

EXECUTIVE SUMMARY

The purpose of the San Antonio Channel Improvement Project (SACIP) General Reevaluation Report (GRR) is to document the investigations, studies, and analyses into the feasibility of implementing the remaining segment of the authorized flood damage reduction project (Park Reach), as well as adding ecosystem restoration to the completed project (Park and Mission Reaches). The GRR describes the characteristics of the existing- and future-without project conditions, water and related land resource problems and opportunities, planning objectives and constraints, evaluation of measures and alternatives, the methodology of analyses, the identification of the Federal project, and the recommended plan.

The SACIP was originally authorized under the section 203 of the Flood Control Act of 1954 as part of a comprehensive plan for flood protection on the Guadalupe and San Antonio Rivers. The project was subsequently modified in section 103 of the Water Resources Development Act of 1976, and again in section 335 of the Water Resources Development Act of 2000 to include ecosystem restoration and recreation as authorized project purposes. The SACIP-GRR was initiated at the request of the San Antonio River Authority (SARA). A cost sharing agreement for the feasibility study was executed in November 2001.

The San Antonio River Basin is located in south central Texas covering approximately 4,180 square miles, and is bordered on the west by the Nueces River Basin and on the east by the Guadalupe River Basin. The basin drainage area includes all or parts of fourteen counties with Bexar County, in which the City of San Antonio is located, being the largest and most populated. Most of the San Antonio River Basin is rural, particularly in the southern half. Streams in this area are lined with dense riparian habitats of varying widths and are bordered by farms and ranches. The heavily urbanized central portion of the basin includes the City of San Antonio and surrounding areas. This portion of the basin is densely populated and includes residential, commercial and industrial activities.

The authorized SACIP was designed to contain a maximum flow of approximately 85,700 cubic feet per second (below Ashley Road). At the time, this was estimated to be approximately a one-percent annual chance exceedence (100-year) flood event. Construction of the SACIP included clearing, widening, deepening, and straightening of approximately 31-miles of river and creek channels within the San Antonio River, San Pedro Creek, Apache Creek, Alazan Creek, and Martinez Creek, all within the city of San Antonio. Construction of the authorized flood damage reduction project was initiated in October 1957, and essentially completed in April 1998. However, one segment of the authorized project, Unit 8-5-2, was never constructed. Unit 8-5-2 is referred to as the Park Reach in this study.

There are two study areas under consideration in this GRR. They are the Park Reach and the Mission Reach. Both are located within the city limits of San Antonio in Bexar County, Texas.

Park Reach

The San Antonio River within the Park Reach extends from Hildebrand Avenue (north) to U.S. Highway 281 (south), approximately 2.17 miles. This area is a mixture of residential, commercial and light industrial development, and includes the San Antonio Zoological Gardens, the Witte Museum, the Brackenridge Park and Golf Course, and the River Road residential community. Also within the Park Reach is the Catalpa-Pershing Channel. The channel extends from its confluence with the San Antonio River upstream to near Mulberry Avenue (approximately 5,300 feet). Approximately 2,300 feet of the upstream end of the channel is concrete-lined, the downstream portion is an earthen channel. The Catalpa-Pershing Channel parallels the highly developed area along Broadway Boulevard to the east, flows through Brackenridge Park and Brackenridge Golf Course, then converges with the San Antonio River upstream of U.S. 281.

Flooding and ecosystem degradation are the problems identified within the Park Reach. Flood damages occur along both the San Antonio River and the Catalpa Channel. The total flood plain investment is estimated at \$50.8 million. Flood damages begin prior to the 50-percent annual chance exceedence (2-year flood event). Damages for the 10- and 1-percent annual chance exceedence are estimated at \$470,000 and \$6.4 million, respectively. Expected annual flood damages are estimated at \$559,000. Flood damage reduction measures evaluated in detail include permanent evacuation, bridge modifications, channel modifications, and diversion. Given relatively high lands costs and the spatial distribution of moderate flood damages, an economically feasible project could not be identified. Although the construction and operation of the SACIP, urbanization, and local drainage projects have adversely impacted the hydrologic and hydraulic regime of the San Antonio River and the Catalpa Channel, and adversely impacted fish and wildlife habitats, reasonable ecosystem restoration measures could not be identified given the level of degradation and expected restoration costs. Consequently, there is no flood damage reduction or ecosystem restoration project recommended for the Park Reach.

Mission Reach

The Mission Reach begins near Lone Star Boulevard and extends downstream to just south of Interstate Highway-410. A large grass-lined trapezoidal floodway, constructed by the U.S. Army Corps of Engineers as part of the SACIP, characterizes this eight-mile stretch of the river. The floodway has a pilot channel, but no base flow channel. The floodway channel has bottom widths within the Mission Reach varying from 50 feet to 300 feet but generally has side slopes constructed to a ratio of 2.5 horizontal to 1 vertical (2.5H:1V). The pilot channel was constructed in varying widths and generally to a depth of 2.5 feet below the floodway channel centerline and with 2H:1V side slopes. The pilot channel has been highly altered over the years due to erosion and implementation of erosion control measures. To maintain the flood carrying capacity of the SACIP, vegetation is regularly mowed to a height of 6 inches or less. With rare exception, there are no trees or shrubs within the floodway channel. A large portion of the pilot channel is lined with large blocks of concrete riprap. Due to the mowing regime and the riprap lining the channel, no semblance of a functioning riparian zone exists for the entire length of the Mission Reach.

The hydrologic regime of the San Antonio River within the Mission Reach has been severely altered by the construction, operation, and maintenance of the SACIP. Prior to the construction of the SACIP, the San Antonio River was wider, shallower, gentler sloped, and more sinuous with a natural sediment supply. The SACIP straightened the river course, increased the slope, confined the flood flows to a relatively narrow floodway, and removed all vegetation within the floodway channel. While conveying flood flows more quickly downstream, the geomorphic impact is erosion, scour, headcutting, and sediment accumulation. Together with the lack of vegetation, there is insufficient suitable aquatic feeding, breeding, and resting habitat for native fishes. The few desirable native fish species remaining will become extirpated from the area. The Mission Reach will continue to provide limited habitat for aquatic species, and no habitat for riparian species under the future without project condition.

Habitat evaluations were completed as a joint effort between the U.S. Fish and Wildlife Service, the Texas Parks and Wildlife Department, the Corps of Engineers Engineering and Research Design Center, and the Fort Worth District for both the without project (existing and future) and with project conditions. Suitability indices were developed for five variables associated with aquatic habitat. They are water depth, water velocity, dominant substrate organic input, and vegetation cover. The greatest deficiencies in the aquatic habitat were dominant substrate, organic material, and vegetation cover. Evaluation of the riparian habitat selected species representative of guilds utilizing specific characteristics of a riparian corridor. The total lack of vegetation was the limiting factor in the riparian habitat.

The study area totals 483 acres in size including 355 acres within the existing SACIP and 128 outside of the SACIP. Of this acreage, 69.23 acres is aquatic, 394.21 acres is riparian, and 19.56 as other (concrete, non-vegetated, etc). The without project average annual habitat unit totals 55.4 (26.7 aquatic and 27.8 riparian) indicating a habitat unable to sustain a diverse ecosystem.

Measures identified within the Mission Reach for restoring the San Antonio River to a more natural condition include the creation of a “pilot channel” to increase sinuosity, reduce slope gradient and velocities, and sediment transport efficiency (using fluvial geomorphologic analyses and design guidelines). The analysis procedure identifies one optimal channel configuration for the entire Mission Reach given certain conditions. They are:

- There would be no modification (pilot channel) to the existing floodway for sediment transport and channel stability purposes. All other remaining measures would be considered.
- The existing floodway channel would be excavated to include a pilot channel for sediment transport and channel stability, and a modified base flow channel. The pilot channel will be confined within the existing SACIP. Other restoration measures will be added once the pilot channel is defined.
- The existing floodway channel would be excavated to include a pilot channel for sediment transport and channel stability, and a modified base flow channel. The

pilot channel will not be confined to within the existing SACIP, and will require real estate acquisitions. Other restoration measures will be added once the pilot channel is defined.

The above “design conditions” are intended to incrementally analyze the costs and restoration outputs of the pilot channel and real estate acquisition. The pilot channel results in the restoration of aquatic habitat, i.e., increasing the amount and/or improving the quality of, pools, riffles, and runs. In addition, by improving the efficiency of the sediment transport, a diversity of dominant substrates is realized having a direct impact on habitat quality.

Although there is only one “optimal” pilot channel for the Mission Reach under each stated design condition, other project features are incrementally justified. A cost effectiveness and incremental cost analysis was performed for riparian vegetation and special aquatic features. Finally, fully formed plans were incrementally analyzed.

Riparian vegetation was categorized as Type A, C, D, or E. Type A vegetation is defined with 250 trees per acre, and the under- and midstory will be allowed to develop naturally. Type A will not require regular maintenance mowing. Type C vegetation is characterized by 70 trees per acre, and includes a planted mid- and understory (native forbs and grasses). Type D vegetation is characterized by 30 trees per acre, and includes a planted mid- and understory (native forbs and grasses). With Types C and D, besides the trees, no woody vegetation will be allowed. Type E consists of native forbs and grasses. Tree species identified in each vegetation type require periodic inundation to grow and thrive. The placement and amount of vegetation was limited by the constraint of not allowing an increase in the 100-year water surface elevation.

The first analysis was intended to demonstrate which vegetation type provided the greatest habitat gain at the least cost (assuming no hydraulic constraints, i.e., the placement of any particular vegetation type does not result in an increase in the water surface elevation). It concluded vegetation Type A always provided the greatest habitat output at the least cost, followed by Types C, D, and E. Therefore Type A was always considered first as a vegetation measure. If by placing Type A in a particular place resulted in an increase in the 100-year water surface elevation, Type A was substituted with Type C, and so on.

Secondly, the impact of the riparian vegetation on the aquatic habitat was quantified using organic input and vegetation cover variables. As a whole, it is clear riparian vegetation plays a critical part in restoring the aquatic habitat. What is not as apparent is the impact of the distance of the vegetation from the waters edge and frequency of vegetation inundation on the aquatic habitat. While the literature and resource agencies all agree on what is riparian and its impact on aquatic habitat, the quantification of this impact is not as straightforward. In an attempt to address this issue, the riparian vegetation was laterally divided into riparian zone one and riparian zone two. Although this study only marginally demonstrated the beneficial impact of zone two (farthest from the waters edge) on the aquatic habitat, the body of biological and ecological sciences is clear in recognizing the importance

of a riparian corridor on the aquatic habitat. Further, the cost effectiveness and incremental analysis did not identify any best buy plan that did not include zone two vegetation.

Special aquatic features include unique aquatic habitats such as embayments, tributary mouths, wetlands, and river remnants. These features, located within or connected to the floodway channel, each provide unique and scarce aquatic habitats that existed prior to the SACIP. A cost effectiveness and incremental cost analysis was completed for each suite of special aquatic features identified for each design condition. The analysis concluded that each features was cost effective and all were identified as best buys, i.e., each provided the greatest amount of habitat output at the least cost possible.

The fully formed plans were comprised of the pilot channel (optimal for that design condition), riparian zone one, riparian zone two, and combinations of special aquatic features. Thirty-nine fully formed combinations were identified for the cost effectiveness and incremental cost analysis, fourteen of which were identified as cost effective, and five were identified as best buys (including the no action plan). They are summarized below.

Code	Design Condition	AAHU	Incremental AAHU	AAC \$	Incremental AAC (\$)	Incremental AAC per Output (\$/AAHU)
A1	Existing	54.52	54.52	0	0	0
C9	DC2-A	142.80	88.28	2,452,299	2,452,299	27,779
E5	DC3B-A	180.52	37.72	4,139,324	1,687,025	44,721
E6	DC3B-B	180.98	0.46	4,167,411	28,087	61,058
D6	DC3A-A	181.04	0.06	4,263,597	96,186	1,579,409

The National Environmental Restoration (NER) plan (DC3B-B) is comprised of a series of pools (68.89 acres), riffles (18.42 acres), and chutes (9.43 acres), two restored river remnants (1.52 acres), nine embayments (5.13 acres), four tributary mouths (0.71 acres), scour pool (1.55 acres), a wetland (7.75 acres) and riparian vegetation (320.14 acres). The recommended plan provides 113.40 total acres of total aquatic habitat and 320.14 total acres of riparian habitat. Another 49.46 acres is categorized as other (vegetated pilot channel, non-vegetated surfaces). The aquatic habitat produced 77.25 total average annual habitat units and the riparian habitat produces 103.72 total average annual habitat units. These represent an increase over the existing condition of 44.17 acres of aquatic habitat and 50.56 annual habitat units; and a decrease in riparian acres of 74.07 acres, but an increase in annual habitat units of 75.89. The NER plan is also the recommended plan.

The recommended plan also benefits 782 acres of riparian and terrestrial habitats located adjacent to the project footprint on lands owned by the National Park Service (NPS). The recommended plan will provide connection for the NPS lands as well as the riverine habitat of the San Antonio Rive outside of the project area. The quality of both will be improved by

increasing the amount of contiguous habitat, increasing energy flow, and increased diversity. The recommended plan will serve as a corridor for wildlife movement between the different types of habitat available in the NPS lands, and provide habitat components to species that require both upland and riparian habitats for survival.

The restoration features are restored and sustained by a pilot channel, 29-riffle structures, two weirs, modification to the existing San Juan Dam, utility, storm water outfall, road, sidewalk, and parking lot relocations, two bridge modifications, channel invert erosion protection, channel slope and over-bank erosion protection, and planting native riparian vegetation.

The total restoration project cost is estimated at \$87,965,519. The total annual cost (5-5/8 percent, 50-year period of analysis) is \$6,299,391. The annual cost per annual habitat unit gained is \$49,800. The annual cost per acre of restoration is \$14,500. Total cost per acre of all restoration totals \$202,900.

	Total Acres	Total Project Cost	Annual Cost	Total AAHU Gained	Annual Cost per AAHU	Annual Cost per Acre
Aquatic	113.40	\$ 53,467,486	\$ 3,786,369	50.56	\$ 74,900	\$ 33,400
Riparian	320.14	\$ 34,498,033	\$ 2,443,023	75.89	\$ 32,200	\$ 7,600
Riverine	433.54	\$ 87,965,519	\$ 6,299,391	126.45	\$ 49,800	\$ 14,500

Total restoration costs are shared between the Federal Government and the local sponsor. The local sponsor is responsible for 35-percent of the total restoration cost. This includes \$4,637,091 for lands, \$7,220,535 for total implementation costs of all relocations (gas, water sewer, electric, storm water outfalls, two bridge modifications, and roads, sidewalks, and parking lot relocations, and a cash payment of \$18,930,305. The Federal share is 65-percent or \$57,177,587. The local sponsor will also be responsible for all operations, maintenance, repair, replacement, and major rehabilitation (OMRR&R). Annual OMRR&R is estimated at \$110,000.

The recommended plan also has recreation features. They include 55,800-linear feet of multi-purpose trail, shade shelters, picnic tables, water fountains, trash receptacles, benches, lighting, and signage. The total recreation project cost is \$5,906,440. Total recreation cost is shared equally between the Federal Government and the local sponsor, or \$2,953,220. The local sponsor will also be responsible for all OMRR&R. Annual OMRR&R is estimated at \$17,500.

The recommended plan provides contributions to significant habitat and wildlife habitat and species. From a diversity and scarcity perspective, the loss of aquatic and riparian habitats is widely recognized. Within the State of Texas, the Nature Conservancy's ranking of biodiversity within the 50 states and the District of Columbia show four states as having

exceptional levels of biodiversity, with Texas ranked 2nd overall, but ranked 1st for diversity of birds and reptiles. Unfortunately, Texas ranks 6th in bird diversity at risk, 8th in freshwater fish diversity at risk, 11th in vascular plant diversity at risk, 4th in the number of extinctions, and is ranked 11th overall for species at risk. A document by the Nature Conservancy identifies the riparian community native to the San Antonio River as a target community for restoration in the publication, Crosstimbers and Southern Tallgrass Prairie Ecoregion: Communities and System Conservation Elements (2003).

The recommended plan will improve the habitat for native fish species, threatened and endangered species, and neotropical migratory bird species, each significant in their own way. The restored aquatic habitat will provide the opportunity for native fish populations to return to the San Antonio River within the SACIP. Annual fish surveys within and downstream of the project area show the percentage of non-native species within the SACIP is consistently 200-300 percent higher than downstream of the floodway. The fish survey conducted for this study found 25 percent of the total number identified are non-native species, and sixty-four percent of the native species populations were species tolerant of degraded habitat. Habitat is the limiting factor in the return of native fish to the project area.

In addition, there are wildlife species listed (or potentially listed) as either threatened or endangered by the State of Texas and United States. The Cagle's map turtle is listed as threatened by the state of Texas, and listed as a candidate species for Federal listing by U.S. Fish and Wildlife Service. Cagle's map turtle is endemic only to the Guadalupe and San Antonio watersheds. The recommended habitat restoration measure would restore lost components of the turtle's habitat. The turtles are strictly a riverine species, and much of the current threat to the species is loss of riverine habitat due to dam construction along the Guadalupe. There are no major impoundments on the mainstem of the San Antonio River, making it an uninterrupted system connected to the Gulf of Mexico with few population centers other than at its headwaters in San Antonio. Riffle and pool restoration, rip-rap removal from the banks, and restoration of a woody riparian zone are all measures restoring habitat potentially supporting a Cagle's map turtles population.

The blue suckerfish is listed as endangered by the State of Texas, and there is a historical record it once inhabited the San Antonio River. Blue suckers are adapted to swift currents where they feed on insects in cobbled areas. Lake construction and disconnection from tributaries have reduced reproductive success of the blue suckerfish, which migrates up tributaries to spawn. Restoration measures included in the recommended restoration plan are reconnection of old river remnants to the mainstem of the river and reconnection to upstream tributaries.

The peregrine falcon, white-faced ibis, and Texas indigo snake also hold an endangered status by the State of Texas. All of these species have a record of occurring in Bexar County; the falcon and snake are solely dependent upon wooded riparian corridors for their habitat while the white-face ibis requires perennial waterways.

The Guadalupe bass is a central Texas species historically collected in the San Antonio River, and is the state fish of Texas. Although the loss of habitat has resulted in this fish

potentially being listed as state and/or Federal endangered species, the state fish designation provides similar protection as a federal or state endangered listing (personal communication TPWD). The Guadalupe bass is a swift water species inhabiting riffles and runs except during spawning when they need shallow backwater areas for breeding. Once moving from the spawning habitat, the young-of-year join sub-adults in the swifter and deeper waters associated with riffles. During winter young, sub-adults, and adults move to pools with currents. Riffles, pools, and reconnection to backwater habitats are all restoration measures included in the restoration plan for the San Antonio River.

Bexar County provides essential feeding and resting habitat for migratory birds, and is the “central-flyway” for migrating birds. Over 300 species of birds are listed as Nearctic-Neotropical migrants in North America, and over 98% of those have been recorded in Texas. Meaning, of the more than 600 species of birds documented in Texas, 54% of them are neotropical species depending on south central Texas riparian areas to provide habitat for nesting or migration. Initially, the focus of conservation for neotropical migratory birds, which have been declining in numbers for several decades, was focused on breeding habitat and wintering grounds. Recently it has been recognized that the loss, fragmentation, and degradation of stop-over habitat is potentially the greatest threat to the survival and conservation of neotropical birds (Smithsonian Migratory Bird Center). In arid areas of the United States, stop-over sites are restricted to small defined habitats along shelter belts, hedgerows, desert oases and riparian corridors. The riparian corridors of south central Texas provide an opportunity for neotropical migratory birds to replenish fat reserves, provide shelter from predators, and water for re-hydration prior to continuing, what is for most neotropicals, a one-way trip of over 1000 miles. During the fall migration, the project area is located towards the end of the long flight, and therefore, provides the vital link between having enough fat reserves to complete the trip or perish.

The significance of the recommended habitat restoration is demonstrated through the passage of laws and statutes promoting ecosystem preservation and restoration at the Federal and state level, particularly in respect with native species, threatened and endangered species, and neotropical migrant bird species. The Water Resources Development Act (WRDA) of 1986 authorizes the Corps of Engineers to recommend restoration projects when ecosystem degradation is the result of Corps water resource projects. The SACIP is a prime example of the type of project addressed in the 1986 WRDA.

The Fish and Wildlife Coordination Act of 1934, as amended, recognizes the contribution of wildlife resources to the nation, and requires all United States departments or agencies to consult with the U.S. Fish and Wildlife Service when modifications to water bodies are proposed. The Endangered Species Act of 1973 “provides a means whereby the ecosystems upon which endangered and threatened species depend may be conserved, and to provide a program for the conservation of these species.” The Fish and Wildlife Conservation Act adopted in 1988 direct the Secretary to protect, conserve, and promote migratory non-game birds.

The U.S. Fish and Wildlife Service (USFWS) identified 36 “Important Waterfowl Habitat Areas”, three of which are represented within Texas, east Texas, the gulf coast, and the playa

lakes region. The project provides a critical link between the three priority waterfowl habitat areas. The USFWS states conservation efforts should include national and regional planning for both migratory and endemic waterfowl species. Whistling ducks, specifically mentioned in the North American Waterfowl Management Plan, are resident (nesting) within the project area. In addition, the recommended plan contributes directly to the U.S. Fish and Wildlife Service Migratory Bird Program goals to protect, conserve, and restore migratory bird habitats to ensure long-term sustainability of all migratory bird populations.

Executive Order 13186 recognizes the significant contribution native species make to the well-being of the Nation's natural environment and directs Federal agencies to take preventive and responsive action to the threat of non-native species invasion and to provide restoration of native species and habitat conditions in ecosystems that have been invaded. Executive Order 13112 directs Federal agencies to promote the conservation of migratory bird populations, including restoring and enhancing habitat.

The Texas Endangered Species Act (1973) gave the Texas Parks and Wildlife Department (TPWD) the authority to establish a list of fish and wildlife that are endangered or threatened with statewide extinction. The Non-game and Endangered Species Conservation Fund of Texas enables TPWD to contribute to ongoing activities for the conservation and restoration of all non-game species and their habitats.

In Texas, Senate Bill 2, 77th Legislature of Texas recognizes the San Antonio River basin as a critical fish and wildlife resource. This bill requires the TPWD, The Texas Water Development Board, the Texas Commission on Environmental Quality, and other agencies to establish an interagency in-stream flow program to determine conditions necessary to support a sound ecological environment.

The Department of Defense has signed a Memorandum of Understanding with Partners in Flight, a cooperative effort involving partnerships among Federal, state, and local government agencies, philanthropic foundations, professional organizations, conservation groups, industry, the academic community, and private individuals. A major focus of Partners in Flight is for the conservation of neotropical migrants.

In addition, The United States has ratified international treaties for the conservation of migratory birds. These treaties impose substantive obligations on the U.S. for the conservation of migratory birds and their habitats. They include the Migratory Bird Treaty Act and the North American Waterfowl Management Plan, and lists wetlands, aquatic systems, grasslands, forests, and riparian areas as habitats critical to waterfowl.

The recommended plan contributes directly to the above laws, statues, and treaties by restoring critical habitat for native fish species, endangered and threatened species, and neotropical migratory bird species.

The recommended plan makes a significant contribution to larger watershed restoration efforts being implemented by Bexar County, City of San Antonio, and the San Antonio River

Authority. The restored habitat along the Mission Reach will contribute to the goals of the various projects listed below. They include:

- City of San Antonio's Creekways Program. Expended \$20 million to purchase and preserve the riparian zone of the Salado and Leon Creeks within the San Antonio River basin.
- City of San Antonio's Proposition 3. Provides funding to purchase lands located in the Edwards Aquifer recharge zone, including creeks. Approximately \$45 million dollars is available for this effort, and thousands of acres have already been purchased.
- Bexar County, City of San Antonio, and the San Antonio River Authority dedicate significant resources for debris cleanup along waterways. The city maintains two fulltime crews, and San Antonio River Authority is spending millions to develop water quality models throughout the basin to quantify water quality benefits produced by natural creek systems.
- The participation by the San Antonio River Authority in the ongoing restoration studies and projects with the Corps of Engineers on Cibolo Creek, Leon Creek, Salado Creek, Olmos Creek, and Eagleland.

Lastly, the significance of the recommended plan is demonstrated by its public recognition and tangible support. In 1998, the San Antonio River Oversight Committee was formed comprised of a diverse group of individuals and organizations whose objective is the restoration of the San Antonio River. Their vision is to restore the San Antonio River to a more natural condition, while maintaining the existing flood damage reduction capability. This 22-person citizen-committee has remained dedicated for 4 years to seeing the restoration of the San Antonio River become a reality establishes the public recognition of the significant habitat to be gained. In addition, endorsements have been received from the San Antonio River Authority, Bexar County Commissioners Court, the city of San Antonio, the San Antonio River Foundation, the U.S Fish and Wildlife Service, Sierra Club, Edwards Aquifer Authority, Bexar Audubon Society, Audubon Texas, League of Women Voters, Symphony Lane Neighborhood Association, Los Compadres de San Antonio Missions, Bexar Land Trust, The King William Association, Texas Department of Agriculture, Mitchell Lake Wetlands Society, and the San Antonio Conservation Society.

Support is also demonstrated by the commitment of funds to project construction by the city of San Antonio and Bexar County. At this time, \$30 million non-Federal dollars have been committed to the project. Further, over \$2 million has been, or will soon be, expended locally on other ecosystem restoration measures. In addition, the Fort Worth District is working for SARA on two additional ecosystem restoration projects within the Continuing Authorities Program (Eagleland and Olmos Creek). Since 1991, approximately \$33.7 million has been spent to secure, protect, restore, enhance and manage waterfowl priority landscapes in Texas. The community is highly involved in ecosystem restoration.

The decision to invest in the San Antonio River restoration project should be based on whether the recommended plan provides the desired output. Notwithstanding fiscal constraints, below is a summary of why an investment of this restoration project is warranted.

The Recommended Plan -

- Fulfills Corps restoration mission
- Is in accordance with the Corps Civil Works Strategic Plan
- Is in accordance with the Corps Environmental Operating Principles
- Is in compliance with Corps restoration policy
- Is technically sound
- Is sustainable through the application of geomorphologic principles for sediment transport, hydraulic modeling, incorporating native vegetation species - survivability, and synergistic effects
- Has low maintenance costs
- Restores significant resources
- Restores habitat for native species, threatened and endangered species, and neotropical migratory bird species
- Complements other state and federal restoration programs and projects
- Restores biological and environmental resources that existed prior to the SACIP
- Demonstrates flood damage reduction and ecosystem function and restoration can co-exist
- Is an opportunity to demonstrate progressive commitment to the principles of environmental restoration by the Corps of Engineers
- Recommended plan provides connection to adjacent habitat and remaining watershed
- Captures the synergy between riparian and aquatic habitats
- Restores the river to a more natural configuration and function resulting in the greatest improvement in sinuosity, slope gradient, velocity and sediment transport
- Reasonably maximizes aquatic habitat; complete restoration to pre-SACIP conditions not practical from a financial perspective
- Provides greatest diversity in aquatic habitats, restores scarce habitats, particularly river remnants
- The total first cost of restoring two river remnants is less than one-half of one percent of the estimated total project first cost
- Is supported by the U.S. Fish and Wildlife Service and the Texas Parks and Wildlife Department; has widespread local support
- Is an opportunity to protect and preserve habitat in an area where further loss of environmental resources is likely
- Customer has demonstrated commitment to ecosystem restoration by implementing millions of dollars to other projects.
- Customer is prepared to implement the San Antonio River project immediately having secured all required funding for implementation
- Provides flood damage reduction benefits

The San Antonio River Authority, on behalf of the city of San Antonio and Bexar County, are identified as the local sponsor. The San Antonio River Authority, the city of San Antonio and Bexar County all support the recommended plan, and intend to participate in its implementation. The U.S. Fish and Wildlife Service, the Texas Parks and Wildlife Department, and other local environmental groups also support the implementation of the recommended plan. Public involvement of the San Antonio River within the Mission Reach began during the development of the conceptual design for the ecosystem restoration outlines in the San Antonio Channel Improvement Project Concept Design – Design Guidelines (July 2001). Numerous public workshops were conducted to solicit public input. Since that time, the San Antonio River Oversight Committee has conducted many public meetings keeping local citizens informed of the study progress and continuing to solicit input. Numerous letters have been received from local environmental and conservation groups supporting the study efforts. A public meeting will be conducted during review of the draft report.

This General Reevaluation Report is comprised of two sections. The first section is the main report and is provided in hard copy. The second section is comprised of the appendices. The appendices have been placed on the enclosed compact disks in a .pdf format. The electronic files on the compact disk can be accessed using Adobe Acrobat. Hard copies of the appendices are available upon request.

Comments or questions regarding the San Antonio Channel Improvement Project, General Reevaluation Report or the recommended plan can be addressed to Mr. Eli Kangas, Project Manager, CESWF-PER-PF, U.S. Army Corps of Engineers, Fort Worth District, P.O. Box 17300, Fort Worth, Texas 76102-0300, or call 817-886-1924, or use electronic mail at eli.a.kangas@swf02.usace.army.mil; or contact Ms. Charissa Kelly, Environmental Planner, CESWF-PER-EE, U.S. Army Corps of Engineers, Fort Worth District, P.O. Box 17300, Fort Worth, Texas 76102-0300, or call 817-886-1759 or use electronic mail at charissa.a.Kelly@swf02.usace.army.mil.