Rural and Suburban	Easy by road and on foot.	Good: open terrain, ground visibility varies from good to poor.	Intensively survey 100% of the park.
NAVAJO	Preserve prehistoric cliff dwellings and pueblo ruins for their ethnological, scientific and educational interest.	Rural	Easy by road, difficult on foot. Sensitive to Navajo and Hopi groups.	Fair to Good: precipitous terrain, good ground visibility.	None- 100% of park has received adequate coverage.
PADRE ISLAND	None	Rural	Easy by boat and on foot. Easy to difficult by road.	Good: open terrain, good ground visibility.	Intensively survey 20% of park's land area.
PALO ALTO	Preserve the site of the first battle of the Mexican-American War.	Rural	Easy by road and easy to difficult on foot, due to heavy vegetation.	Fair: open terrain, but with poor ground visibility in overgrown areas.	Intensively survey 80% of the park; extensive subsurface testing.
PECOS	Protect & interpret the seventeenth century Spanish mission and ancient Indian pueblo; the cultural resources of the Forked Lightning Ranch and the Civil War Battle of Glorieta.	Rural	Easy by road and on foot. Sensitive to Hispanic, Puebloan, Kiowan, Comanche and Apachean groups.	Good: open terrain, fair to excellent ground visibility.	Intensively survey 100% of the new additions to the park.

PARK	CULTURAL RESOURCES IN ENABLING LEGISLATION	SETTING	ACCESSIBILITY AND CULTURAL SENSITIVITY	SURVEY CONDITIONS	PROPOSED SURVEY COVERAGE
PEA RIDGE	Preserve and mark for historical and military study the Civil War Battlefield of Pea Ridge.	Rural	Easy by road and on foot.	Fair to Good: hilly terrain, fair to poor visibility of ground.	Intensively survey 80% of the park area.
PETROGLYPH	Preserve the Las Imagenes National Archeological District, and other cultural resources.	Urban, Rural and Suburban	Easy by road and on foot. Sensitive to Puebloan groups, who still use the area.	Very Good: open to rugged terrain, good ground visibility.	Intensively survey 80% of the park area.
POVERTY POINT	Preserve the archeological area known as Poverty Point, and to interpret and conduct research on its people and their culture.	Rural	Easy by road and on foot, except in areas of heavy vegetation.	Fair to Good: open terrain, poor to fair ground visibility.	Conduct an intensive re-survey of 100% of the park area.
RIO GRANDE	Preserve outstandingly remarkable historical, cultural or other values.	Rural	Difficult by road, boat and on foot.	Poor to Fair: rugged terrain, good to fair ground visibility.	Intensively survey 80% of the park area.
SALINAS PUEBLO	Preserve the ruins of prehistoric Indian pueblos and associated seventeenth century mission ruins.	Rural	Easy by road and on foot. Sensitive to Puebloan and Apachean groups.	Very Good: open terrain, good ground visibility.	Intensively survey 100% of the park.
SAN ANTONIO MISSIONS	Preserve, restore & interpret the Eighteenth Century Spanish missions of San Antonio, Texas, and other cultural resources.	Urban and Suburban	Easy by road and on foot, except in heavily vegetated areas.	Good: open terrain, good to poor ground visibility.	Intensively survey 100% of the park, with some subsurface testing.
SUNSET CRATER	None	Rural	Easy by road, difficult on foot. Sensitive to Hopi groups.	Good: rugged terrain, good ground visibility	Intensively survey an 80% sample of the park.
WALNUT CANYON	Reserve prehistoric ruins of ancient cliff dwellings for their ethnologic, scientific and educational purposes.	Rural	Easy by road, difficult on foot. Sensitive to Hopi groups.	Good: rugged terrain, good ground visibility.	Intensively survey the 10% of park not yet covered (the canyon bottom).
WHITE SANDS	None	Rural	Easy by road, easy to difficult on foot. Sensitive to Mescalero Apache and Puebloan groups.	Poor to Very Good: active dune field in 40% of the park but rest of park is open terrain with good ground visibility.	Intensively survey a 20% sample of the park area.

PARK	CULTURAL RESOURCES IN ENABLING LEGISLATION	SETTING	ACCESSIBILITY AND CULTURAL SENSITIVITY	SURVEY CONDITIONS	PROPOSED SURVEY COVERAGE
WUPATKI	Preserve the Citadel and Wupatki prehistoric ruins and other archeological resources.	Rural	Easy by road, somewhat difficult on foot. Sensitive to Hopi groups.	Fair to Good: Rugged, unstable terrain. Very good ground visibility.	None- 100% of the park has been adequately surveyed.

RAIP Project Procedures

A. Project Design and Execution

I. First Year

A. Preliminary Research Design (Research & Data Acquisition)

Each park will have a data base consisting of USGS 7.5' maps with all cultural properties (archeological, historical and non-site phenomena) and all surveyed areas marked. Whenever possible, the relative quality or completeness of surveys and site information will be distinguished. All relevant published and non-published sources will be used to build the data base, which will consist of hard copies and computerized records for all known sites. All of this documentation will be done by personnel from the regional office. These efforts have already been performed at the first two parks involved in the RAIP, Amistad National Recreation Area and Petroglyph National Monument.

The cultural resource data base will also incorporate, or be accompanied by, a similar assemblage of all relevant environmental, historic, administrative, and other data. The site package for each recorded site will include all site forms (including those done prior to the project), ancillary feature, artifact, or other forms; all photos, maps, profiles, plan-views, or other graphic representations (each of which will require documentation); and any other records pertaining to the site and its immediate environs.

Using these data bases, project personnel will formulate park-specific data collection forms and procedures only if use of Region-wide forms, etc. would be inappropriate. In most cases, Regional base site and other forms, supplements, or modules will be used.

B. Pilot field work.

The Project Director, and any other 'core' project personnel will perform a reconnaissance level pilot survey to assess the research design, sampling strategy and data collection methods to be used. This will be done far enough in advance of the first full season of fieldwork sufficient to allow necessary modifications or improvements indicated by the pilot studies.

C. Internal and External Consultation and Interaction

This process will occur throughout the duration of the project, before, during and after fieldwork. Within the NPS,

consultation and coordination will be established between the RAIP projects and the following Divisions: Planning, History, Conservation, Curation, American Indian Programs, Information Management, Natural Resources, and the Office of Public Information.

Outside of the NPS, all relevant land managers, Federal, State and Local, responsible for properties adjacent to parks participating in the RAIP program will be consulted. In particular, sharing of archeological and other data will be performed. In some cases, the quality of data from areas adjacent to the parks will be superior enough to be used in formulation of initial sampling and recording strategies. The State Historic Preservation Office and related organizations will in particular be fully involved in any RAIP projects.

Other entities that will be brought into the RAIP process via consultation and/or coordination will be interested Native American and other ethnic groups; local non-governmental organizations such as County or City Historical Commissions, and interested members of the scientific and academic communities. Whenever possible, cooperative agreements or MOUs will be established with organizations that wish to work with RAIP personnel. In the case of the RAIP survey of Petroglyph, the City of Albuquerque is a full-partner in the survey. In the future, RAIP funding may be used to further cooperative research with any qualified non-federal researcher or organization.

All RAIP projects will fully integrate with other NPS programs and systems. This will include use of GPS and GIS data retrieval and management methods. The Southwest Region has already purchased GPS equipment for use in the on-going RAIP survey of Petroglyph National Monument. These, and other GPS hardware, will be employed in the final recording of all sites and features identified by each project. The sole exception to this will be in areas such as most of Canyon de Chelly, where topographic or other conditions reduce the effectiveness of such systems.

Each RAIP survey effort will also, when appropriate, be done in conjunction with related programs such as Cultural Landscapes, Eco-System Management, Long-Distance Trails, the Branch of Rivers and Trails, the Submerged Cultural Resource Unit, the Spanish Colonial Research Center, and Natural Resources Management, as well as any programs or studies of the particular parks.

II. Second and Subsequent Years

A. Revision and Final Project Design.

The results of the Pilot studies will be incorporated into the final framework in which all future project work will be

performed. In some cases this stage will be performed in the initial year of the project.

B. Project Data Recovery.

For however many field seasons as are necessary, this stage will consist of the actual fieldwork required by the research design or any other mandate. This will include data identification, retrieval and preliminary assessment. At the end of each FY or field season annual tracking, assessment and/or management documents will be filed with the appropriate RAIP and SAIP offices. Preliminary management recommendations may also be made.

C. Project Analysis

As per the research design, testing of all hypotheses, assumptions, models and other aspects of data analysis will be performed. When analysis leads to the formulations of new research topics, or reassessment of project criteria or models, further, limited data recovery may be necessary.

D. Project Write-up

This will result in documents and records of four general categories:

1) Raw Data. These will be in several media: a) the hard copies (site and feature forms, etc); b) Computerized (DBase IV) data records encompassing all data from the hard copies; and c) GIS, GRSS, and other data retrieval systems. Hard copies will include, but not be limited to: Regional forms, Project-specific forms, forms required by the relevant SHPOs, the NPS' ASMIS forms, and any documentation required by local landmanagers such as Tribal organizations. All of these will be used to produce the following:

2) Professional Monographs. These will be made available to all pertinent NPS organizations, and to the scientific community in general. All relevant NPS standards (Cultural Resource Management Reporting, Architectural Documentation, etc) are to be met by these documents.

a. Preliminary Management Summary. This document will, upon further review by park and regional managers, be published as a final in-house Management package, the 'core' of which will be Preservation/Protection options and plans for all of the park's cultural resources. This should also include all National Register Determinations of Eligibility and Nomination documents.

b. 'Popular' (General Public) Report. These will focus on matters of interest to the general (tax-paying) public, and

incorporate the NPS 'themes' relevant to the park. These will most often be produced by the Interpretive Division, using project materials supplied by the Division of Anthropology.

c. All of these documents, and when possible, the raw data as well, will be subject to peer review, as well as being accessible to any qualified non-NPS organizations or researchers. Recommendations by reviewers will, when appropriate, be fully incorporated into the final products of each RAIP project.

E. Project Termination

All materials produced by the project will be archived in a central (Regional and System-wide) depository that will be accessible to all qualified managers and researchers. When appropriate, copies will be provided to the individual parks or other interested or affected managers and researchers. Certain materials may also be supplied, when appropriate, to Native American or other groups.

RAIP Field Procedures

Each RAIP survey will gather data of the following types:

1. Administrative information
2. Environmental information
3. Archeological information
4. Historic and Ethnographic information
5. Management information

The initial process in any RAIP project will center on the establishment of an adequate, current data base for the affected park. This will then be used in the formulation of the project research design. This document will explicitly set forth the overall goals and orientation of the project, and will specify whatever hypotheses or archeological models will be tested or otherwise employed. Detailed criteria and definition of terms will be presented for every aspect or analytical construct to be used, including such basic concepts as what will constitutes sites, features, artifacts, as well as any non-site phenomena.

All sampling strategies, and environmental or other criteria and parameters will be clearly articulated. Through the course of the project all of these classificatory and analytical constructs and paradigms will be subject to internal review, and when necessary, modification. In some cases, particularly when the cultural resources of the project area are relatively poorly known or understood, differing approaches in data collection and analysis will be attempted until the relative validity of each can be assessed and a single, more satisfactory research structure can be identified.

RAIP survey projects will conform to one or both types of documentation levels discussed below. Most often, Level 1 documentation will be the norm.

Documentation Levels

To provide adequate management, preservation and archeological information three basic levels of documentation have been developed. These levels address the gathering of information and the documentation of a site(s) beginning at the survey level and progressively increasing the level of detail based on the importance of the site, its existing condition and preservation needs.

These levels establish standards and guidelines for written and graphic documentation at the survey level, the assessment level, and at the treatment level. The intent is to establish continuity
and consistency in the information gathered. Within the same basic documentation level, some resources will have different documentation requirements based upon special considerations. There will also be some differences between the same level of documentation for resource types, such as that for an archaeological site and for a historic building. A brief summary of the three levels is presented below.

Levels of Documentation

Level 1: Baseline Inventory, Evaluation, and Assessment: Includes gathering basic data on a site location, environmental context, site description, material culture, and aspects of resource management. Additional documentation includes measures planimetric drawings, photography and point location on U.S.G.S. topographic maps and aerial photography.

Products:
Inventory report listing all of the sites recorded and a priority listing of significant sites requiring further documentation and preservation.

Components:
Basic site form:

a. Section A: Administrative Section. Includes information on site location, general site environment, resource, and resource management.

b. Section B: Prehistoric Component Descriptions. Including information on site classification, dimensions, site type, extent,

material culture, chronology, and inferred function.

c. Section C. Historic Component Description. Includes a comparable level of information as found in Section B.

d. Section D. Resource Condition/Preservation Assessment. Includes a general assessment of (1) site condition and erosive forces impacting site components, and (2) possible preservation strategies that would be required to alleviate the impact(s).

e. Section E. Priority Ranking. Objective evaluation of three basic management criteria: scientific significance, interpretive value, and preservation needs.

f. Supplemental Data. Includes formats for generalized documentation of the various artifactual materials present at a site as well as components and features such as rock art and human remains, etc.

g. Site Maps/Drawings. Measured plans using transits or alidades depicting topographic layout and overall site components and features (metric for prehistoric sites, feet/inches for historic). Numerical designations given to all architectural components, nonarchitectural features, surface artifact assemblages, etc.

h. Site Photography. Overall photographs (both B/W and color) will be taken of the site and site setting and representative photographs of site components and features.

Sector/Locality Information: (includes broad categories of information of a defined area, or management zone. Identifies salient environmental and archeological resources, their basic distribution characteristics, and preservational condition.

a. Field maps and drawings: will include (1) sector-wide base maps (U.S.G.S. 1:1200 or 1:600) that depict locational and thematic data, and (2) locality sketch maps that contain greater detail of archeological and management information.

b. Environmental Maps/Drawings: land class units (geomorphology), canyon cross-sections, arroyo development and characteristics, slope classification, soils, hydrology, vegetation, and resource potential for ceramic, lithic, and building material.

c. Existing Archeological Base Map: location, site numbers, site types (prehistoric or historic resources), and analysis and accuracy.

d. Condition Assessment Maps: multiple maps prepared for both prehistoric and historic cultural resources.

e. Resource Management Recommendation Map: multiple maps prepared for both prehistoric and historic cultural resources.

f. Resource Preservation Analysis Map: this map, or possibly a series of maps (such as a specific map dealing with the character and distribution of cultural impacts), combines both prehistoric and historic resource condition with the whole range of factors affecting these resources. The objective of these maps is to display the relationship between resource condition and patterns of natural/cultural deterioration.

g. Maps of past exploration, archeological research, and/or preservation programs.

h. Locality maps: consisting of simple sketch maps, the locality maps will depict smaller areas in greater detail. Within each locality specific resources will be identified, their condition noted, and annotated recommendations added directly to the map. In a sense, then, the locality maps will replicate the sequence of sector-wide maps, but will incorporate increased resolution of specific resource areas and/or sites areas.

Level II (Enhanced Evaluation and Assessment of Specific Sites): Expands Level I documentation to include detailed data concerning archeological/architectural characteristics, components and features and their existing condition. Further documentation will be accomplished through measured drawings, sectional profiles, drawing of architectural details, obliques or axonometric views, and overlapping photography and video coverage. In keeping with the basic site documentation an assessment will be made of the preservation needs of the archeological/architectural remains.

Products:

1. Archeological Report: includes a complete archeological description of the site including a scaled map, general and detailed photographs, and a concise description of the site components (architecture, artifacts, and other features). The purpose of this documentation is to provide detailed baseline data on the site to verify it scientific or public value.

2. Preservation Assessment/Plan: includes discussions on (a) all actions undertaken that establish the prescribed management use and preservation on the site area, b) condition and integrity, (c) preservation needs and requirements, logistics, material availability, etc., (d) alternative preservation strategies, and (e) a recommended preservation action that should be implemented. [Note: A preservation assessment is considered to be a management document and is not considered at a level sufficient

in detail to be considered as a "Scope-of-Work" for the recommended preservation treatment].

Components:

1. Enhanced site forms: includes recording detailed information regarding the various site components including but not limited to: (a) architectural, (b) nonarchitectural features, (c) surface artifact assemblages, (d deposition characteristics, (e) rock art, (f) human remains, (g) and the existing condition and preservation needs of the various components.

2. Enhanced site photography: detailed component photography.

3. Enhanced mapping: detailed plotting and drawing of site components.

4. Determination of appropriate management use of the site and appropriate preservation strategies to insure the preservation of site components.

Cultural and Historical Research: A Modular Approach

Accounting for the inevitable internal variation, the various environmental zones and areas engendered distinctive cultural adaptations. These commonalities allow for shared approaches on the part of NPS researchers and managers within each zone. Some of the modular research topics to be used are given as examples below.

I. Non-Arid Zone

Commonalities to all four areas:

1. Climatic and environmental dynamism
2. Paleo-Indian settlement, subsistence and belief systems
3. Archaic Period settlement, subsistence and belief systems
4. Protohistoric and Historic Native American systems
5. Initial Euro-American Exploration and Contact
6. Early Euro-American Settlement and Conflict
7. Forced Introduction and Exploitation of African-American groups
8. Destruction and Removal of Native American Populations
9. Later Euro-American Settlement and Exploitation
10. Emergence of Modern Cultural Systems

More detailed topics specific to the individual areas or area groups might include:

A. The Lower Mississippi River Valley Lowlands

1. Woodland Period Systems

2. Early Mississippian Cultural Systems
3. Late Mississippian Cultural Systems
4. Associations between Prehistoric Systems and Historic Native American groups
5. Early Euro-American Transportation Systems: Riverine and Railroad
6. The Civil War and Reconstruction Periods
7. The Boom and Bust Cycles of the Nineteenth and Twentieth Centuries.

II. Arid Zone
Commonalities to all 5 areas include:

1. Climatic and environmental dynamism
2. Evidence for Pre-Clovis Period populations
3. Paleo-Indian settlement, subsistence and belief systems
4. Archaic Period settlement, subsistence and belief systems
5. Formative Sedentary Agricultural systems
6. Protohistoric and Historic Native American systems
7. Associations between Prehistoric Systems and Historic Native American groups
8. Early Spanish Exploration and Contact
9. Early Spanish Settlement and Conflict
10. Later Spanish Settlement and Conflict
11. Mexican Period Settlement and Conflict
12. Early American Settlement and Conflict (including the Civil War)
13. Extinction and Subjugation of Native American groups
14. Later American Settlement and Exploitation
15. Emergence of Modern Cultural Systems

Within these broad categories, more specific areas of future research unique to individual areas or area groups will be identified. As an example these would, for one region, include:

A. The Southern Basin and Range Region:
   1. Jornada Mogollon Cultural Systems
   2. Mimbres Cultural Systems
   3. Casa Grande Area Cultural Systems
   4. Relative Importance of Agriculture
   5. Integration with the Meso-American Cultural Heartland
   6. Late Prehistoric Cultural Dynamism
   7. Intrusive Athabaskan Populations

Regional Management Problem Areas

General Management needs are in the process of being identified for the Arid and Non-Arid Zones, as well as more detailed concerns for each area. Data Recovery techniques for all

RAIP projects will address the following problem areas for future management of cultural and historical resources.

I. Non-Arid Zone
Commonalities for all three areas:
Artificial Impacts:
a. Land-levelling, Wetlands elimination, and other agricultural land modifications
b. Urbanization
c. Deforestation and Overgrazing
d. Pothunting and Artifact Collection
e. Documentation and Preservation of Architectural Properties
f. Graves Repatriation and other Native American concerns

Natural Impacts:
a. Land Subsidence and Fluctuations in Groundwater levels
b. Bioturbation
c. Alluviation
d. Erosion

II. Arid Zone
Commonalities for all five areas:
Artificial Impacts:
a. Desertification, including stream channelization, elimination of ground cover and loss of topsoil.
b. Pothunting, Artifact Collection, and other Vandalism
c. Documentation and Preservation of Architectural Properties
d. Preservation of Fragile Archeological Resources, including perishable remains and rock art
e. Graves Repatriation and other Native American concerns

Natural Impacts:
a. Aeolian Erosion
b. Sheetwash and Stream Erosion
c. Alluviation
d. Salinization

PART III: ISSUES

I. Issues Addressed in the 1991 Revision to the Long-Term Regional Plan

A. Report Preparation/Publication:
Problem: Adequate support staff, funding and time have not yet been available to either of the two on-going RAIP surveys (AMIS and PETR). Much of this is due to unexpected problems in the conduct of the surveys that required the Regional Office to assume operational control of both. As additional funding did not

accompany these newly assigned duties, it has not yet been possible to meet NPS or SAIP guidelines.

Resolution: All RAIP projects should be conducted from the Regional office, by Regional staff. Given the long-term nature of most RAIP surveys, Park archeologists and other staff can not be expected to work full-time on an RAIP project and still meet their other obligations. Sole reliance on Regional resources in the future will avoid such situations.

B. Producing management-sensitive and scientific reports:

Problem: This issue has not yet been raised in an RAIP project per se.

Resolution: The first step in ensuring short-cycle feedback of SAIP project results in to establish periodic in-house peer briefings and review. Expanding on that, existing mechanisms for similar and timely sharing of data with other relevant Regional Office Divisions and finally to Park managers and researchers should be enhanced.

C. Interaction with other Divisions and SWR Parks:

Problem: The goals set forth in the 1991 Revision to the Long-Term Plan have yet to fully realized. The divergence in the perceived mandates of various Regional Office Divisions has yet to be resolved, and the same is true to an even greater degree between the SWRO and the individual parks. This has not only inhibited interaction between the various organizations but has also negatively impacted their general performance.

Resolution: The type of periodic in-house data sharing and review recommended in issue B would be a first step. Similar periodic consultation between the SWRO and park managers should also be established. Once differences have been identified, successful resolution is much more likely, but only after this first step has been taken.

D. Interaction with the scientific/academic community:

Problem: Funding has still not been available to promote these essential efforts. In the brief lifetime of the Southwest Region's RAIP, efforts to cultivate cooperative efforts with private foundations and interested local academicians have been impeded by the intermediary role played by park managers.

Resolution: Funding is essential, but even without it, direct relationships between such groups and the Regional Office should be established, and if necessary, these should be completely independent of the relevant parks. If future RAIP surveys are to be run directly out of the SWRO, such relationships would not be as unpalatable to park managers as they are under the current RAIP structure.

E. Access to high tech equipment and procedures:

Problem: Under the current RAIP system, funds have been provided to the affected parks for the purchase of innovative

equipment; in all but one case, however, such equipment has been misused, or not used at all. Innovative field and analytical techniques have not yet been produced by park personnel involved in RAIP projects and the success of innovations proposed by Regional RAIP staff are still being evaluated.

Resolution: If the previous recommendations for Regional control of all future RAIP projects are followed, this issue will be successfully resolved, if sufficient funding for such experimental approaches can be obtained.

F. Survey cyclicity:

Problem: The need for revisitation of previously recorded sites has been underscored by the RAIP projects at PETR, CACH and AMIS. Each of these has re-recorded dozens of sites; in almost every case significant additional data was generated. Even when previous data retrieval approached NPS standards, on-going site impacts, environmental changes and other processes can produce major changes in site condition and setting over relatively brief periods of time.

Resolution: The current emphasis on survey cyclicity by the Regional RAIP program should continue. For multi-year survey projects, periodic revisitation of sites recorded in previous field seasons should also occur. This should yield data relevant to both research and management needs. In unstable environments such as aeolian sands, or alluvial areas subject to stream channelization, revisitation of even non-site areas should be performed, due to the likelihood additional cultural properties have become newly accessible.

G. Staffing and the 302 Program:

Problem: None of the issues addressed in the 1991 revisions to the Regional Long-term Survey Plan have been resolved. In addition, the proliferation of RAIP and other projects based in the Regional Office will likely lead to further exacerbation of these problems.

Resolution: Permanent staffing and additional funding are probably the only solutions in the long-run. Certainly the cost-effectiveness of periodically re-training replacements for departed personnel compares unfavorably with the staffing continuity permanent assignments could provide.

II. Additional Issues Raised by the RAIP in FY 92 and 93.

A. Coordination with other Divisions and SWR Parks:

Problem: This differs from issue C in that meaningful interaction can not occur until agreement is reached within the NPS on how the differing missions of each Division can be directed towards common goals. Currently the separate organizations not only often work in ignorance of each others' efforts, but on occasion are even at cross-purposes. While massive re-organization is not called for, much more effective consultation

and planning are needed.

B. Accountability within the Park Service

While certainly not a new issue, the experience of the SWR RAIP underscores the need to establish some workable system of accountability in the way funds, physical property, and personnel are to be used within the Regional Office and the individual parks. Current mechanisms for internal regulation have been totally inadequate in ensuring that even the most basic NPS missions and doctrines are met.

C. Reformation of the Multi-Year Budgetary System

As discussed in the 1991 Revision to the Long-Term Plan, the current budgeting system subjects many multiple year research projects to disruptions and revisions, and can lead to a reduction in a project's effectiveness or utility while at the same time increasing its costs. As with issues A and B, resolution of this problem probably requires greater change in the System than can ever be expected to occur.

D. Implementation of Current Guidelines

Much of the reform or other changes needed in various aspects of the SAIP, and NPS cultural and historical resource programs in general have already been identified by the many guidelines and regulations issued by the National and various Regional NPS offices. Implementation of most of these, however, has yet to occur in many parks. Equally important, the roles these programs are to play within the general missions of the Regional Offices have not been fully integrated or articulated. Guidelines that are not disseminated, enacted or enforced do little to correct the many problem areas that exist. Regulatory mechanisms must be established, or further strengthened if the goals of the system are to ever be realized.

APPENDICES

1. ACRONYMS FOR SOUTHWEST REGION PARKS

ALFL....Alibates Flint Quarries National Monument, Texas
AMIS....Amistad National Recreation Area, Texas
ARPO....Arkansas Post National Memorial, Arkansas
AZRU....Aztec Ruins National Monument, New Mexico
BAND....Bandelier National Monument, New Mexico
BIBE....Big Bend National Park, Texas
BITH....Big Thicket National Preserve, Texas

BUFF....Buffalo National River, Arkansas
CACA....Carlsbad Caverns National Park, New Mexico
CACH....Canyon de Chelly National Monument, Arizona
CAVO....Capulin Volcano National Monument, New Mexico
CHCU....Chaco Culture National Park, New Mexico
CHIC....Chickasaw National Recreation Area, Oklahoma
ELMA....El Malpais National Monument, New Mexico
ELMO....El Morro National Monument, New Mexico
FODA....Fort Davis National Historic Site, Texas
FOSM....Fort Smith National Historic Site, Arkansas
FOUN....Fort Union National Monument, New Mexico
GICL....Gila Cliff Dwellings National Monument, New Mexico
GUMO....Guadalupe Mountains National Park, Texas
HOSP....Hot Springs National Park, Arkansas
HUTR....Hubbell Trading Post National Historic Site
JELA....Jean Lafitte National Historic Park and Preserve, Louisiana
LAMR....Lake Meredith National Recreation Area, Texas
LYJO....Lyndon B. Johnson National Historical Park, Texas
NAVA....Navajo National Monument, Arizona
PAAL....Palo Alto Battlefield National Historic Site, Texas
PAIS....Padre Island National Seashore, Texas
PECO....Pecos National Historical Park, New Mexico
PERI....Pea Ridge National Military Park, Arkansas
PETR....Petroglyph National Monument, New Mexico
POPO....Poverty Point National Monument, Louisiana
RIGR....Rio Grande Wild and Scenic River, Texas
SAAN....San Antonio Missions National Historical Park, Texas
SALI....Salinas Pueblo Missions National Monument, New Mexico
SUCR....Sunset Crater National Monument, Arizona
WACA....Walnut Canyon National Monument, Arizona
WHSA....White Sands National Monument, New Mexico
WUPA....Wupatki National Monument, Arizona

Appendix 2. PARK ARCHEOLOGY STATUS SHEET

PARK NAME_____
ZONE: I (Non-Arid Lands)_____ II (Arid lands) _____
Area: A. Miss River/Delta_____ A. S. High Plains _____
B. Ark River/Hiland_____ B. S. Basin & Range _____

C. S. Great Plains _____ C. Upr R Grnd/Hilands_____

D. South/East Tex _____ D. Eastrn Colo Plat _____

E. Westrn Colo Plat _____

RESEARCH DESIGN STATUS: None___ Current___ Updating_____

Interactions: Other Regions_____ SHPO/State Plan____

Affiliated Tribes/Ethnic Grps_____

Potential Partnerships_____

Topical Research Modules (Enter 1-5, with 5 being the most complete)

Native American

_____Culture History (Broad-based and Local Sequencing)_____

Pre-Clovis___ PaleoInd___ Archaic___ BM/Puebloan___

Woodland___ Mssippn___ Other_____ ___

ProtoHist/Hist___ Athbskn___ _____ ___

EuroAmerican, African American and other groups

16th Century___ 17th Century___ 18th Century ___

19th Century___ 20th Century___ Comments_____

_____

Native American Euro-American, etc.

_____Subsistence and Adaptation _____

_____External contacts, transportation, and trade _____

_____ Belief Systems (Images and Human Remains) _____

_____ Other Integrative Mechanisms _____

_____ Architectural Archeology _____

RESOURCE DESCRIPTION:_____

_____

_____

RESOURCE SUMMARY: No. sites recorded _____ Sites projected _____

% unit grounds adequately surveyed_____

Comments on nature of data base_____

_____S

TATUS OF REQUIRED STUDIES:

Archeological Assessment: none___ current___ update needed____

Comment_____

In RMP?____ 10-238/estimate: none____ current/date____/_____

Fund Req:Yr 1___ Yr 2___ Yr 3___ Add'l Yrs___ **RCA Priority**____

Archeological Survey: current___ inadeq data___ inadeq cvrg____

Comment_____

In RMP?____ 10/238/estimate: none____ current/date____/_____

Fund Req:Yr 1____ Yr 2____ Yr 3____ Yr 4____ Yr 5____ Yr 6____

Yr 7___ Yr 8___ Yr 9___ Yr 10___ More yrs?___ **RCA Priority**____

Survey Products (Enter 0,1-5): Site File:Computr____ Paper____

Base Map___ GIS___ Database updates: ARI____ LCS____ ANCS____

MgmtSumm___ Pres/Prot Pln___ Site Assmt___ Interp___ Monog___

NatReg___ Archit. Doc.___ Photo.Doc.___ Other_____

Comments_____

By way of example, a sample of this form, as it would be filled out for the ongoing RAIP survey at Amistad National Recreation Area is given below:

PARK NAME: Amistad National Recreation Area
ZONE: I (Non-Arid Lands)_____ II (Arid lands) ____X_____
Area: A. Miss River/Delta_____ A. S. High Plains _____
B. Ark River/Hiland_____ B. S. Basin & Range___X___
C. S. Great Plains _____ C. Upr R Grnd/Hilands_____
D. South/East Tex. _____ D. Eastern Colo Plat_____

E. Western Colo Plat_____
RESEARCH DESIGN STATUS: None_X_ Current___ Updating_____
Interactions: Other Regions_____ SHPO/State Plan_X__
Affiliated Tribes/Ethnic Grps: Lipan and Mescalero Apache, Comanche, Seminole, Euro-American, Chinese-American, African-American.
Potential Partnerships: Texas Parks & Wildlife Dept., U. of Texas.
Topical Research Modules (Enter 1-5, with 5 being the most complete)
Native American
__4__Culture History (Broad-based and Local Sequencing)
Pre-Clovis_1_ PaleoInd_4_ Archaic_5_ BM/Puebloan_N/A
Woodland N/A Mssippn N/A Other: Neo-Indian: 4
ProtoHist/Hist_3_ Athbskn_2_ _____ ___
EuroAmerican, African American and other groups
16th Century_1_ 17th Century_1_ 18th Century _1_
19th Century_5_ 20th Century_5_ Comments_____
_____

Native American Euro-American, etc.
__4___ Subsistence and Adaptation ___5____
__3__ External contacts, transportation, and trade__5____
__2__ Belief Systems (Images and Human Remains) ___5___
__2__ Other Integrative Mechanisms ___5___
__3__ Architectural Archeology ___5___
RESOURCE DESCRIPTION: Survey has recorded a wide range of site types dating from Late Pleistocene to Modern Periods in several environments. Most significant Native American resources are the hundreds of known sites with polychromatic pictographs, and protected sites (mostly rockshelters) with extensive and well-preserved midden deposits. Historic resources include sites associated with 19th century RR building and military activities, and a variety of site types associated with local Native American

groups as well as others from the southern Great Plains.
RESOURCE SUMMARY: No. sites recorded _389_ Sites projected _N/A_
% unit grounds adequately surveyed_3300 acres_____
Comments on nature of data base: Differing levels of investigation performed throughout course of project; 80 sites not properly recorded, app. 1900 acres not adequately surveyed. Includes 110 previously-known sites re-recorded to greater detail. 480 non-site observations (isolates, natural phenomena, etc) recorded. Eight artifact collections made.

STATUS OF REQUIRED STUDIES:
Archeological Assessment: none___ current_X_ update needed_X__
Comment:_Further survey, data retrieval and mitigation recommended
In RMP?_X_ 10-238/estimate: none____ current/date__/___
Fund Req:Yr 1:58K Yr 2:15K Yr 3_15K Add'l Yrs___ **RCA Priority** _
Archeological Survey: current_X_ inadeq data_X_ inadeq cvrg_X_
Comment__Further Survey, inc. revisitation of portions of project area recommended.
In RMP?_X__ 10/238/estimate: none____ current/date_N/A_/1992
Fund Req:Yr 1_58K Yr 2_15K Yr 3_15K Yr 4____ Yr 5____ Yr 6____
Yr 7___ Yr 8___ Yr 9___ Yr 10___ More yrs?_No **RCA Priority**_2__
Survey Products (Enter 0,1-5): Site File:Computr_5__ Paper_4__
Base Map_5_ GIS_1_ Database updates: ARI____ LCS____ ANCS____
MgmtSumm___ Pres/Prot Pln___ Site Assmt___ Interp___ Monog___
NatReg___ Archit. Doc._2_ Photo.Doc._4_ Other_____
Comments_Post-fieldwork stage on-going

Note: The field "Sites Projected" is checked off as "N/A" (Not Applicable) as most of the survey took place in non-NPS property adjacent to Amistad National Recreation Area.