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APPENDICES

CONVERSION TABLE

U.S. UNIT		METRIC EQUIVALENT
	U.S. WEIGHT	
1 short ton	2,000 pounds	0.907 metric tons
1 long ton	2,240 pounds	1.016 metric tons
1 hundredweight	100 pounds	45.359 kilograms
1 pound	16 ounces	0.453 kilograms
1 ounce	16 drams	28.349 grams
1 dram	27.343 grains	1.771 grams
1 grain	0.036 drams	0.0648 grams
	U.S. LIQUID MEASURE	
1 gallon	4 quarts	3.785 liters
1 quart	2 pints	0.946 liters
1 pint	4 gills	0.473 liters
1 gill	4 fluid ounces	118.291 milliliters
1 fluid ounce	8 fluidrams	29.573 milliliters
1 fluidram	60 minims	3.696 milliliters
1 minim	1/60 fluidram	0.061610 milliliters
	U.S. DRY MEASURE	
1 bushel	4 pecks	35.238 liters
1 peck	8 quarts	8.809 liters
1 quart	2 pints	1.101 liters
1 pint	½ quart	0.550 liters
	U.S. LENGTH	
l mile	5,280 feet, 320 rods, 1,760 yards	1.609 kilometers
1 rod	5.50 yards, 16.5 feet	5.029 meters
l yard	3 feet, 36 inches	0.9144 meters
1 foot	12 inches, 0.333 yards	30.480 centimeters
1 inch	0.083 feet, 0.027 yards	2.540 centimeters
	U.S. AREA	
1 square mile	640 acres	2,589 sq. kilometers
1 acre	4,840 sq. yards, 43,560 sq. feet	0.405 hectares
1 square rod	30.25 sq. yards	25.293 sq. meters
1 square yard	1,296 sq. inches, 9 sq. feet	0.836 sq. meters
1 square foot	144 sq. inches	0.093 sq. meters
1 square inch	0.007 sq. feet	6.451 sq. centimeters
	U.S. VOLUME	
1 cubic yard	27 cubic feet	0.765 cubic meters
1 cubic foot	1,728 cubic inches	0.028 cubic meters
1 cubic inch	0.00058 cubic feet	16.387 cubic centimeters
1 acre-foot	43,560 cubic feet, 325,851 gal.	1,234 cubic meters

ABBREVIATIONS AND ACRONYMS

ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AGFD	Arizona Game and Fish Department
ADC	Arizona Department of Commerce
ADES	Arizona Department of Economic Security
BLM	U.S. Bureau of Land Management
CFR	Code of Federal Regulations
CWA	Clean Water Act
EA	Environmental Assessment
ESA	Endangered Species Act of 1973
FWCA	Fish and Wildlife Coordination Act
FWS	U. S. Fish and Wildlife Service
HCP	Habitat Conservation Plan
Management Fund	Southwestern Willow Flycatcher Management Fund
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
Opinion	Biological Opinion
PILT	Payment in lieu of taxes
P.L.	Public Law
Reclamation	Bureau of Reclamation
Recovery Plan	Southwestern Willow Flycatcher Recovery Plan
RHCP	Roosevelt Habitat Conservation Plan
RPA	Reasonable and Prudent Alternatives
SHPO	State Historic Preservation Office
SRP	Salt River Project
TDS	Total dissolved solids
TNC	The Nature Conservancy
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
willow flycatcher	Southwestern Willow Flycatcher

CHAPTER 1 - PURPOSE AND NEED

1.1 Introduction

This environmental assessment (EA) has been prepared to evaluate the potential environmental impacts of the Bureau of Reclamation's (Reclamation) purchase, and Salt River Project's (SRP) management, of up to about 73 acres of privately owned land from willing sellers in Pinal County, Arizona. The proposed land purchase and management would partially fulfill requirements of the Endangered Species Act (ESA), as amended in 1973, related to Reclamation's modifications to, and SRP's operation of, Theodore Roosevelt Dam.

The proposed land purchase is in support of Reclamation's implementation of a reasonable and prudent alternative (RPA) included in a 1996 Biological Opinion (Opinion) issued by the U.S. Fish and Wildlife Service (FWS). The purpose of the RPA is to compensate for the potential "incidental take"[1] of up to 90 Southwestern Willow Flycatchers - *Empidonax traillii extimus* (willow flycatcher) and the loss of their habitat at Roosevelt Lake, resulting from Reclamation's modification to Roosevelt Dam. Purchasing land to benefit the species is one of the management actions that fulfill Reclamation's obligations. SRP's Roosevelt Habitat Conservation Plan (RHCP) requires additional acquisition and management of riparian habitat (SRP 2002) and incorporates Reclamation's requirements from the 1996 Opinion.

Under the proposed action, Reclamation would purchase up to an estimated 73 acres of privately owned land within the floodplain of the San Pedro River, just upstream (south) of SRP's Spirit Hollow Preserve, in Pinal County, Arizona (Figure 1). The land would be purchased only from willing sellers and only if agreeable terms of sale are reached with each private landowner. These parcels contain suitable nesting, migrating, and dispersal habitat for the endangered willow flycatcher. As part of the proposed action and to fulfill its RHCP obligations, SRP would manage this property in perpetuity to benefit the willow flycatcher.

This EA has been prepared in accordance with the National Environmental Policy Act (NEPA), the Council of Environmental Quality regulations (40 CFR 1500-1508), and Reclamation's NEPA Handbook. Reclamation is the lead Federal agency in accordance with NEPA.

1.2 Background

Reclamation's Modifications of Theodore Roosevelt Dam. Reclamation completed modifications to Theodore Roosevelt Dam on the Salt River in central Arizona in 1996. The modifications raised the height of the dam 88 feet to increase flood control capabilities, add

[1] Incidental take is defined in the ESA as the taking (harassment, harm, pursuit, hunting, shooting, wounding, killing, trapping, capture or collection, or attempt to engage in any such conduct) of a federally protected species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by a Federal agency or entity subject to the ESA.

capacity to prevent overtopping of the dam during the probable maximum flood,[2] and create additional water conservation capacity. The modifications were authorized by the Colorado River Basin Project Act of 1968 (Public Law [P.L.] 90-537) and the Safety of Dams Act of 1978 (P.L. 95-578). Modifications to the dam allow for a 15-foot increase in the water conservation pool elevation. This new conservation space is located upstream of the dam between elevations 2,136 feet and 2,151 feet.

On March 29, 1995, the FWS designated (listed) the willow flycatcher an endangered species under the authority of the ESA. In September 1995, Reclamation and the FWS entered into formal consultation in accordance with Section 7 of the ESA on the potential effects to the willow flycatcher resulting from the modifications to the dam. Section 7 of the ESA requires that a Federal agency consult with FWS regarding the effect of a proposed Federal action on a listed species. Storage of water in the new conservation space has the potential to inundate and degrade willow flycatcher habitat at the Tonto Creek and Salt River inflows to Roosevelt Lake.

The FWS issued a final Opinion on July 23, 1996. The Opinion concluded that storing water in the new conservation space within Roosevelt Lake would jeopardize the continued existence of the willow flycatcher by adversely affecting existing breeding habitat; however, FWS identified an RPA which, if implemented by Reclamation, would remove jeopardy to the willow flycatcher (FWS 1996). Reclamation accepted and agreed to implement all components of the RPA.

Component 1c of the RPA requires Reclamation to establish a Southwestern Willow Flycatcher Management Fund (Management Fund) to offset threats to the species resulting from the modified Theodore Roosevelt Dam. The Management Fund must be utilized to carry out specific management actions to benefit existing willow flycatcher populations and promote survival of the species, including habitat acquisition, procurement of conservation easements, and other measures approved by the FWS. The Management Fund, however, cannot be used for administrative costs or long-term management of properties.

Reclamation's Section 7 consultation only addressed the Federal action of raising the dam and the corresponding new conservation and flood control space above 2,136 feet. Low rainfall associated with the regional drought led to very low water levels behind Theodore Roosevelt Dam from 1998 through 2001 (below elevation 2,136 feet), allowing vegetation to grow within the exposed reservoir bottom. In 1998, only 48 willow flycatcher territories[3] occupied this area. Willow flycatchers moved into this vegetation as it became suitable, and, by 2001, the flycatcher population had expanded to 140 territories below elevation 2,136 feet (Arizona Game and Fish Department [AGFD] unpubl. data).

[2] The probable maximum flood is the maximum runoff conditions that would result from the most severe combination of hydrologic and meteorologic conditions that are considered reasonably possible to occur for a particular drainage basin.

[3] A territory is the unit of measure used for documenting the status of the willow flycatcher and is defined as a single bird or pair defending territory.

SRP's Operation of the Theodore Roosevelt Dam. SRP operates and maintains the dam pursuant to a 1917 agreement with Reclamation. By 2001, in response to the increasing willow flycatcher population, SRP determined that in order to store water in both the old and new conservation space and have full operational control over the reservoir, it would need to obtain a "take" permit from the FWS. The take permit would protect SRP from liability for any harm caused to willow flycatchers as a result of inundating flycatcher nesting habitat within the reservoir. SRP developed the RHCP for authorization of incidental take of threatened and endangered species as authorized under Section 10 of the ESA.[4]

In 2002, the RHCP and FWS' associated Environmental Impact Statement were finalized. The RHCP includes all impacts associated with SRP's storage of water in both the old and new conservation space within Roosevelt Lake. The RHCP provides measures to minimize and mitigate incidental take of the willow flycatcher, yellow-billed cuckoo (*Coccyzus americanus*), bald eagle (*Haliaeetus leucocephalus*), and Yuma clapper rail (*Rallus longirostris yumanensis*) to the maximum extent practicable and ensures that incidental take will not appreciably reduce the likelihood of the survival and recovery of these species in the wild. The measures include protection and management of habitat at Roosevelt Lake and acquisition and management of riparian habitat and its associated buffer lands. In addition, the RHCP also references Reclamation's responsibility for implementing the 1996 Opinion requirements.

In 2003, FWS issued a Section 10 Incidental Take Permit to SRP for continued operation of Roosevelt Dam and Lake and storage of water up to an elevation of 2,151 feet. The Permit covers the four species mentioned above and is conditioned upon SRP's implementation of the RHCP.

Through the currently proposed project, Reclamation and SRP are implementing ESA Section 7 and Section 10 compliance requirements, respectively, for impacts to the willow flycatcher from Reclamation's modifications to, and SRP's operation of, Theodore Roosevelt Dam.

FWS' Finalization of the Southwestern Willow Flycatcher Recovery Plan. In accordance with the ESA, recovery plans are prepared that identify actions which are needed to recover and/or protect a particular listed species. FWS finalized its Southwestern Willow Flycatcher Recovery Plan (Recovery Plan) on August 20, 2002 (FWS 2002). The overall recovery objective for the willow flycatcher is to achieve a population and distribution sufficient for long-term survival (FWS 2002). The Recovery Plan indicates suitable habitat should be geographically located in a way that allows for willow flycatcher movement within and between drainages. Because willow flycatcher habitat is often associated with stream-side riparian corridors, it frequently scours out and regenerates, resulting in corresponding willow flycatcher movement as the habitat changes. Ensuring that suitable habitat exists across the willow flycatcher's range protects it from further decline following localized catastrophic events. This proposed acquisition and long-term protection of willow flycatcher habitat supports and would help to achieve the overall objective of the Recovery Plan because occupied willow flycatcher sites are

[4] Under Section 10 of the ESA, a private entity may coordinate with FWS to develop a Habitat Conservation Plan if its action will result in the incidental take of a listed species but will not jeopardize the existence of the species.

nearby, extensive suitable habitat is present within the action area, and large known populations exist along the San Pedro River.

1.3 Purpose of and Need for the Project

The purpose of the project is to purchase and manage riparian habitat for the benefit of the willow flycatcher and to carry out a portion of RPA Component 1c of the 1996 Opinion and SRP's 2003 RHCP Section IV(c)(a) requirement. The acquisition and preservation of willow flycatcher habitat would partially offset the anticipated incidental take of up to 90 willow flycatchers and the cumulative effect of habitat loss at Roosevelt Lake resulting from the modification of Roosevelt Dam.

Up to approximately 73 acres within the San Pedro River floodplain affecting four property owners are potentially available for purchase, which consist of nesting habitat suitable for the willow flycatcher. Reclamation proposes to purchase as many of these parcels as possible from willing sellers and enter into an agreement, for their long-term management for willow flycatcher habitat conservation, with SRP as part of its Spirit Hollow Preserve.

1.4 Project Location

The project area is located within the San Pedro River floodplain in the extreme southeastern corner of Pinal County, Arizona, in Sections 8 and 9, in Township 10 South., Range 18 East, of the Gila and Salt River Baseline and Meridian. The subject property is currently in private ownership and is located about 9 miles southeast of San Manuel and 11 miles north of Redington, Arizona, on the San Pedro River (Figure 2).

1.5 Public Involvement

On April 17, 2006, Reclamation sent out an initial memorandum to about 80 entities announcing its intention to prepare an EA on the proposed land purchase. Reclamation indicated public comments would be accepted until May 12, 2006, regarding issues and concerns that should be addressed in the EA. Two letters commenting on the scope of the EA were received, in addition to one person that called requesting additional information. The Bureau of Indian Affairs (BIA) commented there were numerous Public Domain trust American Indian allotments located just outside the southwest corner of the San Carlos Apache Indian Reservation and requested that cumulative impacts to neighboring or nearby trust lands be addressed. This issue has been considered in the preparation of the EA. The AGFD submitted a letter indicating its support of the proposed action. Both agencies requested that Reclamation involve them in future public outreach or document reviews associated with the project.

The draft EA was mailed to more than 80 potentially affected or interested individuals and agencies for a 20-day public review period on July 19, 2006. In addition, a news release was issued to major new media outlets serving central and southern Arizona regarding the availability of the draft EA. The draft EA was also available on Reclamation's Phoenix Area Office website.

Four respondents submitted written comments concerning the proposed land acquisition. These comments and Reclamation's responses are included in Appendix A.

Figure 1. General Vicinity Map. Project Area in Pinal County, Arizona

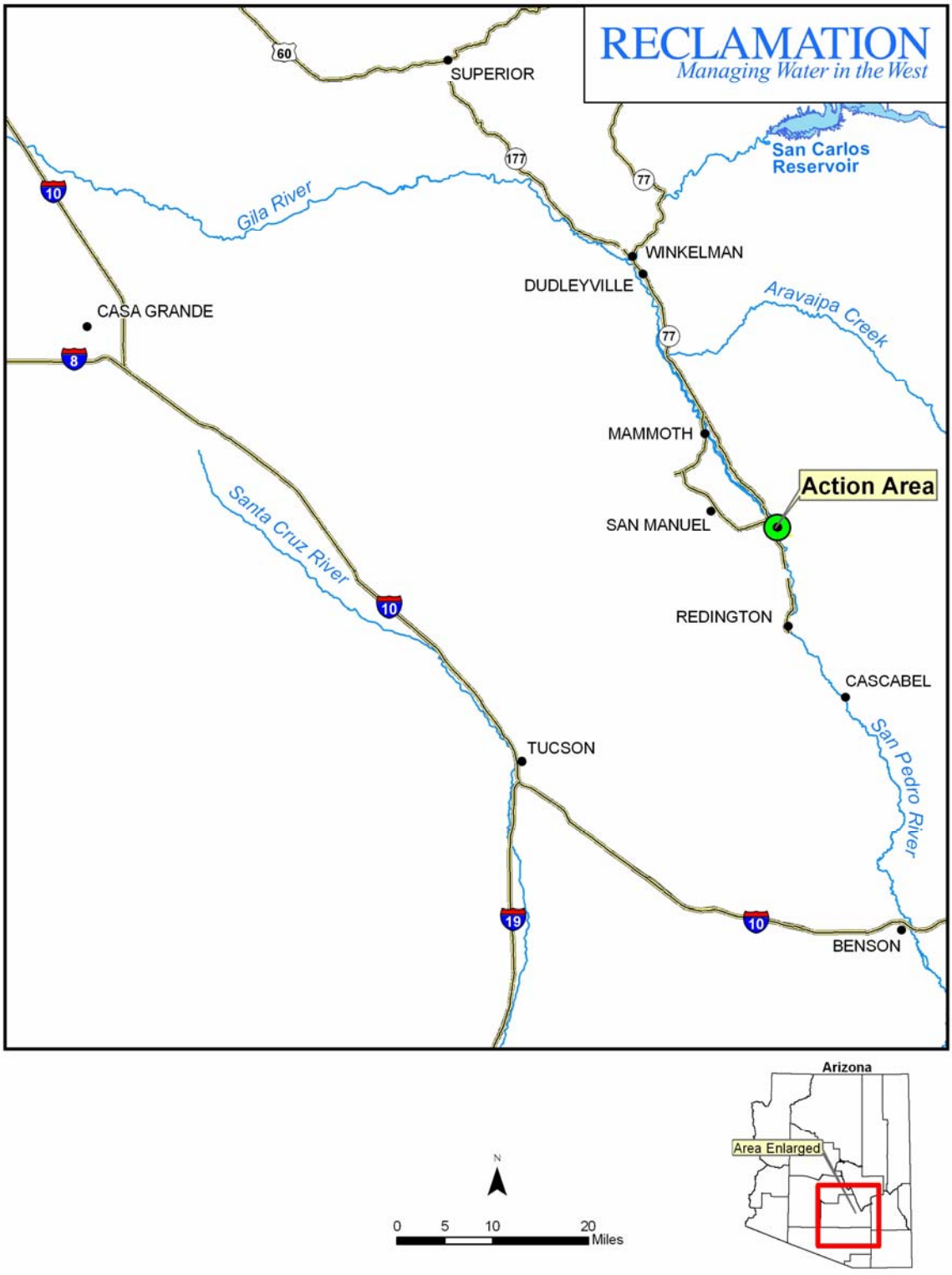
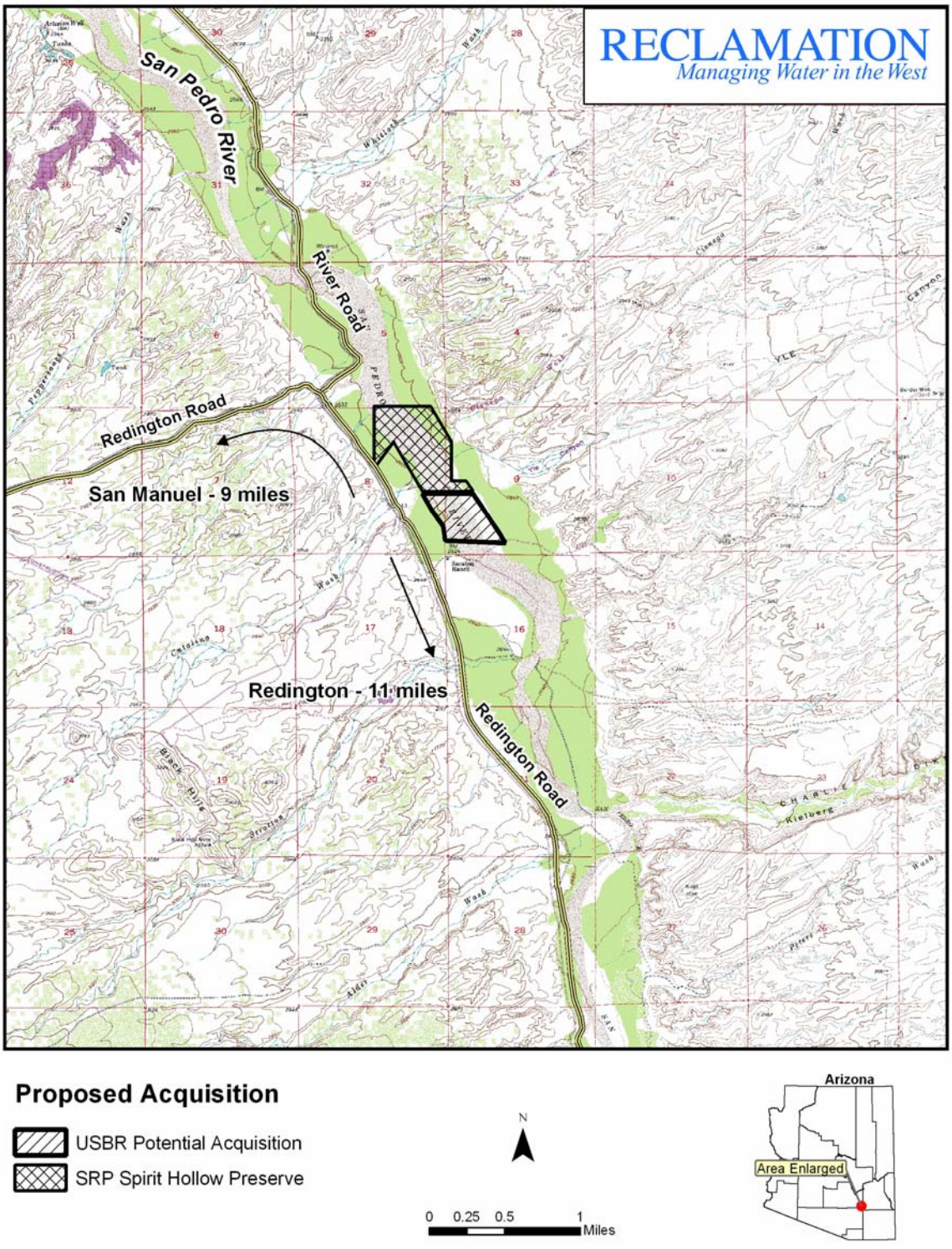


Figure 2. Land Acquisition for Southwestern Willow Flycatcher Habitat in Pinal County, Arizona.



CHAPTER 2 - DESCRIPTION OF ALTERNATIVES

This chapter describes the alternatives considered for the proposed land acquisition in greater detail. It includes the proposed action and no action.

2.1 No Action Alternative

The No Action alternative is used to describe the conditions that are assumed to exist into the future in the absence of the Federal action and provides a basis for comparison with Reclamation's proposed action. Under this alternative, Reclamation would not purchase and SRP would not manage the privately owned parcels within the San Pedro River floodplain identified in Figure 2. Until Reclamation's Management Fund has been depleted, Reclamation and SRP would work together to identify, purchase, and manage property suitable as nesting habitat for the willow flycatcher.

The project area lies within the floodplain and remains in riparian habitat. Periodic scouring from floods and occasional fire regenerate this habitat. For purposes of this analysis, it is assumed the project area would continue under its current or similar private ownership, and its current condition and management would continue into the foreseeable future.

2.2 Proposed Action

Under the Proposed Action, Reclamation would purchase approximately 73 acres of privately owned land within the San Pedro River floodplain, located about 9 miles south of San Manuel in the southeastern corner of Pinal County, Arizona. The property contains riparian vegetation that is suitable nesting habitat for the willow flycatcher. Reclamation does not intend to purchase, hold, or exercise any water rights that may be associated with the property. Water rights would remain with each of the affected property owners, who would continue to own land adjacent to and upslope of the floodplain to be purchased. Reclamation's purchase would fulfill a portion of the 1996 Opinion's RPA Component 1c.

Reclamation would be responsible for installing fences to manage human use of the property and exclude livestock, providing or improving access as needed, providing signage, removing trash and debris from the property, and conducting Class III intensive cultural resource surveys (discussed in more detail in Chapter 3).

Reclamation and SRP would enter into an agreement for long-term management of the subject property. SRP would then take over management of the acreage acquired to benefit the willow flycatcher in perpetuity. In doing so, SRP would receive credit toward its RHCP obligation of Habitat Acquisition and Management. It is intended that SRP would add this acreage (up to 73 acres) to its existing Spirit Hollow Preserve, which is located adjacent to and directly north of the acreage proposed to be purchased.

Spirit Hollow Preserve was purchased and is managed to fulfill its RHCP obligation of habitat acquisition and management. The preserve consists of 144 acres that span the San Pedro River that contain high-quality riparian habitat that serves as nesting and breeding habitat for the willow flycatcher and yellow-billed cuckoo. SRP manages the preserve pursuant to a Management Plan that has been approved by the FWS (SRP 2005a).

The acreage proposed to be purchased by Reclamation would be managed as part of the preserve. The Spirit Hollow Preserve Management Plan would be amended to include these acres. Management activities on these newly acquired lands would include, but are not limited to, the following types of activities: Completion of baseline inventory studies for targeted species; vegetation monitoring and targeted bird surveys; initial fencing of area; and on-site management including regular patrols of the property and fence lines, repairs to fencing as needed, removal of trespass livestock, reporting of trespass and vandalism, identification and removal of potential fire hazards, control of noxious weeds/invasive plants, and coordination with neighbors and community.

The project area was chosen for several reasons: 1) It adjoins the Spirit Hollow Preserve, which would facilitate management of the proposed land acquisition by SRP; 2) it contains suitable habitat for willow flycatcher; and, 3) it is near habitat occupied by willow flycatcher, including one site that supports the largest flycatcher population on the San Pedro River.

2.3 Alternatives Considered but Not Analyzed in Detail

Acquisition and management of habitat by Reclamation were determined not to be feasible. The Opinion states the Management Fund cannot be used for long-term land management purposes; therefore, Reclamation would not have a guaranteed source of income with which to manage the property once it was purchased. Additional appropriations from Congress would need to be sought in order to assure proper maintenance of the property in perpetuity. Given the uncertainty associated with obtaining funding needed to manage the property, this alternative was not considered to be feasible.

Transfer of management responsibility, once land is purchased by Reclamation, to another Federal or State agency was also considered. This alternative did not offer any advantages over the proposed action given the following considerations: SRP's willingness to conduct preliminary negotiations with the landowners; SRP's RHCP requirements to protect willow flycatcher habitat; SRP's willingness to manage the land at no cost to Reclamation; and the presence of SRP's adjoining Spirit Hollow Preserve, already being managed for willow flycatchers. These factors made the proposed action the most cost-effective overall.

Reclamation also has pursued acquisition of other properties for willow flycatcher habitat, which would have been managed in perpetuity by The Nature Conservancy (TNC). In 2001-2002, two separate parcels were identified near Dudleyville on the lower San Pedro River in Pinal County, Arizona; however, both private landowners subsequently decided not to proceed with the sales.

In 2004, Reclamation proposed to purchase a conservation easement for willow flycatcher habitat on land located along the San Pedro River near Cascabel in Cochise County, Arizona. This property was sold while Reclamation was preparing an EA in compliance with NEPA.

CHAPTER 3 - AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter presents the existing conditions in the project area and the environmental consequences that can be expected from implementing the proposed action versus no action. Implementation of the proposed action is not anticipated to substantially affect the following resources, which are not addressed in this EA: Air quality, noise, soil, and aesthetics.

3.1 Water Resources

General Setting

The project area, located approximately 9 miles east of San Manuel in Pinal County, encompasses portions of Sections 8 and 9 of Township 10 South, Range 18 East, of the Gila and Salt River Base and Meridian. The climate in the region is semi-arid, hot in the summer and moderate in the winter. Temperatures in the general vicinity range from a monthly mean of 50° Fahrenheit in December to 84° Fahrenheit in July. The annual mean precipitation is 14.59 inches; the annual mean snowfall is 3 inches (Western Regional Climate Center). About half of the precipitation falls during the summer thunderstorms, and the remainder occurs as intermittent winter or spring storms.

Affected Environment

The San Pedro River originates in the mountains near Cananea Sonora, Mexico. It enters the United States around Palominas, Arizona, and extends northward for approximately 140 miles to join the Gila River near Winkelman, Arizona. The watershed covers a total of approximately 7,015 square-miles. It is the last major undammed river in the American Southwest and exhibits a remarkably intact riparian system including extensive stands of Fremont cottonwood (*Populus fremontii*)/Goodding's willow (*Salix gooddingii*) gallery forest and large mesquite (*Prosopis velutina*) bosques.

The San Pedro River serves as a corridor between the Sky Islands of the Madrean Archipelago in northern Sonora and southern Arizona in its southernmost reaches and, in the north, Arizona's Central Highlands. The river is not only a major corridor between varied habitat types and ecoregions, it represents a ribbon of water and riparian vegetation in an otherwise arid environment. The river thus exhibits a remarkably high biodiversity, both in resident and migratory species.

Over 100 species of breeding birds and another approximately 250 species of migrant and wintering birds occur in the area, representing roughly half the number of known breeding species in North America. The river serves as a migratory corridor for an estimated 4 million migrating birds each year.

The project area is located within Arizona Department of Water Resources' (ADWR)-designated Lower San Pedro Basin, which begins at an area termed "the Narrows" upstream of the community of Cascabel and extends approximately 65 miles to the confluence with the Gila River. The Lower San Pedro basin drains 1,600 square miles of the watershed. Uplands surrounding this reach are characterized by saguaro cactus-dominated Sonoran Desertscrub, rather than the Chihuahuan Desert-influenced uplands adjoining the upper San Pedro River. The following discussions provide more detailed information regarding the ground and surface water resources in the vicinity of the project area.

Surface Water. The project area lies within Hydrologic Unit Code (HUC) 15050203. The U.S. Geological Survey (USGS) stream gage that was nearest to the project area is no longer in existence. This gage was located at Mammoth, Arizona (USGS 09472500), approximately 15 miles downstream from the project area. The contributing drainage area for the watershed at that location along the river is 3,583 square miles. The period of record for that gage began in 1932 and ended in 1941. The closest stream gage upstream of the project area is the San Pedro River at the Redington Bridge near Redington, Arizona (USGS 09472050). This is approximately 10 miles upstream of the project site. The period of record for this gage is from 1998 through present (July 2006). This gage appears to have been installed when the gage located on the San Pedro River near Redington, Arizona (USGS 09472000), washed out in 1998. The period of record for this gage is from 1943 to 1998. The current Redington Bridge gage measures a drainage area of approximately 3,096 square miles.

Selected flow data from these gages are provided in Table 1.

Table 1. Flow Data from USGS Stream Gages on the San Pedro River in the General Vicinity of the Project Area, Arizona.

Station Name USGS #	**San Pedro River near Redington 09472000**	**San Pedro River at Redington Bridge 09472050**	**San Pedro River near Mammoth 09472500**
Period of Record	1943-1998	1998-present (2006)	1932-1941
Annual Mean Flow for period of record	42.8 cfs	23.8 cfs	61.6 cfs
Highest Peak Flow (cfs) Date	90,000 cfs (est. historic peak) 9/28/1926	5,990 cfs 7/27/2003	No data
Highest Annual Mean Flow Water Year	179.5 cfs 1955	54.5 cfs 2001	90.8 cfs 1932
Lowest Annual Mean Flow Water Year	0.82 cfs 1997	3.23 cfs 2002	20.8 cfs 1933

Source of data: USGS 2006

According to the USGS stream gage data, months of lowest flow on the river tend to be in May and June, while highest flows tend to occur in the summer monsoon season during July, August, and September. Stream flows in the San Pedro River follow the bimodal pattern of precipitation in this region, with intense and localized storm events in the summer and more gentle but sustained winter flows.

The portion of the San Pedro River flowing through the project area can be considered to be intermittent in flow, with perennial flows occurring approximately ½-mile downstream – out of the project area. This situation, where perennial flow is not continuous, is sometimes referred to as interrupted stream flow. The stream may lose flow until all surface water disappears for a distance then reappears at some distance downstream. This interruption in surface flow may be the result of increased consumption by riparian vegetation, from ground-water withdrawals by wells or by geological variations in the streambed. Streamflow is also dependent on the area and storage capacity of the alluvium underlying the stream. For example, if sub-surface geologic boundaries significantly reduce the cross-sectional area of the alluvium, often water is forced to the surface and streamflow increases (ADWR 1994).

Groundwater. Data available from the ADWR (1994) identifies two major water-bearing units in the Lower San Pedro basin based on their ability to transmit and supply groundwater: (1) the streambed alluvium that forms the San Pedro River's channel and floodplain; and, (2) the alluvial basin-fill sediments that fill the valley. The streambed alluvium is more permeable than the basin-fill, but the alluvium's limited areal extent only makes it an important local aquifer in the central valley along the San Pedro River floodplain. The alluvial basin-fill sediments are composed of a younger basin-fill, older basin-fill, and basal conglomerate and form the basin's principal aquifer because of its high permeability and large volume.

The streambed alluvium is recharged primarily by surface water flows in the San Pedro River. As a result, water levels in the alluvium fluctuate seasonally in response to surface water flows in the riverbed, rising slightly in the spring and early summer and declining in the fall and winter (Page 1963).

Groundwater in the basin generally moves from higher elevation in the mountains toward the valley and then northwest along the riverbed (ADWR 1994). Water levels in the streambed alluvium typically are less than 60-feet below ground surface. For unconfined zones within the basin-fill aquifer, water levels vary in depth from 50 to 253 feet (Jones 1980).

Water levels are generally stable in the basin except in the area around San Manuel and Mammoth where large ground-water pumpage rates caused water-level declines (ADWR 1990). Artesian conditions are located from about 5 miles north to 10 miles south of Mammoth, Arizona. Deep wells located in or near the river's floodplain encounter fine-grained layers that restrict vertical ground-water movement creating artesian conditions (Heindl 1952). Discharge from these artesian wells ranges from barely flowing to 350 gallons per minute (Page 1963).

Mountain-front recharge is the main source of recharge for the regional basin-fill aquifer, and streambed infiltration is the main source of recharge for the streambed alluvium in the San Pedro River. Recharge also enters the regional aquifer as infiltration from the streambed alluvium. Direct infiltration of precipitation falling on the valley floor is considered negligible due to high evaporation rates and low rainfall totals (Freethey 1982).

Groundwater is discharged from the basin by pumpage from wells, evapotranspiration from phreatophytes and crops, evaporation from open water in the riverbed, and by discharge from springs and seeps. Pumpage is the largest source of discharge (ADWR 1990). Within

the project area, ground-water pumping is limited to domestic usage associated with private residences. Downstream from the project area, there are several active commercial wells associated with mining operations at San Manuel. Pumping for the mine stopped in the early 1990s but may be activated in the future for other uses, such as commercial and residential development.

Water Quality. The quality of groundwater in the Lower San Pedro basin generally is suitable for most uses. The total dissolved solids (TDS) concentrations in samples collected in 1978 to 1980 ranged from 207 to 1,500 milligrams per liter (mg/l) (Jones 1980). The recommended secondary maximum contaminant level for total dissolved solids in drinking water is 500 mg/l (ADWR 2003).

Fluoride concentrations for the samples collected in 1978 through 1980 ranged from 0.3 to 6.1 mg/l (Jones 1980). Fluoride concentrations were highest in wells completed in the streambed alluvium along the San Pedro River. The floodplain area from Winkelman upstream to the San Manuel area had the highest fluoride values. The maximum contaminant level for fluoride in drinking water has been set by the Arizona Department of Environmental Quality (ADEQ) at 4.0 mg/l.

Information in ADEQ's assessments of water quality in Arizona (commonly referred to as the 305(b) Report[5]) indicates that segments of the San Pedro River upstream of the project area have been identified as attaining for some uses. The 2004 305(b) report indicates a segment of the San Pedro River, between Hot Springs Creek and Redfield Canyon, was assessed between 1999 and 2002 as attaining some uses and was placed on the Planning List due to *Escherichia coli* exceedances and former turbidity standard exceedances. Continued monitoring is occurring to determine whether suspended sediment or bottom deposit violations are occurring (ADEQ 2004).

Environmental Consequences

No Action

In the absence of the sale and management of the estimated 73 acres of private land along the San Pedro River for habitat conservation, it is anticipated the water resources in the general vicinity would be used in the same manner and at about the same rate as they are currently. The project area primarily has native riparian vegetation interspersed with some saltcedar.

Under the No Action alternative, it is assumed the estimated 73 acres proposed to be purchased would continue to remain vegetated. The existing riparian vegetation within the floodplain would continue to be sustained by San Pedro River water. With or without the project, it is expected the river channel would continue to widen and narrow, migrating laterally within the

[5] Under Section 305(b) of the Federal Water Pollution Control Act (Clean Water Act), each State is required to develop a program to monitor the quality of its surface and groundwaters and provide a report to the U.S. Environmental Protection Agency every 2 years on the status of its water quality. This report is commonly referred to as a 305(b) report.

boundaries of the alluvial valley. Vegetation is expected to change in response to natural hydrologic and anthropogenic events or uses.

Proposed Action

Under the proposed action, approximately 73 acres located within the San Pedro River floodplain would be purchased by Reclamation. SRP would manage the property in perpetuity for the benefit of the willow flycatcher along with its Spirit Hollow Preserve located immediately downstream of the project area. Water rights would be retained with each of the affected land owners; therefore, it is anticipated there would be no change to water use or water quality in the project area. Because the existing vegetation is mature, no substantial increase in evapotranspiration from protection and preservation of the habitat is expected under the current flow regime. As in the No Action alternative, the vegetation would change through time in response to flood, fire, and other natural events.

Cumulative Impacts

There would be no cumulative impact on water resources.

3.2 Biological Resources

Affected Environment

Biological Resources

Vegetation

The property is primarily San Pedro River floodplain habitat, but it is also composed of a small amount of upland habitat. These riparian and upland communities, described below, are based on an inventory of the adjacent Spirit Hollow Preserve (SRP 2005b).

Riparian Vegetative Communities - In general, the riparian habitat is in fair to good condition but has been impacted somewhat by livestock grazing, recreation and off-road vehicle usage within the stream channel. No farming occurs on any of the property. Naturally occurring flood events will continue to scour out existing vegetation and woody debris, deposit sediment and seeds, and promote regeneration. This natural cycle is important for riparian plant succession and riparian-dependent wildlife species such as willow flycatchers. Five different riparian communities found on the property are described below.

FREMONT COTTONWOOD - GOODDING'S WILLOW GALLERY FOREST

One of the dominant riparian associations in the river floodplain is the Fremont cottonwood-Goodding's willow series of the Warm Temperate Interior Riparian Deciduous Forest (Brown 1994). The San Pedro River supports one of the best remaining examples of this formerly wide-spread riparian vegetation type (SRP 2005b).

This is a lowland, forested riparian association that is found in streams with moderate gradients (0.3-0.9 percent) and gravelly or finer channel substrates. It occurs on low- to mid-elevation bars within and along the channel where flood-recurrence intervals vary widely, but typically range between 2 and 5 years. Some sites are considerably higher in the floodplain and are rarely flooded (25-100 years). The vegetation is characterized by young to middle-aged stands of Fremont cottonwood and Goodding's willow with moderate to closed canopies (usually greater than 60 percent cover). Large, mature individuals of Fremont cottonwood and Goodding's willow are uncommon and tend to be located further away from the active channel. Seep willow (*Baccharis salicifolia)* is well-represented to abundant in the shrub layer (Natureserve 2002). Saltcedar (*Tamarix ramossisima)* is present on this site and represents both an invasive species as well as an important habitat component for the flycatcher when it occurs as dense understory in stands of Goodding's willow. Other shrubs and annuals are scattered and include burrobush (*Hymenoclea salsola),* rabbitbrush (*Chrysothamnus nauseosus),* snakeweed (*Guttierezia sarothrae),* and cocklebur *(Xanthium strumarium)* (SRP 2005b).

MIXED RIPARIAN

This category describes vegetation where Fremont cottonwoods and Goodding's willows are present but are codominant with other species, primarily saltcedar, but also velvet ash *(Fraxinus velutina),* Mexican elder *(Sambucus mexicana),* and seep willow. No single species comprises more than 80 percent of the total composition. Vegetation density is variable. Some areas are relatively open with widely spaced trees or linear stands, while other areas support small patches of tall, dense vegetation. Riparian strand vegetation is intermixed throughout this community on more xeric substrates, such as sandy or cobbly channel bars (SRP 2005b).

RIPARIAN STRAND

Riparian strand vegetation occurs within the active channel and floodplain of the river on sandy/cobbly channel bars where more extreme moisture conditions occur and where scouring or depositional flows may be relatively common. This vegetation community is classified as Warm-Temperate Interior Strand by Brown (1994). Vegetation is composed of either short-lived successional species or plants adapted to periodic flooding, scouring, or soil deposition. The strand community in this reach of the San Pedro River tends to be composed of: (1) riparian scrub species such as seep willow, burrobush, desertbroom (*Baccharis sarothroides),* sacred datura (*Datura wrighti),* rabbitbrush, snakeweed, and cocklebur; (2) seedlings and saplings of riparian trees (Fremont cottonwood, Goodding's willow, velvet ash, and saltcedar); and, (3) any number of characteristic annuals, biennials, short-lived perennials, and grasses (SRP 2005b).

VELVET MESQUITE FOREST (BOSQUE)

Adjacent to the west side of the property, river terraces are dominated by a Mesquite *(Prosopis velutina)* Forested association (Brown 1994). This vegetation community occurs on mesic areas of floodplains, streambanks, intermittently flooded arroyo terraces, alkali sinks and washes, and extends into the upland on dry terraces above streams and arroyos. These woodlands are characterized by a moderate to dense, tall woody canopy dominated by velvet ash. The diversity of other species can vary greatly with geography and substrate (Natureserve 2002). Dominant understory shrubs include graythorn (*Zizyphus obtusifolia),* catclaw acacia (*Acacia gregii),* and

wolfberry (*Lycium* spp). Succulents include prickly pear cactus (*Opuntia* spp.), yucca (*Yucca* spp.), hedgehog cactus (*Echinocereus* spp.), and barrel cactus (*Ferocactus* and *Echinocactus* spp.). The herbaceous layer is variable from moderately dense to nearly absent. Characteristic perennial grasses may include threeawn (*Aristida* spp.), grama (*Bouteloua* spp.), buffalograss (*Buchloe dactyloides),* tobosagrass (*Pleuraphis mutica),* bush muhly (*Muhlenbergia porteri),* and *Sporobolus* spp. Annual grasses and forbs are present but tend to be sparse under dense canopies. However, where canopy cover is sparse, understory species have the potential to be relatively diverse (SRP 2005b).

SALTCEDAR MIXED

Young saltcedar can be found sporadically throughout the floodplain where it is intermixed with cottonwoods and willows. It can also be found on the river terraces where it grows with mesquites. Both saltcedar and athel trees (*T. aphylla)* are found along the river channel. Within the active river channel, native riparian vegetation appears to be successfully recruiting with the invasive saltcedar (SRP 2005b).

Sonoran Upland Community

SONORAN DESERTSCRUB

This vegetation community occurs away from the valley floor on the gently to steeply sloping bajadas of the adjacent mountain ranges. This habitat exists primarily on the east side of the floodplain, within and adjacent to the project area. Vegetation in the upper strata of this community include saguaro *(Cereus giganteus)* and foothills palo verde *(Cercidium microphyllum),* blue palo verde *(Cercidium floridum),* and ironwood *(Olneya tesota).* The shrub layer is composed of shrubby mesquite *(Prosopis* spp.*),* creosote *(Larrea tridentata),* catclaw acacia, and *Lycium* spp. A variety of cacti are also common, including species of *Opuntia, Echinocereus, Ferocactus, and Echinocactus* (SRP 2005b).

Wildlife

Riparian ecosystems are characterized by high diversity in both plant and wildlife species. The presence of water permits the establishment and growth of many plant species not found on adjacent, drier uplands (Briggs 1996). Covering less than one percent of the state, riparian habitat is a valuable natural resource; approximately 60 to 75 percent of Arizona's resident wildlife species are dependent on riparian habitats (Arizona Riparian Council 2004). Riparian areas also function as movement corridors for neotropical migratory birds and other wildlife species. Within the last 100 years, most of these low-elevation habitats, including those within the project area, have been altered.

TNC considers the San Pedro River to be one of the most important migratory bird corridors in the Western Hemisphere. The area in which the project site is located has been documented by the Tucson Audubon Society as exceptional habitat for breeding and migrating birds of conservation concern.

Many of the following birds likely to breed in riparian habitat either nest within riparian communities exclusively or in greater numbers than in adjacent communities. Bird species typical of this geographic area include Abert's towhee (*Pipilo aberti*), Bell's vireo (*Vireo bellii),* black phoebe (*Sayornis nigricans*), blue grosbeak (*Passerina caerulea*), common yellowthroat (*Geothlypis trichas*), Lucy's warbler (*Vermivora luciae*), mourning dove (*Zenaida macroura*), northern cardinal (*Cardinalis cardinalis*), summer tanager (*Piranga rubra*), vermilion flycatcher (*Pyrocephalus rubinus),* western yellow-billed cuckoo, white-winged dove (*Zenaida asiatica*), southwestern willow flycatcher, yellow warbler (*Dendroica petechia*), and yellow-breasted chat (*Icteria virens*) (Latta et al. 1999; Snow et al. 2004). The western yellow-billed cuckoo is a State Species of Special Concern (AGFD in prep.) and a candidate for Federal listing (66 FR 38611). Native resident and migratory birds also are protected under the Migratory Bird Treaty Act (16 United States Code 703-712).

Investigations conducted along the lower San Pedro River in the 1940s and 1970s documented between 95 and 111 bird species solely within the mesquite bosque currently owned by the Resolution Copper Company (Arnold 1940, Gavin and Sowls 1975). The area is currently being considered as an Important Bird Area by the Audubon Society. Furthermore, the lower reaches of the San Pedro River are currently subject to intensive survey efforts, largely conducted by AGFD biologists, for the endangered willow flycatcher.

The aforementioned survey effort has shown the reach between the Three Links Ranch and the Gila River confluence to be densely occupied by willow flycatchers. Indeed, in 2005, the most-recent year for which complete survey data have been summarized, the reach thus described contained 164 willow flycatcher territories consisting of 308 adult birds (English et al. 2006). These lower reaches contain over 99 percent of the willow flycatcher territories on the San Pedro River within the United States. It must be noted that the middle reaches of the river, between St. David and Three Links, are largely unsurveyed due to limited habitat and poor access to private lands. Little to no surveys are conducted in Sonora.

The high importance of the lower San Pedro River for the recovery of the willow flycatcher contributed to its designation as critical habitat for the species. Critical habitat includes approximately 60 river miles of the lower San Pedro River between a point approximately 3.5 river miles south of Hot Springs Canyon to the Gila River confluence.

Mammals likely using riparian habitats along the San Pedro River for at least part of their home ranges or as movement corridors include coyote (*Canis latrans*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), ringtail (*Bassaricus astutus*), American badger (*Taxidea taxus*), coati (*Nasua narica*), striped skunk (*Mephitis mephitis*), hooded skunk (*Mephitis macroura*), hog-nosed skunk (*Conepatus mesoleucus*), mountain lion (*Felis concolor*), black bear (*Ursus americanus*), bobcat (*Lynx rufus*), collared peccary (*Pecari tajacu*), mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), white-throated woodrat (*Neotoma Albigula*), round-tailed ground squirrel (*Spermophilus tereticaudus*), botta's pocket gopher (*Thomomys bottae*), merriam's kangaroo rat (*Dipodomys merriami*), and several other rodent and bat species (Brown 1994).

Riparian-dependent reptiles and amphibians that may be found in the project area include Sonoran Desert toad (*Bufo alvarius*), zebra-tailed lizard (*Callisaurus draconoide*), whiptail lizards (*Cnemidophorus* spp.), western banded gecko (*Coleonyx variegatus*), western diamondback rattlesnake (*Crotalus atrox*), mojove rattlesnake (*Crotalus scutulatus*), common collared lizard (*Crotaphytus collaris*), ringneck snake (*Diadophis punctatus*), desert tortoise (*Gopherus agassizii*), Gila monster (*Heloderma suspectum*), canyon tree frog (*Hyla arenicolor*), Sonoran mud turtle (*Kinosternon sonoriense*), common king snake (*Lampropeltis getula*), western blind snake (*Leptotyphlops humilis*), coachwhip (*Masticophis flagellum*), horned lizards (*Phrynosoma* spp.), gopher snake (*Pituophis catenifer*), lowland leopard frog (*Rana yavapaiensis*), ground snake (*Sonora semiannulata*), blackhead snake (*Tantilla spp.*), garter snake (*Thamnophis* spp.), and tree lizard (*Urosaurus ornatus*) (Brown 1994).

The project area is described as having mixed stands of native and non-native riparian trees. Non-native tree species include saltcedar. Although this tree is considered to be invasive, mixed stands have been found to be among the most productive for willow flycatchers (Paradzick 2004; Sogge et al. 2005). A relatively small percentage of native cottonwood/willow or mesquite vegetation within saltcedar-dominated habitat can have a disproportionately positive influence on bird species diversity and abundance (Van Riper et al. 2004). The mixture of native plant species and saltcedar provides greater structural diversity and a more diverse prey base.

Federally Listed Species

Federal agencies are required by Section 7 of the ESA to assess the potential effects of proposed actions on federally protected species and designated critical habitat. The FWS lists 16 species that are endangered, threatened, or proposed for listing in Pinal County (Table 2). The three federally threatened or endangered species potentially occurring within the project area are the bald eagle (*Haliaeetus leucocephalus*), southwestern willow flycatcher, and lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*). One candidate species, the yellow-billed cuckoo (*Coccyzus americanus*), is also likely to be found within the project area. The remaining 12 species would not be found within the project area, due to lack of suitable habitat and/or because the current range for the species is outside the project area: Arizona hedgehog cactus (*Echinocereus triglochidiatus* var. *arizonicus*), California brown pelican (*Pelecanus occidentalis californicus*), desert pupfish (*Cyprinodon macularius*), Gila chub (*Gila intermedia*), Gila topminnow (*Poeciliopsis occidentalis occidentalis*), loach minnow (*Tiaroga cobitis*), Mexican spotted owl (*Strix occidentalis lucida*), Nichol Turk's head cactus (*Echinocactus horizonthalonius* var. *nicholii*), razorback sucker (*Xyrauchen texanus*), spikedace (*Meda fulgida*), Yuma clapper rail (*Rallus longirostris yumanensis*), and Acuna cactus (*Echinomastus erectocentrus* var. *acunensis*). Reclamation consulted with the FWS on the effects of the proposed land acquisition on the bald eagle, lesser long-nosed bat, willow flycatcher, and designated critical habitat for willow flycatcher (see Appendix B).

Table 2. FWS Threatened, Endangered, or Candidate Species in Pinal County, Arizona.

Common Name	Status*
Arizona hedgehog	E
Bald eagle	T
California brown pelican	E
Desert pupfish	E
Gila chub	E
Gila topminnow	E
Lesser long-nosed bat	E
Loach minnow	T
Mexican spotted owl	T
Nichol Turk's head cactus	E
Razorback sucker	E
Southwestern willow flycatcher	E
Spikedace	T
Yuma clapper rail	E
Acuna cactus	C
Yellow-billed cuckoo	C

Source: U.S. Fish and Wildlife Service (http://arizonaes.fws.gov) June 2006

Following are descriptions of the listed species that may occur in or near the project area and designated Critical Habitat located within the project area.

Bald Eagle - In 1978, all bald eagles in 43 of the 48 contiguous United States, including Arizona, were classified as endangered (43 FR 6233), and those in Minnesota, Wisconsin, Michigan, Oregon, and Washington were classified as threatened. A recovery plan (FWS 1982) was established to delineate specific research and management objectives for the population in the Southwest. On July 12, 1995, the FWS downlisted the bald eagle to Threatened (60 FR 36000), and on July 6, 1999, proposed a rule to remove the Bald Eagle in the lower 48 states from the threatened and endangered species list altogether (64 FR 36454). In February 16, 2006, the proposed rule to remove was reopened with the comment period ending on June 19, 2006. The reasons for reopening the proposed rule for public commenting include the development of the draft voluntary management guidelines, a proposed change in the regulatory definition of "disturb" under the "Bald and Golden Eagle Protection Act," and new scientific information that has been discovered since the previous commenting period (FWS 2006).

The bald eagle is a large, fish-eating raptor once found throughout North America near seacoasts, lakes, and rivers. Population levels prior to European settlement were estimated to reach 500,000 individuals but have since declined to only about 4,500 (64 FR 36454). Chemical contamination (chiefly organochlorine pesticides, such as DDT and its metabolite DDE) caused severe population declines and local extirpation throughout the species range through reproductive failure and direct toxicity. Habitat loss, persecution, and disturbance also threaten the bald eagle's existence and continued recovery.

Although not considered a separate subspecies, bald eagles in the southwest are considered a biologically isolated population for purposes of recovery efforts and Section 7 consultation under

the ESA. Most bald eagles nest in trees near bodies of water. However, Arizona's bald eagles frequently nest on cliffs and pinnacles. Bald eagles in Arizona also nest earlier, lay eggs in January or February, and fledge young in May. This may be a behavioral adaptation to avoid the extreme desert heat of midsummer. The young eagles remain in the vicinity of the nest for about 45 days after hatching (Hunt et al. 1992).

Since DDT was banned from use in the United States in 1972, there has been a steady increase in both the number of breeding pairs and the number of young reared per breeding attempt in most North American populations (Gerrard and Bortolotti 1988). In Arizona, only one or two breeding areas were known in 1970 (AGFD unpubl. data). Thirty-nine of the 50 known breeding areas were active in Arizona in 2006 (AGFD, unpubl. data). The majority of the population is distributed along the Salt, Verde, Gila, and Bill Williams rivers and several major tributaries.

This increase is due to a combination of increased nest search efforts as well as increased protection. The Arizona Bald Eagle Nestwatch Program (Biosystems 1992) has been successful in protecting nesting habitat and eagles. A floating population of resident, mainly subadult, nonbreeding eagles in central Arizona change foraging sites in response to prey availability (Biosystems 1988).

Eagles range statewide throughout the winter and are most commonly found along aquatic river environments, especially those with good perching trees (even when poor fishing habitat exists). The project area provides suitable habitat and is within the range of wintering eagles (personal communication, Greg Beatty, FWS, July 25, 2006). Wintering bald eagles use communal night roosts that may be related to food finding (Hansen et al. 1980) or energetic considerations (Keister 1981, Knight et al. 1983). Night roosts are often on slopes (Platt 1976, Hansen et. al 1980, Dargan 1991) or are protected from prevailing winds by surrounding vegetation (Sabine 1981, Steenhof 1976). Individual roost trees are larger and have open canopies (Stalmaster and Newman 1979, Hansen et al. 1980, Anthony et al. 1982, Keister and Anthony 1983, Dargan 1991).

Eagles have attempted to nest approximately 34 miles north of the project area at the San Pedro/Gila River confluence and farther south in Sonora, Mexico. Therefore, the proposed location is within the breeding range of bald eagles (personal communication, Greg Beatty, FWS, July 25, 2006).

There is less certainty about whether this location provides suitable breeding habitat. Eagles can take advantage of broad habitat types and a variety of aquatic and upland species. Their food sources can be dynamic in nature. Although the property may not sustain high-quality foraging habitat for eagles, during intermittent flows it may temporarily support fish and/or waterfowl. Eagles tend to nest close to where they regularly forage, but they sometimes place their nests far from feeding areas. This property contains large trees, providing suitable nesting habitat (personal communication, Greg Beatty, FWS, July 25, 2006).

There are four Bald Eagle territories or Breeding Areas (BAs) on the Gila River between Coolidge Dam and Winkelman (Suicide, Coolidge, Granite Basin, and Winkleman). The AGFD

conducts annual Occupancy and Reproductive Assessment flights to determine the status of breeding attempts. The reproductive and occupancy history of these BAs is provided in Table 3.

The Coolidge BA was discovered in 1985 and is located approximately 3 miles downstream from Coolidge Dam at the confluence of Hawk Creek. The confluence supports a cottonwood grove, with willows scattered intermittently along the banks. The cottonwoods are in a state of senescence, and little regeneration has been observed. The Coolidge eagles have also nested on a cliff downstream of Hawk Creek but consistently use two nests in the cottonwood grove. Between 1985 and 2006, this BA fledged young 9 of 22 years. Data on the foraging ecology of the Coolidge pair is limited. However, they were known to forage on the Gila River below Coolidge Dam as well as on the Reservoir (Hunt et al. 1992).

The Suicide BA was discovered on a cliff face near the Coolidge Dam on the San Carlos Reservoir in 1998. Between 1999 and 2006, the pair has fledged young 6 of 8 years. Data on foraging patterns of this pair is not available, but it is assumed that they forage on the Reservoir as they nest less than ½-mile upstream of the dam with a commanding view of the Reservoir. This would give these eagles a strategic advantage, especially during periods when the Reservoir surface area is low.

The Granite Basin BA was discovered in 1999 near Granite Basin. The nest is on a large pinnacle on the left bank of the Gila River about 6 miles downstream of Coolidge Dam. The pair has failed to produce young, although they have laid eggs twice in 8 years (1999 and 2001). Although no information exists on foraging habitats, it is believed this pair exclusively uses the Gila River for foraging. The breeding area has been unoccupied during the last four breeding seasons.

The Winkelman BA, approximately 34 miles north of the project area, was discovered in 1995. This is the closest bald eagle breeding area to the project area. The nest is in a cottonwood tree near the confluence of the San Pedro and Gila rivers. No young are known to have been fledged from this BA, and the foraging habitat in the area is poor. The breeding area has been unoccupied during the last eight breeding seasons.

Table 3. Reproductive and Occupancy History of Bald Eagle Breeding Areas Closest to the Project Area (personal communication James Driscoll, AGFD, October 24, 2004; AGFD unpubl. data; Jacobson et al. 2005).

Breeding Area	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Coolidge	F	S	S	S	O	O	S	S	S	F	S	F	S	F	F	F	F	F	S	F	O	F
Granite Basin															F	O	F	O	U	U	U	U
Suicide															S	S	S	F	S	S	S	F
Winkelman											O	F	F	O	U	U	U	U	U	U	U	U

F = failed; O = occupied; S = successful; U= unoccupied (no eagles detected on helicopter or ground surveys of BA)

Lesser Long-nosed Bat - The lesser long-nosed bat was listed as endangered, effective September 30, 1988 (53 FR 38456). It is also listed as a Species of Special Concern by the State of Arizona (AGFD in prep.). Critical Habitat designation was not considered prudent at the time of listing. The Recovery Plan was approved on March 4, 1997 (FWS 1995). A notice of a 5-year review under the Endangered Species Act of 1973 of the lesser long-nosed bat was published on February 2, 2005 (21 FR 5460).

The lesser long-nosed bat is one of three genera in the family Phyllostomidae found in Arizona. There is still some debate over the taxonomic classification of the species in the genus as well as the naming of the species and subspecies. *Leptonycteris curasoae yerbabuenae* is the only subspecies found in Arizona. The range of the species can vary depending upon the form of classification used, but in Arizona it covers the area between the Picacho Mountains to the Agua Dulce, Galiuro, and Chiricahua Mountains south into Mexico (FWS 1995).

Lesser long-nosed bats are migratory in nature following their food source, flying to Mexico during the fall (September/October) where they over winter and breed. They return to Arizona in the spring to congregate in large maternity caves (numbering from hundreds to thousands) to bear their young. The bats tend to follow nectar corridors, or the flowering of agave and columnar cacti, which serve as their main source of food. During the day they roost in caves, and abandoned mine tunnels; and, at night, they forage for nectar, pollen, and fruit of agaves and columnar cacti (FWS 1995).

Although, more common in Arizona than was once believed, major threats to these mammals are the loss of roosting sites and a decline in food sources. Roosting/ breeding colonies can be excluded from or disturbed at certain sites. It is also believed that excessive harvesting of agaves for tequila and mescal and the encroachment of civilization on desert lands are having an impact on the number of food source locations as well as their proximity to each other along a migration route (FWS 1995).

The closest known maternity colony is about 30 miles south in the Rincon Mountains. There are also colonies in the Little Rincon Mountains and Little Dragoon Mountains approximately 30 miles south and southeast. The closest known roost site is approximately 50 miles west in the Picacho Mountains. The closest observations, from capture in mist nets, are 12 and 20 miles to the southeast and 15 miles to the southwest (personal communication, Sabra Schwartz, AGFD, July 28, 2006).

Southwestern Willow Flycatcher - The southwestern subspecies of the willow flycatcher was listed as endangered, effective March 29, 1995 (60 FR 10694). This bird is also listed as a Species of Special Concern by the State of Arizona (AGFD in prep.). Designation of Critical Habitat was deferred at the time of listing. A final Critical Habitat designation was made on July 22, 1997 (62 FR 39129), with a correction on August 20, 1997 (62 FR 44228). On May 11, 2001, the 10th Circuit Court of Appeals set aside designated Critical Habitat. The Court instructed FWS to issue a new Critical Habitat designation in compliance with the Court's ruling.

In 2003, the 10th Circuit Court ruled that FWS must repropose Critical Habitat within a year and complete a final designation by September 30, 2005 (Memorandum Opinion, U.S. District Court, New Mexico, September 2003). Critical Habitat was re-proposed on October 12, 2004 (69 FR 60706), and a final rule was issued on October 19, 2005 (70 CFR 60886). The Recovery Plan was completed on August 20, 2002 (FWS 2002).

The Recovery Plan divides the Southwest into six Recovery Units, which are further subdivided into Management Units. The project area is located within the Middle Gila/San Pedro Management Unit in the Gila Recovery Unit. The Middle Gila/San Pedro Management Unit extends from the Mexican border to south-central Arizona. One of the Recovery Plan goals is the establishment of a minimum of 150 willow flycatcher territories in the Middle Gila/San Pedro Management Unit (FWS 2002). The greatest number of territories documented in a single year within this Management Unit was 186 in 2005 (English et al. 2006). Within this Management Unit, Critical Habitat is designated in the following areas: (1) 60.5 miles of the San Pedro River, from just south of the confluence of Hot Springs Canyon downstream to the confluence of the Gila River, and, (2) 45 miles of the Gila River from Dripping Springs Wash downstream to Ashurst-Hayden Diversion Dam near the Town of Cochran (50 CFR 60924).

The willow flycatcher is a neotropical migrant that breeds in the southwestern United States and migrates to Mexico, Central America, and possibly northern South America during the non-breeding season (Phillips 1948; Stiles and Skutch 1989; Ridgely and Tudor 1994; Howell and Webb 1995). Declines in the distribution and abundance of flycatchers in the Southwest are attributed to habitat loss and modification caused by impacts of dams and reservoirs, stream diversions and groundwater pumping, channelization and bank stabilization, phreatophyte control, livestock grazing, agricultural development, urbanization, recreation, and fire (FWS 2002). Fires accidentally started by recreation users or vehicles and by lightning have burned several known willow flycatcher sites (English et al. 2006, FWS 2002).

In Arizona, the historical range of the willow flycatcher included all major watersheds. Recent surveys have documented willow flycatchers, probably in much reduced numbers, along the Big Sandy, Bill Williams, Colorado, Gila, Hassayampa, Little Colorado, Salt, San Francisco, San Pedro, Santa Cruz, Santa Maria, Tonto Creek, and Verde river systems (FWS 2002). This species has been found in Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Pima, Pinal, Yavapai, and Yuma counties.

The willow flycatcher breeds in riparian habitats along rivers, streams, or other wetlands, where patchy to dense trees and shrubs are established, usually near or adjacent to surface water or saturated soil (FWS 2002). Plant species composition and height vary across the geographical range of this species, but occupied habitat usually consists of a mosaic of dense patches of vegetation, often interspersed with small openings, open water, or shorter/sparser vegetation. Dense vegetation usually occurs within the first 10- to 13-feet aboveground. Willow flycatchers can occupy habitat within 3 to 5 years of a flood event (Paradzick and Woodward 2003). Periodic flooding and habitat regeneration are important to the recovery of this species.

In Arizona, willow flycatchers nest in a variety of riparian tree and shrub species, including saltcedar. Of 512 willow flycatcher nests monitored in Arizona in 2005, 335 were in saltcedar, 123 were in Goodding's willow, 37 were in Fremont cottonwood, and the remaining nests were in other tree and shrub species (English et al. 2006). Nesting substrate in the San Pedro River in Arizona is primarily Gooding's willow and saltcedar, although nests have also been found in mesquite, seepwillow, cottonwood, buttonbush, coyote willow (*Salix exigua*), and graythorn.

In recent years, surveys to locate willow flycatcher territories have been conducted annually at selected locations having suitable habitat along the San Pedro River. Table 4 provides a summary of the number of territories documented annually from 2001 to 2005 at 18 sites along the lower San Pedro River, from the Narrows to the Gila River confluence. These numbers are considered to be an underestimation because only a portion of existing suitable habitat has been surveyed, and all 18 sites have not been surveyed every year (English et al. 2006, Munzer et al. 2005). It is likely there are more than 164 territories along the lower San Pedro River. Territories located through these surveys contribute toward the overall Recovery Plan goal of establishing 150 willow flycatcher territories within the Middle Gila/San Pedro Management Unit.

Table 4. Number of Southwestern Willow Flycatcher Territories Documented on the Lower San Pedro River during 2000-2005 from the Narrows to the Gila River Confluence (dashed line indicates no surveys conducted in that year).

		YEAR				
SITE NAME	**COUNTY**	**2001**	**2002**	**2003**	**2004**	**2005**
CB Crossing Southeast	Pinal	3	1	0	2	1
Indian Hills	Pinal	0	1	0	0	0
Dudleyville Crossing	Pinal	14	26	7	9	15
Malpais Hill	Pinal	2	8	11	2	0
PZ Ranch	Pinal	0	0	0	0	0
PZ Ranch West	Pinal	---	0	3	2	1
Cook's Lake Cienega/Seep	Pinal	5	15	10	12	11
Aravaipa Inflow North	Pinal	22	36	28	23	18
San Pedro/Aravaipa Confluence	Pinal	8	7	7	9	10
Aravaipa Inflow South	Pinal	7	4	5	13	16
Wheatfields	Pinal	14	13	18	18	12
Wheatfields South	Pinal	---	0	2	9	14
Capgage Wash	Pinal	0	2	0	0	0
San Manuel Crossing	Pinal	---	7	35	59	55
Catalina Wash	Pinal	2	3	13	6	4
Bingham Cienega	Pima	1	2	---	2	0
Soza Wash	Cochise	0	1	0	---	---
Three Links	Cochise	---	---	---	6	7
Total		**78**	**126**	**139**	**172**	**164**

Source: English et al. 2006; Munzer et al. 2005; Paradzick et al. 2001; Smith et al. 2004; Smith et al. 2003; Smith et al. 2002.

In 2005, four territories were present immediately north of the project area at the Catalina Wash site, and 55 territories were present nearby at the San Manuel Crossing site (English et al. 2006).

The San Manuel Crossing site is the largest flycatcher site on the San Pedro River. The proximity and abundance of known breeding willow flycatchers upstream and downstream of this property suggest that it may also be used for migration and dispersal. Suitable habitat within close proximity to breeding populations is more likely to become occupied sooner than distant and disjunct habitat (FWS 2002).

Yellow-billed Cuckoo - On July 25, 2001, the FWS concluded that listing the yellow-billed cuckoo (cuckoo) was warranted as a Distinct Vertebrate Population Segment west of the Rocky Mountains but was precluded by higher priority listing actions (66FR 38611). The western yellow-billed cuckoo remains a candidate species. The cuckoo is also listed as a Species of Special Concern by the AGFD (AGFD in prep).

The cuckoo is a neotropical migrant that breeds throughout the United States, southern Canada, and northern Mexico. The cuckoo's range and population numbers have declined substantially across much of the western United States over the past 50 years, primarily due to habitat loss and fragmentation (66 FR 38813). Arizona probably contains the largest remaining cuckoo population among the western states, but current numbers are substantially less than some previous estimates as habitat has declined (FWS 2001).

The cuckoo is an uncommon to fairly common breeder in riparian habitats in western, central, and southeastern Arizona along perennial drainages below 5,000 feet (Corman 2005). The Arizona Breeding Bird Atlas (Corman 2005) documented the highest breeding concentrations along the Agua Fria, San Pedro, upper Santa Cruz, and Verde river drainages and Cienega and Sonoita creeks.

Cuckoos have large home ranges, varying in size between 12 to 49 acres, with 25 acres being the average in California and western Arizona (Halterman 2002). Smaller home ranges have been observed in Nevada and central and southeastern Arizona (Halterman 2002). In the western United States, suitable breeding habitat consists of large reaches of riparian habitat, particularly woodlands with cottonwoods and willows (FWS 2001). Cuckoos have also been found in native riparian habitat that includes some exotic saltcedar, such as in the adjacent Spirit Hollow Preserve. The landscape matrix may also be important. For example, the presence of mesquite stands adjacent to occupied cottonwood-willow habitat may contribute toward overall suitability (Johnson et al. 2005).

Occupied cuckoo habitat exists adjacent to the project area as well as along the entire San Pedro River (Corman 2005, Johnson et al. 2005). A total of 19 cuckoo detections were documented during surveys conducted in 2004 and 2005 in the Spirit Hollow Preserve (Johnson et al. 2005). Based on survey location data of multiple cuckoo detections, it is likely that one or two pairs are breeding there. Purchase and management of the subject property would protect additional habitat along the San Pedro corridor for this species.

Environmental Consequences

No Action

Under the No Action alternative in the foreseeable future, the project area is likely to continue to support about the same variety and number of species that currently exist.

It is anticipated the existing riparian habitat would be maintained in its current condition into the reasonably foreseeable future. As has occurred historically, the San Pedro River is expected to migrate laterally and change course following large floods, causing over-bank flooding as a result of the inability of the natural river hydrology to be controlled during these events. Natural flood events will continue to scour out riparian vegetation in the floodplain.

Long-term future ownership and management of the subject property is unknown. Located within the active floodplain, the project area is not expected to be converted to agriculture or used for other purposes. Some current land-use practices on the subject property are having limited negative impacts on riparian habitat; a change in ownership in the future or increased recreational pressures could result in further degradation or destruction of suitable willow flycatcher and yellow-billed cuckoo habitat. Without protection, the future of this property as suitable flycatcher and cuckoo habitat is uncertain.

Continuation of existing management is not expected to affect the habitat of the lesser long-nosed bat. There is likely to be no change in the number or vigor of agave and columnar cacti, which serve as the main source of food for this species. Roost sites are unlikely to exist in the floodplain habitat, but, if present, they will probably remain unaffected if current management practices continue. However, a change in land use in the future could reduce foraging habitat.

In the absence of purchasing the subject property, Reclamation would continue pursuing purchase of land containing habitat suitable for willow flycatchers from willing sellers and entering into a management agreement with a willing partner.

Proposed Action

Acquisition of this property by Reclamation and management by SRP are expected to maintain and/or possibly improve the quality of riparian habitat within the project area. Fencing and on-site monitoring would help protect the property from habitat degradation resulting from unauthorized recreational activities, livestock grazing, or accidental fire. A fire management plan would be developed that includes fire prevention and recovery procedures. SRP would conduct surveys for the willow flycatcher and yellow-billed cuckoo in 2007 and 2008 in accordance with the RHCP.

As noted above under the No Action alternative, naturally occurring large flood events will continue to scour out riparian vegetation in the floodplain. Periodic floods are expected to remove existing vegetation and woody debris, deposit sediment and seeds, and promote

regeneration. This natural cycle is important for riparian plant succession and riparian-dependent wildlife species.

The project area is located approximately 34 miles south of the nearest known bald eagle breeding area. The large trees in the project area provide suitable nesting, roosting, and wintering habitat. The number of large trees will most likely increase with protection of this habitat. This property is less suitable as foraging habitat, but when the San Pedro River is flowing it may temporarily support fish and waterfowl for eagles to hunt. The proposed acquisition would improve bald eagle habitat through long-term protection of trees needed for roosting and nesting.

The project area is also located within one of the largest known populations of willow flycatcher in the southwest (FWS 2002). This population is found on the lower San Pedro River from Three Links Farm downstream to Winkelman and on the Gila River from Winkelman downstream to Kelvin. The project area is immediately upstream of known willow flycatcher sites on the San Pedro River at the Catalina Wash and San Manuel Crossing sites (English et al. 2006). The proposed action is likely to benefit the continued existence of the willow flycatcher. Purchase and management of the subject property would ensure there is suitable habitat geographically located in a way that allows for willow flycatcher movement within and between drainages, consistent with the Recovery Plan objectives.

Fencing and on-site monitoring is likely to improve habitat by restricting unauthorized recreational activities, trespass vehicles, and livestock grazing that currently impact the property. The proposed action is likely to improve Critical Habitat for the willow flycatcher.

Occupied cuckoo habitat exists adjacent to the project area, as well as along the entire San Pedro River (Corman 2005, Johnson et al. 2005). The proposed action is likely to benefit the continued existence of the cuckoo. Purchase and management of the subject property would protect additional habitat along the San Pedro corridor for this species.

The proposed action is not expected to affect the habitat of the lesser long-nosed bat. There is likely to be no change in the number or vigor of agave and columnar cacti, which serve as the main source of food for this species. Roost sites are unlikely to exist in the floodplain habitat, but, if present, they will probably remain unaffected. Purchase and management of the subject property are likely to have no effect on this species.

Cumulative Impacts

SRP recently acquired 144 acres of willow flycatcher habitat immediately adjacent, downstream, and to the north, of the project area. These actions are in support of fulfilling SRP's RHCP. If acquired, SRP would conduct surveys of the project area (estimated at 73 acres) in 2007 and 2008. Combined with the purchase and management of SRP's existing property, there would be a total of approximately 217 acres of adjoining habitat that would be protected for willow flycatchers. The number of willow flycatchers currently supported by these properties would be

known once field surveys are completed in 2007 and 2008. These numbers would contribute toward the recovery goal of 150 territories for the Middle Gila/San Pedro Management Unit, within which the project area is located.

Section 7 of ESA prohibits adverse modification of critical habitat by actions carried out, funded, or authorized by a Federal agency. There would likely be little to no increase in the number of Section 7 consultations generated as a direct result of habitat conservation measures taken under the proposed action with regard to ongoing and future actions in critical habitat along the San Pedro River.[6]

3.3 Land Ownership and Use

Affected Environment

The project area is located on undeveloped land within the San Pedro River floodplain in Pinal County, Arizona. Pinal County encompasses approximately 5,374 square miles (roughly 343,936 acres), of which 4.5 square miles are water (Arizona Department of Commerce 2006). The State of Arizona is the county's largest landholder. Land ownership within the County is divided into the following categories:

Table 5. Land Ownership Status in Pinal County, Arizona.

Ownership Status	Percent
Private/Corporate	22
State of Arizona	35
Federal	14
Tribal Reservations	23
Other Public	6

Source: Arizona Department of Commerce website (2006). Website: http://www.commerce.state.az.us/doclib/COMMUNE/Pinal_Profile.pdf

The communities in the project area have traditionally been active in copper mining, smelting, milling, and refining. Agriculture and ranching are also currently and historically important to the area. In 2002, there were 216,886 acres of irrigated farm land and 207,635 acres of harvested crop land in Pinal County. This represents a decrease from the amount of irrigated farm land and harvested crop land that was recorded in Pinal County in 1997, but numbers are similar to acreages from 1992. However, the market value of agricultural products sold in 2002 was $604,759,000, an increase of 62 percent from 1997 (www.ams.usda.gov/statesummaries/AZ/County/ County.pdf/). In the project area, irrigated agriculture occurs on lands within and adjacent to the San Pedro River floodplain. Grazing occurs on private lands, State Trust land, and federally administered public land, where permitted.

[6] The presence of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties engaged in actions that do not require Federal permitting or receive Federal funding assistance.

Ownership of lands along the San Pedro River is mixed. There are approximately 960 acres of Indian allotments held in trust by the United States along the lower San Pedro River (United States 1985). Several of these allotments are in the vicinity of Dudleyville, and several are along Aravaipa Creek downstream of the San Carlos Apache Indian Reservation. No Indian trust allotments are known to be present within or near the project area. The Bureau of Land Management (BLM) and Reclamation own disjunct parcels within the reach. The BLM and TNC also own and co-manage lands within the Aravaipa Canyon and Muleshoe Ecosystem Management Areas, both located on major tributaries to the lower San Pedro River. Lands along the lower San Pedro, however, are predominately in private ownership. Some of the private lands are essentially wild, while others support mining, farming, livestock operations, and/or residences. Lands immediately adjacent to the project area are in private ownership.

The project area was once a part of the Sacaton Ranch. A portion of the ranch was sold to a developer who, in 1994, subdivided the land into 16 parcels. Six of these parcels lie on the east side of the river. An access and utility easement was recorded with the subdivision plat to allow access from Redington Road on the west side of the river to these parcels. Currently, access exists as a dirt road across the river. This easement occurs on the south side of the project area.

There are nine designated national wilderness areas within Pinal and Graham Counties in the vicinity of the project area—the Superstition, Galiuro, Santa Teresa, Pusch Ridge, and Rincon wilderness areas are managed by the Forest Service; the Aravaipa Canyon, North Santa Teresa, Table Top, and White Canyon wilderness areas are managed by BLM. Wilderness areas are Federal lands where grazing, mining, timber cutting, and mechanized vehicles are restricted, pursuant to the Wilderness Act (P.L. 88-577). BLM also manages the Sonoran Desert National Monument located in northwestern Pinal County. The Monument contains more than 496,000 acres of diverse Sonoran Desert landscape and provides opportunities for wildlife viewing, camping, hiking, hunting, and back-country vehicle travel. The monument encompasses three designated wilderness areas where motorized and mechanized use of vehicles and equipment is prohibited. Some public lands are open to hunting and fishing.

The National Park Service manages the Casa Grande and Tonto National Monuments in Pinal County. There are five State Parks in Pinal County, including Lost Dutchman, McFarland, Oracle, Boyce Thompson, and Picacho.

In the recent past, properties within the County, particularly along the San Pedro River, have come under management for habitat conservation purposes (Figure 3). TNC and SRP also own lands along the lower San Pedro River. These TNC and SRP lands, along with those owned by Reclamation, are encumbered by easements and are specifically managed to conserve willow flycatchers and mitigate for the impacts of raising Roosevelt Dam and flooding territories there. These properties include TNC's San Pedro Preserve, Three Links Farm, H&E Farm, and other parcels. SRP's properties include the Adobe Preserve, Spirit Hollow Preserve, Black Farm, and Stillinger parcels. Pima County owns the Bingham Cienega Preserve and is actively restoring riparian and sacaton wetland ecosystems.

The Resolution Copper Company parcel owns the 7B Ranch, which includes approximately 7 miles of the river corridor near Mammoth, Arizona. TNC manages the property on behalf of the mining company. The parcel is part of a proposed exchange for Federal lands outside of Superior, Arizona. The 7B Ranch contains a mesquite bosque and is undergoing its first year of protocol-level surveys for willow flycatchers in 2006. If the land exchange is successful, the parcel will be managed for habitat conservation purposes. TNC is also working with FWS' Partners for Fish and Wildlife Program to restore an artesian, spring-fed Cienega (wetland) and reestablish the endangered Gila topminnow and lowland leopard frog on the 7B Ranch.

In November 2005, BHP-Billiton (BHP) presented a conceptual development plan for their San Manuel Mine site, downstream from the project site, to the Pinal County Board of Supervisors. The initial development concept, as presented at that time, included approximately 8,000 acres of development in rural and urban zoning, 3,600 acres of "riparian-sensitive" development along the San Pedro River, 3,000 acres of recreational development (i.e., golf courses and parks) within reclaimed tailings piles, and 600 acres of light industrial development near the current mine smelter. A 7,000-acre area including the mine's open pit will be left to mining activities.

Environmental Consequences

No Action

Under the No Action alternative, it is anticipated current land use practices in the project area will continue. The existing habitat on the property would remain unchanged unless a major storm event or fire occurred that removed the vegetation. Private landowners are already subject to Section 9 of the ESA, which prohibits the take of federally listed species. The current landowners would continue to be subject to Section 9 regarding any land use activities that would substantially alter habitat occupied by willow flycatchers.

Proposed Action

Purchase of approximately 73 acres of privately owned land by Reclamation would not appreciably change land ownership patterns within Pinal County, nor would it result in a change in current land use in the area. There would be a slight increase in the number of river miles being managed for riparian habitat conservation.

Because the riparian vegetation on the property would continue to exist in its present condition, no increase in flooding potential is expected to occur as a result of Reclamation's ownership and/or SRP's management of the proposed property.

To the degree that any recreation and trespass livestock grazing occurs within the project area, fencing that would be undertaken as part of ongoing management would curtail those activities to the extent they adversely affect the quality of the willow flycatcher habitat. The access and utility easement, which allows landowners access across the river bottom to private land on the east side of the river, would not be impacted by the proposed action.

Under the proposed action, surveys for willow flycatchers would be conducted on the subject property in 2007 and 2008. These surveys may increase the overall awareness of the number of willow flycatchers utilizing habitat in the general vicinity which could, in turn, increase the concern about land use activities, if any, that have the potential of taking flycatchers. It is anticipated that results (whether positive or negative) from these surveys would not measurably alter the interest in willow flycatchers and land use activities along the lower San Pedro River since it has already been determined willow flycatchers utilize areas both upstream and downstream of the subject property.

In preparing its land management plans, SRP routinely coordinates with local fire response agencies, assesses fire hazards, and proposes actions and maintenance duties to reduce fire risks. SRP has completed a fire plan for its Spirit Hollow Preserve and distributed copies of the plan to local fire departments and the Arizona State Land Department Wildfire Manager (Taecker 2004). The proposed land acquisition would be incorporated into the Spirit Hollow fire management plan.

Cumulative Impacts

It is anticipated that land use practices within the project area would not change substantially in the reasonably foreseeable future. The BHP development may have an indirect effect on riparian habitat in the vicinity of the project area in terms of increased population and ground-water pumping associated with urban development. The project area is likely far enough downstream that stream flows through this reach would not be appreciably affected. However, the effects are largely unknown because of lack of data and information at this time.

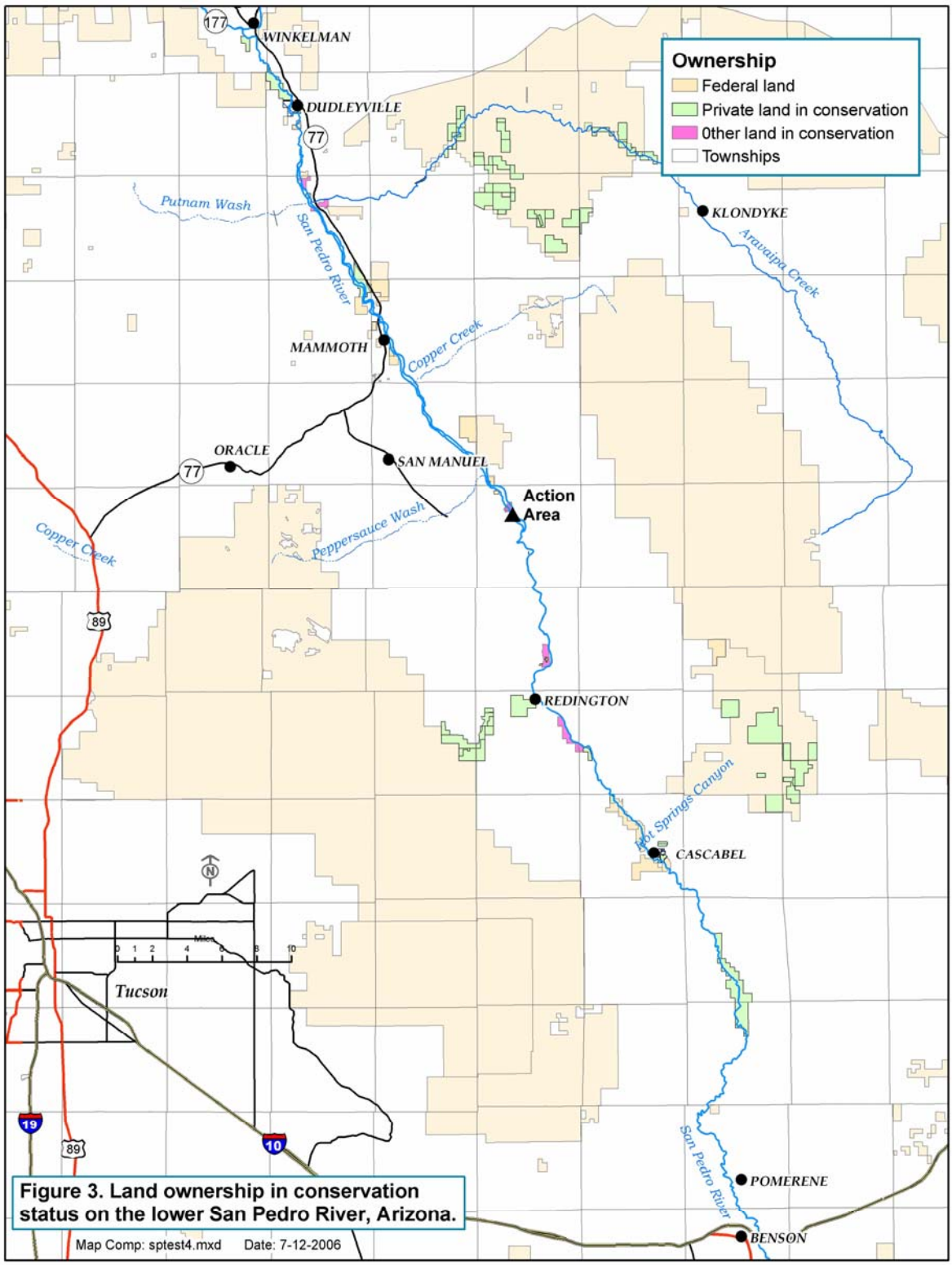
Reclamation and others, including SRP, may acquire additional properties along the lower San Pedro River in the future as part of ongoing mitigation and conservation efforts for the willow flycatcher. The proposed action, in addition to these potential future acquisitions, is not expected to have adverse effects on neighboring landowners and land uses, including Indian trust allotments, for several reasons:

- Reclamation's remaining funds for land acquisition related to construction of Modified Roosevelt Dam are limited.

- A number of properties along the San Pedro have already been acquired by various entities and are being managed as protected areas for flycatchers and other species.

- Additional acquisitions are likely to be in proximity to existing protected areas in order to maximize conservation values and to minimize management costs.

- Consultation with appropriate tribes and the BIA would be undertaken should it be determined there could be ITAs affected by land acquisition under the proposed action.


Ownership
Federal land
Private land in conservation
0ther land in conservation
Townships
177
WINKELMAN
DUDLEYVILLE
77
Putnam Wash
San Pedro River
MAMMOTH
Copper Creek
KLONDYKE
Aravaipa Creek
ORACLE
77
SAN MANUEL
Action Area
Peppersauce Wash
Copper Creek
89
REDINGTON
Hot Springs Canyon
CASCABEL
N
0 1 2 4 6 8 10
Miles
Tucson
19
89
10
San Pedro River
POMERENE
BENSON
Figure 3. Land ownership in conservation status on the lower San Pedro River, Arizona.
Map Comp: sptest4.mxd Date: 7-12-2006

3.4 Cultural Resources

Affected Environment

The Lower San Pedro Valley has been occupied since the Paleoindian period (ca. 9500-8500 BC), although most prehistoric sites in the area represent a Ceramic period occupation lasting from about AD 800 to 1450. These sites include pithouse villages and ballcourt sites more typical of Preclassic Hohokam, as well as compound and platform mound sites associated with the later Salado occupation. Several sites in the middle to southern stretch of the lower San Pedro Valley include artifacts and architectural remains that appear to represent migrant populations from the Kayenta/Tusayan area of northern Arizona who entered the area from the Point of Pines vicinity northeast of the area of potential effect. Numerous agricultural sites on the terraces, many with rock piles probably intended for agave cultivation, indicate that agricultural fields extended beyond those fed by irrigation ditches in the floodplain. The agriculture-based prehistoric occupation appears to have ended around AD 1450 when the area was apparently abandoned.

In the late 17th century, the Spanish identified O'odham groups they called the Sobaipuri living in small agricultural villages in both the upper and lower San Pedro Valley. The Sobaipuri abandoned the San Pedro in the mid-1700s in response to increased raiding from Apaches from the mountains and valleys to the east. The Apaches essentially retained control of the valley until the 1880s when American settlers moved into the area; some Apache allotments continue to be held in the valley today. Historically, the lower San Pedro Valley was never heavily settled but was devoted largely to cattle ranches, agriculture in the bottomland, and mining along the edges.

A Class I records search of the AZSITE database was undertaken to provide background information on the archaeological and cultural resources within the project area. While many sites in the Lower San Pedro Valley were first located by avocational archaeologists and early visitors to the area, only four systematic surveys have been completed in the immediate project area. The most comprehensive was a large-scale, multi-year survey by the Center for Desert Archaeology (Wallace et al. 1998). It focused on identifying Ceramic period cultural resources on the terraces and lower bajadas that line the river valley; very little private bottomland was surveyed. The survey located a vast array of mostly Ceramic period sites that represented large and small habitation sites, ballcourt sites, sites with compounds and platform mounds, as well as numerous agricultural sites characterized by rock pile and water control features. Most of the sites are located on the terraces that are 20 to 50 feet above the valley bottom, though some have been identified on the valley bottom on the low terrace above the relatively active flood channel.

Twenty-eight previously identified archaeological sites are located in the immediate project area (within 1 mile), most of these located on the higher terraces. Six pithouse villages, some with agricultural features, are located on the western terrace and one on the eastern terrace. Thirteen agricultural sites are situated on the gravel terraces of both banks; most of these have rock-pile

features but often also include check dams and rock alignments. Two artifact scatters (AZ BB:6:34 and AZ BB:6:35) are situated on the lower western terrace just north of the project area, while a surface structure and its associated scatter (AZ BB:6:36) are located just within the northwestern boundary of the proposed project area.

Although a large portion of the proposed parcel has been affected by the historic flood channel, surviving terrace remnants are present along the eastern and especially the western margin of the property. Cultural resources most likely to occur on these remnants include Ceramic period sites on the surface and buried Archaic and Ceramic period occupations exposed in the terrace bank cuts along the western margins.

A Class III survey of the proposed acquisition has not been completed.

Environmental Consequences

No Action

There would be no change in existing conditions. A Class III archaeological survey of the parcel would not be undertaken. No specific protection would be afforded to any sites that may be located on the land. It is assumed that current land use and management practices would continue.

Proposed Action

The proposed purchase of this property with Federal (public) funds constitutes an undertaking under the National Historic Preservation Act (NHPA) of 1966, as amended (P.L. 89-6650). The NHPA requires an inventory of significant cultural resources that may be affected by the undertaking. The inventory usually includes a Class III, intensive on-the-ground examination intended to identify all cultural resources within the subject property. Impacts to cultural resources within the subject property cannot be fully determined until a Class III survey is completed and the number, kind, and significance of cultural resources are evaluated. Once these studies have been completed, survey data would be used to evaluate the significance of cultural resources identified and develop plans to avoid, minimize, or otherwise mitigate adverse effects to significant cultural resources from direct and indirect impacts from the proposed project. With purchase of the land for conservation habitat, any sites that might be present would potentially be protected from development. No substantial impacts to cultural resources are anticipated since the land management activities would result in minimal disturbance.

Reclamation would also need to undertake consultation with potentially affected American Indian tribes to identify traditional cultural properties.

The following cultural resource mitigation measures would be implemented as part of the proposed action:

(1) A Class III intensive survey would be undertaken for portions of the subject property located outside the historic active flood channel. A report would be prepared evaluating all identified sites and recommending those sites considered significant that are eligible for nomination to the National Register of Historic Place as per the NHPA. Mitigation options for sites determined to be significant would also be discussed, but an emphasis will be placed on avoidance of any significant cultural resources.

(2) Consultation with the Arizona State Historic Preservation Office (SHPO), as required by Section 106 of the NHPA, would be completed prior to commencement of any land-disturbing activities. If necessary, appropriate mitigation measures would be developed in consultation with the SHPO and interested Indian tribes such as the Hopi Tribe, Pueblo of Zuni, San Carlos Apache, and the Tohono O'odham Nation.

(3) Pursuant to Section 106 of the NHPA, Reclamation will mail requests for consultations regarding the presence of traditional cultural properties that would be affected by the proposed action to the following tribes: the Hopi Tribe, the Pueblo of Zuni, the San Carlos Apache Tribe, and the Tohono O'odham Nation.

(4) If previously unidentified cultural resources, especially human remains or burials, are encountered during future development in the parcel, work shall cease immediately at the location, and personnel from Reclamation's Cultural Resource Branch shall be notified. Any required consultation will be conducted prior to any disturbance to the newly identified cultural resources

Cumulative Impacts

It is anticipated that Reclamation and SRP may continue efforts to purchase additional parcels of private land in accordance with the 1996 Opinion and 2002 RHCP. As part of any future acquisitions, Reclamation would conduct cultural resources surveys to identify any sites that would be considered eligible or potentially eligible for nomination to the National Register of Historic Places as per the NHPA. Further acquisition would result in the identification of significant cultural resources and their added protection under Federal preservation laws.

3.5 Socioeconomics

Affected Environment

The population of Pinal County has grown significantly since the 2000 census, experiencing a 22 percent increase from 2000 to 2004, as compared to an overall increase in State population of almost 14 percent during the same time period. Most of this growth occurred in three communities: Apache Junction (6 percent), Casa Grande (24 percent), and Maricopa (227 percent). Recent population growth data for San Manuel, which is the closest community to the project area, is not available. In the next decade, the population of Pinal County is expected to double (Arizona Department of Economic Security [ADES] 2006).

Pinal County is composed primarily of persons of White or Hispanic racial and ethnic backgrounds (Table 6). Population density in the county is 33.5 persons per square mile versus 45.2 persons per square mile statewide in 2000.

Table 6. Comparison of 2004 Population Statistics for Pinal County and the State of Arizona.

Geographic Area	Total Population	White	African American	American Indian	Asian/ Native HI and other Pacific Islander	Other	Hispanic or Latino (of any race)
Arizona	5,833,685	87.6%	3.5%	5.0%	0. 2%	3.7%	28.0%
Pinal County	219,780	86.9%	3.4%	7.6%	0.2%	1.9%	30.4%
San Manuel*	4,375	75.1%	12.3%	0.9%	3.7%	8.0%	12.5%

Source: U.S. Census Bureau (2006)
* 2000 census data

The 1999 median household and per capita incomes for residents of San Manuel and Pinal County were similar. San Manuel had a higher unemployment rate and lower poverty level than either the county or the State (Table 7).

Table 7. Income and Poverty Statistics.

Population Attribute	Arizona	Pinal County	San Manuel
Population, 2004	5,833,685	219,780	N/A
Population, percent change, 2000-2004	13.7%	22.3%	N/A
Median household income, 1999	$40,558	$39,548	$40,019
Per capita income, 1999	$20,275	$16,025	$16,534
Percent of population below poverty level, 1999	13.9%	16.9%	12.8%
Unemployment rate 1999	3.4%	3.9%	5.5%

Source: U.S. Census Bureau (2006), Arizona Department of Commerce (2006), and ADES (2006)

The major economic activities within Pinal County include mining, farming, and tourism (Pinal County 2005). Among the nonagricultural sector, government (local, State, and Federal), retail trade, transportation, utilities, education and health services constituted nearly 70 percent of the work force. In 2005, the total employment was 37,310 (Table 8).

Though the Pinal County economy has been traditionally dependent on agriculture and mining, new construction and population growth have increased employment in other job sectors and improved economic conditions in those portions of the county where urbanization is occurring. Demand for land also has substantially increased the value of farmland in areas of the county experiencing rapid urban development.

Table 8. Work Force by Occupation in 2005, Pinal County

Occupation	No. of Employees	Percent of Total
Management, business, and finance	2,350	6.3
Education and training	2,710	7.3
Computer, mathematical, architectural, and engineering	510	1.2
Health care	3,000	6.7
Food, cleaning, landscaping, and personal care services	6,600	17.7
Retail sales	2,670	7.2
Office and administrative support	5,150	13.8
Farming	710	1.9
Construction and extraction	1,920	5.1
Maintenance and repair	2,160	5.8
Production	2,020	5.4
Transportation	2,700	7.2

Source: ADES 2005

Property taxes comprise 18.5 percent of the budgeted revenues for Pinal County (Pinal County 2006). In the fiscal year ending June 2005, Pinal County collected approximately $70 million in taxes, which included a 13 percent increase in property tax revenue (Pinal County 2005). This increase is due in part to increases in assessed property values and urban expansion. Rapid population growth and urbanization is expected to generate increased tax revenue for the county over the next decade.

The Federal government does not pay local real estate property tax. To offset this loss of revenue to local governments, the Federal government makes "Payments in Lieu of Taxes" (PILT). Congress appropriates PILT payments each year, which are allocated to local governments according to a formula in the authorizing legislation (P.L. 97-258, as amended). The formula takes into account factors such as population, receipt-sharing payments, and the amount of Federal land within an affected county. PILT payments to a State are in addition to other Federal revenues made to a State from activities such as oil and gas leasing, livestock grazing, or timber harvesting. In 2005, PILT payments were made to Pinal County in the amount of $861,637, based upon 626,902 acres of Federal property. This represents 2.2 percent of the Federal property within the State of Arizona for which PILT payments were made and nearly 4.5 percent of the total PILT payments made to all the counties in the State (DOI 2006).

Environmental Consequences

No Action

Under the No Action alternative, it is anticipated the current socioeconomic trends within Pinal County would continue into the foreseeable future.

Proposed Action

Construction of fencing and implementation of other stewardship start-up activities could provide a minor contribution to local area businesses but would not be expected to affect the local economy in a measurable way. If the subject property is purchased by Reclamation, these acres would be added to the total for which PILT payments are made. This would partially offset the loss of property taxes paid to the County for this acreage. The proposed action is not expected to adversely affect socioeconomic trends in the local area.

Cumulative Impacts

It is anticipated Reclamation and SRP would continue efforts to purchase additional parcels of private land in accordance with the 1996 Opinion and 2002 RHCP. The priority locations for these additional acquisitions likely would be along the lower San Pedro River and in the Verde Valley. If additional lands are acquired, it is assumed commensurate reductions in property taxes would occur, although associated PILT payments would be made to partially offset this reduction. Loss of tax revenue from the currently proposed and any future land acquisition in Pinal County would be counterbalanced by increases in tax revenue from rapid urbanization and new construction.

There would be no economic limitations on the development of surrounding properties as a result of implementing the proposed action. Anecdotal evidence indicates one prior purchase for habitat conservation purposes did result in an increase in land values (personal communication, Shawn Redfield, National Business Center, March 4, 2005). Given continued habitat mitigation measures being required for Federal actions or actions requiring Federal approval/permits and a limited amount of available land that meets the habitat criteria, the price of suitable land would be expected to increase.

The incremental economic effect of the proposed action, when taken into consideration with other measures to conserve willow flycatcher habitat along the San Pedro River, such as the designation of critical habitat by the FWS in 2005, is minor. This is consistent with FWS' finding of insignificance with regard to the economic impacts of willow flycatcher critical habitat on the Middle Gila/San Pedro Management Unit (2005b and 2005c).

CHAPTER 4 - AGENCIES AND PERSONS CONSULTED

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List of Agencies and Persons Consulted

County Agencies:

Pinal County Attorney
Pinal County Planning and Development
Pinal County Division of Public Health
Pinal County Sheriff's Department
Pinal County Board of Supervisors
Pinal County Assessor
Pinal County Environmental Health

Indian Communities:

Ak-Chin Indian Community
Yavapai Prescott Indian Tribe
Gila River Indian Community
Yavapai Apache Indian Tribe
Salt River Pima-Maricopa Indian Community
San Carlos Apache Tribe
The Hopi Tribe
Fort McDowell Yavapai Nation

State Agencies:

Arizona Department of Environmental Quality
Arizona Department of Water Resources
Arizona Game and Fish Department
Arizona State Historic Preservation Office
Arizona State Land Department

Federal Agencies:

Bureau of Indian Affairs (Hopi, Salt River, Papago, San Carlos, Pima, and Tuxton Canon Agencies; Western Regional Office)
Bureau of Land Management (Tucson Field Office and Gila District Office)
Natural Resources Conservation Service
U.S. Fish and Wildlife Service
U.S. Army Corps of Engineers
U.S. Geological Survey

Businesses

Salt River Project
BHP Copper
ASARCO
Resolution Copper

Congressional and State Officials:

Honorable Jon Kyl, Member, U.S. Senate
Honorable John McCain, Member, U.S. Senate
Honorable Rick Renzi, Member, U.S. House of Representatives
Governor Janet Napolitano, Arizona

Conservation and Environmental Organizations:

Arizona Riparian Council
Center for Biological Diversity
Sierra Club
The Nature Conservancy

Grazing Organizations:

Arizona Cattle Growers Association

Other Organizations

Redington NRCD
Winkelman NRCD
CAWCD

Individuals

Jim and Janet Bingham
George and Janice Drum
James and Glenna Hablutzel
Martin and Donna Liebmann
Gary Owens
Del Smith
Christina Tatum
George and Linda Bingham
Daven and Anne Hatfield
Ronald and Karen Mayer
Matthew Reed
Doug Bingham
James and Sara Dougherty
Larry and Kathleen Faul
H.T. Hendrickson, Jr.
Mary Myers
Mack and Carole Skeen

CHAPTER 5 - RELATED ENVIRONMENTAL LAWS/DIRECTIVES

The following is a summary of selected Federal laws, regulations, and Executive Orders that provide information relevant to this EA.

National Environmental Policy Act (NEPA) of 1969, as amended (P.L. 91-190) - This law requires Federal agencies to evaluate the potential environmental consequences of major Federal actions. NEPA also requires full public disclosure about the proposed action, accompanying alternatives, impacts, and mitigation.

This EA was prepared in accordance with the requirements of NEPA. The draft EA was mailed to more than 80 potentially affected or interested individuals and agencies for a 20-day public review period on July 19, 2006. In addition, a news release was issued to major new media outlets serving central and southern Arizona regarding the availability of the draft EA. The draft EA was also available on Reclamation's Phoenix Area Office website. Four letters commenting on the draft EA were received. These comments were considered in the development of the final EA (see Appendix A).

Fish and Wildlife Coordination Act (FWCA) (P.L. 85-624) - The FWCA provides a procedural framework for the consideration of fish and wildlife conservation measures in Federal water resource development projects. Coordination with the FWS and State wildlife management agencies is required on all Federal water development projects.

The effects of regulatory storage of Central Arizona Project water behind Roosevelt Dam were originally addressed in an amended FWCA report prepared by the FWS in 1989. Acquisition and preservation of willow flycatcher habitat does not involve actions that are subject to the reporting requirements of the FWCA.

Endangered Species Act (ESA) of 1973 (P.L. 93-205) - The ESA provides protection for plants and animals that are currently in danger of extinction (endangered) and those that may become so in the foreseeable future (threatened). Section 7 of this law requires Federal agencies to ensure that all federally associated activities do not have adverse impacts on the continued existence of threatened or endangered species or designated areas (critical habitat) that are important in conserving those species.

Reclamation complied with Section 7 of the ESA by formally consulting with the FWS regarding the effects of the modified Roosevelt Dam on the willow flycatcher. Numerous strategies for minimizing effects to willow flycatchers were examined during the consultation process. The 1996 Opinion and 2002 RHCP issued by FWS requires Reclamation and SRP to acquire and ensure long-term protection of replacement habitat. Properties subject to acquisition as mitigation for Roosevelt Dam modifications would require the approval of the FWS to ensure compliance with component 1c of the RPA in the Opinion and the stipulation in Section IV(c)(1)(a) of the RHCP. Consistent with this requirement, FWS visited the proposed land acquisition in the winter of 2005 and concurred with the project pursuant to the requirements of

the Opinion. The FWS also concurred with Reclamation's determination that the proposed action "may affect, but is not likely to adversely affect" the bald eagle, willow flycatcher, and designated critical habitat for willow flycatcher (see Appendix B).

Wild and Scenic Rivers Act of 1968 (P.L. 90-542) - This Act designated the initial components of the National Wild and Scenic River System and established procedures for including other rivers or reaches of rivers that possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values and preserving them in a free-flowing condition.

No designated wild and scenic rivers, or rivers recommended or otherwise eligible for designation as wild and scenic, are present within or near the project area.

Clean Water Act (CWA) (P.L. 92-500, as amended) - The CWA strives to restore and maintain the chemical, physical, and biological integrity of the nation's waters by controlling discharge of pollutants. The basic means to achieve the goals of the CWA is through a system of water quality standards, discharge limitations, and permits. Section 404 of the CWA identifies conditions under which a permit is required for actions that result in placement of fill or dredged material into waters of the United States (U.S.). In addition, a 401 water certification and 402 National Pollutant Discharge Elimination System permit are required for activities that discharge pollutants to waters of the U.S.

Acquisition and preservation of willow flycatcher habitat are not likely to introduce CWA-compliance issues. Nonetheless, any site-specific management activity resulting in a regulated discharge or fill would require CWA compliance. Use of any herbicides within the project area that may be applied to control noxious weeds would comply with all labeling instructions.

National Historic Preservation Act (P.L. 89-665) - This law establishes as Federal policy the protection of historic sites and values in cooperation with States, tribes, and local governments. Cultural resource investigations of acquired properties will be performed by Reclamation.

Reclamation would complete a Class III (intensive) survey of the property outside the active stream channel. If sites are present, Reclamation will consult with the State Historic Preservation Office, pursuant to Section 106 of the National Historic Preservation Act, SRP, and other appropriate entities to develop suitable protection strategies.

Farmland Protection Policy Act (P.L. 97-98) - This law requires identification of proposed actions that would adversely affect any lands classified as prime and unique farmlands to minimize the unnecessary and irreversible conversion of farmland to nonagricultural uses. The U.S. Department of Agriculture's Natural Resources and Conservation Service administers this act. No prime farmlands have been designated in the project area, although such lands have been designated east of the subject property.

The proposed action would not impact any lands classified as prime and unique farmlands.

Executive Order 11988 (Floodplain Management) - This Presidential directive encourages Federal agencies to avoid, where practicable alternatives exist, the short- and long-term adverse impacts associated with floodplain development. Federal agencies are required to reduce the risk of flood loss; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains in carrying out agency responsibility.

The proposed action would preserve and enhance existing riparian plant communities, restore historic riparian habitat, and discourage potential floodplain development or modification.

Executive Order (EO) 12898 (Environmental Justice) - EO 12898 requires Federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of Federal actions on minority populations and low-income populations. Low-income populations include communities or individuals living in close geographic proximity to one another, identified by U.S. Census Bureau statistical thresholds for poverty. Minority populations are identified where the percentage of minorities in the affected area exceeds 50 percent, or where the minority population percentage of the affected area is meaningfully greater than the minority population percentage of a much broader area. Neither of these conditions exists within either Pinal County or the local area.

No disproportionately high and adverse human health or environmental effects on minority populations and low-income populations would result from the proposed project. Properties would be acquired from willing sellers.

Executive Order 11990 (Wetlands) - EO 11990 requires Federal agencies, in carrying out their land management responsibilities, to take action that will minimize the destruction, loss, or degradation of wetlands and take action to preserve and enhance the natural and beneficial values of wetlands.

The riparian habitat within the project area would benefit from this proposed action through preservation and conservation. In addition, implementation of the proposed project would be consistent with and would encourage wetland creation and preservation. Standing water and saturated soils are important characteristics of willow flycatcher habitat that would be maintained. Any effect that may come from this Federal action would be minimal, related to fencing and road access upkeep.

Department of Interior, Secretarial Order, Indian Trust Assets (ITAs) - ITAs are legal interests in assets held in trust by the U.S. Government for Indian tribes or individual Indians. These assets can be real property or intangible rights, including lands, minerals, water rights, hunting rights, money, and other natural resources. The trust responsibility requires that all Federal agencies take actions reasonably necessary to protect ITAs.

No ITAs are currently known to exist within the project area or that could be affected by implementation of the proposed action. Consultation with appropriate tribes and the BIA would be undertaken should it be determined there could be ITAs affected by land acquisition under the proposed action.

CHAPTER 6 – LITERATURE CITED

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