

Revegetating Abandoned Farmland in the Cienega Creek Natural Preserve, Pima County, Arizona

Background

The Cienega Creek Natural Preserve (Preserve) was established by the Pima County Board of Supervisors in 1986 for the purposes of preserving and protecting the natural and scenic resources of the property for benefit of Pima County, its resources, residents and visitors. Under the guidance of the accepted management plan (1994), a policy was developed to revegetate all areas that were previously cleared for agricultural crop production with native vegetation. Two projects were undertaken by the Pima County Flood Control District (District) to help fulfill this policy.

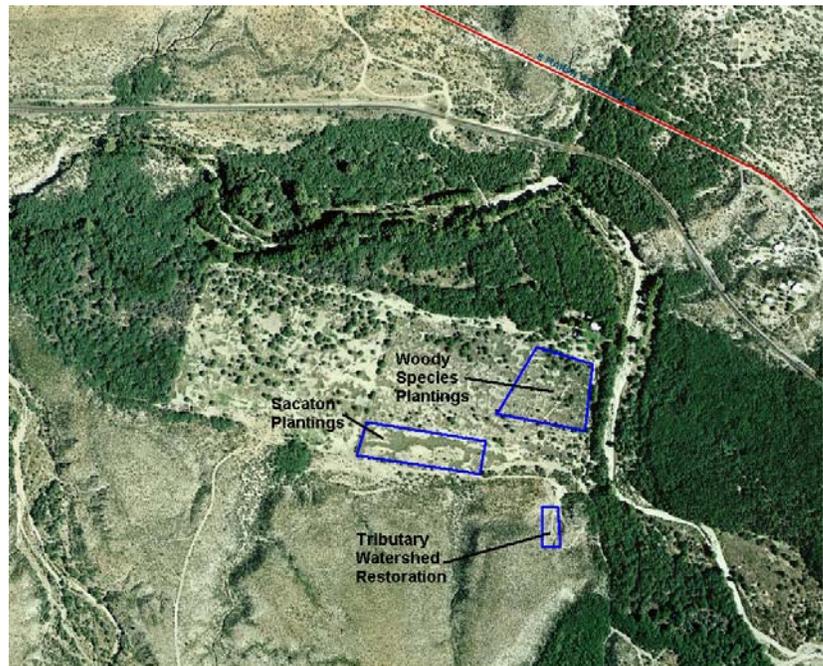
Location

The projects are within an abandoned farm field located along Cienega Creek at the eastern end of the Preserve, north of Interstate 10. Livestock were removed from both planting areas.



Partners for Wildlife Project

The Partners for Wildlife Project was developed by the District in cooperation with the U. S. Fish and Wildlife Service (Partners for Wildlife Program) and the Arizona Game and Fish Department. The primary objectives were to (1) promote the propagation and long-term reestablishment of mesquite bosque habitat in a field currently dominated by Bermuda grass, a non-native species, and (2) increase the structure and species diversity of native vegetation for the benefit of neotropical birds. The project covers about nine acres and includes three components: (1) native grass establishment, (2) woody species establishment, and (3) tributary watershed restoration.



PARTNERS FOR WILDLIFE PROJECT

2002 Aerial Photo from Pima County MapGuide



scale 1 : 13,800

Wright's sacaton, a native grass to the area, was planted by the District in August 1996 with assistance from local volunteers. Water was provided over the course of a few days to help supplement rainfall during the establishment period. Studies conducted by Ron Tiller, University of Arizona, indicated a success rate of 74 percent for the establishment of the grasses.

Woody species that were planted in November 1997 included velvet mesquite, catclaw acacia, netleaf hackberry, desert willow, little-leaf sumac, graythorn, saltbush, wolfberry, and elderberry. Drip irrigation was provided to the majority of the plants over a two-year period. A ten-year monitoring program was initiated for the project in 1998, which included monitoring annually for survival and recruitment in July and photo point monitoring in October to determine relative growth rates. Approximately 60 percent of the plants located within the monitoring plots have been successfully established through 2006. Some of the attrition occurred during the 2002-2004 drought.



Wright's sacaton (*Sporobolus wrightii*)

Efforts have been made by the District to restore a small, tributary watershed located south of the abandoned field. A gully had formed along a dirt road that was graded for access to an undeveloped well site due to exposure of easily eroded soils. Gravel was imported to the site and spread across the length of the gully using youth volunteers. Check dams were constructed within the gully to help slow storm runoff and fill the gully with sediments. Sacaton was planted along the edges of the gully to help stabilize the banks. Annual monitoring has been performed by District staff to determine the success of the restoration efforts and make recommendations for continued activities.

Overall, the project has been successful in reintroducing species that were formerly prominent in the area and increasing the species diversity and structural diversity of vegetation. However, the project has not accelerated natural recruitment of the woodland community at this site. Seed availability is not the likely constraint. Periodic soil-moisture deficits and the dominance of Bermuda grass and other non-native weeds are the main factors for limiting native plant establishment. Efforts to restore the tributary watershed have been successful in changing the channel from a down-cutting, V-shaped arroyo to a wide, meandering channel with associated terraces.



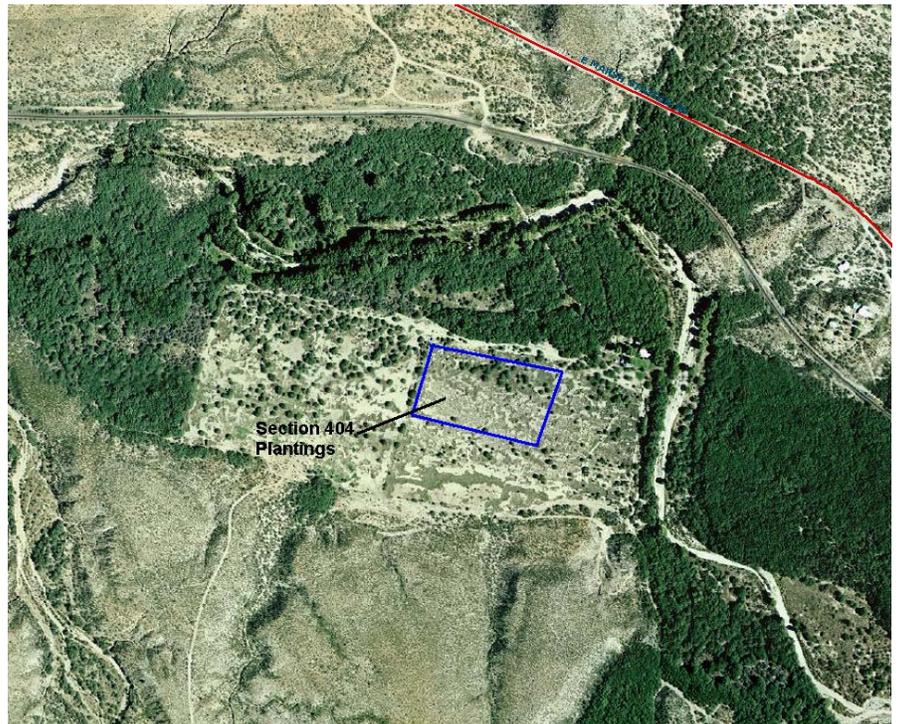
Photo point monitoring at the Partners for Wildlife Project, Southeast Plot looking north – January 1998 photo above, October 2004 photo below



Section 404 Mitigation Project

The Section 404 Mitigation Project was developed solely by the District as off-site mitigation for impacts to jurisdictional waters of the United States resulting from the construction of soil cement bank protection along the Santa Cruz River. The project covers approximately 5.5 acres and includes the same species as those planted in the Partners for Wildlife Project. Drip irrigation was provided to the plants over a two year establishment period.

Monitoring of the project was conducted by Westland Resources in January 1999. Approximately 92 percent of the one hundred plants encountered within three monitoring transects had survived over the two-year establishment period. Woody plants accounted for only 10 percent of the canopy cover, mostly from volunteer mesquite trees. Invasive, non-native weeds still provide most of the cover found at this site.

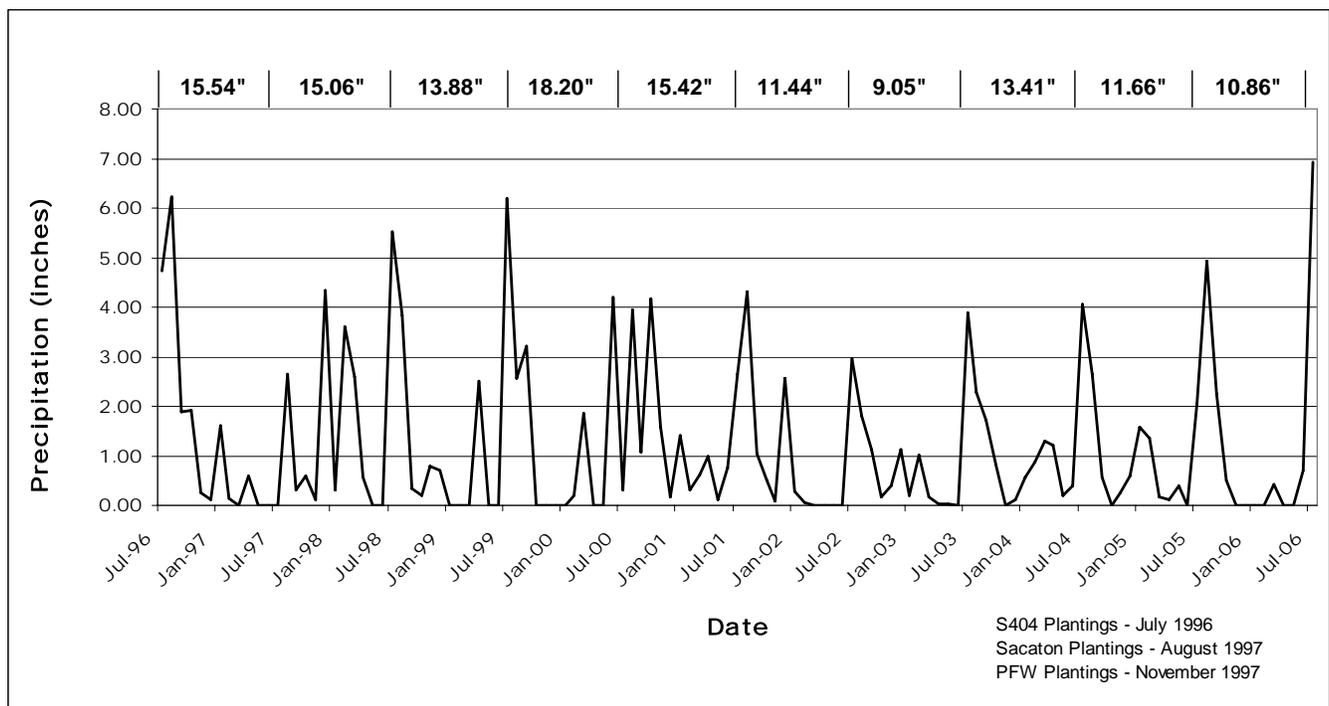


SECTION 404 MITIGATION PROJECT

2002 Aerial Photo from Pima County MapGuide



scale 1 : 13,800



Monthly rainfall at the project site from July 1996 - July 2006 (Annual, July-June, averages on top).