

Lands controlled by the Bureau of Land Management also comprise approximately 23 percent of the total study area. The majority of these lands are consolidated blocks of mountains and foothills located in the western part of Maricopa County. Williams and Luke Air Force Bases and the Florence Military Reservation controlled by the U.S. Department of Defense account for approximately 1 percent of the total CAWCS area.

The Arizona State Land Department and several other state agencies have administrative responsibilities for managing approximately 15 percent of land within the CAWCS area. The majority of the State Trust Lands within the study area are located north and southeast of the Phoenix urban area. The State Land Department generates revenues from these lands by leasing the lands for grazing, mineral, homesite, agricultural and other purposes. Under provisions of the recently enacted Urban Lands Management Legislation, the Land Department now engages in the long-term lease of State Trust Lands near urban areas for private development (Arizona Revised Statutes, Title 37; Arizona State Land Department).

County and municipally owned lands constitute slightly over 1 percent of the total CAWCS area. Almost all of these lands are unspoiled nature preserve parklands within the Maricopa County and City of Phoenix park systems.

Five Indian reservations comprise approximately 7 percent of the study area. These are the entire Fort McDowell, Salt River, Gila River, and Ak-Chin Indian Reservations, and a portion of the Papago Indian Reservation. Most Indian reservation lands are primarily open rangelands generally used for farming or grazing purposes, but increasingly, the Indian communities are leasing unused community lands to the general public for commercial, housing, agricultural, recreational and industrial development.

Privately owned lands, totalling approximately 31 percent of the CAWCS area, are mostly located within the Phoenix urbanized area and to the southeast and west of the City of Phoenix. The smaller parcels of privately owned land located within or near urban areas are primarily used for residential, commercial, industrial, recreational, and public utility purposes. The larger parcels of privately owned lands located outside of the urban areas are predominantly used for agriculture.

C. Description of Affected Site Areas

1. New/Modified Stewart Mountain Site Area

The existing Stewart Mountain Dam, located on the Salt River approximately 10 miles upstream from the confluence of the Salt and Verde Rivers, was constructed in 1930 as part of the SRP system for water storage and hydroelectric purposes.

The entire area which would be affected by construction of New Stewart Mountain Dam is located within the boundaries of the Confluence site area (see Figure III-1). The description of the New Stewart Mountain affected site area is, therefore, included in the description of the Confluence site area.

2. Cliff Site Area

a. Geographic Setting

The Cliff Dam and Reservoir site is located on the Verde River between two existing dams: Horseshoe Dam, constructed in 1946, and Bartlett Dam, constructed in 1939 (see Figure III-1). Horseshoe Dam was constructed by the Phelps Dodge Copper Corporation for water reclamation purposes and is currently operated by the Salt River Project.

The approximately 52,800-acre site lies exclusively within the boundaries of the Tonto National Forest. Access is provided to this area by Cave Creek Road.

The eastern boundary of the Mazatzal Wilderness Area lies approximately 3 miles north and east of the proposed Cliff Dam site. About 14 miles downstream from the proposed Cliff Dam site is Bartlett Dam. The upper reservoir limits at maximum design capacity lie approximately 1 mile downstream from the Cliff Dam site.

b. Biological Resources

The Verde River and its tributaries drain mountainous terrain within the Cliff site area. The area borders on the transition between scrub oak chaparral and paloverde-mixed cacti desert. Temperate riparian forests occur along the Verde River flood plain. Table III-8 presents acreages and ranges for biotic community types within the Cliff site area.

(1) Riparian/Wetland Communities

Mature cottonwood/willow forests grow along the Verde River and its tributaries upstream from Horseshoe Reservoir. These riparian forests support a full complement of wildlife species including large mammals. In addition, stands of cottonwood/willow upstream from Horseshoe Reservoir are used by the bald eagles which nest at Chalk Mountain. Mesquite woodlands also occur at the site, primarily downstream from Horseshoe Dam. A great blue heron rookery exists in cottonwood trees downstream from Horseshoe Dam near the KA Ranch.

(2) Other Terrestrial Communities

The paloverde-mixed cacti community type is the predominant habitat of the surrounding hillsides throughout the site. North-facing slopes of many washes support dense stands of shrubs and desert trees such as acacia and hackberry. Ten springs occur in the Cliff site area. The Chalk Mountain area provides nesting habitat for bald eagles and hawks.

(3) Perennial Stream/Riverine Communities

The Verde River is an unregulated stream upstream from Horseshoe Reservoir and is subject to wide fluctuations in flow.

Table III-8

ACREAGE AND PERCENT RANGE OF BIOTIC COMMUNITY SERIES
AND ASSOCIATIONS AT THE CLIFF SITE AREA

	Symbol	Percent	Acres
Desert upland:			
Paloverde-mixed cacti series	PC	86.3	45,550
Blue paloverde-ironwood association	CB/RA	3.9	2,030
Riparian and wetland types:			
Fremont cottonwood-Goodding willow association	CW/PS	1.0	550
Mixed broadleaf series	MB	0.2	100
Velvet mesquite association	MS/PJ	1.7	880
Saltcedar association	SD/TC	0.02	10
Saltcedar-mixed scrub association	SD/SC	0.02	10
Human-dominated types:			
Agricultural lands	AG	0.2	130
Other resource categories:			
Lake (typical year high)		3.8	2,000
Lake (typical year low)		1.2*	610*
Flowing stream (miles)			20*
Nonvegetated lands		<u>2.9</u>	<u>1,530</u>
Total		100.0	52,790

*Not included in the total.

Source: Second Level Environmental Inventory, Dames & Moore, 1982.

Although upstream portions of the Verde are characterized as mature heterogeneous stream, there are few deep pools or riffles in the reach occurring within the affected site area. Native stream fishes (desert and Gila suckers, longfin dace) and introduced game species (bass, carp, catfish) occur both upstream and downstream from the dam. Approximately 20 miles of perennial stream occur within the Cliff site area.

(4) Reservoir Aquatic Communities

Horseshoe Reservoir is subject to extensive drawdown under the current operation schedule which severely reduces fish spawning. Fishes of the family centrarchidae (crappie, largemouth and smallmouth bass, sunfishes) are the major groups in which severe reductions in spawning success occurs. However, during drawdowns, the river supports vegetative growth in the bed of the reservoir, creating habitat for waterfowl and shorebirds.

(5) Threatened and Endangered Plants and Wildlife

Bald eagles nest along the Verde River in the area of Chalk Mountain. The breeding pair is believed to use the riparian forest and flowing river between Horseshoe Reservoir and Tangle Creek. The Chalk Mountain breeding area is the least productive of five bald eagle breeding areas in CAWCS site areas due to frequent inundation of nest sites.

Among Arizona special status wildlife, the desert tortoise, black hawk, osprey, and black-crowned night heron have been noted in the Cliff site area. The Arizona Game and Fish Department has recently reintroduced the river otter in the Tangle Creek vicinity.

(6) Management and Special Use Areas

The Cliff site area is used for grazing administered by the Tonto National Forest. The Forest Service will also establish approximately 180 acres of cottonwood habitat at four rehabilitation sites along the Verde River. Riparian habitat upstream from Horseshoe Reservoir is considered wintering area for both bald eagles and peregrine falcons. The Mazatzal Wilderness Area and contiguous area recommended for inclusion in the wilderness system are adjacent to the Cliff site area. The Lime Creek area adjacent to the Cliff site is being reevaluated by the Forest Service for roadless area designation.

c. Recreation

(1) Stream-Oriented Recreation

Existing stream-oriented recreation resources and facilities in the Cliff site area are within the Tonto National Forest and are managed by the U.S. Forest Service. Stream-oriented resources include 19.7 miles of stream on the Verde River, approximately half of which are above Horseshoe Dam. One stream-oriented recreation area is located just below Horseshoe Dam.

The total number of maximum annual recreation days attributed to stream-oriented activities at the Cliff site is 19,468. Fishing, camping, and picnicking are the primary recreation activities. These activities occur at both developed and nondeveloped sites on the Verde River.

(2) Reservoir-Oriented Recreation

Existing reservoir-oriented resources within the Cliff site area center around Horseshoe Reservoir. Horseshoe Reservoir has water storage for irrigation as its primary function. Because of this, the level of the reservoir fluctuates widely. The reservoir-oriented recreation condition at the Cliff site was evaluated based on a surface area of 1,327 acres at Horseshoe Reservoir. This acreage represents the average level of the reservoir during the recreation season (April to October) of a typical year.

Access to Horseshoe Reservoir is limited to a two-lane gravel road, thereby restricting the types of boats that can reach the reservoir. According to the U.S. Forest Service, most boating use at Horseshoe Reservoir is for fishing. There are currently no physical facilities for reservoir-oriented recreation within the Cliff site area (Horseshoe Reservoir). The total number of maximum annual recreation days for reservoir-oriented recreation at the Cliff site area is 59,464.

d. Cultural Resources

(1) Prehistoric Resources

Within the Cliff site area boundaries there are estimated to be approximately 1,465 prehistoric archaeological sites which cover a combined area of roughly 1,500 acres.

Several categories of site types were used to describe the archaeological resources in the CAWCS area. The first type of site is the artifact scatter of which approximately 475 are predicted to occur. This type of site is characterized by the presence of pottery fragments and/or lithic fragments or tools on the surface of a site. Surface architecture is generally absent; in a few cases, these sites are found to contain remains of Hohokam pithouses. Such sites functioned as habitation units occupied by families of different sizes for varying lengths of time. In the majority of cases, however these scatters are referred to as limited activity sites: areas where specialized tasks were performed such as plant and/or animal procurement or processing, raw material extraction, or tool manufacturing. These types of sites would have been occupied for a shorter time period than were the pithouses.

The second type of site is one which has evidence of surface architecture. These are commonly called pueblos and reflect more permanent occupations than do limited activity sites. This class of sites was divided into five groups based on the number of rooms found at each site. Each of these different sized pueblo sites served a different function in the prehistoric settlement hierarchy. Sites with only one room (345 predicted)

are the most common in the Cliff site area followed by sites with 2-5 rooms (460 predicted), 6-20 rooms (130 predicted), 21-100 rooms (10 predicted), and greater than 100 rooms (3 predicted). The very large sites, greater than 100 rooms, are the least common at the Cliff site area, and were no doubt of special significance. These sites also contain more nonlocal materials such as decorated pottery from the north and worked shell from the south.

Two other types of sites include petroglyph sites (less than 5 predicted to occur) and agricultural sites (30 predicted to occur). Petroglyph sites refer to sites consisting only of rock art and which lack artifacts or surface rooms. A distinction is made between agricultural sites, or systems, and agricultural features. An agricultural site consists of 5 or more individual water-soil control features, such as terraces, check dams, or gridded gardens, which are spatially related; few, if any, artifacts are present on the surface of the site. These sites are often quite large in areal extent, and many have more than 25 individual water soil control features. If a site has more than 5 water-soil control features, but also has structures on the surface, the site is classified according to the number of rooms as this category more accurately reflects the site function. Thus, the water soil control feature category represents features associated with another type of site.

Occurring with sites in the Cliff site area are a number of special features such as trash mounds (90 predicted), ball courts (2 known to exist), and water and soil control devices (1,270 predicted). Trash mounds are extremely valuable to archaeologists, as they provide an enormous amount of information on subsistence, trade goods, nutrition, and prehistoric environmental conditions. Ball courts are very rare (only one is known to exist in the Cliff site area) and are associated with the larger sites.

There is some evidence documenting human occupation in this area as early as 2000 B.C. with continual occupation up through historic times. Previous research has suggested that the groups which occupied this area prehistorically established trade networks with people living farther north and south. Evidence also exists for the presence of at least two different cultural groups in the Cliff site area during prehistoric times. Thus, the resources in this area present the opportunity to study patterns of both local and regional exchange and interaction.

Some of the sites in this area have been vandalized, but as an archaeological district the prehistoric sites in the Cliff site area have significant information potential.

(2) Historic Resources

Seventeen historic sites are located within the Cliff site area. Nine of the 17 sites have significant scientific or historic value. Three of the nine sites are related to water control functions and six sites have an agricultural function.

Relatively early initial intrusions by non-Indians in the Cliff site area were transitory in nature. The earliest known was that of

a fur trapping party led by Ewing Young who trapped along the Verde River in 1829. The military presence was only occasional and troops traveled along the Verde River through the Cliff site area on a relatively infrequent basis. Generally, the Verde River seems to have been used very little as a north-south transportation or communication route during the historic period.

Agricultural interest was limited, primarily because of the rugged terrain and the creation of the Tonto National Forest in 1905 which restricted access to suitable land for farming. Only two homesteads, both part of the KA Ranch (now Johnson Ranch), were patented, one in 1919 and one in 1922. The 1919 homestead was patented by J. Marion Sears and includes the ranch buildings of the KA Ranch. Although the homestead was patented in 1919, it was first occupied in 1887. The 1922 homestead was patented by Frank Lopez and eventually acquired by the KA Ranch. The remnants of two buildings related to apparently unpatented homesteads situated on Ister Flat were identified. They may date to the World War I period.

Shepherding in the Horseshoe Dam area had its roots in the late nineteenth century. Two relatively late manifestations of this activity are located within the Cliff site area. Near the north end is the Verde River Sheep Bridge built in 1940 by Dr. R. O. Raymond, who began grazing sheep in the area in 1926. The bridge was listed on the National Register of Historic Places in 1978. Associated with the bridge is a small cluster of ranch buildings now in ruin.

Construction of Horseshoe Dam brought substantial change to the area in the mid-1940s. The dam was designed, along with Bartlett Dam, to store water from the Verde River. The immediate environs of the dam contain a number of sites associated with the main structure. Construction took place during the years 1944-1946 and was financed by the Defense Plant Corporation, a Federal agency, for the Phelps Dodge Copper Company. Associated with the dam are extensive remains of a large and complex construction camp.

e. Social Resources

There are no communities in the Cliff site area.

KA Ranch, located 1 mile south of the existing Horseshoe Dam, would be inundated by Cliff Reservoir. The ranch has been in existence since 1887. It includes 212 acres of family-owned land used for growing feed and for other ranching operations. Additionally, the family has obtained grazing permits from the Forest Service for use of 36,848 acres of Tonto Forest land in the vicinity of the ranch. Two people live on the ranch year round. In addition, five to seven ranch hands reside there part-time. During the summer months, nine additional family members live at the ranch. Nearest services are 20 miles away in Cave Creek.

f. Other Resources

(1) Air Quality

No air quality data are available from the vicinity of the Cliff site area. A combination of dust from recreation-related traffic and the relatively high potential for wind erosion make an occasional violation of total suspended particulates (TSP) standards a possibility.

(2) Aesthetics

The Cliff site area extends southward to include a portion of the Bartlett Reservoir and northward to 7 miles upstream from Horseshoe Reservoir. The Verde River in the area between the two reservoirs has clusters of mature cottonwoods and other riparian vegetation along the river banks. On the west shore, approximately 2 miles below Horseshoe Dam, are green fields, grazing cattle, large mature trees, and buildings of the KA Ranch. With the river as a foreground, this ranch enhances the visual quality of the site area by creating a strong contrast to the surrounding desert landscape. The Horseshoe Reservoir often has a large drawdown leaving only a very small lake with a steep unvegetated shoreline. The general terrain of the Cliff site area is characterized by rough mountains and steep valleys. Other than the KA Ranch, little evidence of human habitation is evident.

(3) Noise

Day-night sound levels in the Cliff site area are typically below 55 dB. The day-night sound level of 55 dB is compatible with the EPA's long-term goal for residential areas. Jeep and motorbike activities along local trails contribute to the maximum sound levels within the area.

(4) Geology/Soils

The topography of the Cliff site area is steep, very rugged, and highly dissected by drainages which join with the Verde River. The area includes Precambrian granite and pyroxenite, Tertiary lake deposits and volcanics, and Quaternary basalt and alluvium. The damsite is underlain by alluvium and Precambrian granite. The granite is extensively fractured and faulted, and varies from coarse to relatively fine grained with no distinct contact between the two.

The Cliff Dam site is located in a region of low seismicity so a large damaging earthquake is not expected. Although the area has low rates of tectonic activity, the largest random earthquake (i.e. no causative fault identified) that is postulated for the seismotectonic province in which Cliff Dam site occurs, would have a magnitude of 5.5. Studies of the major faults in the area indicate that earthquakes as large as 6.5 are capable of occurring in the seismotectonic province. A potentially active fault has recently been located to the west of Horseshoe Reservoir.

Uranium occurrences have been noted at Chalk Mountain, Lime Creek, and near Horseshoe Dam, and there has been limited mineral exploration in the area; however, development of claims is not known to have occurred.

The soils of the site area vary from clayey, sandy, loamy, gravelly to rocky. Within the site area, there are approximately 130 acres of prime farmland located at the KA Ranch.

(5) Land Resources

Except for the KA Ranch, all of the lands in the vicinity of the Cliff site are Tonto National Forest lands controlled and managed by the Forest Service for wildlife habitat, water storage, recreation, and livestock grazing. The major land use features currently located within the Cliff site area are the Horseshoe Dam and the 2,800-acre Horseshoe Reservoir which would be replaced by Cliff Dam and Reservoir. No other significant developments have occurred in the vicinity of the Cliff site area given the predominantly public landownership pattern.

3. Verde River Dams Modifications Site Area

The Verde River Dams Modifications site area encompasses 75,690 acres including all 52,790 acres of the Cliff site area and an additional 22,900 acres of the Bartlett Dam and Reservoir area. The description presented here addresses only those factors which differ from the Cliff site area.

a. Geographic Setting

The Verde River Dams Modifications site area is located on the Verde River and consists of two existing dams, Horseshoe Dam and Bartlett Dam. The eastern boundary of the Mazatzal Wilderness Area lies approximately three miles east of Horseshoe Dam. Bartlett Dam is located 24 miles downstream of Horseshoe Dam.

b. Biological Resources

Table III-9 presents acreages and ranges for biotic community types within the Verde River Dams Modifications site area.

(1) Riparian/Wetland Communities

The riparian/wetland communities are the same as described in the Cliff site area.

(2) Terrestrial Communities

Terrestrial communities are as described in the Cliff site area.

Table III-9

ACREAGE AND PERCENT RANGE OF BIOTIC COMMUNITY SERIES

AND ASSOCIATIONS AT THE VERDE RIVER DAMS MODIFICATIONS SITE AREA

	Symbol	Percent	Acres
Desert upland:			
Paloverde-mixed cacti series	PC	85.3	64,550
Blue paloverde-ironwood association	CB/RA	4.0	3,040
Riparian and wetland types:			
Fremont cottonwood-Goodding willow association	CW/PS	0.8	570
Mixed broadleaf series	MB	0.1	100
Velvet mesquite association	MS/PJ	1.3	970
Saltcedar association	SD/TC	0.01	10
Saltcedar-mixed scrub association	SD/SC	.01	10
Human-dominated types:			
Agricultural lands	AG	0.2	130
Other resource categories:			
Lake (typical year high)		6.3	4,780
Lake (typical year low)		2.0*	1,530*
Flowing stream (miles)			21*
Nonvegetated lands		<u>2.0</u>	<u>1,530</u>
Total		100.0	75,690

*Not included in the total.

(3) Perennial Stream/Riverine Communities

The perennial stream/riverine communities are the same as described in the Cliff site area except there are approximately 21 miles of perennial stream.

(4) Reservoir Aquatic Communities

In addition to the reservoir aquatic communities of the Cliff site area, Bartlett Reservoir is a relatively more stable reservoir than Horseshoe. It is one of Arizona's major sports fisheries.

(5) Threatened and Endangered Plants and Wildlife

In addition to the threatened and endangered plants and wildlife described in the Cliff site area, bald eagles nest along the Verde River downstream of Bartlett Dam. This breeding area has been more productive than the Chalk Mountain breeding area.

(6) Management and Special Use Areas

Management and special use areas are as described for the Cliff site area.

c. Recreation

(1) Stream-oriented Recreation

Existing stream-oriented resources in the Verde River Dams Modifications site area include 1 mile of stream below Bartlett Dam in addition to those resources described in the Cliff site area. Recreational use for this mile is estimated to be 16,000 annual recreation days.

(2) Reservoir-Oriented Recreation

In addition to the reservoir oriented recreation at Horseshoe Reservoir described in the Cliff site area, Bartlett Reservoir in the Verde River Dams Modifications site area receives a high amount of recreational use. Reservoir-oriented recreational use at Bartlett Reservoir is 158,730 annual recreation days, 72,150 of these are on the water surface and 86,580 on land.

d. Cultural Resources

(1) Prehistoric Resources

Verde River Dams Modifications site area encompasses the 52,790 acres within the Cliff area described above plus an additional 22,900 acres. This combined area would include the 1464 prehistoric archaeological sites covering approximately 1,500 acres that are estimated to be within the Cliff area. An additional 292 sites covering about 265 acres are predicted to be within the area surrounding Bartlett. The total of 1,756 sites are estimated to encompass about 1,750 acres of archeological remains.

Only limited sample surveys (about 12 percent coverage) were conducted within the Bartlett area, but the types and proportions of sites present are assumed to be generally similar to those for the Cliff area described above. The exception would be due to the fact that the existing Bartlett Reservoir has inundated the prime terrace locations where the larger types of sites are typically located. Although one additional ball court feature, which is usually indicative of a large pit house village, has been recorded in the Bartlett area, it is expected that few others, if any, of the larger site classes would be present within the additional area at Bartlett.

(2) Historic Resources

In addition to the 17 historic sites within the Cliff area an additional 3 sites are known to be present within the Bartlett area. These include Bartlett Dam itself, a saddle dam south of the main dam, and the construction camp complex used when the dam was originally constructed between 1936 and 1939. Because total survey of the Bartlett area has not been made additional historic sites have not been identified. The history of land use in the area would indicate that relatively few, if any, historic sites are unrecorded.

e. Social Resources

Social resources are the same as those described in the Cliff site area.

f. Other Resources

(1) Air Quality

No air quality data are available from the vicinity of the Verde River Dams Modifications site area. A combination of dust from recreation-related traffic and relatively high potential for wind erosion makes an occasional violation of total suspended particles (TSP) standards a possibility.

(2) Aesthetics

The aesthetic qualities of the Verde River Dams Modifications site area are as described for the Cliff site area with the addition of Bartlett Reservoir. Bartlett Reservoir is a relatively stable reservoir without the substantial drawdowns that are associated with Horseshoe Reservoir.

(3) Noise

Noise levels in the Verde River Dams Modifications site area are the same as at the Cliff site area.

(4) Geology/Soil

The foundation of Horseshoe Dam consists of dipping interbedded basalts, tuffs, and agglomerate. Bartlett Dam is underlain by coarse-grained and fine-grained granites with alluvium and talus deposits occurring along the dam axis. Geologic conditions are as described for the Cliff site area.

(5) Land Resources

Land resources are as described for the Cliff site area.

4. New/Modified Roosevelt Site Area

a. Geographic Setting

The New/Modified Roosevelt Dam site area encompasses the existing Roosevelt Dam and Reservoir, located at the confluence of Tonto Creek and the Salt River about 75 miles east of Phoenix (see Figure III-1). Roosevelt Dam was constructed in 1911 for water storage and is currently operated by the Salt River Project. Roosevelt Lake has an approximate 17,000-acre surface area and an 88-mile shoreline at maximum design capacity. Primary access routes to the Roosevelt damsite area are State Routes 88 (Apache Trail), 188, and 288. The affected site area for construction of New/Modified Roosevelt Dam includes approximately 81,000 acres.

b. Biological Resources

The Roosevelt site area has two somewhat dissimilar drainages feeding into Roosevelt Lake. The Salt River flows from the east through a deeply incised, narrow canyon, while Tonto Creek flows from the north through a broader valley where riparian forests are well developed. The surrounding hillsides are part of the Paloverde-mixed cacti community. Table III-10 presents acreages and ranges for biotic community types within the Roosevelt site area.

(1) Riparian/Wetland Communities

Riparian forests and woodlands are primarily confined to Tonto Creek and the Salt River. Tonto Creek supports stands of mature cottonwood, willow and mesquite which harbor many resident and migrating bird species. Salt-cedar is prevalent along the Salt River within the site area.

(2) Other Terrestrial Communities

The upland habitat type is the Paloverde-mixed cacti community; the blue Paloverde-ironwood association occupies large washes in the site area and several alluvial benches on the perimeter of Roosevelt Lake. Wildlife is abundant; coyote, deer and javelina have been noted in the site area during CAWCS surveys. Springs are present along the perimeter of the

Table III- 10

ACREAGE AND PERCENT RANGE OF BIOTIC COMMUNITY SERIES
AND ASSOCIATIONS AT THE ROOSEVELT SITE AREA

	Symbol	Percent	Acres
Desert upland:			
Paloverde-mixed cacti series	PC	69.3	56,130
Blue paloverde-ironwood association	CB/RA	4.4	3,540
Riparian and wetland types:			
Fremont cottonwood-Goodding willow association	CW/PS	0.5	380
Velvet mesquite association	MS/PJ	2.0	1,650
Saltcedar association	SD/TC	1.1	880
Saltcedar-mixed scrub association	SD/SC	0.2	170
Human-dominated types:			
Agricultural lands	AG	0.2	120
Other resource categories:			
Lake (typical year high)		17.9	14,520
Lake (typical year low)		14.7*	11,930*
Flowing stream (miles)			15*
Nonvegetated lands		<u>4.4</u>	<u>3,580</u>
Total		100.0	80,970

*Not included in the total.

Source: Second Level Environmental Inventory, Dames & Moore, 1982.

lake and in the Salt River channel downstream of Roosevelt Dam. The abundant cliff habitat along the Salt River harbors localized populations of specialized plants and animals.

(3) Perennial Stream/Riverine Communities

The Salt River and Tonto Creek constitute 15 miles of perennial stream within the site area when Roosevelt Lake is at 2,094 foot elevation. Riverine fishes occurring on the Salt River include native and introduced species. The Arizona Game and Fish Department has reintroduced the razorback sucker in the reach upstream of Roosevelt Lake and reintroductions of the Gila topminnow have been initiated at tanks and springs in the vicinity. Tonto Creek is subject to occasional cessation of flow. Fish that occur are essentially the same species that occur in Roosevelt Lake.

(4) Reservoir Aquatic Communities

Roosevelt Lake is a large and important self-sustaining fishery resource in central Arizona. The reservoir is relatively stable in that it is only occasionally subjected to severe drawdown conditions. The fish population is predominantly introduced species. As in many other central Arizona impoundments, the lakebed is made up of rocky substrates overlain by sediment conveyed by the main feeder streams.

(5) Threatened and Endangered Plants and Wildlife

A bald eagle breeding area is located near the confluence of Pinal Creek and the Salt River, upstream of Roosevelt Lake. The eagles are known to forage upstream of the nest site and downstream from the Medler Point vicinity to Roosevelt Lake.

The osprey, black-crowned night heron, desert tortoise, and Gila monster which are State of Arizona special status species, occur in the vicinity of Roosevelt Lake. The razorback sucker has been reintroduced to the Salt River upstream of Roosevelt Lake. The Gila topminnow has been reintroduced to springs and lakes in the Tonto National Forest. Desert bighorn have been introduced to the Three-Bar Wildlife Area and are known to occur in the Roosevelt Lake vicinity.

(6) Management and Special Use Areas

Grazing allotments around Roosevelt Lake are managed by the Tonto National Forest. The Tonto Creek end of the lake and vicinity are considered wintering areas for the bald eagle and peregrine falcon. A variety of waterfowl is known to winter at the lake, and portions of the shoreline are closed to public access in the winter. Access to the Pinal Creek nesting area will be curtailed in the future, and habitat improvement such as planting cottonwood trees is being considered.

The Arizona Game and Fish Department manages a waterfowl refuge located on the northeast and west shorelines of the Tonto arm of the lake primarily for migratory waterfowl. The Three-Bar Wildlife Area

also borders the lake and the Salt River downstream of Roosevelt Dam providing excellent habitat for wildlife.

c. Recreation

(1) Stream-Oriented Recreation

Existing stream-oriented recreation resources and facilities in the Roosevelt site area are within the Tonto National Forest and are managed by the Forest Service.

Within this area are a total of 14.9 stream miles. The Salt River accounts for 9.5 miles of stream and Tonto Creek represents the remaining 5.4 stream miles. No stream-oriented facilities have been developed by Tonto National Forest in the Roosevelt site area. Stream fishing activity within the Roosevelt site area accounts for 7,979 annual recreation days.

(2) Reservoir-Oriented Recreation

The recreation use potential of Roosevelt Lake is somewhat diminished by fluctuating water levels and inaccessibility. For the purposes of impact assessment, the surface area of the lake that exists at least 50 percent of the time during the recreation season has been used. This area equals 13,341 surface acres.

Ten recreation areas are managed by Tonto National Forest at Roosevelt Lake. Dispersed camping and fishing are the primary recreation activities at these areas.

The total number of annual recreation days for reservoir-oriented recreation at Roosevelt is 349,477.

d. Cultural Resources

(1) Prehistoric Resources

At the Roosevelt site area there are estimated to be approximately 1,480 prehistoric archaeological sites which cover an area of roughly 2,780 acres.

Sites predicted to occur in the area include 460 artifact scatters. Pueblo sites at Roosevelt include one room sites (490 predicted to occur), 2-5 room sites (290 predicted to occur), 6-20 room sites (175 predicted to occur), 21-100 room sites (45 predicted to occur), and sites with greater than 100 rooms (5 predicted to occur). Many of the one room sites are small (4 square meters) and have a very low artifact density indicating they were probably not used as permanent living quarters. The larger sites (sites with more than 20 rooms) at Roosevelt tend to be located along the largest drainages which flow into the Salt River.

Two other types of sites include petroglyph (1 predicted to occur) and agricultural sites (10 predicted to occur). Special features include an estimated 215 trash mounds and 1,780 individual water and soil control devices.

There is evidence indicating the earliest occupation in Tonto Basin occurred between 5000 B.C. and 1000 B.C. (Huckell, 1973). The major occupation, however, seems to have started with the Colonial Period of the Hohokam which dates from A.D. 500 to A.D. 900. This period marks the start of the sedentary occupation of Tonto Basin. The next major occupation ranges from A.D. 1100 to A.D. 1400 and is attributable to the Salado (Fuller et al, 1976). Less is known about the time period from A.D. 900 to A.D. 1100. Some sites have been recorded which date to this time interval, but the Hohokam-Salado transition is poorly understood. Work by Doyel (1977), however, supports a continual occupation of the basin. Between A.D. 1400 and A.D. 1450, the Salado abandoned the area for reasons which are still unclear.

The current condition of the archaeological resources in the Roosevelt site area is considered fair to poor. Sites with noticeable architectural features have been vandalized with equipment ranging from shovels to bulldozers and front-end loaders. Certain sites have also been disturbed by recreation activities, fluctuations in the water level, and permanent inundation.

The sites in the Roosevelt site area form a data base which is one of the most complex and at the same time poorly understood in central Arizona. Located strategically between the Hohokam area to the southwest and the Mogollon area to the north and east, the prehistoric occupants of this area served a crucial function in regional economic and socio-political activities. Of equal importance, intra-regional indicators such as site size, number of rooms at a site, and artifact diversity suggest a network of independent competing communities who were internally organized. These sites also reflect a wider diversity of architectural styles than is usually observed in the Southwest. For these reasons, the prehistoric cultural resources in the Roosevelt site area, as an archaeological district, have significant information potential.

(2) Historic Resources

Sixty historic period sites are recorded within the Roosevelt site area. All but three of these are considered significant because of their scientific or historic value. Agricultural sites and water control sites, mainly from the Roosevelt Dam construction period, constitute 72 percent of the historic resources at Roosevelt. Water control functions can be assigned to 22 sites and structures. These include Roosevelt Dam (a National Historic Landmark), the power canal and its several related sites, Government Hill, and a number of construction camps and their appurtenant trash disposal areas. Twenty-one sites are associated with agricultural pursuits, primarily ranching and both patented and unpatented homesteading. Five transportation-related sites and structures include an 1881 road, Highway 188 constructed in 1905-1907, and a 1920 truss bridge. Nine sites are included in a miscellaneous category.

Today only one historically important unincorporated village, Roosevelt, remains. One site containing a metal tank and a charcoal pile is classified as having an industrial function. Another site is the Tonto National Monument. Religion-related sites consist of a church site and the Cline family and Roosevelt cemeteries. Finally, three sites consist of trash deposits, the origin of which are uncertain.

Five of the significant sites are above the IDF area and will not be affected by the project. The Roosevelt area is characterized by a long and eventful history beginning with the Apachean occupation. It is not known when the first non-Indians entered the region, but fur trappers traveled along the Salt River on at least two separate occasions in the early 1800s. Military excursions occurred at numerous times, but only one permanent camp, Camp Reno, was established. It was built in 1867 and abandoned in 1870. During the same period, prospectors began searching for gold and other valuable minerals, but with little apparent success. No major travel routes or roads went through the area; it was bypassed by the large exploration and mapping expeditions of the mid-1800s. No sites of these early occupants and users have been discovered within the Roosevelt site area.

The first homesteader-rancher to enter the area was a hog rancher who settled in Greenback Valley in 1875. Soon, the area was blanketed with ranches and homesteads. The last patent for a homestead is dated 1924, although the site was initially settled in the 1890s.

The isolated, remote character of the Roosevelt area changed abruptly beginning about 1903 with the construction of Roosevelt Dam. The dam not only brought better roads, better communication facilities, electricity, and other amenities, but also inundated homesteads, ranches, farmlands, buildings, roads and trails, and familiar landscape. The dam construction project also brought the government and tourists.

Preparation for construction of Roosevelt Dam began in 1903. Brick and lime kilns were established, a cement mill was erected, and construction of the power canal began. The canal was not ready for use until 1906. Work on features directly related to the dam began in 1903 and work on the actual dam began in 1906. During this period, the now submerged town of Roosevelt developed. It provided hotels, cafes, a post office, and recreation facilities for management personnel, labor, government officials, and visitors during the construction period. In addition to the town of Roosevelt, large housing complexes for laborers were developed near the cement mill and by the dam contractor at Hotel Point. Nearly 2,000 individuals are said to have occupied Roosevelt during the construction period.

Upon completion of the dam in 1911, the camps broke up, construction facilities were dismantled and moved or sold, and in 1917 the Bureau of Reclamation turned over the dam and all of its facilities to what is now known as the Salt River Project.

Roosevelt Dam is listed on the National Register of Historic Places and is a National Historic Landmark. One reason for being so designated is that it is the highest masonry dam in the world.

e. Social Resources

Four communities at Roosevelt Lake would be directly affected by relocation: Rockhouse Farm, Roosevelt Lake Estates, Roosevelt Gardens East, and North Bay Estates. A large number of the people in each of these communities are part-time residents.

People living at Roosevelt Lake are geographically divided into two distinct populations: those living on the east (Globe) side and those living on the west (Payson) side of Roosevelt Lake. Residents living on the same side of the lake share facilities and participate in the same social events and community projects. Very little social interaction occurs between east- and west-side residents. Rockhouse Farm and Roosevelt Lake Estates are located on the east side, while Roosevelt Gardens and North Bay Estates are on the west side of the lake. Three ranches on the east side and ten ranches on the west side would be affected by the project.

The east-side communities differ from the west-side communities in two important ways. First, the east side is more developed than the west side. The population is denser and neighborhoods appear more residential. Second, there are more businesses on the east side and they cater primarily to the tourist trade. Lakeview Marina, located near the dam on the east side, provides a place to dock and service boats. Roosevelt Lake Resort is also located on the east side. A small gas station is located near the resort, and Spring Creek Store, a large grocery store, is about 1 mile away. In addition to these businesses, a small store is located at Rockhouse Farm.

The communities on the west side are not as developed as those on the east side of Roosevelt Lake. There are more uncleared lots and more lots without buildings, houses, or trailers. There are also fewer businesses.

There are only two small stores in the vicinity: Punkin Center Store and Angler's Inn. The Punkin Center Store, besides stocking groceries and some fishing and camping supplies, contains a lunch counter and a small bar. It serves as a central meeting place for west-side residents; however, residents generally travel to Payson for most supplies and services.

(1) Rockhouse Farm

The rural desert community of Rockhouse Farm is located on the southeast side of Roosevelt Lake, near where the Salt River enters the lake. The community and the Rockhouse general store which serves it were initially established about 17 years ago. The

property at Rockhouse Farm has been owned by the same family since the early 1930s. Forty-seven people reside at Rockhouse Farm. Of these 31 are full-time residents and 16 live there part-time. All of the residents of Rockhouse Farm live in mobile homes, virtually all of which are leased.

Nearly all of the 31 full-time residents are retired persons living on fixed incomes (pensions and/or social security). Four children live in the community, as well as a few nonretired persons, most of whom work in the Globe-Miami area.

(2) Roosevelt Lake Estates

The community of Roosevelt Lake Estates on the southeast side of the lake is located on 156 acres of private land surrounded by the Tonto National Forest. The population is estimated to be 359 of which about 60 percent (215) are full-time residents and 40 percent (144) are part-time residents. Approximately 200 of the residents are retired persons, most of whom live on fixed incomes with limited resources. Children comprise about 24 percent (87) of the population, and those school-aged children who are permanent residents are bused to the Globe-Miami area for school.

The average length of residency is about 6 years for full-time residents. About half of the residents live in houses, and half live in mobile homes. Of those who live in mobile homes, many have made them more permanent by building additions to them.

(3) Roosevelt Gardens East

Roosevelt Gardens East is located about 7 miles southeast of Punkin Center on the eastern boundary of Tonto Creek. It is a private residential community which has been developed since 1970. There are about 72 permanent and 58 part-time residents living in the community, although population numbers fluctuate. Most of the permanent residents live in houses; part-time residents live primarily in mobile homes. Of the permanent residents, most are retired individuals living on fixed incomes. The young children who are permanent residents attend school at the Punkin Center School 7 miles away. High school age children attend school in Payson.

None of the roads in the area are paved; the community is accessible only by crossing Tonto Creek. When the creek rises, residents of Roosevelt Gardens (and North Bay Estates) are temporarily cut off from the other communities.

(4) North Bay Estates

North Bay Estates is a small, relatively new community located approximately 2 miles south of Roosevelt Gardens East on the northwest side of Roosevelt Lake. Approximately 60 residents live in the community, 20 of whom are full-time. Half live in houses and half live in mobile homes, many with additions that make them more permanent. Homes in the area are typically quite large. Almost all of the 20 full-time residents are elderly, retired individuals in good health with moderate-to-high incomes. There are no children living in North Bay Estates.

(5) Profile of Roosevelt Lake Residents

While each of the four affected communities have unique features, generalizations can be made about all of the Roosevelt Lake

residents. Collectively, their most distinguishing characteristic is their commitment to a rural, independent lifestyle. They relish their isolation and the peacefulness of the rural, desert setting. Residents spend a great deal of time out-of-doors. The area is very scenic, and residents have a deep appreciation of nature. The lake is an important feature of the residents' lifestyle and their primary source of recreation.

There was concern by all residents that if they were relocated, there would be considerable expenses for which they would not be reimbursed. However, if relocations were necessary, they wished to remain in the area close to their current neighbors, where they could enjoy the independence and privacy that originally attracted them to the community.

f. Other Resources

(1) Air Quality

No air quality data other than TSP data are available from the vicinity of Roosevelt Dam. Although the data are based on a very limited number of samples, they indicate that the federal and state primary standard was probably not violated in 1980. There is no particular reason to expect that any federal or state ambient air quality standards are currently being violated in the area.

(2) Aesthetics

Visitors to the Roosevelt site area initially receive two dominant visual impressions. The first is a striking view of the 300 foot high, stone faced Roosevelt Dam anchored in a deep rock canyon. The second is a large, attractive lake with a recreation pool of over 13,000 acres. From the dam, this placid body of water, approximately 2 miles wide, stretches 10 miles to the east and a similar distance to the west. At the east end of the lake cottonwoods and other types of riparian vegetation grow in abundance. Most of the remainder of Roosevelt Lake is surrounded by sparse vegetation creating a bold distinct pattern of blue water contrasting with the various earth tone colors of the desert.

(3) Noise

Day-night sound levels are typically below 55 dB. Jeep and motorbike activities along local trails, traffic on Apache Trail (State Route 88) and the perimeter lake roads, and motorboat activities on the lake contribute to the maximum sound levels within the area.

(4) Geology/Soils

The topography of the Roosevelt site area varies from near-flat or gently sloping in the floodplains of Tonto Creek and the Salt River, to gently rolling hills adjacent to the floodplains, to very steep and rugged terrain in the mountains. Drainage of the site area is into Tonto Creek, a tributary of the Salt River, and into the Salt River from numerous

washes, gullies and creeks which dissect the surrounding hills. The area includes Precambrian granite, limestone, quartzite, conglomerate, and shale; Precambrian to Tertiary diabase; Cambrian sandstone and quartzite; Carboniferous to Devonian limestone, shale, and sandstone; Tertiary dacite, gravel, sand, and conglomerate; and Quaternary to Tertiary gravel, sand, and silt. The foundation of the existing dam consists of hard, thickly bedded, fine grained, dense, lightly jointed Precambrian quartzites and sandstones.

Although several faults have been noted in the area, there is no evidence of Quaternary movement. Roosevelt Dam is in a region of relatively low seismicity so a large damaging earthquake is not likely. However, earthquakes as large as magnitude 5.5 occurred in historic time and are characteristic of the largest random earthquake (i.e. no causative fault identified) within the seismotectonic province. Studies of the major faults in the area indicate that earthquakes as large as 6.2 may occur. Rockslides are possible in areas with steep rock slopes if there is a seismic event.

Although there are several mineral deposits within the site area boundary, current information indicates that they are abandoned. There are numerous oil and gas leases in the area but there has been limited activity and no oil or gas has been found as yet.

The soils of the site area vary from silty to clayey to sandy to gravelly in composition. There is no prime farmland within the Roosevelt site area.

(5) Land Resources

Roosevelt Dam and Roosevelt Lake are the dominant land use features in the site area. Since the construction of Roosevelt Dam in 1911, some recreational facilities have been developed on public lands on the periphery of Roosevelt Lake and limited urban/built-up areas have occurred on some small private land holdings in the general vicinity. These include the Forest Service's Horse Pasture, Porter Springs, and Windy Hill Recreational Areas and the small residential communities previously described. Except for these developments, the land area within the Roosevelt site area is open space desert rangeland which is passively used for wildlife habitat, water storage, recreation, and livestock grazing purposes.

The 80,970-acre Roosevelt site area lies exclusively within the boundaries and under the administrative control of the Tonto National Forest, Tonto Basin Ranger District. Exceptions to public landownership include inholdings of privately owned lands, lands which have been withdrawn by the Bureau of Reclamation for the existing Roosevelt Dam and Lake, and lands similarly withdrawn along the Salt River corridor for water

reclamation purposes by the Salt River Project. Three other parcels within the Roosevelt site area have also been set aside as publicly-managed special use areas: the 1,120-acre Tonto National Monument, the 38,897-acre Three Bar Wildlife Management Area, and the 7,680-acre land/11,500-acre water Salt River Natural Wildlife Goose Refuge Management Area. Additionally, the segment of Tonto Creek upstream of Roosevelt Lake has been determined to meet criteria for possible Congressional designation as a wild and scenic river.

5. Confluence Site Area

a. Geographic Setting

The Confluence Dam site is located at the confluence of the Salt and Verde Rivers, approximately 3.5 miles upstream from the existing Granite Reef Diversion Dam, and approximately 25 miles northeast of Phoenix (see Figure III-1). Primary access to the site area is provided by Beeline Highway (State Highway 87), Bush Highway, and Usery Pass Road. The affected site area of Confluence Dam and Reservoir includes 70,400 acres.

b. Biological Resources

The Confluence site area, with the juxtaposition of five different riparian habitats and the convergence of two perennial streams, is considered highly important in the Southwestern United States because of its wildlife habitat diversity. Three breeding areas of the endangered bald eagle occur in the area. The endangered Yuma clapper rail and several species of Arizona listed-threatened and unique wildlife also occur at the Confluence area. Table III-11 gives acreages and ranges for biotic community types within the site area.

(1) Riparian/Wetland Communities

Cottonwood-willow forest grows on sand and gravel bars adjacent to the Salt and Verde Rivers, including a large stand called the Blue Point Cottonwoods. Mesquite woodlands occur on well-drained sandy terraces along both the Salt and Verde Rivers. These "bosques" are characterized by mature trees up to 30 feet tall and 3 feet in trunk diameter growing in savanna-like stands. The Confluence site area contains cattail marsh habitat which is used by the endangered Yuma clapper rail. Stands of salt-cedar and mixed scrub make up the other riparian habitats.

(2) Other Terrestrial Communities

The paloverde-mixed cacti community forms the prevalent biotic community of hillsides and mesas, supporting essentially the full array of Sonoran wildlife. Along washes the blue paloverde-ironwood association grows in response to greater moisture availability. Rock outcrop and cliff habitat on the south side of the Salt River are important as wildlife habitats.

(3) Perennial Stream/Riverine Communities

The Salt and Verde Rivers constitute about 31 miles of perennial stream in the Confluence site area. The Salt River contains few deep pools; the reach between Stewart Mountain Dam and the confluence is composed mostly of broad shallow riffles over a cobble bed. The Verde River grades from a cobble bed at the north end of the site area to sands and gravel at the confluence, with long quiescent stretches on the Salt River below the confluence. Both rivers are subject to wide fluctuations in flow. Both native riverine fishes and introduced species are present. Rainbow trout are stocked in the Salt River by the Arizona Game and Fish Department.

TABLE III-11

ACREAGE AND PERCENT RANGE OF BIOTIC COMMUNITY SERIES
AND ASSOCIATIONS AT THE CONFLUENCE SITE AREA

	Symbol	Percent	Acres
Desert upland:			
Paloverde-mixed cacti series	PC	77.9	54,870
Blue paloverde-ironwood association	CB/RA	2.3	1,600
Riparian and wetland types:			
Velvet mesquite association	MS/PJ	10.4	7,290
Mixed scrub series	SC	0.5	370
Saltcedar association	SD/TC	0.5	330
Fremont cottonwood-Goodding willow association	CW/PS	1.3	880
Cattail series	CT	0.04	30
Human-dominated types:			
Agricultural lands	AG	0.4	300
Developed and urban lands	DV	2.2	1,540
Other resource categories:			
Lake		0.9	630
Flowing stream			(31 miles)*
Nonvegetated lands		<u>3.6</u>	<u>2,560</u>
Total		100.0	70,400

*Not included in total.

Source: Second Level Environmental Inventory, Dames & Moore, 1982.

(4) Reservoir Aquatic Communities

A portion of Saguaro Lake and the Granite Reef diversion pool are included in the site area. No lake habitat occurs in the area which would be directly affected by a dam at the confluence.

(5) Threatened and Endangered Plants and Wildlife

The Yuma clapper rail and bald eagle are endangered species that inhabit the Confluence site area. As many as 4 Yuma clapper rails have been simultaneously observed about 2 miles upstream from the confluence.

Three bald eagle breeding areas have been identified within the Confluence site: 1) the Bartlett breeding area about 2 miles downstream of Bartlett Dam on the Verde, 2) the Fort McDowell breeding area near the Sycamore Creek-Verde River confluence, and 3) the Blue Point/Stewart Mountain breeding area on the Salt River between Stewart Mountain Dam and the confluence. The eagles which use these breeding areas forage along the rivers between Stewart Mountain Dam, Sycamore Creek, and the Granite Reef Diversion Dam. According to the Fish and Wildlife Service, the Blue Point/Stewart Mountain breeding area is the most productive of the five bald eagle breeding areas present in the CAWCS study area. Arizona threatened and unique species also occur at the site. The Colorado river roundtail chub, black hawk, osprey, and black-crowned night heron have also been observed in the Confluence site area. Desert tortoise and Mississippi kite probably occur in the site area as well.

(6) Management and Special Use Areas

Natural resources on the Fort McDowell and Salt River Indian Reservations are controlled by the Indian communities, with priority use granted to resident citizens. The Tonto National Forest maintains grazing allotments bordering Saguaro Lake and the Salt River, and is engaged in habitat rehabilitation in the Blue Point vicinity and along the Verde River north of the Fort McDowell Reservation.

Public access is restricted in the Blue Point cottonwoods and cattail marsh areas on the north side of the Salt River. Mature stands of cottonwood and mesquite are considered good birding areas by the Maricopa Audubon Society; such stands on the south side of the Salt River are included in the Tonto National Forest Lower Salt River Recreation Area.

c. Recreation

(1) Stream-Oriented Recreation

Stream-oriented recreation resources at the Confluence site consist of 12.1 stream miles on the Salt River, 19.0 miles on the Verde River, and 3.8 miles on Sycamore Creek. Most recreational activity takes place on the Salt River in the Lower Salt River Recreation Area. Tubing is the primary activity along the Salt River from Stewart Mountain Dam to the

confluence with the Verde River. This represents a unique and easily accessible recreation experience that is not duplicated elsewhere in central Arizona. Within the site area, tubing is found along the lower Salt River and to a lesser extent on the Verde River where low flows restrict tubing to spring months and accounts for 2,168,000 maximum annual recreation days. Stream fishing is also common along streams within the Confluence site area.

Three stream-oriented recreation areas managed by Tonto National Forest are located along the Salt River in the Confluence site area. No public water-related recreation facilities are found on either the Salt River or Fort McDowell Indian Reservation.

A total of 2,201,114 maximum annual recreation days are associated with stream-oriented recreation in the Confluence site area.

(2) Reservoir-Oriented Recreation

Reservoir-oriented resources and facilities at the Confluence site area are centered around Saguaro Lake, located in Tonto National Forest. Saguaro Lake has an average surface area of 630 acres during the recreation season (April to October) and is very intensively used for boating; over 20,000 maximum annual recreation days are attributable to fishing, powerboating, waterskiing, and non-powerboating activities.

Three major recreation sites are located within the Confluence site area at Saguaro Lake. Swimming and picnicking are the most frequent activities of visitors. The lake area has a parking capacity of 200 cars and is often filled on weekends during summer. A total of 89,549 maximum annual recreation days are associated with reservoir-oriented recreation at the Confluence site.

d. Cultural Resources

(1) Prehistoric Resources

It is estimated that approximately 265 prehistoric sites are located in the site area covering a combined area of approximately 7,740 acres. About 200 artifact scatters are predicted to occur. Many of these sites are associated with trash mounds, and in such instances it is very likely that the remains of Hohokam-style pithouses can be found at such sites.

Pueblos, which are less common at the Confluence than at the Cliff or Roosevelt site areas, include one room sites (5 predicted to occur), 2-5 room sites (20 predicted to occur), and 21-100 room sites (less than 5 predicted).

Two other types of prehistoric resources found in the Confluence site area include petroglyph sites (20 predicted to occur) and agricultural sites (10 predicted to occur). Several Hohokam irrigation canals have been documented in the area.

Special features include an estimated 635 trash mounds. Twelve ball courts were recorded (13 predicted to occur); ball courts are more common in this area than in any of the other CAWCS site areas. They are connected with ceremonial and religious activities and have been cited as evidence of connections with parts of Mexico.

The number of sites estimated to occur in this site area is much lower than that predicted for the Cliff and Roosevelt site areas. However, while site density is between five and eight times less, the size of the sites is much larger. This is reflected in the total acreage of archaeological remains.

The current condition of the archaeological resources in the Confluence site area is fair to good. Sites have been altered as a result of vandalism, agricultural use, or erosion. Impacts resulting from recreation have been less severe than in the Roosevelt site area.

Because of their location at the confluence of two major rivers, the archaeological resources in this area are a record of unusual and unique prehistoric cultural processes. By controlling and managing trade from the east and north and implementing major irrigation projects, the prehistoric occupants of this area developed a complex level of social and political organization very different from that in other areas of central Arizona. The prehistoric resources are considered significant as an archaeological district.

(2) Historic Resources

One hundred historic sites and structures are recorded within the Confluence site area; 97 of these are considered significant because of their scientific or historic value.

Seventy of the significant sites are connected in one way or another with agriculture; 15 of these are related to irrigation and water control, and 55 are remains of small, often isolated, Indian and non-Indian farmsteads and homesteads scattered over the area. Sites, in addition to the farmsteads, include Government Ditch, Jones Ditch, Stewart Mountain Dam and construction camp, Granite Reef Dam and construction camp, and Arizona Dam and construction camp.

Transportation is represented by three sites. Eight sites which have their origin in governmental activities include six military and two Forest Service facilities. Recreation and mining are represented by one site each. Two lime kilns constructed for the production of lime for building purposes, represent an industrial function. Isolated graves and two cemeteries reflect a religious function. The Fort McDowell cemetery, dating to 1868, is still in use. Finally, nine very small sites consisting primarily of petroglyphs, are classed as miscellaneous.

The history of the Fort McDowell portion of the Confluence site area can be divided into four general periods: the pre-1865 Indian occupation, the 1865-1890 military establishment, the squatter-farmer

period of 1890-1903, and the Indian Reservation period of 1903-present. Sites from all of these periods except the first have been located. The Yavapai Indians used the area before the permanent entry of the white man in 1865 and to a limited extent afterwards until 1903 when the Fort McDowell Indian Reservation was created. The U.S. Army constructed Camp McDowell, later Fort McDowell, in 1865 and occupied it until 1890 when the fort was permanently abandoned. In addition to the buildings and structures of the fort itself, an irrigation ditch and fields were developed.

A total of 14 squatters and 21 individuals who thought they had valid claims to the land were farming within the old Fort McDowell Military Reservation when, in 1903, President Roosevelt signed an Executive Order transforming it into an Indian Reservation. With this action, the Federal Government purchased the improvements only and forced everyone to leave. Since 1903 the reservation has been managed by the Bureau of Indian Affairs and the Yavapai Indians. Until recently, farming has been a major occupation at Fort McDowell.

South of the proposed Confluence Dam site lie the remains of the Arizona Dam, the first major dam on the Salt River. It was in operation from 1895 to 1905 when it was partially destroyed by flooding. This dam provided water for irrigation, and was replaced by Granite Reef Dam in 1906-1908. Remnants of the Arizona Dam remain, as does its construction camp and associated dam tender's facilities.

The Stewart Mountain Dam was erected on the Salt River between 1928 and 1930. Upon completion of the dam, the construction camp was abandoned and many of the buildings were sold for local use. Some of them were used to develop the Saguaro Lake Guest Ranch Resort.

Along the Salt River between the historic Arizona Dam site and Stewart Mountain Dam are a number of sites reflecting the varied uses to which the area has been put. Homesteading and ranching activities, more or less contemporaneous with those at Fort McDowell, are evidenced at a number of sites on the south side of the Salt River. Very few of these were ever patented and thus very little information is available about them. All are now in the Tonto National Forest.

Mining was very limited in the area because of the lack of minerals in marketable quantities. An exception is an extensive barite mine on Coon Bluff in operation from about 1931 to 1955. Two kilns reflect a small but active business of processing limestone for the manufacture of lime on the north side of the river. Sites attributed to both the Civilian Conservation Corps (CCC) and the Forest Service were recorded, including a CCC campsite, the Blue Point Ranger Station, and the Blue Point Administrative Site.

e. Social Resources

The Fort McDowell Indian Reservation encompasses 24,680 acres of land northeast of Phoenix. The Verde River runs through the reservation and converges with the Salt River about 1.5 miles from the

southern boundary of the reservation. The current population of the reservation is reported to be 374, with most people identifying themselves as members of the Yavapai Tribe.

(1) History

The earliest evidence that the Yavapai lived in the area that includes the current reservation boundaries dates to 1539. It is likely that they occupied the area even long before that. For the last 100 years, Yavapai history has largely been defined by implemented or threatened compulsory relocation by the U.S. Government. Bloody Basin, Skeleton Cave, and Skull Valley are places in Arizona named following Yavapai encounters with the military, in which many Yavapai were killed. In 1872, the Yavapai were forced to move to Rio Verde Reservation near Camp Verde. After successfully establishing farming on the reservation, the Yavapai, in mid-winter 1875, were marched from Camp Verde to the San Carlos Reservation, a distance of 180 miles. During this March-of-Tears, as it is called by the Yavapai, many become ill and died or were killed. The Yavapai were allowed to leave San Carlos in 1889, and a group returned to their ancestral land, settling at Camp McDowell, an abandoned military post. In 1903, Theodore Roosevelt, by Executive Order, established Fort McDowell as a reservation. From 1910 until 1931 the U.S. Government made repeated attempts to remove the Yavapai from Fort McDowell to the Salt River Reservation. The tribe consistently opposed their relocation. Beginning in the early 1950s, the construction of a dam at the confluence of the Salt and Verde Rivers (first called Maxwell Dam, then Orme Dam, and finally Confluence Dam) was proposed and would have required the relocation of the Fort McDowell Community.

The tribe has strongly opposed relocation because of dam construction at the confluence. Because of residents' past experiences with compulsory relocation, and since many of the current Fort McDowell residents had relatives who participated or even died in past relocation attempts, any proposed relocation remains a volatile issue.

(2) Meaning of the Land

The land at Fort McDowell has psychological, historical, religious, and economic significance for the Yavapai. Land represents stability and is crucial to transmission of Yavapai culture. The land is viewed like a trust fund which is passed on to future generations. Land also represents security since it provides a constant source of food, water, shelter and recreation. Residents make use of its renewable resources to supplement their incomes; many cut and sell mesquite wood for firewood to supplement their incomes and basketweavers sell baskets made out of the willow, cottonwood, and devil's claw that grow on the reservation.

The land has important religious significance for the residents. There are many sites on the reservation that are considered sacred or holy, including prehistoric cultural sites. Many aspects or practices of traditional tribal religion (parts of which are incorporated into Christianity as practiced by the residents) are linked directly to specific locations on the reservation. Sacred sites are considered inviolate, and the Yavapai

believe they should not be disturbed or altered in any way. One of the most sacred of known sites at Fort McDowell is the cemetery, which could be flooded or made inaccessible by plans which include Confluence Dam and Reservoir. The importance of preserving the sacredness of the cemetery was emphasized by many residents in interviews conducted by CAWCS researchers.

While many residents rely on the land to supplement their incomes, many others rely on it for their primary source of income. The Verde River, the vegetation that exists, the flat terrain and the ample space combine to make the land at Fort McDowell extremely well suited for grazing. Currently, about 600 acres are being farmed, including an experimental tribal farming operation. The economic development consultant for the tribe projects that by the year 2000 the tribe will be farming 4,000 acres of land along with an additional 1,000 acres devoted to experimental arid crops.

Besides agriculture and livestock, there are other land-dependent sources of revenue critical to the Fort McDowell economy. The City of Phoenix's well field on the reservation generated \$100,000 per year. The sand and gravel operation has a potential for generating one-half million dollars a year, according to a University of Arizona study. The current economy as well as the tribe's economic development policy hinges on the use of the valuable resources at Fort McDowell.

The significance of the land for the Yavapai was frequently reiterated in the interviews. Residents described their land as "our mother", "our heart", "our life", "our home". They expressed deep attachment to the land and said that other land would not have the same meaning for them. Residents stated that neither money or other land would adequately compensate them for the loss of the reservation.

(3) Social Organization

Fort McDowell is an extremely cohesive community. Most residents are related to each other either by birth or marriage; they share a distinct culture, a common identity and history. They are a remarkably stationary population. Most were born on the reservation and have lived there all their lives, some in the same house. The Fort McDowell community is characterized by extensive informal support networks. Residents interact frequently and many provide each other with daily support. The extended family is crucial to the social organization of the Yavapai community. Grandparents, siblings, grandchildren and cousins typically live with or nearby each other.

Besides well developed informal support networks, the Fort McDowell community also has extensive formal support systems. The community is an Indian chartered corporation as defined by the Indian Reorganization Act of June 18, 1934. The tribe is governed by a tribal council comprised of five members who are elected for two-year terms. Participation in the tribal government is high. In recent years much of the tribe's activity has revolved around their vehement opposition to relocation. Fort McDowell also supports a pre-school program, a center for the elderly, a hot-lunch program for the elderly, a health clinic as well as other programs

and facilities for community members. There are currently four churches in the community and their services and activities are well attended and play an integral role in the community organization.

(4) Quality of Life

Residents at Fort McDowell are highly satisfied living in their community. Because of their strong attachment to the community, land and tribe, theirs is not a portable lifestyle. While most residents are generally healthy, they have experienced an increase in physical and mental health problems attributed to the stress associated with their proposed relocation.

On the basis of educational levels, income, and occupation, most residents would not be ranked very high in social class. Unemployment is a serious problem for the community. The current unemployment rate is 43 percent. Of those employed half earn less than \$5,000 annually (Annual Economic Development Report, 1979-80). The mean number of years of formal schooling is 11.3 years. Residents are currently working hard to improve the situation, despite the impediment of their proposed relocation.

(5) Summary Profile

In summary, the Yavapai of Fort McDowell are a people with strong cultural and personal ties to the land; their lifestyle, culture, and identity are dependent on it. They have little experience moving, and they are adamantly opposed to relocation. They constitute an extremely cohesive community and are very dependent on well-established support systems within the community. Because of these characteristics, they are a population for whom relocation would be extremely difficult.

f. Other Resources

(1) Air Quality

No air quality data are available from the vicinity of the Confluence site area; therefore, no accurate quantitative statements about the local air quality can be made at this time. The Confluence site is located near the eastern boundary of the Maricopa County Urban Planning Area (MCUPA). The area comprising MCUPA has been designated by the EPA as a non-attainment area for TSP, carbon monoxide, and ozone, which means that at least one national ambient air quality standard for each of these pollutants is being violated as shown by monitored data or modeling. However, there is no particular reason to expect that any Federal or state ambient air quality standards are currently being violated in the immediate vicinity of the site.

(2) Aesthetics

The convergence of two major rivers, the Salt and Verde, provides a visually important component in the Confluence site area. The Salt River flows unimpeded for approximately 9 miles from the

Stewart Mountain Dam to the confluence. Through relatively steep topography and prominent high rock cliffs, this stretch of the Salt River winds around bends and sharp curves. The attractive desert composition is further intensified by the mature riparian vegetation that frames each side of much of the river. Approximately 15 miles of the Verde River above the confluence is also located in this site area. Riparian vegetation flourishes along the low land on each shore of the Verde River. Adjacent to the natural riparian vegetation are many irrigated fields cultivated by the Fort McDowell Yavapai. Immediately below the confluence of the two rivers is a small lake created by the Granite Reef Diversion Dam. Mature riparian vegetation is growing on much of the shoreline of this lake.

(3) Noise

No site surveys were undertaken to determine sound levels in the area; however, based on existing literature and data, typical day-night sound levels within local undeveloped areas are estimated to be below 55 dB.

Day-night ambient sound levels (L_{dn}) at recreational areas such as Coon Bluff, Blue Point, and Saguaro Lake are estimated to range from approximately 35 to 70 dB; jeep and motorbike activities on trails and roads, vehicle traffic on Bush and Beeline Highways, and motorboating on Saguaro Lake contribute to the maximum sound levels. Peak-hour equivalent sound levels along major haul roads for sand and gravel operations at Fort McDowell are estimated to range from 48 to 61 dB based on available data regarding truck volumes; L_{dn} in the area are generally below 65 dB. An L_{dn} of 65 dB is compatible with the EPA's short-term goals for residential and noise-sensitive recreational areas.

(4) Geology/Soils

The topography of the site area consists of near-flat river channel and flood plain; gently sloping but highly dissected river terraces; low and rolling, highly dissected hills; and rugged to steep mountains. Drainage of the area is into the Verde and upper Salt Rivers, and into the lower Salt River through the Phoenix Area. The site area includes Precambrian granite and metamorphosed granite; Cretaceous sandstone, shale and conglomerate; Laramide granite; Tertiary dacite, sand, gravel, and conglomerate; and Quaternary silt, sand, gravel, and conglomerate. The foundation of the proposed dam consists of moderately to poorly indurated, weathered conglomerate with an interbed of fresh to weathered, hard to moderately hard tuff. Several faults have been mapped in the area. Recent studies indicate no evidence of Quaternary faulting near the damsite. The potential earthquake hazard is not considered serious.

There are several mineral deposits within the site area, but most mines and prospects are now abandoned. On the Fort McDowell Indian Reservation, there are an estimated 7.5 million tons of sand and gravel which could be extracted. Some of this resource is currently being mined.

The soils of the site area vary from gravelly, stony, sandy, clayey, to loamy in composition. There are approximately 680 acres of prime farmland under agricultural production on the Fort McDowell Indian Reservation. An additional 440 acres may be classified as prime farmland when a dependable water supply is made available. This is anticipated by the year 2000.

(5) Land Resources

Located within the 70,400 acre Confluence site area are portions of the Fort McDowell and Salt River Indian Reservations, McDowell Mountain Regional Park, Tonto National Forest, Arizona State Trust Lands, and the new residential communities of Fountain Hills and Rio Verde, and other privately owned parcels such as Goldfield Estates. Segments of the Granite Reef and Salt-Gila Aqueducts of the CAP, Stewart Mountain Dam/Saguaro Lake, and Granite Reef Diversion Dam/Maxwell Lake are also located in the Confluence site area.

Some small-scale residential recreational, and other urban developments have occurred in the Confluence vicinity but public (Forest Service, State of Arizona, and Maricopa County) and Indian (Fort McDowell and Salt River) landownership patterns are the chief reasons that more extensive urban developments have not occurred in this area. The land areas upstream from the Confluence Dam site along the Salt and Verde Rivers are almost exclusively Fort McDowell and Salt River Indian Reservation lands, and Forest Service lands within the Tonto National Forest. These lands, for the most part, are managed for livestock grazing, water conservation, and general recreational purposes. Limited agricultural and sand and gravel mining operations also occur on the Fort McDowell Indian Reservation.

The only developments in the immediate vicinity of the Stewart Mountain Dam, other than the dam and appurtenant facilities, are the Forest Service-maintained recreational sites and Saguaro Lake Guest Ranch. The open desert rangelands found adjacent to Stewart Mountain Dam/Saguaro lake and the riparian vegetation found along the segment of the Salt River just below the dam are also managed by the Forest Service for multiple-use purposes.

6. New Waddell Site Area

a. Geographical Setting

The New Waddell Dam site is located approximately 1/4 mile downstream from the existing Waddell Dam on the Agua Fria River about 45 miles northwest of Phoenix (see Figure III-1). The New Waddell site area includes 41,080 acres. Access to the Lake Pleasant area is via I-17 and Carefree Highway.

b. Biological Resources

The New Waddell site area is characterized by hilly terrain. Biotic communities are typical of the Sonoran Desert. Table III-12 presents acreages and ranges of these communities.

TABLE III-12

ACREAGE AND PERCENT RANGE OF BIOTIC COMMUNITY SERIES
AND ASSOCIATIONS AT THE NEW WADDELL SITE AREA

	Symbol	Percent	Acres
Desert upland:			
Paloverde-mixed cacti series	PC	89.6	36,820
Blue paloverde-ironwood association	CB/RA	3.3	1,370
Riparian and wetland types:			
Velvet mesquite association	MS/PJ	0.8	310
Mixed scrub series	SC	0.1	50
Saltcedar association	SD/TC	0.5	210
Cattail association	CT	0.02	10
Human-dominated types:			
Agricultural lands	AG	0.2	70
Developed lands	DV	0.4	150
Other resource categories:			
Lake (typical year high)		4.2	1,720
Lake (typical year low)		2.0*	830*
Nonvegetated lands		<u>0.9</u>	<u>370</u>
Total		100.0	41,080

*Not included in total.

Source: Second Level Environmental Inventory, Dames & Moore, 1982.

(1) Riparian/Wetland Communities

Riparian habitat consists of stands of salt cedar, mesquite, and mixed scrub along the Agua Fria channel and tributary washes near the upper end of the lake, and along Morgan City Wash and the Agua Fria downstream from Waddell Dam. A small stand of cattail marsh habitat grows at Lower Lake Pleasant. Shorebirds and waterfowl are known to use Lower Lake Pleasant mesquite and cattail habitats.

(2) Other Terrestrial Communities

Nearly 90 percent of the area is paloverde-mixed cacti series, with the blue paloverde-ironwood association occupying the larger washes which feed into Lake Pleasant. There are five springs in the site area. The cliffs along the Agua Fria channel upstream of the lake provide important wildlife habitat for hawks and other wildlife.

(3) Perennial Stream/Riverine Communities

The Agua Fria River, Humbug Wash, and several of the springs have sufficient flow to maintain riparian vegetation, but are not stable streams for the support of fish populations except in spring-fed pools and ponds along the channel.

(4) Reservoir Aquatic Communities

The Lake Pleasant basin is composed of a decomposed granite bed over which a silt layer has been deposited by the Agua Fria River and other streams. The lake is subject to severe drawdown, but normally supports excellent populations of game fish, which also occur in Lower Lake Pleasant.

(5) Threatened and Endangered Plants and Wildlife

A raptor nest observed along the Agua Fria channel upstream from Lake Pleasant has been tentatively identified as a bald eagle nest, and unconfirmed sightings of bald eagles have been made; however, the presence of bald eagles in the site area has not been confirmed by the Fish and Wildlife Service or the Southwest Bald Eagle Recovery Team.

The Gila topminnow (a Federal listed endangered species) was introduced into Tule Creek north of Lake Pleasant in 1970. The Tule Creek population was surveyed in 1982 and found to be in relatively healthy condition.

Arizona special status species known to occur in the Lake Pleasant area include desert tortoise, osprey, peregrine falcon, great egret, snowy egret, and black-crowned night heron. The desert tortoise may breed in the site area.

(6) Management and Special Use Areas

Grazing in the site area is controlled by the Arizona State Land Department, which maintains grazing allotments. There are no other specific habitat enhancement or wildlife management areas present.

c. Recreation

(1) Stream-Oriented Recreation

There are minimal stream miles of recreational value in the site area. No stream-oriented recreation facilities exist in the site area.

(2) Reservoir-Oriented Recreation

Existing reservoir-oriented resources and facilities in the New Waddell site area are located within Lake Pleasant Regional Park. The park is intensively used by Phoenix area residents.

Reservoir-oriented resources consist of two lakes, Upper Lake Pleasant and Lower Lake Pleasant. Upper Lake Pleasant, located above Waddell Dam, is a regulatory storage reservoir and therefore fluctuates considerably (from a high of 1,640 acres to a low of 747 acres). For at least 50 percent of the recreation season, Upper Lake Pleasant has a surface area of 1,280 acres. Motorized boats are permitted on the lake; however, it is also used extensively for sailboating activities. Lower Lake Pleasant has a surface area of only 75 acres. Located below Waddell Dam, this lake is used primarily for fishing and swimming, as motorized boats are not permitted.

Reservoir-oriented facilities at the upper lake consist of picnicking, camping and fishing facilities. At the lower lake, facilities include picnic tables and a beach. Construction of additional facilities is currently underway at Lake Pleasant Regional Park.

Annual recreation days for all reservoir-oriented activities at the New Waddell site area total 168,646.

d. Cultural Resources

(1) Prehistoric Resources

At the New Waddell site area, there are estimated to be approximately 120 prehistoric archaeological sites covering approximately 190 acres.

The most common site type at New Waddell is the artifact scatter, of which 70 are predicted to occur. Pueblos at New Waddell include one room sites (25 predicted to occur), 2-5 room sites (10 predicted to occur), and 6-20 room sites (5 predicted to occur). Sites with puebloan architecture tend to be smaller at the New Waddell site area than those in the

Cliff and Roosevelt site areas. The one exception may be the Beardsley Canal site which has been partially destroyed through a variety of cultural and natural factors.

Also occurring in the New Waddell area are approximately 10 petroglyph sites. Special features are estimated to include approximately 5 trash mounds and 70 individual water and soil control devices which are found in association with the types of sites described above.

In general, the sites in the New Waddell area reflect an adaptation to a mountainous uplands region on the northern margin of the Hohokam area. Evidence indicates that trade networks were established between this area and the Salt River Valley. While the resources in this area are not unique, they do represent a largely unstudied data base and have significant information potential as an archaeological district.

(2) Historic Resources

Fifteen historic period sites and structures are recorded within the New Waddell site area; 11 sites reflect significant scientific or historic values. These sites can be grouped into a number of categories. The Mitchell Springs Ranch is associated with agriculture, the Phoenix-Prescott Wagon Road is transportation related and a lime kiln is associated with industrial production of lime. Eight sites and structures are related to water control and use including the 1893 diversion dam, the Carl Pleasant (Waddell) Dam, the Beardsley Canal, and three associated construction camps.

The earliest historical activity in the New Waddell site area appears to have been that of prospectors and miners in the 1860s and 1870s; however, the level of mining endeavor was never great. Beginning in the 1870s, transportation routes to and from population centers and mining areas near Wickenburg and Prescott were gradually established. Many of these roads ran along or crossed the Agua Fria in the New Waddell site area. The most important of these were a stage route from Wickenburg to Phoenix which was in existence at least by the late 1870s and the Phoenix to Prescott Wagon Road which had been constructed by 1894. The community of Frog Tanks, also known as Pratt, was a stopping place along these north-south transportation routes. It appears to have been established in late 1889 or early 1890 on the Agua Fria River by William Pratt, a miner. Ranching activities in the New Waddell site area began in the 1870s. Today, only one ranch, the Mitchell Springs site, is represented by physical remains located within the site area. Only four individuals filed on homesteads from about 1916 to 1928.

During the heyday of Frog Tanks, certain activities began which would ultimately come to dominate the cultural landscape of the area. These activities began as relatively small-scale schemes to provide water for irrigation purposes and ended with construction of the Carl Pleasant Dam. The first such scheme was that of the Agua Fria Water and Land Company established on November 10, 1888 by six individuals including William A. Hancock, one of the founders of Phoenix, Arizona. By 1891 the company had proposed to erect two reservoir dams and a diversion dam on the Agua Fria

River; however, the project barely progressed beyond the planning stage. Later, W. H. Beardsley of Ohio arrived on the scene and obtained control of the company. In 1893 he formed the Agua Fria Construction Company to actually begin to build the dams. Work began on the diversion dam and canal in 1893 and proceeded haltingly until 1895 when the project ceased. The construction work camp, known as Camp Dyer, was situated on the east side of the dam.

After over three decades of personal struggle to finance the construction of a dam on the Agua Fria River with private funds, Beardsley formed the Beardsley Land and Investment Company in 1925 and, with the financial support of Donald C. Waddell, a financier and investor, began construction of the dam. At the same time, the Maricopa County Municipal Water Conservation District No. 1 was formed to regulate the use of water from the dam. When the dam was completed in 1927, it was the highest multiple arch dam in the United States. It remains the key element in the largest privately funded irrigation system in Arizona.

Along with the building of the Carl Pleasant (Waddell) Dam, the 1893 diversion dam and the Beardsley Canal were finally completed. Both dams and the canal have remained essentially unmodified since construction. The diversion dam is the oldest such structure in central Arizona still in use.

e. Social Resources

No people in the New Waddell site area would be affected by relocation or flood reduction; therefore, no description of the social setting of the site area is presented.

f. Other Resources

(1) Air Quality

No air quality data are available from the vicinity of Lake Pleasant; however, a portion of the lake is included in the MCUPA which has been designated by the EPA as a non-attainment area for TSP, carbon monoxide, and ozone.

(2) Aesthetics

A large portion of this site is occupied by Lake Pleasant Regional Park. Desert vegetation continues down to the shoreline of Upper Lake Pleasant except where riparian vegetation exists in the upper areas of the lake. Lower Lake Pleasant is bordered by riparian vegetation including many large cottonwood trees. Lake Pleasant is a visually-important and well used recreational facility surrounded by the interesting character of the Arizona desert.

(3) Noise

The Lake Pleasant area is minimally developed. The primary area to be affected by noise includes the residential area

approximately 1 mile south of the dam in the vicinity of Lake Pleasant Inn, consisting of fewer than 50 acres. The secondary area consists of those lands within 3 miles of Lake Pleasant, under public ownership and not developed. Day-night sound levels are typically below 55 dB.

(4) Geology/Soils

The topography of the area varies from near-flat to the south and east of Lake Pleasant, to rolling hills and low ridges at the north end of the lake, to fairly steep and highly dissected terrain to the west. The area includes Precambrian metamorphic rocks, Tertiary volcanics and sediments, and Quaternary alluvium. The foundation of the proposed New Waddell Dam site consists of interbedded andesite, tuff, tuffaceous sandstone, and conglomerate.

There are numerous faults within the site area; however, there is no evidence of Quaternary movement near the damsite. There have been no recorded earthquakes originating from this area so a large damaging earthquake is not expected. Although the area has low rates of tectonic activity, the maximum earthquake capable of occurring on the numerous small faults in the seismotectonic province range from 5.5 to 6.5.

Uranium-bearing strata are relatively widespread and have been exposed by tributaries to the Agua Fria River at the northern part of Lake Pleasant. Claims were filed in portions of this area; however, subsequent exploration programs failed to reveal unusual amounts of uranium. Recently, there has been mineral activity by groups and individuals exploring for various precious metals, and several oil and gas leases have been filed. To date (1982) no oil or gas have been found.

The soils of the site area vary in composition from loamy, clayey, sandy, to gravelly. There are approximately 70 acres of prime farmland located in the site area.

(5) Land Resources

The Waddell Dam/Lake Pleasant area is primarily an open desert rangeland area which, except for some recreational facilities and service buildings within Lake Pleasant Regional Park, is used for wildlife habitat, water storage, recreation, and livestock grazing purposes. The 41,080-acre New Waddell site area is primarily comprised of State Trust Lands controlled by the Arizona State Land Department, with some small privately owned parcels and National Resource Lands controlled by BLM. Lake Pleasant Regional Park, which is operated by the Maricopa County Parks and Recreation Department on lands leased from the Arizona State Land Department, covers approximately 14,382 acres, of which 5,686 acres are in Maricopa County and 8,696 acres are in Yavapai County.

7. Downstream Area

a. Geographical Setting

Areas downstream from CAWCS alternative dam sites on the Salt and Verde Rivers are affected by flooding. Additional development opportunities in these areas may result from the implementation of upstream flood control structures. For these reasons, the Salt and Gila River flood plain through metropolitan Phoenix is considered an affected area. The downstream area includes a 42-mile segment of the Salt River flood plain below the Granite Reef Dam extending through the City of Phoenix to the Salt/Gila River confluence, and a 32-mile segment of the Gila River flood plain between the Salt/Gila River confluence and Gillespie Dam (see Figure III-1).

b. Biological Resources

Human intervention, cessation of historic perennial flows, and subsequent ecological disturbance have greatly modified the riparian habitat within the Salt River channel in the downstream area.

(1) Riparian/Wetland Communities

In the reach from Granite Reef Dam to 91st Avenue, only a few small patches of riparian habitat exist where wastewaters are discharged to the channel. Downstream of 91st Avenue stands of cottonwood, willow, mesquite and cattail are sustained by more consistent flows from irrigation tailwaters and from the 91st Avenue wastewater treatment plant. Great blue herons and a number of waterfowl species, as well as a variety of songbirds, use these riparian habitats. Salt-cedar woodlands have replaced much of the historically more extensive mesquite and cottonwood forests along this reach.

(2) Other Terrestrial Communities

Much of the nonriparian habitat within the upstream reach of the channel is composed of sparse stands of shrub species from the blue paloverde-ironwood desert wash association. In its present degraded condition, such habitat is not conducive to supporting a viable, diverse wildlife community. The creosotebush-bursage series is the predominant desert upland type outside the channel; saltbush scrub and paloverde-mixed cacti communities also occur.

Agricultural and urban areas also occupy large parts of the upstream reach outside the main channel. A variety of rodents and insect- and grain-eating birds are attracted to the agricultural areas.

(3) Perennial Stream/Riverine Communities

Perennial flows are sustained for about 4 miles below the 91st Avenue treatment facility. Carp and mosquitofish make up the bulk of the fish population, but bass and other species are periodically carried down when releases are made from upstream impoundments.

(4) Reservoir Aquatic Communities

There are no reservoirs in the downstream area. Lacustrine (lake) habitat in the channel is essentially nonexistent except where water-filled depressions, like old gravel pits, exist. These small, short-lived ponds sustain few, if any, fish or other wildlife.

(5) Threatened and Endangered Plants and Animals

Numerous sightings of the Yuma clapper rail have been recorded in the reach downstream of 91st Avenue. No endangered plant or other endangered vertebrate species have been reported for the downstream area.

(6) Special Use and Management Areas

The Fred J. Weiler Greenbelt accounts for nearly all the Federal land in the reach between the Salt-Gila confluence and Gillespie Dam. The Arizona Game and Fish Department manages more than 2,000 acres of land, including the 400-acre Robbins Butte Wildlife Area, as habitat for game species such as Gambel's quail and dove. The reach between 91st Avenue and the Salt-Gila confluence is included in the Maricopa Audubon Society's Christmas Bird Count area.

c. Recreation

Recreation resources and facilities in the downstream area are predominantly urban in character. Very little, if any, water-oriented recreation exists in this area.

d. Cultural Resources

(1) Prehistoric Resources

Portions of the downstream area were subjected to a sample survey. All sites located on this survey were characterized by only a few surface artifacts. Surface architecture was lacking in all cases. The records search conducted prior to the fieldwork indicated the presence of numerous large Hohokam sites as well as smaller sites, but, in most cases, little or no evidence of these sites was present on the surface. Artifacts and structures associated with these sites are most probably buried under several feet of alluvium.

Despite the fact that these sites have been impacted by a variety of natural and cultural factors, the prehistoric resources in this area have the potential of providing information relevant to the prehistory of the Salt-Gila River Valley and central Arizona.

(2) Historic Resources

A total of 123 historic sites have been identified in historical records for the downstream area. Eleven of these 123 sites are known to be present due to their notation in recent archaeological and historic site inventories; an additional 63 sites may be present. (This total

number of sites which may be present is somewhat misleading since at least 6 sites consist of multiple features or dwellings of from 7 to 100 in number.) The remaining 49 sites have probably been destroyed due to flooding and historical land use activities.

The majority of sites thought to be present within the downstream area consist of houses which were occupied by early residents of Phoenix, Tempe, and Mesa. A few house sites may date from the 1870s, 1880s, and 1890s and would reflect the initial Anglo settlement of the Salt River Valley. Other site types represented include a cemetery, wells, "Indian Huts" on the Salt River Indian Reservation, early wagon roads, irrigation canals, bridges, a horse race track, mineral prospects, stone quarries, and a dam.

e. Social Resources

The affected area comprises the portion of the metropolitan area of central Arizona which most directly experiences problems associated with flooding in the Salt and Gila Rivers. Communities located in the area have experienced flooding three times in recent years: March 1978, December 1978, and February 1980.

The current population in the 200-year flood inundation area is estimated to be 36,700 persons, which constitutes 2 percent of the 1980 Maricopa County population of 1,508,000. The eastern and western extremities are in a rural, agricultural setting. The central sector contains both residential neighborhoods and mixed residential-industrial commercial use.

Communities located in the downstream site area that have experienced problems associated with flooding are:

- City of Mesa
- City of Tempe
- City of Phoenix
- Holly Acres Subdivision
- Salt River Pima-Maricopa Indian Community
- Gila River Indian Community
- Buckeye Area

Mesa, Tempe, and Phoenix are urban areas, while Holly Acres, the Salt River Indian Community, the Gila River Indian Community, and Buckeye are rural areas.

(1) City of Mesa

Mesa, situated in Maricopa County immediately to the east of Tempe along the southern bank of the Salt River, is the third largest city in Arizona and one of the ten fastest growing cities in the United States. The current Mesa population within the 200-year flood inundation area is estimated to be 10,000 people, or 6 percent of the 1980 estimated population of 153,000. A portion of the area, adjacent to the southern bank

of the Salt River, is agricultural land. The remaining area is characterized by diverse residential groups including "first home" families, older, established neighborhoods, and some higher cost homes.

(2) City of Tempe

The City of Tempe, home of Arizona State University (ASU), is a community of approximately 107,000 people, situated immediately east of Phoenix. Tempe lies on both banks of the Salt River and portions of the community are susceptible to flooding. The current population residing within the 200-year flood inundation area is estimated to be 1,300, or 1 percent of the total population. The area that would be affected by a 200-year flood is characterized by mixed housing types. Single-family and mobile home units account for one-third each, and multi-family units account for the rest.

(3) City of Phoenix

The City of Phoenix, capital of the State of Arizona, had a 1980 population of 790,000 and is the largest municipality in the State of Arizona. The City of Phoenix is a very fast-growing community and, as a major urban area, is highly complex.

Phoenix is bisected by the Salt River. Major enterprises, including Sky Harbor International Airport, several large construction companies, and numerous business concerns are in the Salt River flood plain. Approximately 20,000 persons currently reside within the 200-year flood inundation area boundaries, or 3 percent of the total estimated 1980 population. Population in the 200-year flood inundation area has been decreasing, as have the number of dwelling units. Housing units in this area are predominantly rental units, and are at the lower end of the housing value scale.

(4) Holly Acres Area

Holly Acres is an area composed of residential subdivisions within an otherwise agricultural area located approximately 20 miles southwest of downtown Phoenix in Maricopa County. These unincorporated communities cover 12 square miles directly adjacent to the north bank of the Gila River between 115th Avenue and El Mirage Road, near the confluence of the Salt, Gila, and Agua Fria Rivers. Five subdivisions are located in the area with approximately 400 total residential units and a population of 1,500. The general area has been settled for approximately 15 years. There are several commercial enterprises located in the area.

The subdivision of Holly Acres, containing 50 to 60 homes, has sustained the most extensive flood damage in recent years. The vast majority of dwellings located within the Holly Acres subdivision are relatively new, less than 8 years old.

(5) Salt River Pima-Maricopa Indian Community

The Salt River Pima-Maricopa Indian Community is situated in eastern Maricopa County, immediately east of Scottsdale and north of Tempe and Mesa. The community encompasses 50,000 acres of land and has a population of approximately 3,200 community members and 900 non-Indian residents. The community is divided into two districts, Salt River and Lehi. The districts are separated from one another by the Salt River. The Verde River enters at the northeast portion of the community. The southeast portion of the community (Lehi) has a population of approximately 320 persons, or 8 percent of the community's total population, and is the only area located in the 200-year flood inundation area.

(6) Gila River Indian Community

The Gila River Indian Community is a Pima-Maricopa community which straddles the Gila River and encompasses 372,000 acres of land. The population of the community is 7,500. The community is divided into seven districts. The 200-year inundation area of the Gila River Indian Community is characteristic of the agricultural setting which typifies District 7. The district has recently directed its efforts to expanding its agricultural base as part of an overall emphasis toward greater self-sufficiency.

(7) Buckeye Area (Including Towns of Arlington, Palo Verde and Liberty)

The Town of Buckeye is located 31 miles west of Phoenix in an expansive valley between the White Tank Mountains on the north and the Maricopa Mountains to the south. Buckeye is situated near the Gila River below its confluence with the Salt. The river is gradually shifting northward each time it floods with the potential for affecting the entire community. Buckeye is a major producer of agricultural crops and cattle.

(8) Infrastructure

In addition to the seven communities described above, a number of area-wide infrastructure systems are located in the Salt River flood plain. These include automobile, air, and rail transportation routes and equipment, public utility lines and towers, telecommunication lines, and numerous business operations.

Major highways in and around the flood plain include the Beeline Highway, the Maricopa Freeway, and Interstates 10 and 17. In addition, a number of transportation routes connect Phoenix with its suburbs, running directly through the flood plain area. There are 29 road crossings in the flood plain, of which 15 are bridge crossings, and the remainder are "dip" or surface crossings.

Air and rail facilities bordering the flood plain include Sky Harbor International Airport and the Southern Pacific Railroad yard and accompanying tracks and equipment. Both facilities are located in Phoenix.

Public utilities that are in or border the flood plain include 2 wastewater treatment plants, 2 sewage treatment plants, 5 sewage lines, 6 water lines, 14 power transmission lines, 12 natural gas lines, 11 telephone lines, and numerous active landfills.

The types of businesses located in the flood plain include light manufacturing, supply houses, scrap yards, sand and gravel mining operations, and wholesale facilities.

Business, public utility, and transportation losses as a result of prior flooding have amounted to several million dollars.

f. Other Resources

(1) Air Quality

Much of the downstream area is located within the MCUPA, which has been designated a nonattainment area for carbon monoxide, ozone, and TSP. Ambient concentrations of other pollutants are expected to be below standard levels.

Site-specific data are unavailable for the remainder of the downstream area located outside the MCUPA. However, a limited amount of data from Buckeye indicate that sulfur dioxide and ozone standards are not being violated; TSP standards probably are being violated.

(2) Aesthetics

The Salt River below the Granite Reef Diversion Dam is dry for most of the year, revealing a wide shallow riverbed of rocks and small boulders. Bridges and dry river road crossings connect the north side with the south portion of the metropolitan area. During the spring when snow is melting in the mountains, water may flow in this section of the river. The Salt River joins the Gila River near the west side of Phoenix. This western portion of the river receives effluent from wastewater treatment plants which results in a green tangled band of low riparian vegetation that extends down the river to Gillespie Dam.

(3) Noise

Day-night sound levels for this area range from 35 dB in open areas to as high as 85 dB at areas adjacent to major arterials. Since the affected area is largely composed of urban land uses which are characterized by heavier traffic volumes than other CAWCS site areas, much of this area experiences Ldn exceeding the EPA's long-term goal of 55 dB.

(4) Geology/Soils

The topography of the downstream area is nearly flat in the floodplains of the Salt and Gila Rivers. Throughout most of the area, the river is braided and has a broad flood plain; the river channel is restricted near Granite Reef Dam, at Tempe Butte, and at the southwest end of

the Buckeye Hills. Rocks exposed within the site area include Precambrian granite gneiss, schist, and granite; Laramide granite; Tertiary andesite; Quaternary to Tertiary sand, gravel, and conglomerate; and Quaternary basalt, silt, sand, and gravel. There have been no recorded earthquakes originating from this area, although some earthquakes of mild intensities have been reported in the general Phoenix area. A large damaging earthquake is not expected in the area. Because earth fissures resulting from ground subsidence from water table declines have been noted near this area, there is a possibility that some earth fissures may form.

There are numerous sand and gravel deposits which are actively mined along the Salt River, particularly in and near the Phoenix area. Some sand and gravel are also extracted from the Gila River. The mining of sand and gravel is an important industry in the area; Maricopa County currently produces more than 50 percent of the total amount of sand and gravel mined in the state.

The soils of the downstream area vary from loamy, clayey, gravelly, to cobbly. Some of these soils are suitable for classification as prime farmland and have been mapped by the Soil Conservation Service.

(5) Land Resources

The segment of the Salt River flood plain just below Granite Reef Dam to Gilbert Road is mostly undeveloped open desert land. Several sand and gravel mining operations are located in the river channel downstream from Gilbert Road. Extensive urban development has encroached upon the flood plain in some locations within the cities of Phoenix, Mesa, and Tempe. From approximately 23rd Avenue west to the Salt/Gila confluence the Salt River flood plain includes scattered residential and industrial uses and extensive agricultural areas, particularly on the south side of the channel.

Downstream from the confluence of the Salt and Gila Rivers, riparian and phreatophytic vegetation abound in the river channel and along the flood plain. The Maricopa County Flood Control District has initiated an interim project to develop and maintain a cleared and graded 1,000-foot-wide corridor within the floodway of the Salt and Gila Rivers from 91st Avenue to Gillespie Dam until more adequate flood control can be provided by the implementation of a CAWCS alternative and/or other measures. Segments of the flood plain have been set aside as parts of the Fred J. Weiler Greenbelt, Casey Abbott Semi-Regional Park, Robbins Butte State Game Management Area, and the Arlington State Wildlife Area. Outside of the defined river channel, irrigation agricultural croplands are the predominant land use in the Gila River flood plain from downstream of the Salt/Gila confluence through the Arlington Valley. Some clusters of residential development, such as Holly Acres, are also located within this segment of the flood plain.