

**New Mexico Wetlands Protection Program
FY04 EPA WETLANDS GRANT PROGRAM
CWA Section 104(b) (3)**

**FINAL REPORT
Mesilla Valley Bosque State Park Wetlands Restoration Project
CD# 966349-01-0C**

Executive Summary

The New Mexico Environment Department (NMED) Surface Water Quality Bureau (SWQB) and the New Mexico State Parks Division (State Parks) of the New Mexico Energy Minerals and Natural Resources Department partnered to conduct wetlands restoration to reintroduce historic wetland conditions on approximately 30 acres adjacent to the Rio Grande in south central New Mexico. The project involved utilizing a variety of methods to achieve the project goals that include: removing exotic plant species by hand and mechanical techniques, mechanical disturbance of coyote willow to promote regeneration, and replanting native riparian and wetland vegetation. In addition, the project developed a docent-training program that will train volunteer staff to educate visitors about wetlands and wetland restoration methods including the restoration techniques utilized for this project.

The original grant was awarded by EPA Region 6 to the Wetlands Program for the Riverside Recreation Area Wetlands Restoration Project. However as the result of a failing well and the inability to locate a water source for the project site, the site was abandoned, and a search for an alternate site began. The project was subsequently moved to Mesilla Valley Bosque State Park. Once the project was relocated, all project tasks were implemented at a rapid pace.

As a result of the technical expertise and hard work of the final group of cooperators, the *Mesilla Valley Bosque State Park Wetlands Restoration Project* was a huge success. The primary cooperators included: the SWQB, State Parks, and the U.S. Fish and Wildlife Service (USFWS). The docent training was provided by Nancy Stotz of Desert Scribes. Following three years of difficulties at the initial project site, the entire project was implemented in 18 months. This included project planning, obtaining federal clearances, QAPP development, developing the above partnerships, implementing contracts, implementing all restoration work, developing a monitoring effort, and conducting pre and post treatment monitoring. The project restored 28.5 acres of wet meadow habitat from the salt cedar treatment. Approximately 1.0 acre was restored with coyote willow following disturbance with the brush rake. An additional 1.5 acres of riparian habitat was developed from pole planting of 900 Rio Grande cottonwood and 100 Gooding's willow. **Total wetland habitat restored was 31 acres.**

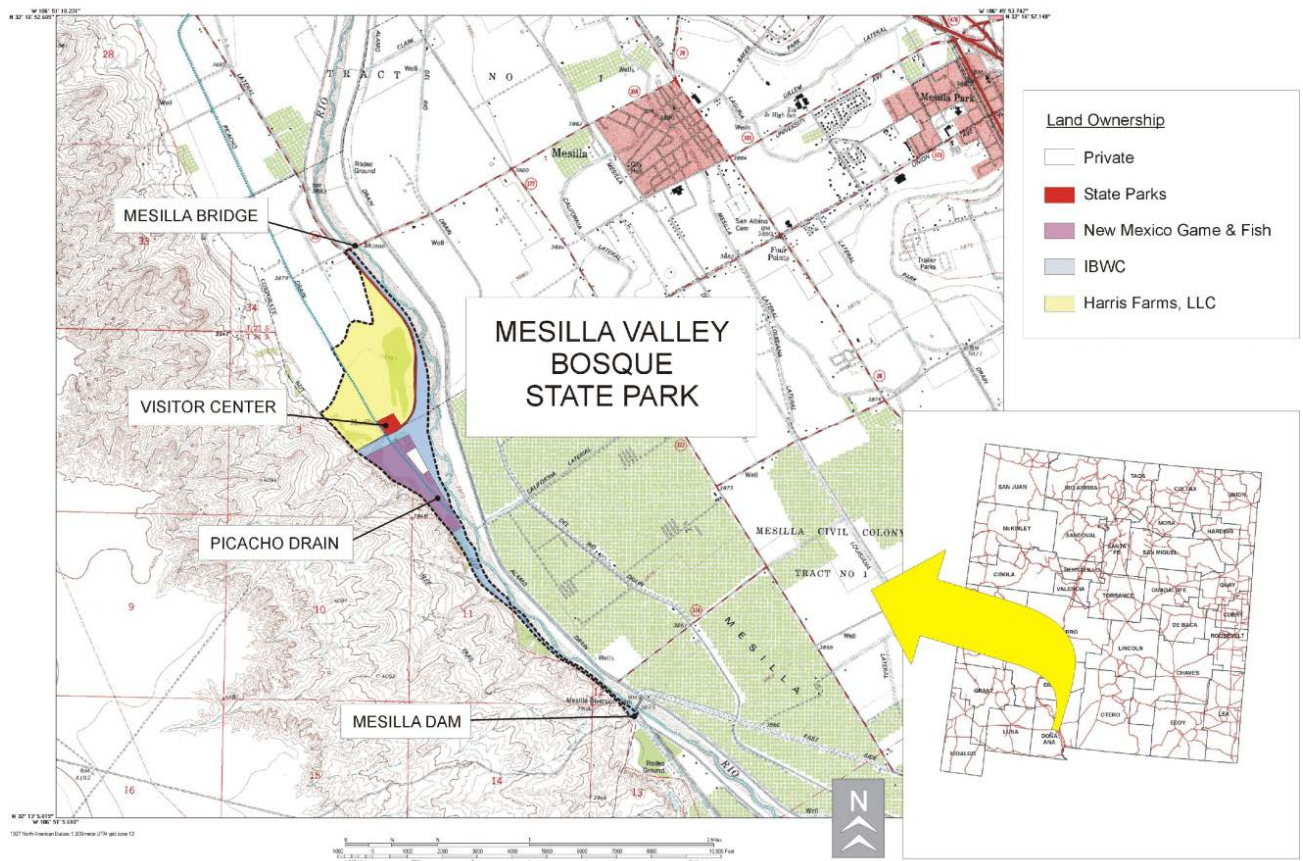
Project Location and Description

The project was located on the Rio Grande in the El Paso-Las Cruces Watershed (HUC 10303102). Historically, this stretch of the Rio Grande had a fairly wide floodplain with a sinuous and sometimes braided meandering channel with small oxbows, sloughs, cienegas, marshes and other associated wetland features. Annual spring flooding, and flooding from monsoon rains in late summer and early fall were an integral part of this process. These floods regenerated riverside ecosystems by germinating cottonwood seeds, flushing salts from soils, re-arranging channels and rejuvenating floodplain bosque wetlands. Today, the Rio Grande in the Mesilla Valley is contained within levees and is controlled by a dam at Elephant Butte Reservoir upstream. While this provides a reliable source of water for agricultural use, and reduces the risk of flooding, it has altered the hydrogeomorphic characteristics of the river by removing much of the sinuosity of the channel, greatly reducing wetland habitat, eliminating regenerating spring flood flows and disconnecting the river from its floodplain (For more information, see the El Paso-Las Cruces Watershed Wetlands Action Plan available from SWQB upon request). These

changes accompanied by maintenance mowing between the levees has promoted the establishment of a variety of invasive species including, salt cedar, kochia, and Russian thistle.

Federally Endangered or Threatened (T and E) species that could be affected by this project include the southwestern willow flycatcher. However, this project should provide the habitat conditions for the flycatcher as well as the western Yellow-billed cuckoo, which, although not currently listed as a T and E species, is currently a candidate for listing under the Endangered Species Act.

The project proposed to conduct wetlands restoration to reintroduce historic wetland conditions on approximately 30 acres adjacent to the Rio Grande in south central New Mexico. The project involved utilizing a variety of methods to achieve the project goals that include: removing exotic plant species by hand and mechanical techniques, mechanical disturbance of coyote willow to promote regeneration, and replanting native riparian and wetland vegetation. In addition, the project developed a docent-training program that will train volunteer staff to educate visitors about wetlands and wetland restoration methods including the restoration techniques utilized for this project.



Map showing general location of the Project Area

Project Goals and Objectives

The goal of this project was to begin restoring wetland habitat on the Rio Grande through innovative methods, comprehensive approaches, and new partnerships. The objectives of this project were to work with partners to achieve a net increase of wetlands by approximately 30 acres by restoring a part of the floodplain to historic wetland conditions. The project contained the following specific objectives:

- I. To restore approximately thirty acres of wetland and wet meadow habitat to historic wetland condition;
- II. Develop a wetlands focused docent-training program to train 10 docents that will volunteer at the park that contains four skill sets; Visitor Engagement, Conducting Outdoor Tours, Local and Park History and Management and Plants and Animals;
- III. Develop a docent training manual and associated materials to be utilized by park volunteers as reference, and park personnel for future trainings.

Timeframe

The original grant was awarded by EPA Region 6 to the Wetlands Program on October 1, 2006 and to be completed on June 30, 2009 for the *Riverside Recreation Area Wetlands Restoration Project*. As reported in the October, 2008 semi-annual report, it was discovered during the summer of 2008 that the well that was to provide water for the project was not functioning and beyond rehabilitation. Alternate water sources were explored from October 2008 to June 2009 when it was determined that an alternate water source could not be procured. Following consultation with EPA Region 6 project officers, a decision was made to relocate the project to the Mesilla Valley Bosque State Park. Once the project was relocated to a more suitable site it proceeded smoothly.

Project Chronology

A revised work plan was submitted to EPA in November 2009 for the *Mesilla Valley Bosque State Park Wetlands Restoration Project*. An amendment request was submitted to EPA March 11, 2010 to move the project to the Mesilla Valley Bosque State Park, which was subsequently approved April 6, 2010. By May 30, 2010 NEPA compliance documentation was complete, and a detailed task plan, a draft Quality Assurance Project Plan (QAPP), a draft contract between New Mexico State Parks and NMED and a draft of a three year monitoring plan had been developed. Identification of potential contractors and a monitoring team were also developed at this time. On August 5, 2010, a second amendment request was submitted to EPA to modify the project budget and extend the project timeline to September 15, 2011. The project QAPP was submitted to EPA August 12, 2010 and final signature was obtained August 20, 2010. A contract was developed between the USFWS to perform a major component of the restoration during the fall of 2010. Baseline monitoring was conducted on November 29-30, 2010, and January 18, 2011. Work commenced on the restoration component of the project on January 10, 2011. The mechanical extraction of salt cedar was completed on February 7, 2011. Pole planting was conducted for three weeks in February and March 2011. The docent trainer was hired in April of 2011, and four classes were held from April-June 2011.

Cooperators

NMED's Wetlands Program administered the grant through the assistance of project officer Chris Canavan. Mr. Canavan coordinated the partnership, provided guidance for implementation of the restoration, and worked in the field with the rest of the partners on monitoring and restoration.

State Parks oversaw the project and assisted in identifying potential restoration areas within Mesilla Valley Bosque State Park, assisted in forging a partnership with the USFWS to conduct the restoration, submitted a list of potential docent trainers, directed the development of the docent training manual, and assisted in selecting the docent trainer. Key State Parks personnel included: Steve Cary, Jan Kirwan, Ken Abalos, and Judy Kowalski.

The USFWS was a key cooperorator by assisting State Parks and NMED with determining restoration potential, planning restoration activities, and implementing much of the restoration. This cooperative effort was significant from the outset and has lasted beyond the length of the obligations under contract. This included a comprehensive report and follow up recommendations for further restoration and maintenance of the project's restoration efforts. They continue to work closely with State Parks and NMED in assessing the restoration progress. Their support has been critical to the success of the project. Key USFWS personnel included: Brett Beasley, Kevin Cobble, and Coby Bartram.

Desert Scribes conducted the docent training program for the project. This included four (4) four hour classroom sessions, interpretive walks at the park, and producing a docent training manual for future park volunteers, and park personnel. Key personnel included Nancy Stotz who conducted the trainings and produced the manual.

Funding History:

Funding for SWQB staff activities, travel and supplies were provided by the grant. In addition, restoration design and implementation, docent training, the docent training manual and monitoring were funded by the grant. Match was achieved by in-kind services from State Park employees, the New Mexico Corrections Department, and s state penitentiary inmate work crew. Match was also achieved by use of State Parks equipment and vehicles.

Match is reported for both the *Riverside Recreation Area Wetlands Restoration Project* and the *Mesilla Valley Bosque State Park Wetlands Restoration Project*.

\$91,369 Federal **\$25,600 Match from Riverside (28% of total project cost).**

\$50,831.63 Match from MVBSP (56% of total project cost).

\$76,432 total Match or 84% total Match for the project (\$40,621 overmatched).

Environmental Outputs: Tasks and Deliverables:

Task One: Wetland Restoration Design.

The Mesilla Valley Bosque State Park Resource Management Plan and the Mesilla Valley Bosque State Park Biological Assessment were utilized for preliminary development of the restoration plan which was followed by on site assessment for final development of treatments for specific locations. A project plan for removal of salt cedar from 29.5 acres with all components of the restoration activities to be conducted was submitted to State Parks by the USFWS as part of their bid proposal. State Parks developed an informal plan (primarily maps included in the appendix of this report) for pole planting of willows and cottonwoods.

- *Output:* Completed restoration plan.

Task Two: State and Federal Clearances.

Funding for this portion of the project was all match and no federal funding was expended. This task included completing and compiling the information necessary to fulfill the

requirements for the State Historic Preservation Division (SHPD) and tribal consultation, applying for Clean Water Act Sections 404 permitting, and 401 certification, and complying with National Environmental Policy Act requirements. State Parks was responsible for the deliverables of this task.

- *Output:* State Historic Preservation Division clearance, Clean Water Act Sections 404, and 401 clearances, and compliance with NEPA and ESA requirements.

Task Three: Develop Maintenance Plan for Post-Restoration.

A post restoration maintenance plan was developed by the U.S. Fish and Wildlife Service and State Parks which primarily consists of monitoring and treating re-sprouts of salt cedar in the treatment areas. In addition the USFWS provided a comprehensive set of recommendations for management of park vegetation with the goal of promoting a mosaic of wetland plants and habitat types.

- *Output:* A maintenance plan was developed by Mesilla Valley Bosque State Park personnel. An additional maintenance plan and management recommendations were submitted by USFWS (attached).

Task Four: Docent Training

The goal of this effort was to develop a docent training program to train approximately 10 docents that will volunteer at the park, and to develop a training manual/materials to be utilized by park personnel for future trainings. Four, 4 hour trainings were held from April-June, 2011. Four skill sets were proposed for the training; Initial Engagement of Visitors at Visitors Center; Conducting Outdoor Tours; Local and Park History and Park Management; and a Plant and Animal Skill Set.

- *Output:* Docent training manual, four docent trainings, and 10 docents trained.



Docents learning wetland plant identification in the classroom and in the field.

Task Five: Restoration Implementation.

State Parks and SWQB in cooperation with the USFWS personnel oversaw implementation of the project. Initial ground surveys conducted by the USFWS, State Parks and SWQB personnel determined that much of the area to be treated had sufficient native undergrowth and potential seed source to promote growth especially following the disturbance

associated with treatment. As a result, the general approach to restoration was to remove the non-native salt cedar and monitor the treated areas for increased vigor of the native plants and germination of native plants from the existing seed bank. Large live salt cedar, including root crowns, was extracted using a tracked excavator with a thumb attachment. A bobcat with a brush rake attachment was used to rake and pile the resulting biomass. The majority of the woody biomass from 7 acres was chipped and transported from the site by State Parks with assistance from an inmate work crew. The remaining slash was piled and will be burned in the winter of 2011-2012 when safe conditions exist and the necessary fire crews can be deployed to manage the burning. The bobcat with brush rake was also utilized to open up and promote growth of a stand of coyote willow. Monthly evaluations of plant succession took place from March-October 2011. Rio Grande cottonwood and Gooding's willows were planted by State Parks and an inmate work crew in the floodplain outside the treatment area to provide additional habitat diversity. Follow-up spot treatment will be conducted by State Parks into the foreseeable future (at least three years).

- *Output:* Restored 27.5 acres of wet meadow habitat and approximately 1.0 acres of marsh habitat from the salt cedar treatment. Approximately 1.0 acres were restored with coyote willow following disturbance with a brush rake. An additional 1.5 acres of riparian habitat was developed from pole planting of 900 Rio Grande cottonwood and 100 Gooding's willow. **Total wetland habitat restored was 31 acres.**



Excavator with “thumb”attachment.



Bobcat equipped with brush rake.



Northeast quadrant before treatment (left) and during removal of saltcedar (right).



Northeast quadrant ten months after treatment. The light brown patch in the center of the right side of the photo is baltic rush, an obligate wetland plant.



Flooding in the southwest quadrant two months after treatment. Notice emergence of hardstem bulrush and cattails.



Thriving Rio Grande cottonwoods on the floodplain nine months after pole planting.

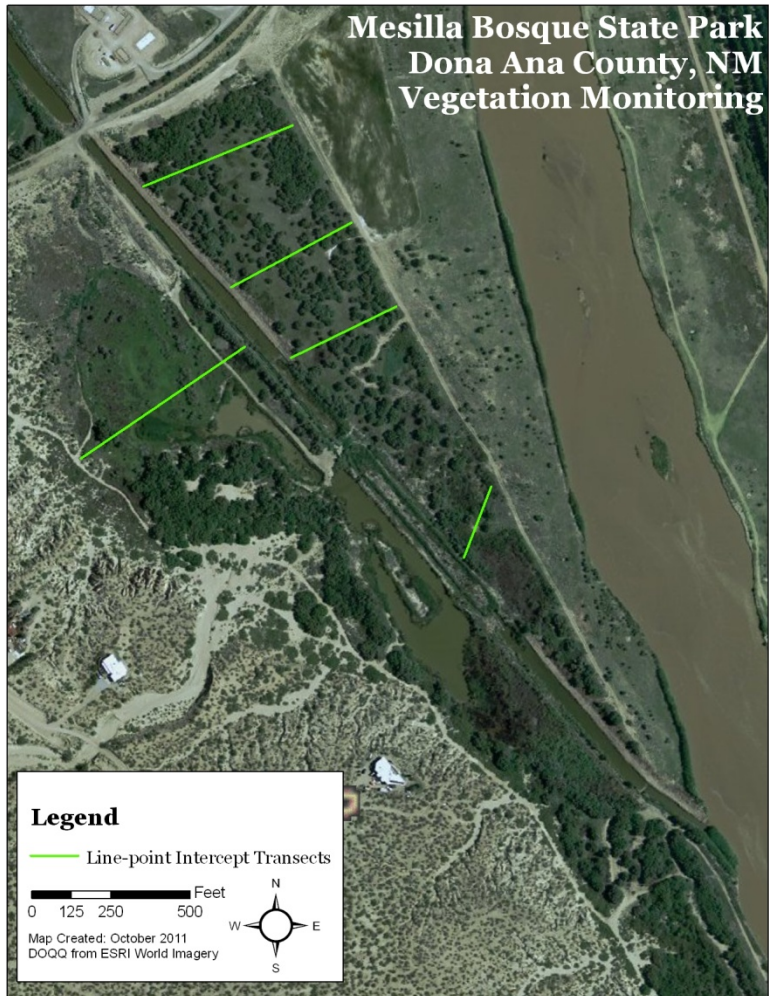


Willow shoots emerging in the background following brush rake treatment of dead and down willow two months after treatment (top). The same area ten months after treatment (bottom) with alkali mallow (foreground), hardstem bulrush (arrow), and a dense stand of new coyote willow beyond. Note the slash pile on right of each photo for reference.

Task Six: Monitoring and QAPP Development.

The SWQB wrote a project Quality Assurance Project Plan (QAPP) to ensure that proper quality assurance and control were being conducted for the monitoring of the project in accordance with SWQB and EPA requirements and guidelines. Since funding was depleted during the *Riverside Recreation Area Wetlands Restoration Project*, SWQB personnel implemented the project monitoring utilizing the La Jornada Method. Monitoring consisted of a total of five line point intercept transects: four across treatment areas and one control. Photo points of all line point intercept transects were taken, and will continue to be taken for three years following treatment. Anticipated outcomes include an increase in wetland vegetation, decreased invasive species, and increased wetting of the floodplain.

- Output: Project QAPP. Baseline monitoring was completed in the fall/winter of 2010/2011 and the data compiled in spreadsheet format. Post treatment monitoring was conducted October 13-14, 2011. These data have not yet been compiled.
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Map of line-point intercept transects utilized for the vegetation monitoring.



Transect 5 (far west transect) before (left) and after (right) treatment.

Task Seven: Project Administration.

This includes writing quarterly reports, one final report, and overseeing contracts. A Joint Powers Agreement was redeveloped between State Parks and SWQB. The Docent Training contract was written and implemented by SWQB. State Parks developed and implemented the restoration contract with the USFWS. SWQB developed all semi-annual reports, tracked finances, and was involved in contractual selection and work oversight with assistance from State Parks.

- *Output:* Managed reimbursements and information provided for quarterly and annual reports. Semi-annual? reports, one final report, and a Professional Services Contract.

Task Eight: Attend a Wetlands Training.

This task is for SWQB staff to attend training.

- *Output:* SWQB staff attended an Applied Fluvial Geomorphology class in Lubrecht, Montana June 20-24, 2011.

Lessons Learned and Technical Transfer

Preliminary collection of existing data and information concerning the proposed project is key to the development of a successful project. This includes reviewing existing site data, understanding existing project partners, legal constraints, overall site suitability, and the potential to build strong partnerships. The strength of the resulting project was a direct result of the technical expertise of the project personnel, the strength of the partnerships that were developed, and the commitment of the cooperators. Even prior to implementation of the on-the-ground work of the project, technical information was being shared among the project partners and others to assist in developing sound restoration techniques for the project and other restoration sites on the Rio Grande in southern New Mexico. This collaborative effort outlives the current project and many of the cooperators have been working on, and continue to work on, a similar project in the El Paso-Las Cruces Watershed. The information gathered from implementing this

project is being shared between NMED, State Parks, the USFWS, the New Mexico Office of the State Engineer, New Mexico Audubon, and the U. S. Army Corps of Engineers. The success of the project, the techniques employed, and the importance of wetland restoration along the Rio Grande in southern New Mexico has also been disseminated to the public in two separate interviews which were aired on a local radio and television station in the spring and summer of 2011. The spring interview can be viewed at <http://www.youtube.com/watch?v=w1K4wDniKhs>.