State of New Mexico
NONPOINT SOURCE MANAGEMENT PROGRAM

2014 Annual Report

New Mexico Environment Department
Surface Water Quality Bureau
Watershed Protection Section

State of New Mexico
Nonpoint Source Management Program

2014 Annual Report

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January 30, 2015

William K. Honker
Director, Water Quality Protection Division
U.S. Environmental Protection Agency, Region 6
1445 Ross Ave., Suite 1200
Dallas, Texas 75202

Dear Mr. Honker,

I am pleased to submit New Mexico's 2014 Nonpoint Source Management Program Annual Report. In this report we document load reductions of nonpoint source pollutants and the progress made in meeting the program milestones set forth in our Nonpoint Source Management Program.

The Nonpoint Source Management Program has six core objectives and I would like to briefly highlight our accomplishments made during 2014 for each:

1. Under the **watershed-based planning** objective, and working with local cooperators, our staff completed one major watershed-based plan in 2014. The plan (for thirty-seven priority watersheds within the larger El Paso – Las Cruces watershed) was reviewed by Region 6, and meets the planning elements in the *Nonpoint Source Program and Grants Guidelines for States and Territories*.

2. We report the successful completion of four projects funded under Section 319 that **address water quality problems**. We estimate that these projects reduced loading of nitrogen by 1,136 lb/yr, phosphorus by 417 lb/yr, and sediment by 4,442 tons/yr. One of these projects reduced *E. coli* loading by approximately 2.07×10^{12} colony forming units per year, and three of these projects made significant progress towards meeting shade goals included in Total Maximum Daily load documents for four streams. We also report on successful completion of six State-funded River Ecosystem Restoration Initiative projects.

3. To better **protect water quality**, New Mexico's Nonpoint Source Program staff issued conditional certification for three new Section 404 permits and reviewed many more projects potentially requiring Section 404 permit coverage. Nonpoint Source Program staff also carried out their responsibilities related to surface water quality protection

under the New Mexico Mining Act. We also report on successful completion of four Wetlands Program projects.

4. Related to **education and outreach,** one issue of the newsletter *Clearing the Waters* was published in 2014. Additional publications, workshops, field tours, and signage installations were included in projects completed in 2014. Of special note, three day-long technical meetings were conducted as part of Wetlands Program projects.

5. In the area of **groundwater quality protection,** the New Mexico Environment Department's Groundwater Quality Bureau conducted eight water fairs where local residents could have well water tested, and issued nine permits for large septic tank leachfield systems and surface disposal sites.

6. Finally, we document the progress in addressing nonpoint source pollution reported to us by our agency partners and the most promising developments related to **interagency cooperation** and coordination, including a kick-off of long awaited revision of Land and Resource Management Plans by the US Forest Service.

We thank you for your support of these efforts and look forward to working together to improve water quality and reduce nonpoint source pollution in New Mexico in the future. Should you have any questions about New Mexico's Nonpoint Source Management Program Annual Report please feel free to contact me (505-476-3671) or Abe Franklin of my staff (505-827-2793).

Sincerely,

James Hogan

Bureau Chief
Surface Water Quality Bureau

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Executive Summary

This report summarizes activities conducted in New Mexico in 2014 under the Nonpoint Source Management Program, as required by Section 319(h) of the Clean Water Act (CWA). Polluted runoff, or nonpoint source (NPS) pollution, is defined by the EPA as "caused by rainfall or snowmelt moving over and through the ground and carrying natural and human-made pollutants into lakes, rivers, streams, wetlands, estuaries, and other coastal waters and groundwater. Atmospheric deposition and hydrologic modification are also sources of nonpoint source pollution." Nonpoint source pollution is the leading cause of water quality degradation in the United States and poses a substantial problem for the health of New Mexico's rivers, wetlands, lakes and streams. When Congress amended the CWA in 1987, Section 319 was added to provide federal leadership to assist states, territories and tribes in developing programs that address NPS pollution. Under Section 319, states, territories and tribes receive grant funding to support activities such as: outreach and education, training, implementation of best management practices (BMPs), and monitoring to assess implementation efficacy. Milestones are an integral part of the NPS Management Program and a requirement under Section 319(b)(2)(c) of the CWA. The 2014 milestones for which a specific schedule is provided in the Nonpoint Source Management Program are reported on pages 5-10. Significant achievements include:

- Two nominations for 319 Success Stories under PAM WQ-10 were accepted, for Willow Creek and Sitting Bull Creek.
- A Request for Proposals (RFP) was released in April 2014 to select projects that will develop or update watershed plans relative to EPA's *Nonpoint Source Program and Grants Guidelines for States and Territories.*
- A second RFP was released to fund on-the-ground water quality improvement projects.
- The Paso del Norte Watershed Based Plan, covering the El Paso – Las Cruces watershed (hydrologic unit code 13030102) and 37 priority watersheds with 12-digit hydrologic unit codes was completed.
- Four on-the-ground projects funded under Section 319 were completed. Four Wetlands Program projects were completed, and three new Wetlands Program projects were awarded funding by EPA Region 6.
- Six state funded restoration projects were successfully completed.

In addition, five national forests, the Bureau of Land Management, the Natural Resources Conservation Service, four soil and water conservation districts, New Mexico State Forestry, and the New Mexico Department of Game and Fish provided information for the report on their activities related to NPS pollution control in 2014.

Introduction

This annual report to the United States Environmental Protection Agency (EPA) provides an overview of nonpoint source management related activities conducted in New Mexico in 2014 by the Watershed Protection Section (WPS) of the New Mexico Environment Department (NMED) Surface Water Quality Bureau (SWQB). The report presents the state's progress in meeting the milestones outlined in the goals and objectives of the New Mexico Nonpoint Source Management Program, and provides information on reductions in nonpoint source (NPS) pollutant loading and improvements to water quality of New Mexico watersheds as required under Section 319(h)(11) of the Clean Water Act (CWA). The majority of funding to support the New Mexico Nonpoint Source Management Program was provided by 319(h) grants awarded to NMED by the EPA. Activities and projects reported are CWA 319 projects, and those implemented by the River Ecosystem Restoration Intiative (RERI), the New Mexico Wetlands Program, CWA Section 401 activities, N.M. Mining Act activities, and NPS projects implemented by other natural resource agencies outside of NMED.

What is Nonpoint Source (NPS) Pollution?

Polluted runoff, or NPS pollution, is defined by the EPA as "caused by rainfall or snowmelt moving over and through the ground and carrying natural and human-made pollutants into lakes, rivers, streams, wetlands, estuaries, and other coastal waters and groundwater. Atmospheric deposition and hydrologic modification are also sources of nonpoint source pollution."

A few examples of NPS pollution include: bacteria and nitrates from aging or out of compliance septic systems; sediment and ash from forest and rangeland fires; oil, grease and other hydrocarbons from parking lots and roads; sediments from poorly designed unpaved roads; fertilizers, nutrients and bacteria from agricultural practices; and bacteria from pet waste. Increased water temperature resulting from degraded streambanks, loss of streambank vegetation, and hydromodification is another example of NPS pollution. New Mexico's most common causes of NPS pollution are nutrients, bacteria, and temperature.

Stormwater runoff carrying NPS pollutants from a horse corral entering a bar ditch that drains to Little Creek in the Sacramento Mountains.

Buck and rail fencing provides an aesthetic alternative to direct cattle away from sensitive riparian areas along the Rio de Las Vacas.

Clean Water Act Section 319

NPS pollution is the leading cause of water quality degradation in the United States and poses a substantial problem for the health of New Mexico's rivers, wetlands, lakes and streams. When Congress amended the CWA in 1987, Section 319 was added to provide federal leadership to assist states, territories and tribes in developing programs that address NPS pollution. Under Section 319, states, territories, and tribes receive grant funding to support the following activities: outreach and education, training, implementation of best management practices (BMPs), and monitoring to assess implementation efficacy.

Section 319 contains three main strategies for addressing NPS pollution:

- ◊ Requires states to prepare assessment reports of their NPS pollution problems.
- ◊ Requires states to develop a management program to control NPS pollution and improve water quality problems within the state.
- ◊ Creates a grant program to fund implementation of the management program for the assessment and control of NPS pollution.

Clean Water Act Sections 303(d) and 305(b)

Two sections of the CWA designed to manage both point sources and NPS are Sections 303 and 305. Under Section 303(d), states are required to list all polluted surface waters in their jurisdiction which do not meet state water quality standards (also known as the "impaired waters" list). Under Section 305(b), states must publish a biennial report on the health of all surface waters. In New Mexico, the 305(b) report includes the 303(d) list and is referred to the *State of New Mexico CWA §303(d)/§305(b) Integrated Report*.

New Mexico's Nonpoint Source Management Program

As lead agency for the management of NPS pollution, NMED coordinates activities within the state through the SWQB and the Ground Water Quality Bureau (GWQB). In accordance with the CWA, the SWQB has developed a Nonpoint Source Management Program planning document (NPS Management Plan). Our ultimate goal is to manage a balanced program that addresses both existing impairments (as listed in the 303(d) list) and prevents future impairments. The focus on existing impairments is directed at those impaired waters for which a Total Maximum Daily Load (TMDL) has been calculated. The TMDL is the total amount of pollutant a waterbody can assimilate daily and still meet water quality standards. In New Mexico TMDLs are generally only calculated on impaired waterbodies. In calculating a TMDL for an impaired waterbody, a target value of pollutant reduction is also provided. The primary focus of New Mexico's Nonpoint Source Management Program is to fund and support projects which implement TMDLs to reduce the pollutant load. An important component of this process is the watershed based plan (WBP) approach as outlined in the guidance provided in EPA's *Nonpoint Source Program and Grants Guidelines for States and Territories* (http://water.epa.gov/polwaste/nps/upload/319-guidelines-fy14.pdf). A WBP expands on the information provided in a TMDL by identifying causes and sources of impairment, recommending management measures, estimating expected load reductions from management measures, providing methods to measure implementation success, estimating funding needs, and outlining potential education and outreach efforts.

Following a public meeting addressing a proposed nutrient TMDL on the Mora River, stakeholders discuss developing a proposal for a mitigation project to submit for funding using CWA 319 (h) funds.

The goal of New Mexico's Nonpoint Source Management Program is:

> ***To implement watershed-based restoration and protection programs with the assistance of all stakeholders, for all watersheds within New Mexico, to meet and maintain water quality standards and beneficial uses of surface water and groundwater resources.***

NPS Management Program Milestones

At the core of the NPS Management Program are specific objectives aimed at reducing and preventing NPS pollution in New Mexico: Watershed-Based Planning, Addressing Water Quality Problems, Water Quality Protection, Education and Outreach, Protect Groundwater Resources, and Interagency Cooperation. Within each objective are specific activities and milestones to meet the objective. Milestones are an integral part of the NPS Management Program and a requirement under Section 319(b)(2)(c) of the Clean Water Act. The following table lists each milestone identified in the 2009 NPS Management Plan which has a specific numeric goal and an established time frame, and its status.

Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	2014 Status
1	Watershed Based Planning	All nine planning elements are addressed in watershed-based plans (WBPs).	2012: 3 plans, 49 watersheds. 2014: 2 additional plans, 20 additional watersheds.	The WBP for the El Paso - Las Cruces watershed was accepted by EPA in 2014. This plan covers 37 priority watersheds. New Mexico now has five WBPs covering 82 priority watersheds.
2	Addressing Water Quality Problems	Improve water quality in priority watersheds, meeting EPA performance measures SP-12 or WQ-10.	Three watersheds by 2012 and three more by 2014.	Two success stories were recognized by EPA in 2014. There have been five success stories in six 12-digit watersheds recognized from 2009 - 2014.
2	Addressing Water Quality Problems	Wetlands Action Plans are implemented in at least one priority watershed per year.	1 watershed per year.	The Section 319 project "Reducing Temperature and Turbidity on San Antonio Creek by Restoring Slope Wetlands on Six Tributaries" (Project 11-H) implements the San Antonio Creek WAP, in HUC 130202020201.
3	Water Quality Protection	The CWA §303(d)/§305(b) Integrated Report does not indicate an increase in the percentage of assessed stream miles designated as impaired.	The Integrated Report is scheduled for completion in 2010, 2012, and 2014.	Milestone was met for the 2014-2016 CWA §303(d)/§305(b) Integrated Report with a 2% reduction in impaired stream miles.

NPS Management Program Milestones (continued)

Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	2014 Status
3	Water Quality Protection	The CWA §303(d)/§305(b) Integrated Report provides summaries of water quality survey activity, analysis, and conclusions.	The Integrated Report is scheduled for completion in 2010, 2012, and 2014.	This milestone was met. EPA approved the CWA §303(d)/§305(b) Integrated Report for 2014-2016 on November 18, 2014.
3	Water Quality Protection	NMED proposes to WQCC adoption of water quality standards for wetlands.	2014	This milestone was not met.
4	Education and Outreach	The Forest and Watershed Health Program Virtual Library experiences an annual increase in internet hits of at least 10% between 2009 and 2014.	Annually	Undetermined. The library section of the allaboutwatershed.org web site was up and running in 2014, but in January 2015 the site administrator encountered technical difficulties obtaining records of use.
4	Education and Outreach	NM Watershed Forum is attended by more than 300 people.	2010, 2012, 2014	This milestone was not met. Watershed Forums were held in 2010 and 2012, but not in 2014.
4	Education and Outreach	Clearing the Waters is published quarterly.	Quarterly	This milestone was not met.
4	Education and Outreach	Clearing the Waters circulation increases to 1000 by 2014.	2014	Milestone was met in a previous year.
6	Interagency Cooperation	The MOU between NMED and USFS is renewed.	2014	This milestone was met in 2012.

NPS Management Program Milestones (continued)

Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	2014 Status
6	Interagency Cooperation	The Agreement in Principle between NMED and USDOE will be renewed.	2010	Milestone achieved. The agreement was updated and renewed in 2013 with a set of grant conditions.
6	Interagency Cooperation	The MOU between NMED and NMDOT will be renewed.	2010	This milestone was not met. The JPA between NMED and NMDOT terminated in 2010 and has not been renewed, mainly due to lack of funds to support a joint NMED/NMDOT position.

The NPS Management Plan was revised during 2014 and approved by the Water Quality Control Commission (WQCC) during their July 8, 2014 meeting. The plan was submitted to EPA in August, and NMED received comments and questions from EPA in October. A response was sent to EPA in November, and NMED received formal approval of the 2014 NPS Management Plan in January 2015. The 2014 NPS Management Plan is available on line at www.nmenv.state.nm.us/swqb/wps/Plan.

Although the 2014 NPS Management Plan was not technically in effect in 2014, there were some milestones that were to have been completed in 2014. The following table lists each milestone identified in the 2014 NPS Management Plan which has a specific numeric goal and an established time frame, with its status.

Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	2014 Status
1	Watershed Based Planning	WBPs and related documents are available in an organized web page, which will also provide a WBP submittal process.	2014	This milestone was not met. The outline for a newly organized web page has been completed, at www.nmenv.state.nm.us/swqb/wps/WBP. Instructions for submitting WBPs are complete, at www.nmenv.state.nm.us/swqb/wps/WBP/Submit.
1	Watershed Based Planning	A small procurement process is developed to update existing WBPs	2015	Not applicable -this is a goal for 2015.

Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	2014 Status
1	Watershed Based Planning	New watershed plans meet all nine planning elements, or are accepted by EPA as alternative plans.	2014: 1 plan, 3 watersheds. 2015: 3 additional plans, 9 additional watersheds. 2016: 2 additional plans, 13 additional watersheds. 2018: 1 additional plan, 1 additional watershed.	This milestone was met. The watershed-based plan for the El Paso - Las Cruces watershed was reviewed and accepted by EPA in 2014. This plan covers 37 priority watersheds.
1	Watershed Based Planning	Existing watershed-based plans are updated.	2016, 2017, and 2018: 2 plans each year are updated, one plan each year is accepted by EPA.	Not applicable - this milestone is scheduled for future years.
2	Addressing Water Quality Problems	Watershed restoration projects described in watershed-based plans or accepted alternative plans are initiated in two priority watersheds per year.	2 watersheds per year, 2014 through 2018.	This milestone was met. The Ponil Creek Restoration Project, Phase II (14-D) began within HUC 110800020202 in 2014. The Selden Drain Restoration Program Phase II (14-H) began within HUC 130301020601 in 2014.
2	Addressing Water Quality Problems	Wetlands Action Plans are implemented in at least one priority watershed per year.	1 watershed per year, 2014 through 2018.	This milestone was met. The Section 319 project "Reducing Temperature and Turbidity on San Antonio Creek by Restoring Slope Wetlands on Six Tributaries" (Project 11-H) implements the San Antonio Creek WAP, in HUC 130202020201.
2	Addressing Water Quality Problems	Improve water quality in priority watersheds, meeting EPA performance measures.	2 watersheds annually, 2014 through 2018.	Two success stories were recognized by EPA in 2014. There have been five success stories in six 12-digit watersheds recognized from 2009 - 2014.

Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	2014 Status
3	Water Quality Protection	The *CWA §303(d)/§305(b) Integrated Report* does not indicate an increase in the percentage of assessed stream miles designated as impaired.	The Integrated Report is scheduled for completion in 2014, 2016, and 2018.	Milestone was met for the 2014-2016 CWA §303(d)/§305(b) Integrated Report with a 2% reduction in impaired stream miles.
4	Education and Outreach	*Clearing the Waters* is published quarterly.	Quarterly	This milestone was not met.
4	Education and Outreach	*Clearing the Waters* circulation increases to 2000 by 2018.	2018	Not applicable - this is a goal for 2018.
4	Education and Outreach	The Forest and Watershed Health Program Virtual Library experiences an annual increase in internet hits of at least 10% between 2014 and 2018.	Annually	No #'s from Susan as of 1/24/15.
6	Interagency Cooperation	NRCS reports that agricultural BMPs funded under NWQI or other conservation programs have been implemented, with sufficient details to enable WPS to estimate pollutant load reductions.	Annually	This milestone was met. Forest stand improvement and woody residue treatment was completed on 117 acres of private nonindustrial forest land in the Gallinas watershed under NWQI in 2014. The effect of this work on sediment and nutrient loading could be modeled.
6	Interagency Cooperation	The NPS Management Program Annual Report is submitted to EPA by January 31 and made available to the public in February.	Annually	This milestone was met.

Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	2014 Status
6	Interagency Cooperation	USACE approves a programmatic agreement with NMDOT to establish the framework for an APRM program.	2015	Not applicable - this is a goal for 2015.
6	Interagency Cooperation	The MOU between NMED and USFS is renewed.	2017	Not applicable - this is a goal for 2017.
6	Interagency Cooperation	The grant from DOE that supports the work of the DOE Oversight Bureau is re-issued.	2018	Not applicable - this is a goal for 2018.
6	Interagency Cooperation	A revised NPS Management Plan is submitted to the EPA Regional Administrator.	2018	Not applicable - this is a goal for 2018.

Interagency Cooperation Highlights

The WPS continues to forge and maintain relationships to promote interagency cooperation. This is critical in New Mexico where over 30% of the land is managed by the U.S. Forest Service (USFS) and the Bureau of Land Management (BLM).

A coordination meeting was held with the USFS on November 4, 2014 between staff from four of the five National Forests in New Mexico and several SWQB programs. One major subject of discussion was the status of land and resource management planning (also known as forest planning) now underway in New Mexico. Forest plans set major goals for each national forest over an expected time frame of fifteen or more years. The current forest plans were all developed in the 1980s. The Cibola National Forest is furthest along in this process, having completed a forest plan revision for the Kiowa and Rita Blanca National Grasslands, a draft assessment of resources to be evaluated (Assessment Report), and preliminary statements of needs for changes in 2014 for the "mountain districts." The Carson and Santa Fe National Forests conducted initial scoping and outreach to agencies and the public in 2014 and the Lincoln and Gila National Forests will begin scoping in 2015. Forest plan revision is expected to take up to four years, with the Cibola National Forest Land and Resource Management Plan expected to be complete first, in 2016. With the exception of the forest plan revision for the Kiowa and Rita Blanca National Grasslands, each of these forest plan revisions will comply with the 2012 Planning Rule, which requires components for the maintenance and restoration of the ecological integrity of aquatic ecosystems and watersheds, water quality, and water resources in the plan area, including lakes, streams, wetlands, and sources of drinking water.

Coordination with the Natural Resources Conservation Service (NRCS) also continued during 2014,

mostly related to the National Water Quality Initiative (NWQI). Efforts continued to focus on three priority watersheds: Arroyo Pecos – Gallinas River (130600010805), Mossman Arroyo (130301020801), and Anthony Wash – Rio Grande (130301020803).

NRCS funded forest stand improvement and woody residue treatment on 117 acres of private nonindustrial forest land in the Gallinas watershed in 2014, under one NWQI contract. This work is consistent with NWQI because it reduces the risk of unnaturally intense wildfire that seriously threatens water quality in the Gallinas watershed.

NRCS approved contracts for manure scraping lanes at three dairies in the Mossman Arroyo and Anthony Wash watersheds in 2013 and is awaiting implementation. The manure scrapers would have a role in a larger system that would reduce *E. coli* loading to the Rio Grande through waste diversion, as described in the Paso del Norte Watershed Based Plan. On-the-ground work has not begun on the manure scraping lanes because the dairies are waiting for ground to be broken on a privately funded manure digester project. The private entity supporting the manure digester has developed a composting facility that is now operational, as part of a longer term plan that, according to NRCS, may include methane production and electricity generation. The contracts for manure scraping lanes may terminate prior to the work being done. NMED supports the addition of more priority watersheds in the El Paso – Las Cruces watershed (13030102) to allow for a larger range of practices and agricultural producers to utilize NWQI to address the *E. coli* impairment in the lower Rio Grande.

Implementation of NWQI in the Arroyo Pecos – Gallinas River watershed appears to be limited by the small pool of potential applicants. These applicants do not have significant experience working with NRCS or NMED, although many have had contact with a watershed group (the Hermits Peak Watershed Alliance) which has introduced the concept of NWQI to them. The priority for this area is to work with small livestock producers on improved grazing management within the Gallinas River riparian area. Eligible practices (or categories of practices) may include fencing, bank stabilization, pasture management, and provision of alternative water sources for livestock. NMED continues to support NRCS in implementing practices to prevent potential future sediment impairment as well, through forest management activities to reduce the likelihood of a severe fire within the watershed. In 2015, NMED plans to explore options for identifying and recruiting applicants for NWQI within the Gallinas watershed through a small contract developed in cooperation with NRCS. One deliverable under the contract would be an objective analysis and critique of NWQI in the Gallinas watershed, with recommendations for future years.

More information on NRCS activities is found starting on page 81 in the outside agency section.

The NMED Construction Programs Bureau provided a summary of activities related to the use of the Clean Water State Revolving Fund (SRF) to improve water quality, with an update on a project in development on the Arroyo de los Montoyas that is expected to reduce *E. coli* loading to the Rio Grande.

In late 2013, the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) approached NMED about utilizing remaining funds appropriated by the 2010 New Mexico Legislature under RERI. NMED and EMNRD renewed their Memorandum of Agreement to outline responsibilities for project management and financial oversight, and NMED assisted EMNRD with developing three new projects which began in February 2014 and are supported with these funds. The projects include a wetlands enhancement project on the Selden Drain in Doña Ana County, a fisheries improvement project within the Town of Red

River, and a watershed-based planning project for the Animas River. More details on these projects are avail-able in the Grant Reporting and Tracking System (GRTS) see www.nmenv.state.nm.us/swqb/wps/GRTS for more information.

NPS Management Program Objectives Completed in 2014

2014 was a year of routine implementation of the NPS Management Program combined with planning and adaptation to new conditions. Most of the objectives outlined for 2014 in the 2013 NPS Annual Report were met, including:

- A Request for Proposals (RFP) was released in April 2014 to select projects that will develop or update watershed plans relative to *EPA's Nonpoint Source Program and Grants Guidelines for States and Territories*. This activity may support meeting a program objective identified in the 2014 NPS Management Plan to complete watershed-based plans.

- A second RFP was released in April 2014 to select on-the-ground projects with the greatest potential of success under PAMs WQ-10 and WQ-SP12.N11 (called SP-12 in older guidance) in EPA's National Water Program Guidance for FY 2014.

- A nomination for a 319 Success Story under PAM WQ-10 was accepted for Willow Creek, based on its delisting for zinc and cadmium, coupled with information on the Terrero Mine reclamation and evidence of water quality improvement. A second success story, for Sitting Bull Creek, though not anticipated in 2013 was revisited and also submitted and accepted. These and other NPS Success Stories are available at http://water.epa.gov/polwaste/nps/success319.

- Changes in the *2014-2016 State of New Mexico 303(d)/305(b) Integrated List for Assessed Surface Waters* relative to earlier versions were reviewed to identify additional potential candidates for Success Story nomination. The changes are summarized in spreadsheets available at www.nmenv.state.nm.us/swqb/303d-305b/2014-2016, including one spreadsheet for delistings. Polvadera Creek was identified as a Success Story candidate, based on delistings for temperature and turbidity coupled with a Section 319 restoration project and other management changes by the Santa Fe National Forest.

- The Paso del Norte Watershed Based Plan, covering the El Paso – Las Cruces watershed (hydrologic unit code 13030102) and 37 priority watersheds with 12-digit hydrologic unit codes was completed in 2014. The plan was reviewed by EPA and found to contain all nine planning elements. This plan was developed by an interagency planning group called the Paso del Norte Watershed Council, with representatives of agencies and other organizations in the region, including some from Texas and Chihuahua, to identify the most promising approaches for reducing *E. coli* loading in the Rio Grande.

- In 2014, four on-the-ground projects funded under Section 319 were completed. All four were implemented within priority watersheds identified in the 2009 NPS Management Plan, resulting in pollutant load reductions (see pp 20-25).

Three watershed-based planning projects were scheduled to be complete in 2014, and all three were extended (a fourth was mistakenly reported in the 2013 NPS Annual Report to be scheduled for completion in 2014). A watershed-based plan is the main deliverable of each project. EPA reviewed a watershed-based plan produced by one of the projects (for the Rio Nutrias), and determined that it does not yet meet all nine watershed-planning elements. More discussion of challenges faced with watershed-based planning is provided below.

Two new on-the-ground Section 319 projects were developed in 2014. These projects will be implemented within two priority watersheds identified in the 2009 NPS Management Plan. Neither of these projects implements an accepted watershed-based plan, but both are considered to have adequately addressed the watershed-based planning elements in their project workplans. Section 319 funded implementation projects were initiated in twenty-one distinct priority watersheds in 2009 through 2014. State-funded RERI projects were initiated in nine additional priority watersheds during this period, and so the goal in the 2009 NPS Management Plan of twenty-eight watersheds by the close of 2014 has been met.

The 2014 NM Legislature appropriated $2.3 million to NMED to support the River Stewardship Program. The language in the bill states that the funding is for use "to design and construct projects that improve surface water quality or river habitat statewide and to provide state matching funds required by the terms of any federal grant under the Clean Water Act." The SWQB in cooperation with the State Purchasing Division conducted a RFP in 2014 to identify projects to be implemented under the River Stewardship Program, and twelve resulting projects are scheduled to begin in 2015. These projects will be summarized and periodically reported (along with Section 319-funded projects) in GRTS (see www.nmenv.state.nm.us/swqb/wps/GRTS for more information). More information on the River Stewardship Program can be found on page 32.

NPS Management Program Objectives for 2015

EPA approved the 2014 NPS Management Plan on January 13, 2015. Consistent with *EPA's Nonpoint Source Program and Grants Guidelines for States and Territories (revised in April, 2013)*, the 2014 NPS Management Plan places a stronger emphasis on implementation projects. NMED will submit an application for a Section 319 grant to fund major aspects of the Nonpoint Source Management Program (and projects) in state fiscal years 2016 and 2017, consistent with the 2014 NPS Management Plan.

The WPS has identified the following activities from the 2014 NPS Management Plan to meet program objectives for 2015.

- Watershed-based plans, alternative plans, wetlands action plans, and earlier watershed restoration action strategies will be made available in a new organized web page. An outline of the new web page, including a complete section with instructions for submitting plans, is available at www.nmenv.state.nm.us/swqb/wps/WBP.

- A RFP will be conducted to select projects that will develop or update watershed plans that include the nine elements in EPA's Nonpoint Source Program and Grants Guidelines for States and Territories.

- At least one existing watershed plan will be supplemented, updated, or completed using a small procure-

ment for a short-term, non-comprehensive planning project. The draft Rio Pueblo de Taos watershed-based plan has tentatively been selected for this effort in 2015.

- A second RFP will be conducted to select on-the-ground projects with the greatest potential of success under PAMs WQ-10 and WQ-SP12.N11 (called SP-12 in earlier guidance) in EPA's National Water Program Guidance for FY 2015. This RFP will be limited to watersheds with EPA-accepted watershed-based plans.
- A nomination will be completed for a 319 Success Story under PAM WQ-10 for Polvadera Creek, based on its delisting for temperature and sedimentation, coupled with information on the Polvadera Creek Riparian Project (319 Project 08-7/ULO) and other management changes implemented by the Santa Fe National Forest.
- A nomination will be completed for a 319 Success Story under PAM WQ-10 for a second stream, to be identified.
- WPS will continue to provide contract oversight and technical assistance for ongoing Section 319 projects. Five Section 319 watershed-based planning projects scheduled to be complete in 2015 are listed in the following table.

Project Number	Project Title	Project completion date	Streams included	Number of priority watersheds in project area
11-F	Mogollon Creek Watershed-Based Plan	February 11, 2015	Mogollon Creek	3
12-C	Black Canyon Watershed-Based Plan	December 31, 2015	Black Canyon Creek	2
12-H	An Updated Watershed-Based Plan for the Lower Embudo Watershed	September 30, 2015	Embudo Creek	3
12-I	Nutrias Watershed Based Plan	June 30, 2015	Rio Nutrias (in the Rio Chama watershed)	4
12-J	Watershed-Based Planning within the Upper Rio San Antonio Drainage Basin	September 30, 2015	Rio San Antonio (in the Conejos watershed)	1

NMED plans to explore options for identifying and recruiting applicants for NWQI within the Gallinas watershed through a small contract developed in cooperation with NRCS, and to seek a second contractor

to implement a portion of the monitoring described in the Updated Watershed Based Plan for the Upper Gallinas River.

WPS will continue to provide contract oversight and technical assistance for ongoing Section 319 projects. Seven Section 319 implementation projects scheduled to be complete in 2015 are listed in the following table.

Project Number	Project Title	Project completion date	Streams included
10-D	Respect the Rio: Managing Uplands to Improve Water Quality	6/30/2015	Rio de las Vacas, Clear Creek, Rio Cebolla (above Fenton Lake), San Antonio Creek
10-E	Respect the Rio: Managing Recreation to Improve Water Quality	6/30/2015	Rio Guadalupe, Jemez River, East Fork Jemez River, San Antonio Creek, Rito Peñas Negras, Rio de las Vacas, Pecos River, Dalton Creek
11-G	Restoring Jaramillo Creek	9/30/2015	Jaramillo Creek
11-H	Reducing Temperature and Turbidity on San Antonio Creek by Restoring Slope Wetlands on Six Tributaries	6/30/2015	San Antonio Creek
12-F	Urban Green Infrastructure Retrofit Pilot Project in Albuquerque	6/30/2015	Rio Grande
13-E	Cow Creek Direct Implementation Pilot Project	12/31/2015	Cow Creek

NPS Management Program Problems and Concerns

According to the 2009 NPS Management Plan (which was in effect during all of 2014), the Watershed Forum (a statewide professional conference or a series of workshops around the state, on watershed management topics) was to have been conducted in 2014 as it was in 2010 and 2012. NMED decided not to support the Watershed Forum in 2014 mainly to adapt to a program requirement beginning in FY 2014 that fifty percent or more of Section 319 funds be directed to implementation of watershed-based plans or acceptable alternatives to watershed-based plans.

Three watershed-based planning projects were scheduled to be complete in 2014, and their completion was identified among activities planned for 2014 in the 2013 NPS Annual Report. All three were extended to be completed in 2015. A watershed-based plan is the main deliverable of each project. A draft watershed-based

plan was delivered under one of the projects (Nutrias Watershed Based Plan FY12-I,), which NMED and EPA Region 6 reviewed and identified a few remaining aspects required to meet all nine planning elements. The remaining challenges center on estimating pollutant load reductions for separate management measures. Project oversight for the remaining two watershed planning projects (Black Canyon Watershed-Based Plan FY12-C, and Mogollon Creek Watershed-Based Plan FY11-F) is being conducted by staff at the Silver City Office. The office underwent a 100 % turnover from August 2013 to January 2014. The first of these vacancies was filled in February 2014 while the second was filled in November. In addition, the contractor was also having difficulties with project management. Staff re-engaged the contractor and became familiar with the projects, but both projects were extended to provide sufficient time to produce acceptable watershed-based plans.

Fiscal years 2013 and 2014 were the first years in which NMED experienced a significant decrease in Federal Section 319 funding. The final award for each year was $1.9 million, relative to $2.3 million per year for several previous years. A GIS specialist position vacated in January 2014 has been filled, but the position now serves multiple programs and generally is not supported with Section 319 grant funding. Accordingly, GIS support for the NPS program has been reduced. Two project officer positions vacated through retirement in February and May, respectively, were filled in September and November. A project officer position vacated in August 2013 was filled in February 2014.

The Nonpoint Source Management Program was impacted in 2014 by these vacancies and the need to train new staff. Over most of 2014, NPS Program staff absorbed responsibilities of their former coworkers, and have prioritized project management, contract oversight, statutory responsibilities (Section 401 review activities and Mining Act reviews), and reporting over project development, program coordination activities, and outreach (including the newsletter *Clearing the Waters*, which was published only once in 2014).

Experience with NWQI in 2014 was similar to that in 2013. NRCS is limited by their applicant pool, and also has limited ability to conduct targeted outreach to develop projects that address specific resource concerns. NRCS is unable to fund the specific management measures recommended in a watershed-based plan if an applicant does not request funds for those management measures. NRCS has indicated that a small pool of interested applicants in two NWQI watersheds in Doña Ana County will only apply for NWQI funding if they can piece together financing for other parts of a manure management system.

Effectiveness Monitoring of NPS Pollution Controls

WPS Effectiveness Monitoring Program continued to document the effects of NPS pollution control projects on water quality. These projects are primarily funded under the CWA Section 319, and 104(b)(3) programs with additional funding from RERI.

Thermographs were deployed in nine streams in 2014 to record hourly temperature upstream and downstream of project reaches and additional sites where tributary inputs could have significant effects (see table page 17). Results from the data analysis indicate that peak summer temperatures in many streams have improved but still exceed the standard of 20°C for coldwater aquatic life in many cases. However the projects are expected to have beneficial effects which will continue to increase as vegetation continues to grow. Further data collection and analysis will be conducted to account for the lag time.

Upon review of the *State of New Mexico 303(d)/305(b) Integrated List for Assessed Surface Waters* for potential Success Stories, two were recognized by EPA during 2014: Willow Creek and Sitting Bull Creek.

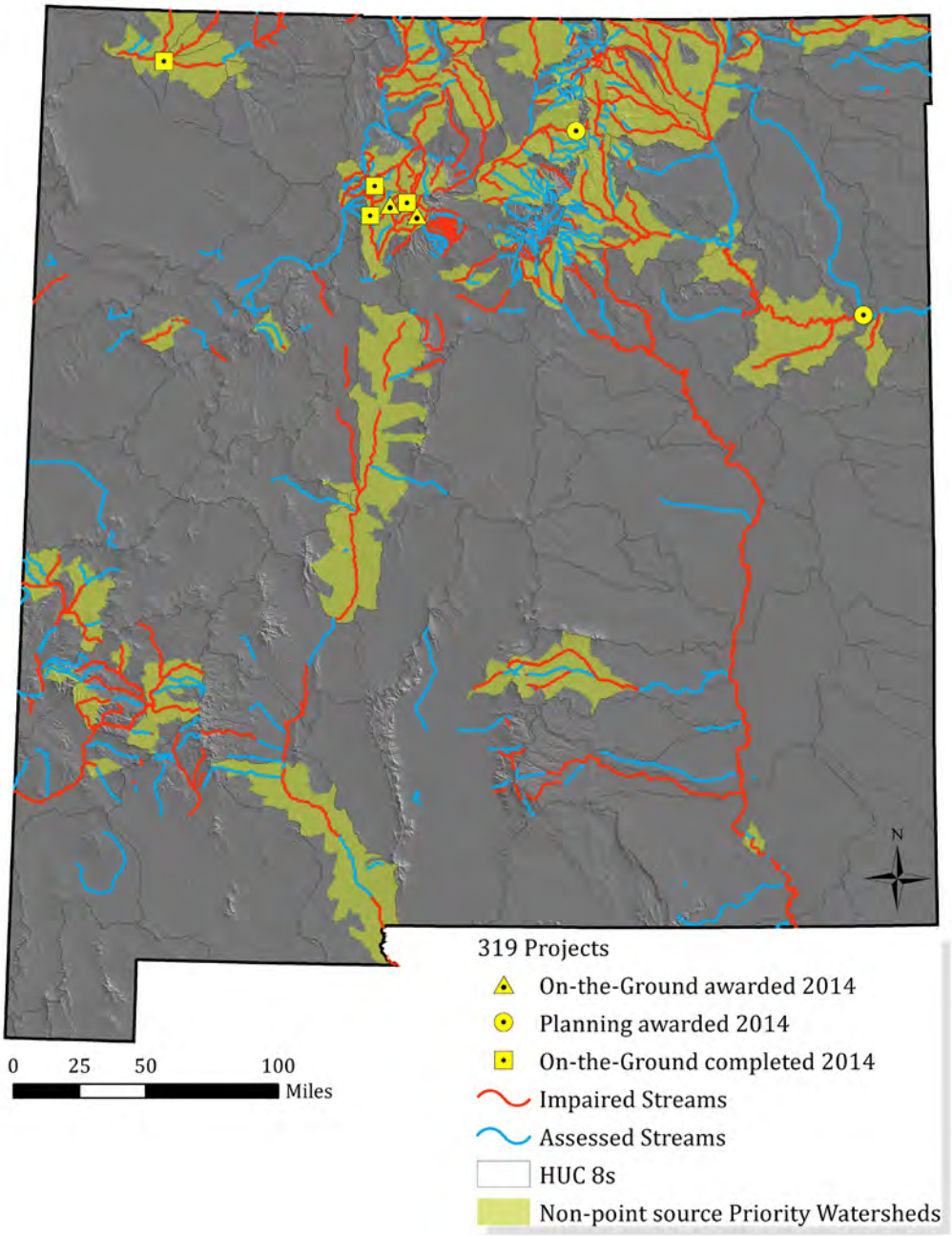
Waterbody	Start Date	2014 Comments
Comanche Creek	2009	Monitoring was conducted in conjunction with a Quivira Coalition volunteer workshop.
Rio de los Pinos	2009	Temperature monitoring to be re-evaluated in 2015, depending on the results of the 2014 statistical analysis.
Middle Ponil Creek	2009	Phase two project underway, monitoring to continue in cooperation with Cimarron Watershed Alliance.
Bluewater Creek	2009	Canopy cover was measured at five cross sections. Following statistical analysis begun in 2014, temperature monitoring will be re-evaluated for 2015.
San Antonio Creek	2009	Statistical analysis showed 1.7°C decrease in maximum daily stream temperature for upper reach.
Redondo Creek	2010	The project area was heavily impacted by the Thompson Ridge Fire. The stream was dry at one station and the second station received storm flow that buried the thermo in sediment.
Rito Peñas Negras	2010	Monitoring was conducted on the upper and lower reaches by SWQB staff with assistance from cooperators. pQapp was approved late in 2014.
Jaramillo Creek	2012	Monitoring was conducted in conjunction with project cooperators. New stations were added to account for new project activities and post-fire flooding from Obsidian Valley tributary.
Rio de las Vacas	2012	Monitoring was conducted on the 2012 project reach with Rocky Mountain Ecology. Monitoring, which included multi-parameter sonde deployment, began on the middle Rio de Las Vacas for a new project with the Wild Earth Guardians

Willow Creek was de-listed for Cadmium and Zinc following a mine reclamation project that included staff from SWQB to implement the reconstruction of a channel previously buried in mine tailings. Sitting Bull Creek was de-listed for sedimentation, total phosphorus, and bacteria, following a 319 project in cooperation with the Lincoln National Forest to improve facilities and better manage recreational impacts to water qual-ity. New Mexico's NPS Success Stories are available for review on line at http://water.epa.gov/polwaste/nps/success319. The Effectiveness Monitoring Program anticipates additional Success Stories in 2015 following continued data analysis.

Two workshops were conducted in December to instruct cooperators and staff in data analysis methods used for determining project efficacy. One workshop was held in Santa Fe with 12 participants and a second workshop in Las Cruces had seven. The workshops covered data verification and validation and the analysis of covariance method using a spreadsheet (Grabow, Spooner, et al. 1998). Two cooperators included analysis of covariance results in their final project reports as a result. Similar workshops are planned for spring 2015.

The effectiveness monitoring coordinator for SWQB gave a presentation at the 2014 National Non-point Source Training Workshop in Dallas, TX in November 2014 on the effectiveness monitoring program and related Success Stories. Additional activities included giving a presentation at the SWQB sponsored Wetlands Roundtable, participating on the RFP Committee to select projects for 319 funding, including both on-the-ground projects and watershed-based planning projects.

New Mexico
Watershed Restoration Priorities and Progress



Summaries for 319(h) Projects Completed in 2014

Collaborative Water Quality Improvement Project for the San Juan River Watershed, Phase III (FY11-C)

Project Budget:	Federal 319(h): $217,723 Match: $259,091 Project Total: $476,814
Watershed:	Animas (HUC 14080104), Middle San Juan (HUC 14080105), Upper San Juan (HUC 14080101) and Blanco Canyon (HUC 14080103)
Sub-watersheds:	Comprised of 144 12 digit HUCs
Impairments:	Pathogens (*E Coli)*, Phosphorus, Nitrogen, Sedimentation-Siltation, Biochemical Oxygen Demand (BOD)

Project Summary:

Agricultural BMPs were implemented on irrigated bottomland adjacent to or near the La Plata River, Animas River, and Kiffen Creek that adressed *E. coli*, fecal coliform and plant nutrients. Project cooperators included the NRCS, the San Juan Soil and Water Conservation District, the San Juan Watershed Group (SJWG), and the Animas Watershed Partnership. Stakeholders in the watershed groups include the Southern Ute Indian Tribe, and the cities of Farmington and Durango. The cooperators discussed the project at County Commission and City Council meetings, and other public meetings. Outreach also included interaction with numerous landowners including most Environmental Quality Initiatives Program (EQIP) applicants.

Project Outcome:

The SJWG identified local property owners/managers to implement appropriate BMPs. Priority was given to areas identified in the Source ID Final Report as significant sources of bacteria, nutrient, and sediment

Riparian fence on the Blancett farm along the Animas River on 5/22/13 right after Russian olive removal and fence installation.

Same fence on the Blancett farm one year later on 6/25/2014 showing an increase in vegetation after livestock were excluded.

loading. The SJWG also approached EQIP applicants to augment their EQIP proposals with work targeted, and to be funded under this grant. (the EQIP ranking formula awarded additional points for projects targeted by this grant.) Targeted BMPs included manure management, riparian access management for livestock, soil conservation, efficient irrigation conversion, fertilizer management, and vegetated buffers, and emphasized additional BMPs on non-agricultural lands. This grant funded these ten projects: Gard (Irrigation Water Management), Talley (Irrigation Water Management), Kiffen Creek (Sediment Collector), and Blancett (Nutrient Management), re-engineering a San Juan County boat ramp (bank erosion control), Thornhill (upland erosion control project), Munson (pasture/riparian fencing), Adkins (riparian fencing and off-stream livestock watering), McBee (riparian fencing and irrigation upgrade), and Rachel Sanchez (cover crop planting).

As mentioned above, outreach activities included numerous public meetings both directly funded by this grant as well as other meetings in which grant activities were a major agenda item.

This project integrated with several other watershed activities funded elsewhere, especially additional sampling (a privately-funded MST project, 604(b)-funded nutrient assessments, currently unfunded Source Water Protection work, and especially state-funded Watershed Based Plan development). Here is an example of follow-on outreach:

www.kob.com/article/stories/S3603555.shtml?cat=500#.VPTy1-EpoxJ.

Load Reductions:

The Spreadsheet Tool for Estimating Pollutant Loads (STEPL) was used to estimate the majority of reductions to the pollutant loads. *E.coli* estimates based on irrigation acreage, irrigation application rates, concentrations commonly found in local irrigation runoff, and assumption of no edge-of-field runoff post-project (validated by visual inspection). The project provided the following estimated load reductions:

- Sedimentation-Siltation 4286.3 tons/yr
- Phosphorus 330.97 lbs/yr
- Pathogens 2.07×10^{12} cfu/yr
- Nitrogen 905.03 lbs/yr
- Biochemical Oxygen Demand (BOD) 1143.2 lbs/yr

Redondo Creek and San Antonio Creek Riparian Restoration and Temperature Reduction Project (FY11-D)

Project Budget:	Federal 319(h): $240,310 Match: $277,683 Project Total: $517,993
Watershed:	Jemez (HUC 13020202)
Sub-watersheds:	Outlet San Antonio Creek (HUC 130202020204) and Sulphur Creek (HUC 130202020202).
Impairments:	TMDLs: Redondo Creek (temperature, turbidity and total phosphorus), San Antonio Creek (temperature, turbidity, and arsenic)

Project Summary:

The project area includes approximately 1.4 miles of San Antonio Creek and 2.1 miles of Redondo Creek, on U.S. Forest Service and Valles Caldera National Preserve (VCNP) lands, near the VCNP boundary. When the project began in early 2011, Redondo Creek (Sulphur Creek to VCNP boundary) was impaired by turbidity. Redondo Creek (VCNP boundary to headwaters) was impaired by aluminum, temperature, and turbidity. San Antonio Creek (East Fork Jemez to VCNP boundary) was impaired by aluminum, arsenic, temperature, and turbidity, and San Antonio Creek (VCNP boundary to headwaters) was impaired by dissolved oxygen, pH, and temperature. TMDLs are in place for most of these parameters.

Recreational use, road drainage, and grazing by livestock and elk have impacted the high quality coldwater aquatic life use of these streams. These impacts caused the streams to become wider and shallower, thereby increasing temperature and causing further stream bank erosion. Prior to 1900, settlers diverted Redondo Creek to water livestock paddocks, and this action contributed to the dewatering of a wetland 40 acres or more in area. It is likely this wetland once contributed to sustained perennial flows in Redondo Creek after spring runoff and during drought conditions. A lack of riparian vegetation and the resultant absence of shade to cover the stream is the primary cause of the temperature impairments and reduce filtering of sediment from adjacent meadows and uplands. Increased riparian vegetation can provide shade for the stream keeping water cooler during the warmer months when impairment is the most severe and is most critical to aquatic life.

The WildEarth Guardians implemented this Section 319 project and related state-funded River Ecosystem Restoration Initiative and federal North American Wetlands Conservation Act projects in partnership with the VCNP and Santa Fe National Forest. The New Mexico Youth Conservation Corps (with crew members from Jemez Pueblo) and WildEarth Guardians volunteers provided labor. American Forests contributed additional funding.

Several sections of Redondo Creek and San Antonio Creek and their floodplains were fenced to exclude domestic livestock and elk. Woody vegetation was planted to provide shade and stream bank stability for the riparian systems. The Redondo Creek meadow was restored to a wetter condition (with expected increases in base flow and reduction in sediment loading) by realigning a section of Redondo Creek to its historic channel.

San Antonio Creek exclosure after planting small cottonwood poles, July 2014.

Due to the severe impacts of the 2013 Thompson Ridge Fire within the Redondo Creek watershed, and closure of the VCNP for much of 2013, the project was extended into 2014 in order to complete fence repairs, replacement plantings, initial planting on portions of San Antonio Creek, and monitoring.

Project Outcome:

Over 50,000 willow (coyote, strapleaf, Bebb's, and bluestem species), 1,000 narrowleaf cottonwoods, 1,000 aspen, and 1,000 riparian shrubs and forage species, including thinleaf alder, serviceberry, woods rose, and chokecherry, were planted along 2.7 stream miles of San Antonio and Redondo Creeks. Twenty-two elk

exclosures were constructed along both streams, encompassing 2.5 miles of stream to protect plantings and herbaceous ground cover from livestock and native ungulate browse. Also, with funding from the North American Wetlands Conservation Act (secured by WildEarth Guardians), Redondo Creek was realigned back to its historic channel and the creek was reconnected to the Redondo meadow to restore its historic wetland habitat.

This project also engaged approximately 120 volunteers who participated in the riparian plantings and learned about the importance of riparian ecosystems and their role in improving and maintaining water quality with benefits to fish and wildlife.

Load Reductions

Canopy cover increased through most portions of the project area, reaching the percent shade goal in the TMDL for a portion of Redondo Creek and nearly reaching the goal within the project area on San Antonio Creek upstream of the VCNP boundary. Little or no increase in canopy was observed on the USFS (downstream) portion of San Antonio Creek or on portions of Redondo Creek severely impacted by the Thompson Ridge Fire.

STEPL was used to estimate that in Redondo Creek, the project produced a reduction in sediment loading of 3.2 tons/yr. In San Antonio Creek, the project produced estimated reductions of 9.8 tons/yr of sediment, 37 lbs/yr of total nitrogen, and 11 lbs/yr of total phosphorus.

Riparian Restoration along the Rio de las Vacas (FY11-I)

Project Budget:	Federal 319(h): $142,659.75 Match: $97,886.00 Project Total: $240,558
Watershed:	Jemez (HUC 13020202)
Sub-watersheds:	Outlet Rio de Las Vacas (HUC 130202020105)
Impairments:	Listed for Temperature and Nutrients.

Project Summary:

Rocky Mountain Ecology LLC (RME) was awarded CWA Section 319 funding in March 2012 for an on-the-ground river restoration project along a ~ 2.2-mile reach of the Rio de Las Vacas in Sandoval County, NM. The project area is located within the Outlet Rio de las Vacas hydrologic unit of the Jemez Watershed (HUC 130202020105) within Sandoval County. The project is on the Rio de las Vacas (Rio Cebolla to Clear Creek, assessment unit NM-2106.A_40) assessment unit within the Cuba Ranger District of the Santa Fe National Forest.

The TMDL for the Rio de las Vacas includes a modeling result indicating that the TMDL goal may be achieved if total percent shade could be increased from 19.8% (estimated at the time the TMDL was developed) to 31.9%. To decrease solar load, the project installed buck and pole fencing as well as 3-strand cattle fencing to control cattle and ungulate access. Three hundred cottonwood trees were planted to provide overstory shade cover, 150 alders, 1,000 willows and additional native shrubs were planted to provide shade cover. The project also obliterated and re-seeded 1,200 feet of 2 track access roads. Local materials (rocks and

logs) were used for installation of instream structures to reduce channel width at critical locations.

Buck and rail fencing in combination with wire fencing protecting sensitive riparian plantings reduce impact to the riparian area from cattle and elk.

Project Outcome:

Handheld spherical densiometer readings were taken per the approved project QAPP at two locations in the project area. Readings were taken during the 2012-2013 field seasons prior to implementation of BMPs, and were taken again in 2014 post-BMP implementation. NMED compared the data and determined that a 2.5% increase in shade had taken place within the project area between the two sampling events. Although this increase is small, a t-test indicated that the increase was statistically significant (P=0.01), and very little time had passed between implementation and post-implementation measurements. RME reports plants are thriving and are expected to grow further this season given a reasonably wet winter.

Load Reduction:

The 2.5% increase in shade described above is equivalent to a solar load reduction of 8.7 joules/meter^2/second (j/m^2/s), relative to the load reduction goal in the TMDL of 43.17 j/m^2/s.

Upper Rito Peñas Negras Woody Riparian and Temperature Reduction Project (13-C)

Project Budget:	Federal 319(h): $221,198 Match: $170,562 Project Total: $391,760
Watershed:	Jemez Watershed (HUC 13020202)
Sub-watersheds:	Rito Peñas Negras (HUC 130202020101)
Impairments:	TMDL for nutrients, sedimentation and temperature.

Project Summary:

The Rito Peñas Negras is a perennial tributary to the Rio de las Vacas of the Jemez Watershed, and is 11.78 miles in length (Rio de las Vacas to Headwaters) flowing through a series of meadows in the Santa Fe National Forest. Although it is classified as a Rosgen C5 stream, it is incised. The channel has developed a narrower floodplain within the incision, but heavy grazing by ungulates, especially cattle, has prevented many of the stream banks from stabilizing.

The primary goal of the project was to reduce water temperatures and stream bottom deposit loading, and was accomplished with mitigation measures designed to reduce solar infiltration and streambank erosion.

Native woody riparian vegetation was planted throughout the project reach to provide direct shade over the stream surface and exclosures were installed to reduce elk and livestock browse utilization within the treatment area. In addition to providing bank stability to reduce erosion, the increase in riparian vegetation should moderate and reduce water temperatures. Partners/Cooperators included the National Forest Foundation, WildEarth Guardians, the USFS, NMED, USFS Grazing Permittees, American Forests, and public volunteers.

Project Outcome:

More than 40,000 willows (Bebb's, strapleaf, coyote, and bluestem), 400 narrow leaf cottonwoods, 800 aspen, and 500 assorted riparian shrubs were planted on this project. Ten large exclosures where constructed in select areas along 1.96 stream miles of the Rito Peñas Negras, and a total of 1.4 miles of upland pasture fencing was constructed at two locations on the forest grazing allotments to limit livestock access to both the Rito Peñas Negras and Rito Café (headwaters of the Rito Peñas Negras).

The project also provided an opportunity to educate the community on anthropogenic impacts to forested watersheds, the importance of riparian ecosystems for improving and maintaining water quality, and the benefits of a self-sustaining productive eco-system to both aquatic and terrestrial wildlife. Over 75 project volunteers participated in the project conducting riparian plantings and fence construction.

Load Reduction:

Hourly stream temperature was recorded at several locations along the Rito Peñas Negras to determine the effects of the restoration projects. A downstream reach of the river was compared to the project area via measurement of water temperature using thermograph monitors. An analysis of covariance showed a slight increase in mean daily maximum temperature of 0.7^{o} C. This result could be due to the fact that some of the temperature reducing BMPs had been installed in 2012 prior to the installation of thermographs. Additionally, there has been an insufficient interval of time to allow for substantial growth of new plants. Continued monitoring and further analysis will be required to account for the lag time in vegetation growth and fully determine the impacts of the BMPs.

A diverse composition of riparian plants inside one of the 10 exclosures installed during the project.

Wetlands Program

Funding Awarded to the Wetlands Program

Three new Wetlands Program Development projects were awarded funding by EPA Region 6 in 2014. The federal grants for these project total $995,440.00 in federal assistance awarded through the FY13-14 EPA Wetlands Program Development Grant Program authorized by CWA Section 104(b)(3).

Inventory and Rapid Assessment of Southern New Mexico Springs

The goal of this project to further develop the New Mexico Rapid Assessment Method (NMRAM) to include springs wetlands (subclasses of slope wetlands). This four year project will complete a springs inventory and a geodatabase compilation of springs attribute information in southern New Mexico (Arizona/New Mexico Mountains Ecoregion). A literature review of springs assessment methods, field data collection, and analysis will contribute to refined definitions of springs subclasses, validation and refinement of a core set of metrics to meet the SWQB Wetlands Program needs, and the first draft of a New Mexico Springs Rapid Assessment Manual and Field Guide. An advisory group will be formed to obtain input from local experts, and training in the methods will follow the development of Springs NMRAM methods. Roundtable meetings in the southern part of the state will ensure that our southern partners are informed and involved. Development of the Springs NMRAM will increase applicability of this assessment method to additional important wetland types in New Mexico

New Mexico Rapid Assessment Method for the Canadian, and Developing Designated Uses for Montane Riverine Wetlands in New Mexico

This four year project will further develop and validate our New Mexico Rapid Assessment Method (NMRAM) for Wetlands and increase the applicability to other types of wetlands and regions where NMRAM can be used. This project will target riverine wetlands in the Canadian/Dry Cimarron Watersheds in Eastern New Mexico using current National Wetlands Inventory (NWI) mapping and classification products. This project will also pool montane riverine NMRAM data to date (URG, Gila) to develop a draft narrative standard and designated uses for this subclass of wetlands. Through this grant we will accomplish five major objectives. We propose to complete data collection and analysis using NMRAM for montane riverine wetlands of the Canadian/Dry Cimarron Watersheds for a combined function and condition assessment. We will continue to refine our subclass descriptions and regional models by developing vegetation community maps from imagery and NMRAM data for wetlands of interest at our data collection sites. We propose to develop draft narrative standards based on NMRAM data and site scores and identify reference standard wetlands in the watershed for future protection. We will maintain the NM Wetlands Roundtables through meetings focused on the objectives established by the group. We will continue development of our web-based database and refine GIS mapping capabilities.

Fire and Water: The Interplay Between Wetlands and Fire Management (Sacramento Mountains Mapping and Classification of Wetlands)

The goal of this four-year project is to map and classify wetlands in the Sacramento Mountain Range

as part of the SWQB Wetlands Program Landscape Level 1 Assessment Strategy. Wetlands will be mapped to Federal Geospatial Data Collection standards and will be submitted to the National Wetlands Inventory (NWI) for inclusion. The mapped wetlands will be classified using the Landscape Position, Landform, Water Flow Path, and Waterbody Type (LLWW) classification system (also known as NWI+), and Hydrogeomorphic Method (HGM) wetland subclasses for the area will be identified. The NWI wetlands mapping and LLWW classification together will provide information for modeling landscape level functional attributes for these wetlands. The project area includes the site of the 2012 Little Bear fire. Originally the project included a post-fire landscape evaluation of wetlands, but funding limitations for this project precluded this task at this time. The mapping products will be used to help develop classified segments for water quality standards for wetlands development. A technical advisory group will be assembled to review and analyze the information. The Project Officer will continue to be involved in the state mapping consortium to represent wetland mapping interests, to share information and coordinate mapping efforts statewide.

Wetland Projects Completed in 2014

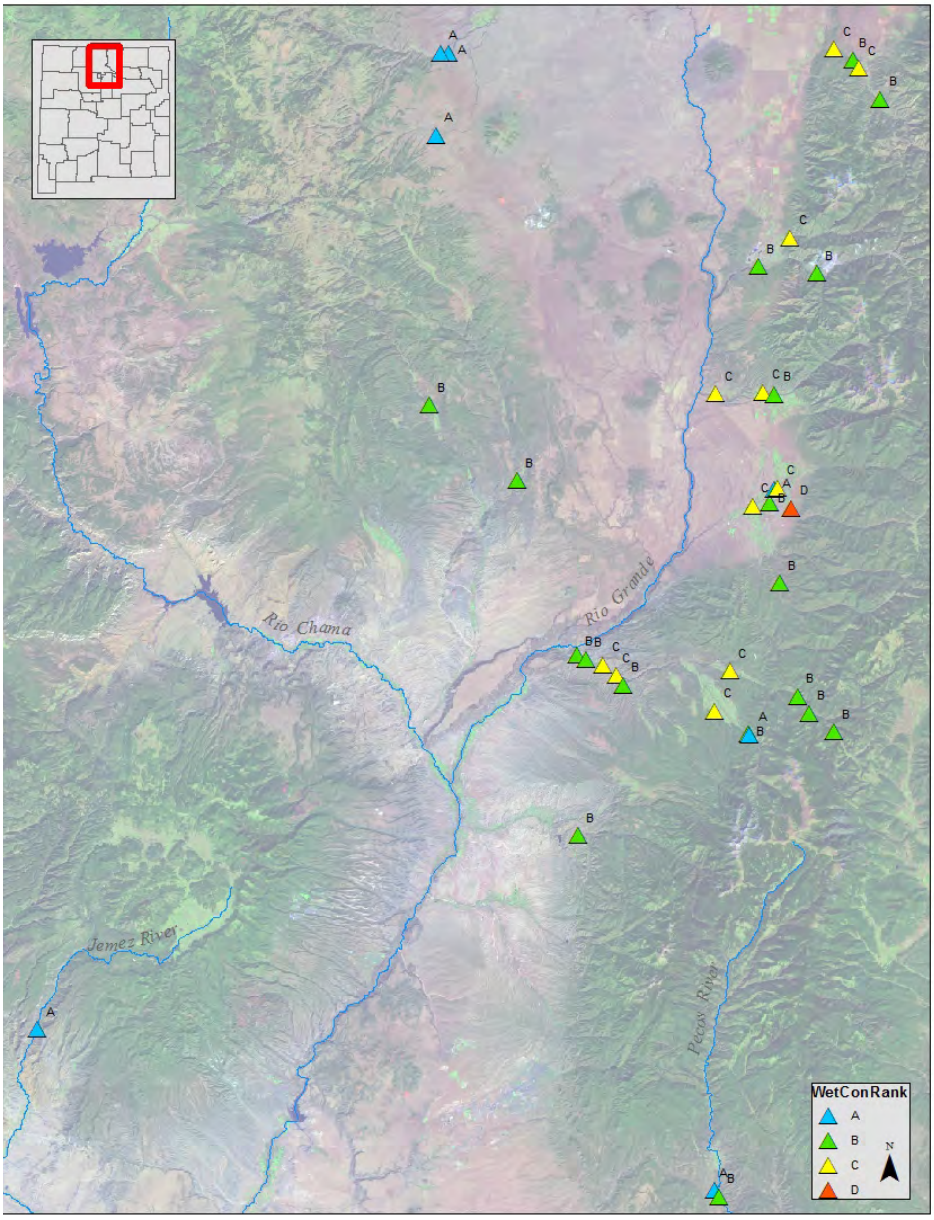
Four projects funded under CWA Section 104(b)(3) Wetlands Program Development Grants were successfully completed this year.

Rapid Assessment for New Mexico Wetlands Upper Rio Grande Phase 2

This project was a continuation of the development of wetlands rapid assessment with a focus on riverine wetlands in the Upper Rio Grande watershed as our reference domain. Through this project four major objectives were accomplished. 1) We completed data collection, analysis, and validation for NM's first state-sponsored Rapid Assessment Users' Manual and Field Guide that is focused on the Upper Rio Grande (URG) region (www.nmenv.state.nm.us/swqb/Wetlands/NMRAM) and conducted trainings for potential end users. 2) Further investigation and analysis of concurrent intensive vegetation data collection and the incorporation of other floodplain vegetation data within the reference domain was used to develop and refine a vegetation index of biotic integrity (VIBI) for riverine wetlands. 3) The statewide wetlands workgroup was maintained and expanded to include two separate groups (the NGO Roundtable and the Agency Roundtable) meeting twice per year. Meetings focused on the objectives established by the group. 4) Finally, the first web-based database was developed to accept NMRAM mid-montane riverine data and was transferred to NMED to begin development of links to other relevant data sets and prepare for GIS mapping capabilities. The development of NMRAM has been shared locally and nationally though a number of presentations, trainings and public events.

This rapid assessment methodology was developed for Montane Riverine Wetlands situated in north central New Mexico on tributaries of the Upper Rio Grande and Rio Chama. This version of NMRAM was developed for one subclass of wetlands to reduce the inherent variability displayed among wetland types so that the NMRAM process could be evaluated as a reliable indicator of wetland condition. The subclass of riverine wetlands that was selected as the focus of this project includes 3rd or 4th –order unconfined drainages. NMRAM concentrated on riverine wetlands because it is possibly the most abundant type of wetland in New Mexico and the most impacted. The Upper Rio Grande reference domain was selected because of the availability of potential sites with a range of disturbance, the potential for future impacts to these sites by develop-

ment, and to correspond with concurrent water quality assessments. Over 60 sites were identified initially that fit the subclass description.



Map of NMRAM assessment areas (AAs) in the Upper Rio Grande Reference Domain including six additional outlier sites where the NMRAM was tested to determine the geographical limits of the method. Initial rankings after NMRAM data collection are also given.

La Cienega de San Vicente Wetland Project

This project characterized a floodplain riparian wetland system within the town of Silver City. Extensive soils, hydrologic and vegetation data were gathered at a fine scale previously unavailable. Additionally, active and passive restoration techniques were utilized to protect and enhance 30 acres of floodplain wetland habitat. None of this would have been possible without volunteer and in-kind work contributed by the project partners including: the Town of Silver City, the Youth Conservation Corps, Aldo Leopold High School, Western New Mexico University, the Gila Conservation Education Center (GCEC), and many more partners. This project created new partnerships, strengthened relationships between agencies and the public, and galvanized local support for the small, but vital, riparian corridor that flows through Silver City.

Project officer Dave Menzie works with local high school students and explains the history of the Big Ditch.

A new cross-vane shown during a moderate flood event. The cross-vane prevents erosion down to a sewer line that had been damaged by prior flooding.

The GCEC was contracted to provide education and outreach about the project and wetland ecology and water quality. Dave Menzie (Silver City Project Officer) and GCEC were successful in engaging members of the community and bringing them out for volunteer work days, providing educational tours and the "Big Ditch" community celebration of the project. Numerous newspaper articles featured the project and New Mexico's senior senator Jeff Bingaman toured the project in 2009.

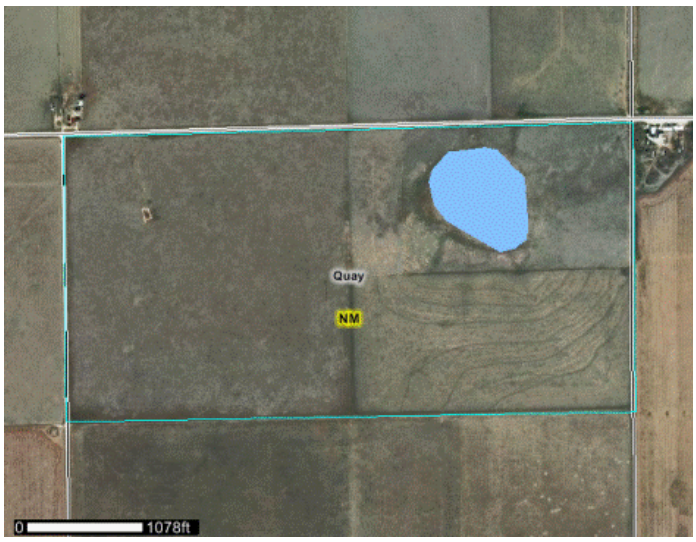
Wetland restoration activities included non-native species removal, willow and cottonwood stake and pole planting, transplanting live plants, seed collection and re-seeding, fencing to protect wetland and riparian areas, trail closure and signage to prevent trespass and damage to restored areas, and construction of in-stream grade control structures. Work was completed by SWQB staff, volunteers, Americorps and Youth Conservation Corps team members, and Stream Dynamics Inc. who completed construction of a cross-vane and Zuni bowl in San Vicente Creek. Volunteers and Youth Corps members received on-the-ground training in plant identification, water quality sampling, invasive species removal, seed collection, and wetland restoration techniques.

Curry County Playas Restoration and Protection

This project utilized active and passive restoration techniques to restore 200 acres of playa wetland and buffer areas, and place more than 1,100 acres of playa wetland watershed into 10-year conservation plans. Upland livestock watering facilities, fencing, and 10-year conservations plans were used by five participating private landowners to manage and defer grazing in pastures containing playa wetlands. Historic excavated pits in playas were filled with appropriate soils to restore more natural hydrology and hydro-periods. A demonstration restoration technique for spreading water more broadly across a playa was developed and implemented on a large playa wetland. This technique was used to restore natural hydrology to the playa and its watershed impacted by erosion related to a road crossing and water diversion ditch.

Early in the project a steering committee was formed that included state and local agencies, local NGOs, and the Mayor of the City of Clovis. Education and outreach events were held in local communities to communicate the importance of playa wetlands. The Nature Conservancy, Playa Lakes Joint Venture, and NRCS hosted Prairie Partnership meetings where opportunities to participate in playa restoration were shared by the SWQB Wetlands Project Officer. A series of four Playa Lakes Workshops were held in separate counties in the region to further engage private landowners including presentations on funding mechanisms for wetland conservation provided by the NRCS.

Playa Festivals were conducted in and around Clovis, New Mexico. Students spent the day at a local playa to participate in hands-on discovery about the ecosystem services, plants, wildlife, and threats to playas in this region.



Mackechnie Playa – Quay County. A small pit on the south end was restored with local soils previously side cast. The Conservation Plan includes grazing deferral for the playa and buffer, fencing, and alternative water source improvements.

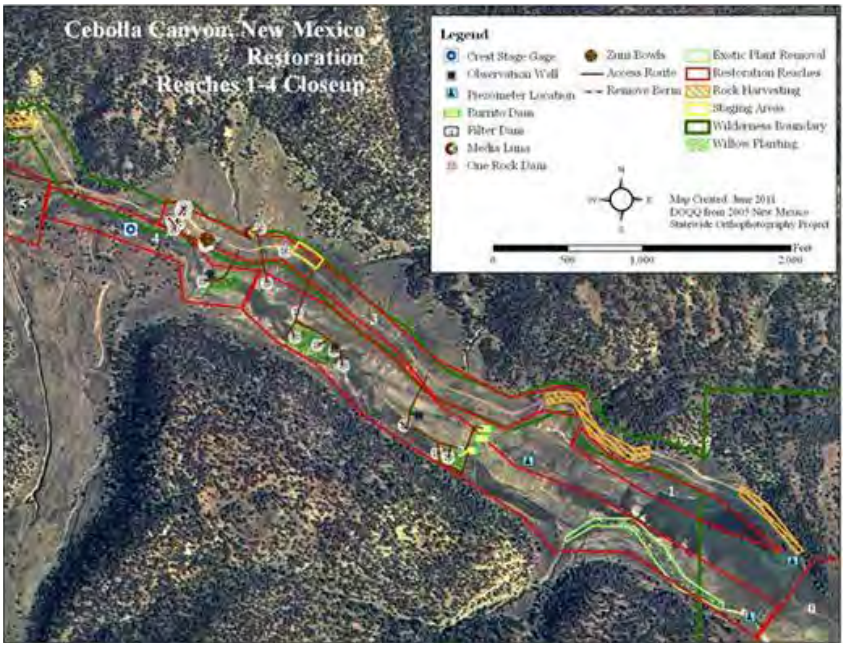
Restoring and Protecting Wetlands in Cebolla Canyon Closed Basin

This project demonstrated innovative wetlands restoration with the intent of returning Cebolla Creek located in Cebolla Canyon Closed Basin, Cibola County, to its pre-agricultural condition. Historic irrigation diversions and impoundments had dried out the wetlands that are sustained by naturally-occurring springs along Cebolla Creek, and caused gully formation, head-cutting, and incision in the Cebolla Creek main channel. More than 80 acres of historic wetland, stream and floodplain were affected by restoration project activities. The project area underwent severe drought during the project term, but even with the drought over four acres of new jurisdictional wetlands, 30 acres where wetland hydrology has been established, three miles of rewetted stream reach, and an increase in stream length of 0.7 miles due to increased sinuosity were measured. Seven weekend workshops and two outdoor classrooms were conducted using restoration field meth-

ods to conduct handwork by volunteers and students. Two Summer Academies were conducted for high school students and teachers in the Grants area with special emphasis on local and tribal schools. In the long term, the site will experience more acres of new wetland restored by project activities.

A Wetlands Action Plan was developed providing guidance for future protection and restoration of wetlands in the Cebolla Canyon watershed within the North Plains closed basin, and is available on the NMED SWQB Wetlands Program website at www.nmenv.state.nm.us/swqb/Wetlands. Additional funding was leveraged including RERI, ARRA, and the New Mexico Community Foundation.

September 2014 view of the Cebolla Canyon Wetlands after implementation of project restoration structures, grazing cattle removed from the area, and the 2014 monsoon season.



Restoration design for reaches 1-4 of the "Restoring and Protecting Wetlands in Cebolla Canyon Closed Basin" project.

State Funded Restoration Activities

River Stewardship Program

The goal of the River Stewardship Program is to fund projects that enhance the health of rivers by addressing the root causes of poor water quality and stream habitat. The 2014 New Mexico Legislature appropriated $2.3 million in capital outlay funds to NMED for the River Stewardship Program "to design and construct projects that improve surface water quality or river habitat statewide and to provide state matching funds required by the terms of any federal grant under the Clean Water Act." The source of the funding is state severance tax bond disbursements. The River Stewardship Program builds on the success of past efforts with CWA funding and prior state funding for watersheds, rivers and wetlands. The objectives of the River Stewardship Program include:

- Enhancing the economic benefits of healthy river systems, such as improved opportunities to hunt, fish, float and view wildlife.
- Restoring or maintaining the hydrology of streams and rivers to better handle overbank flows and reduce flooding downstream.
- Providing match required to leverage federal grants, ensuring that New Mexico continues to receive these funds.

In the Summer of 2014, NMED issued a RFP to select projects for the River Stewardship Program. The RFP evaluation criteria ensure that projects are technically sound, community-based and stakeholder driven. The RFP evaluation criteria favor projects that improve water quality, enhance fish and wildlife habitat, support local economies, and that reduce downstream flood hazard. The RFP also identified statewide priority areas for the River Stewardship Program: 1) projects that address water quality and stream habitat impacts associated with fires in 2011, 2012, or 2013; 2) projects that advance source water protection of public drinking water supplies that utilize surface water, and; 3) projects that improve urban water quality and stream habitat.

Thirty-nine proposals were submitted in response to the RFP. An evaluation committee consisting of NMED staff and representatives of two other natural resource agencies reviewed and scored the proposals according to the RFP evaluation criteria. Twelve projects with budgets totaling $2.3 million were selected to move forward as finalists. Contracts and government agreements are in development and projects will begin in 2015. The project funding is subject to state rules for severance tax bond disbursements, as well as the language of the NM legislative appropriation. NMED will also track the funding as state match to ensure that approximately $2.25 million per year in federal funds are awarded to New Mexico under federal CWA programs for watersheds, surface water quality and wetlands. With the River Stewardship Program, NMED will make progress on improving surface water and stream habitat and will provide a significant return on the investment of state capital outlay funds.

For more on the River Stewardship Program visit: www.nmenv.state.nm.us/swqb/RiverStewards

State-Funded River Restoration Projects Completed in 2014

Six projects were completed during 2014 with state funding that was appropriated during the 2010 legislative session under RERI. The 2010 funding was appropriated to EMNRD and has been administered by NMED under a Memorandum of Agreement with EMNRD. A portion of the funding for the following completed projects is being used as state match for CWA 319 and 104(b)(3) grants.

Upper Comanche Creek Ecosystem Restoration Project

Project Budget:	$99,171 in state funds
Watershed:	Upper Rio Grande (13020101)
Sub-watersheds:	Comanche Creek (130201010101)

Project Summary:

The project area is located in Taos in the Comanche Creek Watershed on the Valle Vidal of the Carson National Forest along Springwagon and Grassy Creeks. Both creeks are designated as Outstanding National Resource Waters. The goal of the project was to restore and maintain in-stream, riparian, and slope wetlands ecosystem functions and their associated ecosystem services on 2.8 miles of stream channel and at least 30 acres of wetlands. The methods used included treating head cuts and cut-banks with structures that arrest head-cut development. Additional structures were implemented that address incision by intentionally aggrading the stream bed to re-wet the floodplain and re-route and spread water out onto the slope wetlands areas.

Project Outcome:

The Quivira Coalition utilized sub-contractors with heavy equipment to build large structures, and recruited 42 volunteers to hand-build dozens of smaller structures from locally available materials such as logs, brush, rocks, sod and soil. In total, 1,362 hours of volunteer work were donated to the project. A variety of structure types were built including: log flow splitters, lateral worm ditches, sod flow splitters, jackstraw fences, sod plugs, log mats, zuni bowls, one-rock dams, log step falls, and log and rock rundowns. The result of the work was to restore 33 acres of wetlands, stabilize 2.8 miles of stream channel by halting head-cuts, stabilize eroding banks, and develop new wetlands.

Head cut in lower Grassy Creek, Valle Vidal after treatment with a machine built log and rock rundown structure. This structure will hold the grade and help prevent the de-watering of upstream slope wetlands.

In addition to the individual volunteers and subcontractors, numerous partner organizations were instrumental in accomplishing this project: US Forest Service (Carson National Forest), Trout Unlimited, Valle Vidal Grazing Association, and the Taos Soil and Water Conservation District.

Ecological Restoration of the Swastika Mine and Dutchman Canyon Sites in Dillon Canyon

Project Budget:	$125,000 in state funds
Watershed:	Canadian Headwaters (11080001)
Sub-watersheds:	Dillon Canyon (110800010203)

Project Summary:

The project area is located in Dillon Canyon approximately 2.8 miles upstream of its confluence with the Canadian River. In the 1980s, the New Mexico Abandoned Mine Land Program of the Energy, Minerals and Natural Resources Department conducted work to safeguard historic coal mine openings in Dillon Canyon. The primary goals of this river restoration project were to safeguard remaining hazardous mine features and to stabilize and reclaim existing coal mine waste (gob piles) that were adversely impacting stream morphology water quality in adjacent drainages. Most of the abandoned coal gob piles were located near the base of steep canyon walls and immediately adjacent to intermittent and ephemeral streams. Sediment from the eroding gob piles and destabilization of the stream systems caused by historic mining practices led to water quality and aquatic habitat degradation downstream of the mines.

Steep-sided coal mine gob piles at Swastika Mine.

Project Outcome:

The NM Abandoned Mine Land Program with EMNRD completed the project to restore degraded environment at the Swastika Mine and Dutchman Canyon sites. Specifically, the project addressed the issues of stream turbidity, sedimentation, channel degradation, low pH mine runoff, and riparian vegetation. At Swastika Mine, the stream channel had been re-located and straightened, and steep gob piles were eroding, depositing sediment with low pH and high sodium into the stream. At Dutchman Canyon, historic mine adits were seeping low pH water and the infrastructure that had been created to capture this water was creating erosion problems. The $125,000 in state funding was used directly on construction, wetlands restoration, and riparian planting, and helped leverage $4.1 million in federal funding that was used to re-shape the gob piles

and re-route the stream to its historic channel.

Rio Chama Flow Optimization Project

Project Budget:	$ 89,386 in state funds
Watershed:	Rio Chama (13020102)
Sub-watersheds:	Rio Puerco- Abuquiu Reservoir (130201021003), Ojito Canyon-Abiquiu Reservoir (130201011002), Huckbay Canyon-Rio Chama (130201020708) and Arroyo del Puerto Chiquito-Rio Chama (130201020707)

Project Summary:

The project was located along the 30 mile reach of the Rio Chama from below El Vado Reservoir to Abiquiu Reservoir. The goal of the Rio Chama Flow Optimization Project was to create a program for conducting water operations so as to optimize sediment transport, channel dynamics, and ecological function that has been diminished by dam-controlled flows. The project developed adaptive, scientifically determined flow regimes that improve river ecology while protecting or improving the current management objectives of: 1) water storage and delivery for irrigators, tribes and municipalities; 2) compliance with the Rio Grande Compact and environmental mandates; and 3) the needs of river-oriented recreation.

Rio Chama Flow Optimization Project team members measured velocity and sediment loading at a flow rate of 2,000 cfs in the Chama River, April 2014.

Project Outcome:

Rio Grande Restoration, a non-profit organization, accomplished the project by assembling a project implementation team of experts to acquire ecosystem data, modeling environmental flow needs, building a broad partnership with stakeholders, integrating a range of desired outcomes, and synthesizing an optimized hydrograph which incorporated hydrologic elements necessary to achieve desired outcomes. The project engaged a wide range of over forty government, non-government, and private entities as stakeholders. Rio Grande Restoration convened more than 40 face-to-face meetings with leaders of organized stakeholders in the Rio Chama Basin, along with four broadly attended public meetings, to explain and receive input on project goals and objectives. The involvement and commitment of water managers (U.S. Bureau of Reclamation, U.S. Army Corps of Engineers, and NM Interstate Stream Commission) was critical to project success. Several types of monitoring data were gathered by the implementation team to inform the flow model: sediment-loading, geomorphology, riparian

vegetation, aquatic species, ground water levels, and water quality. Professors at the University of New Mexico modeled environmental flows at different flow rates. Based on the model and recommendations from the project team and stakeholders, several flow recommendations and water management strategies were developed that will enable water managers to manage reservoirs for environmental flows as well as meet the various needs of users. In addition to the flow management plan, an adaptive management plan and a monitoring strategy were developed to assess and manage future flow changes based on funding and water availability.

State Trust Land La Plata Riparian Restoration and Outreach Project

Project Budget: $64,408 in state funds
Watershed: Middle San Juan (14080105)
Sub-watersheds: Cottonwood Arroyo-La Plata River (140801050302)

Project Summary:

The project is located along the La Plata River within the Jackson Lake Wildlife Management Area. The tract is owned by the NM State Land Office and leased by the NM Department of Game and Fish. The goals for the project were to: 1) reduce local sediment input by building and installing erosion control structures in both the uplands and in the stream channel; 2) re-connect pre-existing side channels and one backwater embayment to improve hydrological connection between the river and floodplain and restore wetlands; and 3) restore the vegetative component of the riparian ecosystem by removing exotic species and planting native species on the floodplain.

La Plata Riparian Restoration Project Design.

Project Outcome:

The San Juan Soil and Water Conservation District and the NM

State Land Office oversaw the completion of the project. The channel was re-aligned through excavation with heavy machinery in two areas to increase wetlands acreage and floodplain connectivity. Two sets of post vanes were constructed with wood poles to re-direct flow. Non-native woody vegetation and weeds were removed and State Land Office staff planted native riparian vegetation, including 75 longstem New Mexico olive, 150 cottonwood poles, 1,000 coyote willow whips, 20 longstem wolfberry, 25 longstem false indigo, and 50 longstem golden current. In addition, 40 acres were seeded with native grass seed and covered with mulch. Partner organizations on this project included the U.S. Bureau of Land Management's Farmington Field Office, the NM Department of Game and Fish, and the U.S. Army Corps of Engineers.

Burro Cienaga Planting and Restoration

Project Budget:	$84,000 in state funds
Watershed:	Animas Valley (15040003)
Sub-watersheds:	Horse Canyon- Burro Cienega (150400030202)

Project Summary:

The project area is located along Upper Burro Cienaga in Grant County on the Prevost and the Pitchfork Ranches. Burro Cienaga is the only free-flowing water for 35 miles in any direction and is one of the few functioning cienegas remaining in the Southwest, as over 80% of these desert wetlands are desiccated. The purpose of the project was to reestablish riparian and wetland vegetation cover, arrest erosion, promote deposition of sediment, encourage re-saturation of the historic floodplain, increase water infiltration, and enhance overall watershed health. The project area on Pitchfork Ranch is on private land protected by a conservation easement held by the New Mexico Land Conservancy.

Riparian vegetation was planted along Burro Cienaga and is becoming established. Photo taken May 2014.

Project Outcome:

The Grant Soil and Water Conservation District was the fiscal agent for the project, and local subcontractors completed the work. A total of twenty-two structures were constructed over a 3.6 mile reach of the cienega. The structures consisted of pine posts and boulders, including: fifteen post baffles, four post vanes, two boulder baffles, and one boulder cross vane. In addition, an area of approximately 37 acres of floodplain downstream of the instream structures was planted with a total of 4,271 native plants appropriate for the cienega.

Middle Rito Peñas Negras Riparian Restoration Project

Project Budget: $146,950 in state funds
Watershed: Jemez Watershed (13020202)
Sub-watershed: Rito Peñas Negras (130202020101)

Project Summary:

The project area consists of 35 acres of riparian-floodplain habitat along 2.5 stream-miles of the Rito Peñas Negras in the Jemez Mountains on U.S. Forest Service lands south of the San Pedro Parks Wilderness and north of the Valles Caldera National Preserve. The primary goals of the project were to: 1) reduce and stabilize stream temperature through native riparian plantings and fencing to protect the riparian area from domestic livestock grazing, elk, and motorized vehicle use; 2) to restore the natural ecology of the site such that water quality is improved and wildlife habitat restored; 3) to build consensus and support for a shared vision of a healthy riparian system for the Jemez Water shed; and 4) to engage and educate schools and local citizens via environmental restoration and environmental education activities throughout the duration of the project. Although not an activity included directly in the project, the long term outlook for the area includes the potential re-introduction or natural migration of beaver to the Rito Peñas Negras.

WildEarth Guardian's volunteer restoration event planting cottonwood and willow poles on Rito Peñas Negras in May 2013.

Project Outcome:

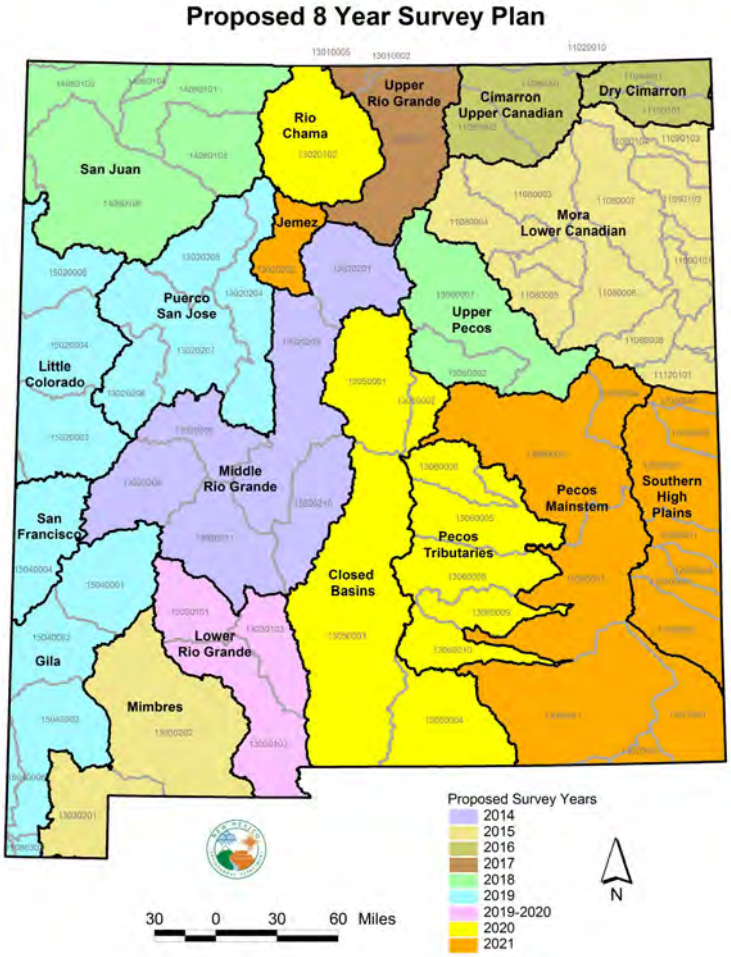
WildEarth Guardians accomplished the project by planting 50,000 willows (coyote, strapleaf, Bebb's and bluestem species), 1,200 narrowleaf cottonwood, 1,000 aspens, and 500 riparian shrubs and forage species along 2.5 stream-miles. The project team then constructed elk and livestock fencing to protect the project reach from future degradation due to grazing and recreational use. A monitoring plan was implemented to evaluate efficacy and water quality benefits, including sampling for water quality, water quantity, and riparian ecology. The project also engaged approximately 150 volunteers who participated in the riparian plantings and this provided an opportunity to educate the community on the benefits of self-sustaining productive riparian ecosystems for wildlife and humans.

Other Water Quality Protection Programs

Monitoring, Assessment and Standards Program

Water Quality Surveys

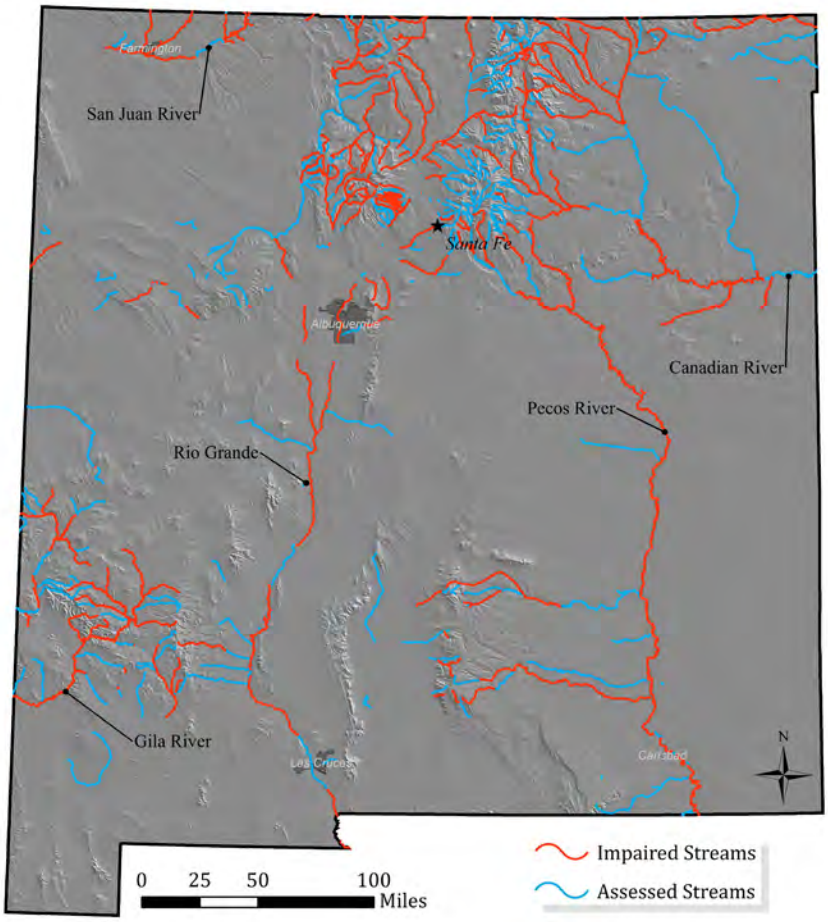
The Monitoring, Assessment and Standards Section (MASS) conducted one primary water quality survey and performed data gap monitoring for three other survey areas in 2014. Staff collected water quality data from 117 monitoring locations within 105 stream assessment units and 12 lake assessment units, which included 1,731 stream miles and 29,665 lake acres. The watersheds surveyed included the Middle Rio Grande (966 miles, 14,747 acres), the Jemez (148 miles, 60 acres), the Chama (480 miles, 14,798 acres), and the Sacramento Mountains (137 miles, 51 acres). These surveys are part of an eight year rotation throughout the state (see Figure). In 2015, the SWQB will begin new surveys in the Canadian and Dry Cimarron river basins.



Clean Water Act §303(d)/§305(b) Integrated Report Update

Similar to most states, New Mexico uses a targeted, rotational watershed approach to ambient water quality monitoring to achieve comprehensive coverage of waters of the state. As required by the CWA, every two years the state evaluates the data it has collected, as well as readily available water quality data, to determine if state water quality standards are met and associated designated uses are achieved. Those waters which exceed water quality standards are "impaired" for the associated use and are identified in the State of New Mexico CWA §303(d)/§305(b) Integrated Report (see map).

From the approximately 7,710 stream miles in New Mexico, nearly 4,170 assessed miles (54%) have identified impairments where water quality does not support the designated uses. Approximately 66,143 out of 94,415 (65%), categorized publically-owned lake, reservoir, or playa acres do not fully support designated uses. Using available data assessed against current designated, existing, or attainable uses utilizing established assessment protocols, the department has found that temperature, nutrient/eutrophication, and *E. coli* are the three most common causes of river and stream water quality impairments in New Mexico. The vast majority of surface water quality impairments identified in New Mexico are due to NPS pollution. Rangeland grazing, on-site treatment systems and loss of riparian habitat are the leading sources of impairment in New Mexico's rivers and streams. The three most common causes of water quality impairments in lakes and reservoirs are mercury in fish tissue, PCB in fish tissue, and temperature.



The state is beginning the development of the 2016-2018 State of New Mexico CWA §303(d)/§305(b) Integrated Report §303(d), starting with the revision of SWQB's assessment protocols to improve designated use impairment determinations. Updates will focus on data collected during the 2013 Jemez River watershed and Lower Pecos River watershed water quality surveys and during the 2014 Middle Rio Grande water quality surveys.

Water Quality Standards Update -Triennial Review

The CWA related federal code provisions in 40 C.F.R. Part 131 and the New Mexico Water Quality Act (Chapter 74, Article 6 NMSA 1978) require the State of New Mexico to develop, review, revise, and adopt water quality standards. Water quality standards (WQS) must protect public health or welfare, enhance the quality of water, and serve the purposes of the CWA. They must also include the designated use(s) of the water body, water quality criteria necessary to protect those uses, and antidegradation provisions to protect the water quality.

The CWA at 33 U.S.C. §1313(c)(1), and the WQS rules at 20.6.4.10(A) NMAC, also require the state to review and update the rules at least every three years in a process known as the Triennial Review. However, the review process conducted by the state can take several years to complete. The previous Triennial Review was conducted by the SWQB beginning with preliminary scoping and outreach in 2007, and was completed during 2009.

The SWQB began work on its current Triennial Review almost two years ago. State priorities for potential changes were identified and an informal 30-day scoping period for the Triennial Review was conducted during April 3 - May 15, 2013. Staff was available to meet with stakeholders on their issues of concern. The SWQB's proposals for amendments were developed into a Public Discussion Draft which was released for review and comment during April 1 - May 30, 2014.

During comment periods for both the scoping phase and Public Discussion Draft, the SWQB received comments from a variety of contributors including the EPA, watershed/river conservation groups, municipalities, water districts, industrial/trade groups, private entities and citizens. While the entire water quality standards have been under review, the most significant changes proposed by the SWQB are updates to designated uses, updates to water quality standards processes or implementation provisions and changes to clarify the implementation of standards, such as for EPA's NPDES permits for water discharges issued in New Mexico.

The Department's petition for a hearing request on the Triennial Review was presented to the Water Quality Control Commission (WQCC) on July 8, 2014. The hearing petition included changes to the Public Discussion Draft in consideration of all comments received. The schedule and procedural orders for the Triennial Review were also published by the hearing officer appointed by the WQCC in the New Mexico Register and in newspapers on July 31, 2014. The public notice for the hearing scheduled to begin on April 14, 2015 was published on October 30, 2014. The SWQB filed its Notice of Intent (NOI) with technical testimony on December 12, 2014. Other parties also filed NOIs, including Amigos Bravos, Chino Mines Company (Freeport MacMoRan), Chevron Mining Incorporation (CMI), San Juan Water Commission, Los Alamos National Labs (LANL), and Peabody Energy.

The next procedural step in the Triennial Review hearing process is for SWQB to file any appropriate rebuttal testimony, which is due on February 13, 2015. This information along with all filings associated with the Triennial Review, is available online at: www.nmenv.state.nm.us/swqb/Standards/TR2013

You may also subscribe to email updates and notices from NMED SWQB at: http://nmenv-it.nmenv.state.nm.us/Listserv/RPD/?p=subscribe&id=4.

Other Water Quality Standards News - Hydro Protocol / Use Attainability Analysis

The Hydrology Protocol (HP) is a technical document that was developed to distinguish between ephemeral, intermittent and perennial streams and rivers in New Mexico. It also generates documentation of the uses supported by those waters as a result of the flow regime. The ability to make such determinations is often key to assuring that the appropriate water quality standards are applied to a waterbody.

A use attainability analysis (UAA) is a scientific assessment of the factors affecting the attainment of a designated use. Designated aquatic life or contact uses in the water quality standards may not be removed or made less stringent unless a UAA demonstrates that attaining the assigned designated use is not feasible due to one of the factors listed in 40 CFR 131.10(g). An "existing use" may not be removed at all unless a use requiring more stringent criteria is added.

The SWQB is awaiting EPA's technical approval of Chino Mines application of the HP to five drainages on Chino Mines property in the final HP UAA report forwarded to EPA on June 30, 2013. The EPA responded with comments and questions on June 26, 2014. Chino Mines has provided a revised report and responses to EPA's comments to SWQB and EPA. These are part of the SWQB's Triennial Review NOI as Exhibits 31 and 36, which is available online: at: www.nmenv.state.nm.us/swqb/Standards/TR2013

UAAs prepared by SWQB's Assessment and TMDL Team included HP UAAs applied to four ephemeral streams in southern New Mexico (Aqua Chiquita from Rio Peñasco to McEwan Canyon, Grindstone Canyon from Grindstone Reservoir to its headwaters, San Andres Canyon, and San Vicente Arroyo from Mimbres River to Maude's Canyon), and a UAA evaluating temperature criteria and associated aquatic life uses in two segments of the Animas River (San Juan River Basin). The HP UAAs were submitted to EPA for technical approval on October 18, 2013. EPA technical approval was provided on December 19, 2013. These UAAs will be considered at a triennial review hearing to be scheduled in 2015.

Once HP UAAs are technically approved by EPA, identified waters are subject to uses and criteria as ephemeral under Subsection C of §20.6.4.97 NMAC and are listed on SWQB's Water Quality Standards website at: www.nmenv.state.nm.us/swqb/UAA/HP

Additional UAA Investigations

A public discussion draft of the Animas River UAA was noticed for review and comment (November 18, 2013 – December 20, 2013), and a public meeting was held in Farmington on December 17, 2013. The final draft Animas River UAA changes the designated aquatic life uses (ALU) for the Animas River in New Mexico to the coolwater ALU and was submitted to EPA on July 7, 2014. EPA granted technical approval on November 3, 2014, and the UAA will be presented for WQCC review and approval as part of the Triennial Review hearing (SWQB NOI Exhibit 50).

During the summer of 2013, SWQB initiated preliminary investigations of aquatic life uses and temperature criteria for UAAs in the Gila River Watershed and Mimbres closed basin. Historical datasets have been compiled for use in statistical summaries (for between-year and within year comparisons); summary analyses (i.e. box and whisker plots of thermograph data, etc.) have been completed. Landscape, hydrology, climate, and fisheries data will be evaluated to determine attainable aquatic life uses and temperature criteria within an ecoregion framework. A discussion draft UAA is planned for early 2014.

A draft UAA was completed for the Mimbres River during November 2014 and concludes that the

designated aquatic life use (ALU) is not attainable for the entire reach, and also recommends segment delineation changes. Cooney Canyon to the headwaters of the Mimbres River, including all perennial tributaries from the 23d ecoregion (Subalpine Forests), should remain designated as High Quality Coldwater ALU. A new segment extending from Allie Canyon to Cooney canyon (the "Middle Mimbres") should be re-designated as coldwater ALU, and a segment from Allie Canyon to the mouth of the Mimbres should be re-designated as coolwater ALU with a segment-specific temperature criterion of 30°C. This draft UAA was included as part of the Triennial Review Public Discussion Draft for public comment during April 1 - May 30, 2014. No comments were received and the draft UAA was sent to EPA for technical review on July 21, 2014. The Mimbres River UAA will be presented for WQCC review and approval as part of the Triennial Review hearing (SWQB NOI Exhibit 65).

Visit the NMED Surface Water Quality Bureau Water Quality Standards website for updates (includ-ing recent EPA approvals) at: www.nmenv.state.nm.us/swqb/Standards

TMDL Update

In 2014, the SWQB developed 11 TMDLs for waterbodies in the Gila, Mimbres, and San Francisco River watersheds. The SWQB received approval for the TMDLs from the NM WQCC and EPA Region 6 in September 2014. Thirteen TMDLs were developed for waterbodies in the Sacramento Mountain watershed and the plant nutrient TMDL for the Mora River was revised. SWQB has not yet requested approval of these two TMDL documents from the NM WQCC or EPA. The SWQB is planning new TMDL development for the Pajarito Plateau and the Rio Puerco watersheds in 2015.

Humingbird assisting with pollination of penstemon on the Mora river.

Ground Water Quality Bureau

Permitting and Compliance Assistance for Large Capacity Septic Tank/Leachfields

Under New Mexico's Nonpoint Source Management Plan (Objective 5 – Protect Groundwater Resources), the Ground Water Quality Bureau's (GWQB) is assigned to protect ground water quality from NPS pollution attributed to large capacity septic tank/leachfield systems and surface disposal facilities. As of September 15, 2014, only facilities discharging greater than 5,000 gallons per day of domestic wastewater are required to have a Ground Water Discharge Permit (prior to that time it was 2,000 gallons per day). Additionally, facilities that surface apply septage, sludge, food related grease trap waste, grit trap waste, oil/water separator waste, or hydrocarbon contaminated soils for disposal or remediation are required to have a Ground Water Discharge Permit with the GWQB. Technical personnel of the GWQB review Discharge Permit applications, develop Ground Water Discharge Permits, perform compliance assistance activities, and enforce Discharge Permit requirements for large capacity septic tank/leachfield systems.

Installation of a new septic tank permitted by the GWQB at Pagosa Hills Mobile Home Park.

Throughout the permitting and compliance assistance activities, GWQB staff provides outreach material, assistance forms and spreadsheets along with the Discharge Permits that are helpful to permitees who are required to complete and submit monitoring reports. In addition GWQB staff performs routine site inspections to inspect the septic tank/leachfield system(s) and offer face-to-face communication with the permittee. It is critical to make sure that the sites are discharging pursuant to their Discharge Permits and in some incidences ground water quality is monitored and, if contamination is detected, corrective action will be required. The GWQB permitting and compliance activities for large capacity septic systems and surface disposal facilities improve the protection of Ground Water from these non-point sources that discharge nitrogen compounds, metals, and organic compounds. Nine permits were issued by the GWQB in 2014 for septic tank/leachfield systems and surface disposal sites.

New Mexico Water Fair and Water-Quality Outreach Program

Residents of New Mexico primarily rely on ground water as its drinking water supply and in some locations ground water is the only available source of drinking water. Since many communities are concentrated in river valleys where ground water is shallow, their drinking water supplies are susceptible to contamination from non-point source pollution, predominantly household septic tank/leachfield systems, cesspools and inappropriate agricultural practices. However, the extent and severity of potential contamination of drinking water

Water Fair in the village of High Rolls, April 24, 2014.

supplies in rural communities of New Mexico is largely unknown. Most homeowners do not test their domestic well water for contaminants, because they are unaware of potential contamination or find the cost associated with water testing unmanageable.

To identify possible non-point source water quality problems in rural New Mexico communities, the GWQB conducts free testing of domestic wells ("water fairs") throughout the state. The Water Fair Program reaches domestic well owners and educates them about water quality issues and how they can help preserve or improve water quality in their communities. These activities have been carried out as an EPA-funded Water Fair Program. This program has proven to be very popular with the general public, providing a visible and highly appreciated service with valuable information on ground water quality in rural communities. NMED continues to receive numerous requests for water fairs from community organizations, NMED Field Offices, other State, County and City agencies, and private citizens. The Water Fair Program continues to be an important tool for identifying possible non-point source water quality problems.

Water quality outreach events include the demonstration of a ground water model/stimulation (ant farm). The model is a hands-on visual aid that takes difficult ground water concepts and makes them understandable for all ages. Ground water demonstrations are often conducted in schools, community centers or state fair exhibits.

Many families in rural New Mexico have become more knowledgeable about water quality, potential for contamination, and pollution prevention. In 2014, the GWQB conducted 8 water fairs, receiving a total of 454 water samples. Overall, the amount of water fairs conducted and the level of public participation in 2014 proved to be a success.

Staff with the GWQB demonstrate a ground water simulator (ant farm), Gallup, April 14, 2014

For additional information and health-related concerns or questions about your well, please visit: https://nmtracking.org/en/environ_exposure/water-qual/private-wells

To learn more about the Water Fair Program visit : www.nmenv.state.nm.us/gwb/NMED-GWQB-WaterFairs.htm or to request a water fair in your community contact Kathryn Hayden at (505) 827-1046.

CWA Section 401 Certification Activities

Staff continue to process water quality certifications under Section 401 of the federal CWA.The purpose of the Section 401 water quality certification is to ensure that Section 404 "Discharge of Dredge or Fill" permits issued or authorized by the U.S. Army Corps of Engineers (the Corps) comply with state water quality standards.

On January 21, 2014, the Corps released for public notice a new Section 404 Regional General Permit (RGP) for Stream Stabilization and Water Quality Improvement Projects Within Urban Ephemeral Channels in the State of New Mexico. After public notice NMED issued conditional certification for this RGP on March 25, 2014. On June 3, 2014, the Corps released for public notice a new Section 404 RGP for Sediment and Debris Removal Activities. After public notice NMED issued conditional certification for this RGP on July 22, 2014.

Since April 2012, the SWQB has issued informal confirmation of NWP activities, and formal 401 certification is generally required only for 404 individual permits. SWQB issued three certifications of individual permits in 2014, after requesting and considering public comments.

A broken natural gas pipeline in Largo Wash following a thunderstorm in August, 2014. Subsequent repair and bank stabilization was authorized under the Section 404 Regional General Permit for Activities in Emergency Situations.

CWA Section 401 Water Quality Certification Activities 2014	
Confirmations	
NWP Certifications Confirmed	67
Actions in Progress	1
Total	68
Other Actions	
Emergency RGP	3
Sediment & Debris Removal RGP	1
Urban Ephemeral RGP	0
Individual Permits Certified	4
Enforcement Actions	4
Total	12

Constructions Programs Bureau CWA (State Revolving Fund)

The New Mexico Clean Water State Revolving Fund (CWSRF) is a program created and funded through the Clean Water Act. The revolving loan fund assists New Mexico communities by providing low interest subsidized financing of wastewater and nonpoint source projects that protect or improve water quality. The CWSRF program is administered by NMED's Construction Programs Bureau (CPB).

In May 2013, CPB signed a CWSRF funding agreement with the Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA) for the Arroyo de los Montoyas stormwater management project. The project was in design in 2014, and construction is planned in 2015. The Arroyo de los Montoyas stormwater facility will utilize EPA green infrastructure standards by restoring hydrology and infiltration through the design and implementation of Low Impact Development (LID) techniques including low-water species of plants and site grading to reduce velocity and enhance infiltration of storm water. The funds will be used to design a "mechanical phytoremediation" facility in a high desert landscape. Traditional phytoremediation is biological treatment of impacted areas through plants' ability to naturally metabolize contamination; this facility's purpose will be to use the macro properties of the plants to capture and filter sediment, floatables and debris from storm water and to facilitate infiltration into the permeable substrate. This project is expected to reduce *E. coli* loading to the Rio Grande, among other benefits to water quality.

Clean Water
State Revolving Fund

The Lower Montoyas Water Quality Feature will help remove sediment which has historically increased the risk of flooding at the Corrales Road crossing of the Harvey Jones Channel and provide an attractive open space area for the local community. This project incorporates a number of "green build" and LID concepts to provide a functional flood control facility that enhances the environment. The project will keep the arroyo channel in a natural state with minimal traditional hardened elements; this will allow natural infiltration of storm flows to assist in recharging the aquifer, promote the growth of local native vegetation and preserve habitat for local wildlife. Plants will also be added as an integral part of water quality and grade control structures to add a "living screen" to assist in removing debris from storm water before it enters the hard lined Harvey Jones Channel. These plants will be irrigated with reclaimed wastewater to ensure a robust plant colony is established and avoid the use of precious potable water. Finally, completion of this project will include the development of pedestrian trails within the property area outside of the arroyo to provide the local community with an open space amenity.

New Mexico Mining Act Activities

The New Mexico Mining Act (19 NMAC 10) obligates NMED to review and comment on various applications associated with non-coal mining in New Mexico. Proposed actions range from recreational mining (such as panning for gold) to large mine and mill operations. For minimum-impact exploration application or modifications of existing exploration permits, NMED is provided an opportunity for formal comment. For new mining operations, NMED is responsible to "certify that water quality standards are expected to be met" and to determine that the proposed post-mining closeout plan will "achieve compliance with all applicable air, water quality and other environmental standards if carried out as described." For modification of existing operations, NMED has the opportunity to concur with proposed permit changes. Comment periods are typically twenty days from receipt of an application.

NMED has an informal Mining-Act team that includes representatives from SWQB, GWQB, and the Air Quality Bureau to review mining applications and otherwise support the work of the New Mexico Mining and Minerals Division (MMD) of EMNRD. This work involves reviewing applications, site inspections, hydrologic interpretations, and evaluating water quality standards agaimst proposed mining activities. The SWQB discusses Best Management Practices and other mitigation with the applicant in an effort to negotiate mining plans that prevent or minimize environmental risks. The team's written comments often include conditions necessary to ensure compliance with both state and federal environmental standards. Beyond permitting actions, the team also participates in meetings and review documents in support of the work the EMNRD, the USACE, federal land managers, and others.

In 2014, staff from the SWQB reviewed numerous mining notices, applications, close-out plans, operations plans, monitoring plans, reclamation plans and requests for release of financial assurance or bonding money held by the state as a guarantee for mine-site reclamation. The SWQB also reviewed permit applications and associated documents for exploratory drilling programs, proposed new mining activities, and modification of existing mining activities. The following is a summary example of mining permit activites that occurred in 2014:

- Reviewing the proposed haul road linking Cobre Mine to the Chino ore processing facility which will carry ore from Hanover Mountain to the Chino mill.
- Inspecting two mines near Lordsburg for post-reclamation finanacial assurance release.
- Working with the US Forest Service, private industry and recreational placer miners to restore a high-altitude wet meadow near Hopewell Lake in northern New Mexico.
- Providing substantial comment on the revised Tyrone mine close-out plan to protect McCain Spring, an isolated surface water within the permitted mine boundary.
- Provide technical assistance to enforce violation of federal environmental laws associated with mining activities.

Mitigating Problems with Abandonded Legacy Mining

Placer Creek Wetland Restoration Project

More than 100 years ago, Placer Creek, near Hopewell Lake on the Tres Piedras Ranger District of the Carson National Forest was severely impacted by mining practices. This includes large-scale erosion associated with historic hydraulic placer mining that resulted in a degraded stream channel running through a high mountain meadow. In 2013, the Coca-Cola Company partnered with the Carson National Forest and the National Forest Foundation in an effort to reduce continuing erosion and protect wet meadow habitat. The New Mexico Environment Department provided technical assistance with conceptual design and further assistance with funding applications, contractor scoping, and permitting.

A series of grade control structures were installed to reduce erosion and halt headcut migration into the meadow on Placer Creek.

While Placer Creek has not been assessed for compliance with NM Water Quality Standards, it is tributary to the Rio Vallecitos which has TMDLs for aluminum, water temperature, and turbidity. A nearby, downstream public drinking water supply frequently experiences boil-water advisories due to excessive turbidity in the Rio Vallecitos.

Coca-Cola has a goal to become "water neutral" by 2020 and intends to balance the water it uses by supporting high-priority restoration activities that will "return" water to nature. This fit well with the USFS and NMED goal to reduce the sediment load to Placer Creek and reduce turbidity in the Rio Vallecitos. NMED designed a project to stabilize active headcuts migrating into a 30 acre wet meadow and prevent de-watering of the meadow. The successful project reduces erosion, stores water in the wet meadow, maintains base flow, and helps Coca-Cola in meeting their goal.

The project mitigates severe erosion of the wet meadow by redirecting flood flows into the main Placer Creek channel and stabilizing the headcuts. The final design of the project included a permeable flow splitter, a soil/sod channel plug, a log/boulder drop structure, seven one-rock dams, an improved low water crossing, three rolling dip road drains, and two excavated bypass channels.

Researchers have determined this project will restore an estimated 13 million gallons of water per year, allowing Placer Creek to be transformed from an eroded stream channel to a vibrant high mountain meadow. Because the creek flow will spread out over the meadow during high flows, water will be allowed to seep back

A flow splitter was installed that inundates the meadow during higher flows reducing erosion, storing water and improving habitat.

into the ground. The surrounding meadow plants will be healthier and better able to provide food and habitat for animals and insects, improving the entire ecosystem of Placer Creek.

Pollutant load reductions were estimated using physical measurements and STEPL (gully, volumetric), based on headcut sizes, advancement rates determined from aerial photos:

Biochemical Oxygen Demand (BOD), 389 lbs/yr
Nitrogen, 194 lbs/yr
Phosphorus, 75 lbs/yr
Sedimentation-Siltation, 143 tons/yr

For more information visit:
www.nationalforests.org/blog/cocacola-partners-with-the-nff-to-restore-americas-headwaters

Carson National Forest
Red River Mining District
Legacy Mining Remediation

The Red River Mining District is located in the mountains surrounding the town of Red River within the Questa Ranger District of the Carson National Forest in the north-central part of Taos County, New Mexico. Numerous small mines were developed in the late 1800's in the watersheds Bitter Creek, Pioneer Creek, and another stream called Placer Creek near the headwaters of the Red River. Gold and copper were the predominant commodities produced from the Red River Mining District. Mining activities reached their historic peak in the early 1900's and the mines are now inactive and abandoned. The majority of these mines are located on National Forest administered lands within the Carson National Forest. Twenty-five mines with 57,500 cubic yards of contaminated waste rock and tailings were identified along or in Bitter, Pioneer, and Placer Creeks.

In 2005, the Forest Service initiated a remediation to clean up these mines which were releasing heavy metals such as arsenic, lead and mercury into the soil pathway. These heavy metals can lead to human exposure (via dermal contact and ingestion) and surface water pathway. The cleanup objectives were to reduce and/or eliminate hazardous substances from migrating onto drainages in the Placer, Pioneer and Bitter Creek watersheds for the protection of human health and the environment.

Midnight Mine Consolidation Cell (foreground) showing good vegetation in October 2014.

An environmental contractor was hired to clean up the mine sites on the Placer and Pioneer Creek watersheds. During the summers of 2006 and 2007 more than 14,000 cubic yards of mine waste were removed and consolidated in a nearby consolidation cell. The construction activities of the remediation project at Placer and Pioneer Creek were completed in 2007.

In late 2007, few remediation activities began at mine sites within the Bitter Creek watershed due to elevations over 10,000 feet and a large snow pack. Construction activities resumed in July of 2008.

Initial remediation activities in 2007 removed approximately 10,200 cubic yards of waste rock from the pathways of concern by excavating, consolidation at the individual mine sites or removal to a repository, and constructing a soil cap. Mines remediated in this initial phase were Cashier, Deldosso, Dorothy, Keystone, Little Gem, Midnight, an Unnamed Prospect, and sections of Edison. The remaining mines were planned for out years as additional funding became available. Total contract cost was $3,020,924.08.

The waste rock was consolidated at the mine site if the area was large enough to place it above the typical flood elevation. The remaining contaminated mine waste was removed and placed in a central consolidation cell on a ridge in the Bitter Creek drainage (Bitter Creek Repository), approximately one-half mile south of Big Five Prospect. The Bitter Creek Repository was designed to accommodate approximately 31,400 cubic yards of contaminated waste rock and tailings from the Bitter Creek mines. The repository is on federal lands administered by the Carson National Forest.

Upon completion of the remediation project, the consolidation cell was capped with an engineered cover system designed to shed water from the surface of the cell. An under drain system was constructed to intercept any water that seeps towards the repository. Two monitoring wells were installed down-gradient from the repository. Baseline water samples were taken before any waste rock and tailings were placed in the repository.

An inspection was made on October 1, 2014 to investigate the continued effectiveness of the removal action. The Midnight Mine and Midnight Consolidation Cell and the Bitter Creek consolidation Cell were both inspected along with numerous other mines. In general re-vegetation at the mines and the two cells was fair to good with no erosion noted in most areas. Based on this inspection, only the Big Five Mine was recommended to be reseeded in June of 2015 with native grasses to ensure good vegetative growth.

Additional Management Practices by Non-NMED Agencies

The following land management agencies implemented various projects and best managment practices in New Mexico that ultimately contribute to the reduction of NPS pollutants in surface waters. The most common NPS issues being addressed are excessive erosion, sedimentation, encroachment of exotic vegetation, streambank stability, excessive nutrients, and excessive water temperature.

Bureau of Land Management Projects

Watershed/HUC No.	Project Description	Water Quality Benefits
Lower Rio Bonito (13060008) (130600080208)	Chemical treatment on 10 acres salt cedar, Russian Olive, and Siberian Elm trees	• Protection and restoration of riparian vegetation to reduce erosion. • Increase shade to reduce stream temperature. • Stabilize stream banks to reduce erosion. • Increase bank storage. • Improvement of water quality.
Rio Bonito (13060008) (130600080207)	Prescribed burn on 339 acres pinyon-juniper	• Decrease risk of extreme wildfire, and associated erosion.
Yellow Lake-Arroyo del Macho (13060005) (130600050808)	Chemical treatment on 84 acres salt cedar. Prescribed pile burn on 360 acres salt cedar	• Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover.
Salt Creek-Pecos River (13060003) (130600031807)	Prescribed burn on 400 acres sacaton, mesquite, and salt cedar	• Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover.
Tularosa Valley (13050003)	Mechanical/Chemical treatment on 10 acres salt cedar on Three Rivers	• Protection and restoration of riparian vegetation to reduce erosion. • Increase shade to reduce stream temperature. • Stabilize stream banks to reduce erosion. • Increase bank storage. • Improvement of water quality.
Rio Grande between Pilar, NM and Rio Pueblo de Taos (13020101)	200 acres of re-treatment/new treatment chemical application of tamarisk	• Decrease risk of extreme wildfire and associated erosion. • Reestablishment of native species. • Streambank stabilization and improved wildlife habitat. • Reduce sedimentation and turbidity.

BLM (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Rio Grande from CO to Red River (13020101)	304 acres thinned in piñon-juniper woodland (Guadalupe Mtn., Cerro Montoso)	• Increase herbaceous ground cover to reduce soil exposed to water erosion and increase water infiltration.
Rio Grande-Santa Fe (13020201)	1 mile of fence construction	• Reduce vegetation loss and soil damage from poor cattle distribution.
Rio Frijoles near Cundiyo, NM (13020101)	180 acres thinned in piñon-juniper woodland	• Increase herbaceous ground cover to reduce soil exposed to water erosion.
Rio Ojo Caliente from Rio Chama to Rio Vallecitos (13020102)	1 tire trough (1300 gallons), and 28,000 gallons of storage tanks	• Reduce vegetation loss and soil damage from poor cattle distribution.
Rio Grande from CO to Rio Pueblo de Taos; Rio Embudo between Chamisal Creek and Cañada Ojo Sarco; Rio Embudo Gage; State line; Chiflo; Taos Junction Bridge; Rio Hondo (13020101)	9 sites were monitored . Temperature is continuous hourly. pH, turbidity, conductivity, nitrate and phosphorus collected monthly or less	• Monitor water quality.
Rio Grande from CO to Red River (13020101)	100 acres sagebrush removal (mechanical)	• Increase herbaceous ground cover to reduce soil exposed to water erosion and increase water infiltration.
Rio Grande from CO to Red River (13020101)	400 acres seeded with native grasses and forbs	• Increase herbaceous ground cover to reduce soil exposed to water erosion and increase water infiltration.
Rio Grande from CO to Red River (13020101)	400 acres prescribed burn on Cerro del Aire and Guadalupe Mtns	• Increase herbaceous ground cover to reduce soil exposed to water erosion. • Increase water infiltration.
Rio Grande from CO to Red River (13020101)	3 earth tanks constructed	• Reduce vegetation loss and soil damage from poor cattle distribution.
Upper San Juan, Colorado-New Mexico (14080101)	6,466 acres of sagebrush thinning trough chemical treatment (Tebuthiuron)	• Increase herbaceous ground cover to reduce soil exposed to water erosion. • Directly improve upland vegetation and indirectly improve riparian habitat and water quality.

BLM (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Blanco Canyon (14080103)	11,524 acres of sagebrush thinning trough chemical treatment (Tebuthiuron)	• Increase herbaceous ground cover to reduce soil exposed to water erosion and increase water infiltration. • Directly improve upland vegetation and indirectly improve riparian habitat and water quality.
Chaco (14080106)	673 acres of sagebrush thinning trough chemical treatment (Tebuthiuron)	• Increase herbaceous ground cover to reduce soil exposed to water erosion and increase water infiltration.
Rio Puerco (13020204)	Elk Springs Thinning - 12 acres Cuba Chemical (Chijuilla #4, Hondo East, and Valle Pastures) - 2,637	• Increase herbaceous ground cover to reduce soil exposed to water erosion. • Increase water infiltration.
Arroyo Chico (13020205)	IC Grant RX - 2,500 acres	• Increase herbaceous ground cover to reduce soil exposed to water erosion. • Increase water infiltration.
North Plains (13020206)	Mertz RX (Gibson Pasture) - 2,000 acres Mertz Chemical (Owsley Pasture) - 3,769 acres Zuni Mt & Comadre Thinning (West side of NCA) - 240 acres Whiskey Wildfire - Managed for resource benefit (Cerritos de Jaspe Area) - 201 acres	• Increase herbaceous ground cover to reduce soil exposed to water erosion. • Increase water infiltration.

New Mexico Soil and Water Conservation Districts

Watershed	Project Description	Water Quality Benefits
Rio Grande (13020101)	Riparian restoration through phreatophyte removal (12.5 acres)	• Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion.
Rio Chama (13020102)	Acequia improvement, through piping and better regulation	• Decrease sheet flow and erosion. • Increase water yield.

Soil and Water Conservation Districts (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Rio Grande (13020101)	Riparian restoration through phreatophyte removal (12.5 acres)	• Decrease sheet flow and erosion • Increase water yield • Increase herbaceous ground cover • Decrease risk of extreme wildfire and associated erosion.
Rio Chama (13020102)	Acequia improvement, through piping and better regulation.	• Decrease sheet flow and erosion • Increase water yield
Rio Chama (13020102)	Post fire distribution of straw bales and seed to landowners impacted by Diego Fire.	• Decrease erosion. • Increase herbaceous ground cover
Rio Grande (13020101)	Acequia improvement, through piping and better regulation.	• Decrease sheet flow and erosion • Increase water yield
Upper San Juan, Animas River, Middle San Juan	Russian olive and salt cedar removal (255 acres)	• Decrease risk of extreme wildfire and associated erosion. • Increase water yield • Increase herbaceous ground cover
Canyon Largo (Carrizo Canyon)	Installed livestock water wells and ponds to increase cattle distribution. Mulched 160 acres of greasewood, reseeded in native grasses (70 acres).	• Improve riparian veg. to reduce erosion. • Increase herbaceous ground cover • Decrease erosion.
Animas Watershed	Water quality sampling in river, inflows, and irrigation ditches in 3 seasons. GIS analysis of land use for watershed planning.	• Identification of pollutant sources • Identification of future BMP projects
Upper San Juan, Animas River, Middle San Juan	7 months of weekly water sampling at 5 sites for *E.coli*, nutrients, and bacteria source tracking.	• Identification of pollutant sources
El Paso-Las Cruces (13030102)	South Central Stormwater Management Coalition: Fostering interagency cooperation among governmental entities with flood/stormwater management resposibilities.	• Planning for reducing sediment to the Rio Grande. • Planning for reducing *E. coli* to the Rio Grande.

New Mexico Soil and Water Conservation Districts (continued)

Watershed	Project Description	Water Quality Benefits
El Paso-Las Cruces (13030102)	Doña Ana SWCD, as part of the Local Work Group convened by the NRCS, requested 15% of 2014 EQIP funds be set aside for a small watershed initiative on grazing lands on the west mesa to target runoff and reduce water erosion. No applications were received in 2014. The Doña Ana SWCD anticipates promoting this initiative with eligible producers in 2015.	• Planning for reducing sediment to the Rio Grande • Planning for reducing *E. coli* to the Rio Grande
Rio Grande (13020203)	51.8 acres of non-native phreatophytes (salt cedar, Russian olive, tree of heaven and Siberian elm) extracted and windrowed for firewood harvesting.	• The site was thinned from several thousand trees/acre to <20 trees/acre. All remaining trees are native and shrubs and grasses are flourishing.
Rio Grande (13020203)	Conducted stream flow measurements in the Rio Grande with Cottonwood Valley Charter School 5th grade	• Students calculated flow rate of floating objects along a specified distance. The students also discussed the benefits of flowing water vs a dry river.
Rio Grande (13020203)	Set up the Rolling Rivers trailer at a Kids, Kows, and More outreach event for 3rd and 4th graders to demonstrate Rio grande hydrology and uses in Socorro County.	• Students identified the multiple uses of the Rio Grande including: irrigation, livestock watering, recreation and wildlife.

New Mexico State Forestry Division

Watershed/HUC No.	Project Description	Water Quality Benefits
Pecos Headwaters (Tecolote Creek)	Timber Harvests (160 acres) Ponderosa pine. Waterbarring of access roads and skid trails, lop & scattering of slash and seeding of critical areas.	• Decrease erosion from road prism. • Increase herbaceous ground cover. • Increase water infiltration.
Canadian Headwaters, New Mexico (Chicorica Creek-Canadian River)	Timber Harvests (1,267 acres) Ponderosa pine and Mixed Conifer forests. Waterbarring of access roads and skid trails, lop & scattering of slash and seeding of critical areas.	• Decrease erosion from road prism. • Increase herbaceous ground cover. • Increase water infiltration.

New Mexico State Forestry Division (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Canadian Headwaters, New Mexico (Headwaters Vermejo River)	Timber Harvests (780 acres) Ponderosa pine and Mixed Conifer forests. Waterbarring of access roads and skid trails, lop & scattering of slash and seeding of critical areas.	• Decrease erosion from road prism. • Increase herbaceous ground cover. • Increase water infiltration.
Mora (Sapello River)	Ponderosa thinning (244.6 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Western Estancia (Arroyo de Manzano)	Ponderosa, pinon and juniper thinning (25 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Upper Gila-Mangas (Bear Creek)	Ponderosa, pinon and juniper thinning, chipping (104 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Pecos Headwaters (Tecolote Creek)	Ponderosa, mixed conifer, pinon and juniper thinning, pile burning, mastication (225 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Western Estancia (Lower Salt Draw) (Hells Canyon Wash)	Ponderosa, pinon and juniper thinning, mastication (52.3 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Rio Hondo (Rio Ruidoso)	Ponderosa, mixed conifer, pinon and juniper thinning (261.5 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.

New Mexico State Forestry Division (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Upper Rio Grande (Rio Pueblo de Taos)	Ponderosa, mixed conifer thinning (95 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Tularosa Valley (Lost River)	Ponderosa, mixed conifer thinning (101 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Mora (Coyote Creek)	Ponderosa, mixed conifer thinning, prescribed burning, mastication (268 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Plains of San Augustin (C-N Lake)	Ponderosa, pinon and juniper thinning, Prescribed burning (593 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Plains of San Augustin (Patterson Lake)	Ponderosa, pinon and juniper Mastication(627.5 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Middle San Juan. AZ,CO,NM (Barker Arroyo-La Plata River)	Salt Cedar and Russian Olive removal (450 acres)	• Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover. • Decrease risk of high intensity wildfire.
Upper San Juan. CO, NM (Animas River-San Juan River	Salt Cedar and Russian Olive removal (422.2 acres)	• Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover. • Decrease risk of high intensity wildfire.

New Mexico State Forestry Division (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Rio Grande-Santa Fe (Arroyo Tonque-Rio Grande)	Salt Cedar and Russian Olive removal, chipping (42.5 acres)	• Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover. • Decrease risk of high intensity wildfire.
Rio Grande-Albuquerque (Canon Monte Largo-Rio Grande)	Salt Cedar and Russian Olive removal, chipping (3 acres)	• Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover. • Decrease risk of high intensity wildfire.
Rio Grande-Albuquerque (Arroyo de las Callabacillas-Rio Grande)	Salt Cedar and Russian Olive removal, chipping (31 acres)	• Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover. • Decrease risk of high intensity wildfire.
Rio Grande-Albuquerque (Arroyo de la Matanza-Rio Grande)	Salt Cedar and Russian Olive removal, chipping (26 acres)	• Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover. • Decrease risk of high intensity wildfire.

Staff member of the NM Forestry Division conducts conservation education at a riparian restoration project near Escondida, NM.

NM Forestry Division uses prescribed fire after thinning operations to increase groundcover and reduce erosion and the risk of wildfire near Luera Mountains, NM.

US Forest Service Projects

Carson National Forest

Watershed/HUC No.	Project Description	Water Quality Benefits
Cañada Alamosa – Rio Vallecitos Watershed (13020102)	Alfonso Chacon CFRP 3 FY 14 - Ponderosa pine thinning, lopping and scattering of activity created fuels and removal of small diameter materials (102 acres).	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion.
Cañada Alamosa – Rio Vallecitos Watershed (13020102)	Agua/Caballos Green Fuelwood FY 14 - Commercial thinning of ponderosa pine (fuelwood-sized material) and lopping and scattering of activity created fuels (87 acres).	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion.
Cañada del Agua – Rio Tusas Watershed and Cañada Alamosa – Rio Vallecitos Watershed (13020102)	Ensenada Prescribed Burn FY 14 - Prescribed burning of piled material (78 acres).	• Decrease risk of extreme wildfire and associated erosion.
Rio Tusas – Rio Vallecitos Watershed (13020102)	Lower Agua/Caballos TSI FY 14 - Precommercial thinning, lopping and scattering of activity created fuels and removal of small diameter materials (105 acres).	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion.
Cañada de Agua – Rio Tusas Watershed and Rio Tusas – Rio Vallecitos Watershed (13020102)	Alamos Prescribed Burn FY 15 - Broadcast Prescribed Burning (4,400 acres).	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Arroyo Blanco Watershed and Montoya Canyon-Canjilon Creek Watershed (13020102)	State Road 115 Prescribed Burn FY 14 - Pile burning of activity created fuels (163 acres).	• Decrease risk of extreme wildfire and associated erosion.
Arroyo Blanco Watershed and Montoya Canyon - Canjilon Creek Watershed (13020102)	Canjilon WUI SRS FY 14 - Piñon/juniper thinning and piling of activity created fuels (102 acres).	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion.

Carson National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Martinez Canyon – Canjilon Creek Watershed (13020102)	Canjilon WUI Green Fuelwood FY 14 - Piñon/juniper thinning and lopping of activity created fuels (71 acres).	• Increase herbaceous ground cover. • Decrease erosion.
Martinez Canyon – Canjilon Creek Watershed (13020102)	La Alba CFRP FY 14 - Precommercial thinning and piling of activity created fuels (70 acres).	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion.
Martinez Canyon – Canjilon Creek Watershed (13020102)	Chimayo Conservation Corps CFRP FY 14 - Precommercial thinning and lopping and scattering of activity created fuels (33 acres).	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion.
Rio Chama Watershed (13020102)	2 acres noxious weed removal El Rito Lobato Allotment	• Protect resource conditions.
Rio Chama Watershed (13020102)	2 Stock Tank Cleanouts in El Rito Lobato Allotment	• Improve sediment retention and reduce sedimentation within channel.
Rio Chama Watershed (13020102)	Road maintenance (25 miles)	• Improve road drainage; reduce erosion.
Canada Alamosa- Rio Vallecitos (130201021402)	2 Stock Tank Cleanouts in Jarosita Allotment	• Improve sediment retention and reduce. sedimentation within channel.
Canada Alamosa- Rio Vallecitos (130201021402)	8 acres noxious weed removal Escondido Allotment	• Protect resource conditions.
Canada Alamosa- Rio Vallecitos (130201021402)	Road maintenance (20 miles)	• Improve road drainage; reduce erosion.
Arroyo Aguaje de la Petaca (1302010108)	Road maintenance (12 miles)	• Improve road drainage; reduce erosion.
Outlet Rio Cebolla (130201020503)	1.5 Miles of fence on the English Allotment	• Increase forage capacity and improve pasture rotations for distribution of livestock.

Carson National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Cañada Biscara – Rio Tusas Watershed (13020102)	Maquinita HSP Force Account Thinning FY 14 - Ponderosa pine thinning, lopping and scattering of activity created fuels (80 acres).	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion.
Cañada Biscara – Rio Tusas Watershed (13020102)	Kuykendall CFRP FY 14 - Ponderosa pine thinning, lopping and scattering of activity created fuels (88 acres).	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion.
Cañada Biscara – Rio Tusas Watershed (13020102)	Rocky Mountain Youth Corps CFRP FY 14 - Thinning in ponderosa pine and mixed conifer forest types and lopping and scattering of activity created fuels (140 acres).	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion.
Cañada Biscara – Rio Tusas Watershed (13020102)	Maquinita (Rocky Mountain Elk Foundation Grant) Thinning FY 14 - Ponderosa pine thinning, lopping and scattering of activity created fuels (65 acres).	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion.
Cañada Biscara – Rio Tusas Watershed (13020102)	Maquinita (Secure Rural Schools) Thinning Contract FY 14 - Thinning in ponderosa pine, lopping and scattering of activity created fuels (113 acres).	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Cañada Biscara – Rio Tusas Watershed (13020102)	Maquinita Big Game Enhancement Thinning Contract FY 14 - Spruce-fir thinning, lopping and scattering of activity created fuels (146 acres).	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Cañon de Tio Gordito – Arroyo Aguaje de la Petaca Watershed (13020101)	Gordito Timber Sale Unit 2B FY 14 - Commercial Thinning of 72 acres of ponderosa pine and Group Selection Openings on 13 acres of ponderosa pine.	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Cañon de Tio Gordito – Arroyo Aguaje de la Petaca Watershed (13020101)	Gordito Timber Sale 1 FY 14 - Commercial Thinning of 45 acres of ponderosa pine and Group Selection Openings on 8 acres of ponderosa pine.	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.

Carson National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Cañon de Tio Gordito – Arroyo Aguaje de la Petaca Watershed (13020101)	Gordito Timber Sale 3 FY 14 Commercial Thinning of 29 acres of ponderosa pine and Group Selection Openings on 5 acres of ponderosa pine.	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Cañon de Tio Gordito – Arroyo Aguaje de la Petaca Watershed (13020101)	Red Mesa Big Game Enhancement Thinning Contract FY 14 Ponderosa pine thinning, lopping and scattering of activity created fuels (114 acres).	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Cañon de Tio Gordito – Arroyo Aguaje de la Petaca Watershed (13020101)	Red Mesa (Secure Rural Schools) Piling Contract FY 14 Piling of activity created fuels (149 acres).	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Cañon de Tio Gordito – Arroyo Aguaje de la Petaca Watershed (13020101)	Red Mesa Prescribed Burn FY 14 - Pile burning of activity created fuels (225 acres).	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Blanco Canyon (14080103) Wild Horse Canyon-Tapacito Creek (140801030303)	Cottonwood Canyon Road Improvement: Improved road conditions (.5 mile), brought embedded road back to natural grade, installed 3 rolling dips, and constructed 2 silt-traps	• Improve road condition and drainage. • Decrease erosion and sedimentation.
Blanco Canyon (14080103) Martinez Canyon-Carrizo Canyon (140801030405)	Jaramillo Road Re-Route Improved road conditions by re-routing approximately 500 feet of road out of an arroyo**.** Re-constructed a silt-trap.	• Improve road condition and drainage. • Decrease erosion and sedimentation.
Upper San Juan (14080101) Blanco Canyon (14080103)	Road Maintenance: -Road maintenance and culvert cleaning district wide (approximately 150 miles).	• Improve road condition drainage. • Decrease erosion and sedimentation.
Upper San Juan (14080101) La Fragua Canyon (140801010905)	Road Decommissioned: Decommissioned and returned to natural grade approximately 1, 250 feet of road along with a 1.5 acre abandoned well pad.	• Decrease erosion and sedimentation.

Carson National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Blanco Canyon (14080103) Carrizo Creek (140801030404)	Lost Lakes Rx--Broadcast burning in Ponderosa Pine, Gambel Oak, and Pinyon/Juniper (450 acres)	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion.
Upper San Juan (14080101) La Jara Creek (1408010109)	Bixler Sage Mowing--Mowing of sagebrush and reseeding (274 acres) Laguna Seca Sage Mowing-- Mowing of sagebrush and reseeding (782 acres)	• Increase herbaceous ground cover.
Upper San Juan 14080101 Navajo Reservoir (1408010115)	Box Tank Rx-- Broadcast burning in Ponderosa Pine, Gambel Oak, and Pinyon/Juniper (175 acres)	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion.
Upper San Juan (14080101) Cañon Bancos (1408010108)	Wild Horse Bait Trap Gather -65 wild horses removed from Jicarilla Wild Horse Territory	• Decreased grazing and other occupancy impacts such as trailing, trampling, defecation, etc.
Upper San Juan (14080101) Cañon Bancos (1408010108)	Wild Horse Fertility Control- 48 wild horse mares darted with PZP fertility control vaccine	• Decrease reproduction of wild horse population which is currently well over appropriate management level.
Upper Rio Grande 13020101) Headwaters Rio Fernando del Taos Watershed (130201010601)	Capulin Prescribed Burn FY 14 Pile burning of activity created fuels (51 acres).	• Decrease risk of extreme wildfire and associated erosion.
Upper Rio Grande 13020101) Headwaters Rio Fernando del Taos Watershed (130201010601)	Guajalote Timber Stand Improvement Project FY 14-Thinning in mixed conifer and lopping and scattering of activity created fuels (138 acres).	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion.
Upper Rio Grande 13020101) Rio Truchas Watershed– Rio Grande Watershed (130201011104)	Francisco Prescribed Burn FY 14 Broadcast Prescribed burning in ponderosa pine type (323 acres). Ruedas Green Fuelwood FY 14 Commercial thinning in ponderosa pine type (70 acres).	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion.

Carson National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Upper Rio Grande (13020101) Rio Santa Barbara – Rio Pueblo Watershed (130201010906)	Borrego Green Fuelwood FY 14 Commercial thinning in ponderosa pine type (146 acres). Mica Green Fuelwood FY 14 Commercial thinning in ponderosa pine type (68 acres).	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion. • Decrease erosion.
Upper Rio Grande (13020101) Headwaters Arroyo Hondo Watershed (130201010701)	Yerba (Trail 61) 2 miles trail maintenance Italianos (Trail 59) 1.5 miles trail maintenance	• Reduce stream sedimentation.
Upper Rio Grande (13020101) Headwaters Rio Santa Barbara Watershed (130201010904) Canada del Ojo Sarco-Embudo Creek (130201010908)	West Fork (Trail 25) 0.5 mile trail maintenance Middle Fork (Trail 24) 6 miles trail maintenance Serpent Lake (Trail 19) 0.5 mile trail maintenance Trampas (Trail 31) 1 mile trail maintenance	• Reduce stream sedimentation.
Upper Rio Grande (13020101) Middle Red River Watershed (130201010303)	Columbine (Trail 71) 2.25 miles trail maintenance	• Reduce stream sedimentation.
Upper Rio Grande (13020101) Rio Chiquito Watershed (130201010503) Rito de la Olla Watershed (130201010501)	Rio Chiquito (Trail 121) 2 miles trail maintenance Camino Real Road Decommissioning 55.1 miles of road decommissioned; 4 culverts removed	• Reduce stream sedimentation. • 6.5 miles of stream habitat improved due to reduced sedimentation. • 4,721 acres of terrestrial habitat improved due to decreased erosion and increased herbaceous ground cover.
RIO CHAMA (13020102) Watershed -Rio Vallecitos	Road Maintenance: -Improved road conditions (3.2 miles)	• Improve road drainage.

Carson National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
RIO CHAMA (13020102) Watershed – Rio Tusas/Cañada Biscara	Various Thinning Projects- Ponderosa pine, mixed conifer, spruce-fir thinning, lopping and scattering of activity created fuels (680 acres). Road Maintenance-Improved road conditions (24.7 miles), installed 3 culverts, and repaired/stabilized one water-crossing.	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion. • Improve road drainage. • Stabilize stream to reduce erosion.
RIO CHAMA, (13020102) Watershed -Rio Ojo Caliente	Solo Pasture Fence Improvement FY 14 -Improved pasture management and livestock distribution management by fencing smaller sized pasture units (4459 acres). Road Maintenance- Improved road conditions (12.9 miles).	• Increase herbaceous ground cover. • Decrease erosion and sedimentation. • Improve road drainage.
UPPER RIO GRANDE (13020101) Watershed– Arroyo Aguaje de la Petaca/ Cañon de Tio Gordito	Timber Sales- Commercial Thinning of 146 acres of ponderosa pine and Group Selection Openings on 26 acres of ponderosa pine. Red Mesa Big Game Enhancement Thinning Contract FY 14- Ponderosa pine thinning, lopping and scattering of activity created fuels (114 acres). Red Mesa (Secure Rural Schools) Piling Contract FY 14- Piling of activity created fuels (149 acres). Red Mesa Prescribed Burn FY 14- Pile burning of activity created fuels (225 acres). Road Maintenance- Improved road conditions (2 miles).	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover. • Improve road drainage.
UPPER RIO GRANDE (13020101) Rio San Antonio/ Rio Nutrias	Stewart Meadows Fence Improvement FY 14- Repaired top rail fence and constructed barbed wire fence for cattle exclusion from wetland (486 acres) Road Maintenance- Improved road conditions (27 miles), grade dips (.5 miles), cleaned culverts (5 miles)	• Improve riparian veg. to reduce erosion. • Increase shade to reduce stream temperature. • Stabilize stream banks to reduce erosion. • Increase bank storage. • Improve road drainage.
Fish Fiesta Outreach	Sponsored a Kids fishing day in partnership with NMDFG.	• Provided outreach and education.

Carson National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Upper Rio Grande (13020101) Comanche Creek (130201010102)	Comanche Creek Wetland restoration (Valle Vidal Mgmt Unit): Work funded and performed in partnership with The Quivira Coalition NMED, SWQB – Wetlands and Rocky Mtn Youth Corps. Grassy Ck: Install 128 structures to arrest headcut migration in drainage channels (3 miles of stream). Removed 1 corrugated metal pipe and create hardened low water crossing on FR1905 (1.0 mi. stream habitat improved). Springwagon Canyon: Install 11 structures to arrest headcut migration in drainage channels (1.0 mile stream channel stabilized/restored. Comanche Ck: Dismantle and remove large elk/cattle exclosure. Construct new small elk/cattle exclosure to protect stream banks. Road Maintenance (FR1950): Improved road conditions (8 miles)	• Increase herbaceous ground cover. • Stabilize stream channel to reduce erosion. • Improve/stabilize wetlands. • Improve habitat for riparian dependent species. • Improve habitat and water quantity delivery to native trout streams. • Restore fen wetland function. • Improve road drainage.
Upper Rio Grande (13020101) Headwaters Arroyo Hondo (130201010701)	Wheeler Peak Wilderness Area: Work funded and performed in partnership with NM Dept. Game & Fish. Bighorn Sheep Population Reduction: Removal of Rocky Mtn bighorn sheep in effort to maintain good forage condition to maintain watershed health. (2,560 acres)	• Maintain alpine grassland habitat and forage production.
Upper Rio Grande (13020101) Cabresto Creek (130201010302)	Road Maintenance (FR134): Improved road conditions (14 miles)	• Improve road drainage.

Carson National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Cimarron (11080002) Middle Ponil (110800020202) North Ponil (110800020203)	Valle Vidal Mgmt. Unit: Work funded and performed in partnership with Philmont Boy Scout Ranch. Noxious weed treatment: Mechanical treatment (hand tools/ motorized mower): 110 Acres treated in the Middle Ponil, Bonito Canyon and McCrystal Creek drainages. Road Maintenance (FR1950): Improved road conditions (17 miles)	• Improve terrestrial species habitat. • Stabilize/restore vegetation species diversity. • Improve watershed condition. • Improve road drainage.
Upper Rio Grande (13020101) Middle Red River (130201010303) Cabresto Creek (130201010302)	Road Maintenance (FR597): Improved road conditions (9 miles). Red River Trout Habitat Project (Planning – NEPA): Completed plan with Stakeholders and Partners to improve trout habitat conditions on the Red River adjacent Eagle Rock Lake (0.4 mile) and adjacent the NMDept. Game & Fish – Red River Fish Hatchery (0.8 mile). Work will include removal of old fish barriers and improve movement of fish upstream.	• Improve road drainage. • Improve cold water trout habitat, • Improve stream water quality.
Upper Rio Grande (13020101) Lower Red River (130201010304)	Questa/Lama WUI: Thinning: Mechanical thinning with lop and scatter of slash (10 acres).	• Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion in pinyon/juniper vegetation type.
Upper Rio Grande (13020101) Arroyo Hondo-Rio Grande (130201010703)	San Cristobal Allotment: Projects completed with NRCS EQIP grant funding obtained by allotment Permittees- Cattle Guard installation Fencing of Water tank Road Maintenance (FR493, FR493A, FR 9)--Improved road conditions (9 miles)	• Improve grazing distribution and improve watershed condition within pastures. • Maintain stability/integrity of existing water source structure. • Improve road drainage.

Cibola National Forest

Watershed/HUC No.	Project Description	Water Quality Benefits
Agua Medio-Bluewater Creek (130202070201) Ojo Redondo-Bluewater Creek (130303070205)	Bluewater Ecosystem Restoration Project- Ponderosa and Piñon/Juniper Prescribed Fire	• Increase herbaceous ground cover. • Decrease erosion. • Improve fire condition class. • 650 acres.
Upper Rio Nutria (150200040201)	Agua Ramora Stream Restoration- Head cut stabilization Stream structures	• Reduce erosion, prevent migration of head cut. • Stabilize stream channel. • 0.5 acres.
Headwaters San Pedro Creek (130202010501)	Sulphur Project- Ponderosa and Piñon/Juniper Mechanical treatments	• Increase ground cover. • Reduce erosion. • Restore natural conditions. • 134 acres.
Upper Tijeras Arroyo (130202030201)	Tablazon Project- Piñon/Juniper Mechanical treatments	• Increase ground cover. • Reduce erosion. • Restore natural conditions. • 196 acres.
Upper Hells Canyon Wash (130202030401)	David Canyon- Ponderosa and Piñon/Juniper thinning	• Increase ground cover. • Reduce erosion. • Restore natural conditions. • 500 acres.
Canon Mesteno-Canadian River (110800030505)	Canadian River Restoration Project- Salt cedar eradication/control	• Restore natural vegetation. • Improve riparian condition. • 60 acres.

Gila National Forest

Watershed/HUC No.	Project Description	Water Quality Benefits
Beaver Creek (1504000103) Houghton Canyon (150400010304) Houghton Canyon-Beaver Creek (150400010305)	V+T Allotment – entire allotment was kept in non-use. Wolf Hollow Trail 773 maintenance – 5 miles	• Decrease erosion from trail prism. • Improve watershed condition and herbaceous ground cover due to resting of allotment from livestock grazing resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.

Gila National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Palomas Creek-Rio Grande (1303010102) North Fork Palomas Creek-(130301010206) South Fork Palomas Creek-(130301010207) Seco Creek-(130301010403) North Seco Creek-(130301010401) Mud Spring-(130301010204) Circle Seven Creek-(130301010205)	Hermosa Allotment – entire allotment was kept in non-use resource protection – approx. 44,000 acres	• Improve watershed condition and herbaceous ground cover due to resting of allotment from livestock grazing resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.
Percha Creek (1303010103) (South Percha Creek-(130301010301) North Percha Creek-(130301010302)	Kingston Allotment Spring Development; Sam Bass Spring Maintenance; Kingston Campground; Reconstruction/Streambank Stabilization; Kingston Horse Pasture Thinning – 70 acres; Kingston Allotment Fence reconstruction – approx. 0.5 mile; Highway 152 hazardous tree removal; Carbonate Spring Maintenance; Black Range Crest Trail Maintenance – 5 miles; Trail 796 Maintenance – 1 mile	• Protection of riparian vegetation and water quality from ungulate grazing activities • Increase herbaceous ground cover. • Decrease erosion from trail prism. • Improve drainage features of road bed in campground. • Armoring of streambank with large natural riprap. • Soil stabilization through contour felling and increasing amount of organic material on soil. • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Caballo Reservoir (1303010104) Headwaters Las Animas-(130301010406) Cave Creek-(130301010405)	Animas Allotment – entire allotment was kept in non-use resource protection; Hermosa Allotment – entire allotment was kept in non-use resource protection – approx. 19,012 acres; Kingston Allotment Fence reconstruction – approx. 2.5 mile	• Improve watershed condition and herbaceous ground cover due to resting of allotment from livestock grazing resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.
Agua Fria Creek (1502000305) Harris Creek-Agua Fria Creek (150200030501)	723 acres of commercial thinning (Gap 2)	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.

Gila National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Cuervo Arroyo-Rio Grande (1303010202) Outlet Tierra Blanca Creek-(130301020204) Headwaters Tierra Blanca Creek (130301020203) Trujillo Canyon Creek (130301020201)	Tierra Blanca approx. 100 acres thinning; Tierra Blanca approx. 185 acres thinning; Wedgewood Allotment - entire allotment was kept in non-use resource protection	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover. • Thin current pinion/juniper stand improving grassland restoration. • Improve watershed condition and herbaceous ground cover due to resting of allotment from livestock grazing resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.
Corduroy Draw (1504000102) Upper Corduroy Draw (150400010201) Lower Corduroy Draw (150400010204) South Water Canyon (150400010202) Middle Corduroy Draw (150400010203)	North Wahoo Allotment - entire allotment was kept in non-use resource protection; V+T Allotment – entire allotment was kept in non-use; Adobe Spring Maintenance	• Improve watershed condition and herbaceous ground cover due to resting of allotment from livestock grazing resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Improve riparian function
Headwaters East Fork Gila River (1504000104) Hoyt Creek-(150400010401) Taylor Creek-()150400010402) Taylor Creek-Beaver Creek-(150400010403) Diamond Creek and Turkey Run drainages	Kemp Mesa Thinning 84 acres; D-Bar, Cox, and Panda Trick Tank Maintenance; Titanic and Lookout Trick Tank Maintenance; Steer Mesa and Black Mesa Trick Tank Maintenance; Wolf Hollow Trail 773 maintenance; Cienega Fire Use – 28 acres	• Improve watershed condition and herbaceous ground cover due to improved livestock and wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Decrease risk of extreme wildfire and improve watershed condition and herbaceous ground cover. • Improve riparian vegetation to reduce erosion. • Decrease erosion from trail prism and improve drainage off of trail
Railroad Canyon (1504000101) Upper Railroad Canyon (150400010101) Middle Railroad Canyon (150400010102) Lower Railroad Canyon (150400010103)	V+T Allotment – entire allotment was kept in non-use	• Improve watershed condition and herbaceous ground cover due to resting of allotment from livestock grazing resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.

Gila National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Headwaters Alamosa Creek (1302021106) Little Pigeon Canyon-Alamosa Creek (130202110603) Wahoo Canyon-Alamosa Creek - (130202110606)	North Wahoo Allotment - entire allotment was kept in non-use resource protection.	• Improve watershed condition and herbaceous ground cover due to resting of allotment from livestock grazing resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.
Upper Largo Creek (1502000302) El Caso Spring Canyon (150200030201) Sawmill Canyon-Largo Creek (150200030202)	Slaughter Mesa ~ 4613 acres of broadcast burning. Slaughter Mesa ~365 acres of thinning/encroaching tree removal. Slaughter Mesa ~320 acres of thinning/encroaching tree removal.	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Duck Creek Headwaters Duck Creek (150400020204)	31 acres of woodland fuelwood harvesting (Sacaton Mesa.)	• Increase herbaceous ground cover.
Headwaters Tularosa River (1504000401) Canon del Buey (150400040102)	Slaughter Mesa – 80 acres Thinning/encroaching tree removal.	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous groundcover.
LA Draw-Cienega Amarilla (1502000307)	33 acres of land clearing beneath roughly 4 miles of Tucson Electric Power utility lines.	• Decrease risk of wildfire and subsequent erosion associated with electric utility lines. • Increase herbaceous ground cover.
Middle Fork Gila River (1504000105) Gilita Creek (150400010502) Snow Canyon (150400010503)	15 acres of pile burning on the Reserve Ranger District; Deep Creek allotment entered non-use (resource protection) ~35 acres in this 6th code; 9 miles of allotment boundary and interior fence reconstructed. 3.5 miles of allotment boundary and interior fence reconstructed.	• Improve watershed condition due to resting of allotment from livestock grazing resulting in an increase in herbaceous ground cover, stabilized soils, and reduction in runoff, erosion and sedimentation. • Improve the management of the cattle distribution resulting in an increase of stabilized soils, and reduction in runoff, erosion and sedimentation. • Increase herbaceous ground cover.

Gila National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Outlet Tularosa River (1504000402) Sign Camp Canyon-(150400040205) South Fork Negrito (Creek-150400040203) Outlet North Fork Negrito Creek-(150400040204) Long Canyon-Tularosa River (150400040201) Negrito Creek-Tularosa River (150400040207)	Sheep Basin; Approx. 1338 acres of broadcast burning Sheep Basin pile burning ~ 50 acres of pile burning Entire Deep Creek allotment entered non-use (resource protection) ~500 acres in this 6th code Approximately 19 miles of allotment boundary and interior fence maintained or reconstructed Approximately 102 acres of thinning (Black Deer Six Shooter) Approximately 16.5 miles of allotment boundary fence maintained or reconstructed. 2 miles of allotment boundary fence maintained or reconstructed. 18.5 miles of allotment interior fence maintained or reconstructed; 0.5 mile of trail improved - Trail #616 A Walk in the Past 1.5 miles of allotment boundary fence maintained or reconstructed.	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover. • Improve watershed condition due to resting of allotment from livestock grazing resulting in an increase in herbaceous ground cover, stabilized soils and reduction in runoff, erosion and sedimentation. • Improve the management of the cattle distribution resulting in an increase of stabilized soils, and reduction in runoff, erosion and sedimentation. • Decreased erosion from trail prism.
Mule Creek-San Francisco River (1504000408) Big Pine Canyon-San Francisco River (150400040807) Big Dry Creek (150400040802)	120 acres of land clearing beneath roughly 5 miles of Tucson Electric Power utility lines 80 acres of salt cedar treatment along the San Francisco River from the confluence with Sipes Canyon to 0.3 miles below the confluence with Potholes Canyon; 1 mile of trail maintenance. Trail #250 San Francisco Hot Springs. 2.5 miles of trail maintenance. Trail #181 Holt-Apache.	• Decrease risk of wildfire and subsequent erosion associated with electric utility lines. • Increase herbaceous ground cover. • Reduce the spread of noxious weeds and improve riparian condition. • Decrease erosion from trail prism.
Y Canyon (1302020806) (a Jolla Canyon 1(30202080601)	Thinned 100 acres of encroaching trees in Moraga Canyon.	• Improve watershed condition and herbaceous ground cover.

Gila National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Centerfire Creek-San Francisco River (1504000403) Largo Canyon (150400040310) Starkweather Canyon (150400040309) Cienega Canyon-San Francisco River (150400040311) Trout Creek (150400040302)	Wallow and FiveBar/Rancho Grande pile burning - 344 acres; 159 acres of land clearing beneath roughly 18 miles of Tuscon Electric Power utility lines. 14.75 miles of allotment boundary fence reconstructed. 12 miles of allotment boundary and interior fence reconstructed; 35 acres of land clearing beneath roughly 2 miles of Tuscon Electric Power utility lines; 369 acres of Wildland Urban Interface thinning. 21.5 miles of allotment boundary and interior fence reconstructed. 2.4 miles of heavy trail maintenance including enhanced drainage. Trail 351 Trout Creek.	• Decrease risk of wildfire and subsequent erosion associated with electric utility lines • Increase herbaceous ground cover • Improve the management of the cattle distribution resulting in an increase of stabilized soils, and reduction in runoff, erosion and sedimentation • Improve the management of the cattle distribution resulting in an increase of stabilized soils, and reduction in runoff, erosion and sedimentation • Decrease erosion from trail prism
Pueblo Creek-San Francisco River (1504000406) Mineral Creek (150400040605) Upper Pueblo Creek (150400040601) Lower Pueblo Creek (150400040602) Vigil Canyon (150400040604)	372 acres of land clearing beneath roughly 15 miles of Tucson Electric Power utility lines. 8 acres of pile burning on the Reserve Ranger District. Entire Deep Creek allotment entered non-use (resource protection) ~100 acres in this 6th code. 20 acres of thinning along Forest Road 209. 8.5 miles of trail maintenance. Trail #90 Tige Rim and Trail #43 WS Mountain. Hand thinning of 100 acres of PJ near Snare Mesa	• Decrease risk of wildfire and subsequent erosion, including that associated with electric utility lines • Increase herbaceous ground cover • Improve watershed condition due to resting of allotment from livestock grazing resulting in an increase in herbaceous ground cover, stabilized soils, and reduction in runoff, erosion and sedimentation • Decrease erosion from the trail prism
Sapillo Creek-Gila River (1504000109) Middle Mogollon Creek (150400010905)	2 miles of trail maintenance. Trail #189 Rain Creek.	• Decreased erosion from the trail prism

Gila National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Deep Creek-San Francisco River (1504000404) Headwaters Saliz Canyon (150400040401) Devil's Creek (150400040404) Outlet Saliz Canyon (150400040402) Deep Creek (150400040405) Saliz Canyon-San Francisco River (150400040403) Devil's Creek-San Francisco River (150400040406)	144 acres of land clearing beneath roughly 11 miles of Tucson Electric Power utility lines. 25 acres of thinning along Forest Road 209 5 miles of allotment boundary fence reconstructed; Deep Creek allotment entered non-use (resource protection) ~8,200 acres. Deep Creek allotment entered non-use (resource protection) ~1,433 acres. 13.25 miles of allotment boundary and interior fence reconstructed Deep Creek allotment entered non-use (resource protection) ~17,844 acres. 14.5 miles of livestock exclosure fencing constructed along the San Francisco River (~564 acres); 26 miles of allotment boundary and interior fence maintained or reconstructed. 12 acres PJ thinning on Gutache Mesa.	• Decrease risk of wildfire and subsequent erosion, including those associated with electric utility lines • Increase herbaceous ground cover • Improve the management of the cattle distribution resulting in an increase of stabilized soils, and reduction in runoff, erosion and sedimentation • Improve watershed condition due to resting of allotment from livestock grazing resulting in an increase in herbaceous ground cover, stabilized soils, and reduction in runoff, erosion and sedimentation. • Protection of riparian vegetation and water quality from ungulate grazing activities
Headwaters East Fork Gila River (1504000104) Diamond Creek-East Fork Gila River (150400010407)	Salt Cedar removal: 400 acres	• Reduce the spread of noxious weeds and improve watershed condition
Mangas Creek (1504000203) Willow Creek-Mangas Creek (150400020301)	Bar 6 Hand Thinning -70acres	• Reduce hazardous fuels and increase of herbaceous ground cover

Gila National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Lordsburg Draw (1504000304) Headwaters Thompson Canyon (150400030403)	Pocketknife Well reconstruction	• Improve the management of cattle distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation
Gallinas Canyon-Mimbres River (1303020201) Powderhorn Canyon-Mimbres River (130302020101) Gallinas Canyon- (130302020106)	25 acres Juniper Pulling North Star Mesa; 25 acres thinning – 3 Circles WUI Black Range Crest Trail Maintenance	• Improve watershed condition • Decrease risk of wildfire • Decrease erosion from trail prism

Gila National Forest 2014 Update on BAER and Restoration Activities for Silver and Signal Fires

2013 Silver Fire - BAER

- Trail Work - Trail drainage features and tread work were implemented along 8 miles of Crest Trail #79 to Hillsboro Peak Lookout. This work was done to minimize erosion and excessive sedimentation from the trail.
- Road Work - The Gila National Forest's Construction and Maintenance crew focused on installing drainage features and partially reconstructing 4 miles of the Silver Creek road. Drainage features were added to 4 miles of the McKnight road. This work was done to minimize erosion.
- Channel clearing - Channel clearing was conducted in Little Gallinas Canyon along 2 miles of the Silver Creek road.
- Monitoring - Monitoring for seeding and mulching effectiveness began on the Silver Fire in the fall of 2013 and continuing into the fall of 2014. Monitoring will continue in 2015 after the growing season.

2014 Signal Fire - BAER

- Aerial Seeding - 1,525 acres of high and moderate burn severity were seeded to maintain soil productivity by reducing excessive erosion and sedimentation from the burned area.
- Road work - The Gila National Forest's Construction and Maintenance crew focused on installing drainage features along 7 miles of the Signal Peak road that were severely affected by the fire.
- Trail Work - Trail drainage features and tread work were implemented along 2.5 miles of the Continental Divide trail. This work was done to minimize erosion and excessive sedimentation from the trail.
- Monitoring - Monitoring for seeding effectiveness (reduction of post fire erosion) began in the fall of 2013 and will continue for the next 2 years.

Lincoln National Forest

Watershed/HUC No.	Project Description	Water Quality Benefits
Upper Aqua Chiquita (130600010201)	Fenced with Pipe and Rail Fence 1 miles on stream.	• Improve riparian veg. to reduce erosion. • Stabilize stream banks to reduce erosion. • Increase bank storage. • Decrease Channel Cutting.
Carrizo Creek (130600080101)	Wetland Construction --Constructed 1.5 acres of wetland .	• Improve riparian veg. to reduce erosion. • Increase herbaceous ground cover.
Cox Canyon Rio Peñasco (130600010302)	Constructed Temporary Fence around 1 mile of stream.	• Improve riparian veg. to reduce erosion. • Stabilize stream banks to reduce erosion. • Increase bank storage.
Gyp Spring Canyon (130600080204)	Thinning for Hazardous Fuels Reduction West Mountain CE (644 acres).	• Increase Herbaceous Ground Cover. • Reduce overland Erosion. • Decrease Risk of High Flows and Sediment by Decreasing Wildfire Risk.
Magado Canyon (130600080202)	Thinning on Cora Dutton (24).	• Increase Herbaceous Ground Cover. • Reduce overland Erosion. • Decrease Risk of High Flows and Sediment by Decreasing Wildfire Risk.
Aragon Canyon (130600050301) Gyp Spring Canyon (130600080204)	Aragon and Gyp Spring Subwatershed (3 acres).	• Increase Herbaceous Ground Cover. • Reduce overland Erosion. • Decrease Risk of High Flows and Sediment by Decreasing Wildfire Risk.
Middle Last Chance Canyon (130600010302)	Sitting Bull Canyon Riparian Enhancement (1 acre) –Trail Realignment.	• Reduce Erosion/Rockfall.
Cuervo Creek Chimney Canyon (130600010403)	Blue Water Fuels Treatment.	• Increase Herbaceous Ground Cover. • Reduce overland Erosion. • Decrease Risk of High Flows and Sediment by Decreasing Wildfire Risk.

Santa Fe National Forest

Watershed/HUC No.	Project Description	Water Quality Benefits
Rio Capulin (130201020601)	Gallina WUI Prescribed burn (337 acres) ponderosa pine. East Trick Tank maintenance-383 acres range vegetation improvement.	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover by improving watershed condition and herbaceous ground cover due to improved livestock and wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.
Upper Rio Gallina (130201020603)	Gallina WUI Prescribed burn (224 acres) ponderosa pine. Gallina East-West Acequia reestablished diversion head gate; partnered with NRCS and ISC. Leon Spring-361 acres range vegetation improvement.	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover. • Decrease erosion.
Middle Rio Gallina (130201020605)	Oil Well-1,164 acres range vegetation improvement. Ojo Cercado Spring-339 acres range vegetation improvement.	• Increase herbaceous ground cover. • Decrease erosion.
Lower Rio Gallina (130201020608)	Mud Spring-581 acres range vegetation improvement. Lagunita Spring-442 acres range vegetation improvement. La Presa-Llaves Boundary Fence-1,262 acres range vegetation improvement.	• Increase herbaceous ground cover. • Decrease erosion. • Improve the management of the cattle distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.
Coyote Creek (130201020802)	Nestor Spring-286 acres range vegetation improvement.	• Increase herbaceous ground cover. • Decrease erosion.
Headwaters Rio Puerco (130201020803)	Diego BAER: Road maintenance (6.5 miles), culvert installation and cleaning (8-12 culverts). Cultural sites (3) stabilization. Aerial Seeding (740 acres). Aranda Spring-416 acres range vegetation improvement.	• Improve road drainage. • Stabilize soil to reduce erosion • Increase herbaceous ground cover • Decrease erosion.

Santa Fe National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Outlet Rio Puerco (130201020804)	Pedernal Tanks 1&2, construct two earthen tanks-283 acres range vegetation improvement.	• Increase herbaceous ground cover by improving watershed condition and herbaceous ground cover due to improved livestock and wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.
Ojitos Canyon (130201021001)	Corral Units 2 & 3 Removal (152 acres), Corral 2&3 Broadcast burn (152 acres), Tusas Prescribe burn (25 acres) ponderosa pine.	• Decrease risk of extreme wildfire and associated erosion.
Rio Puerco-Abiquiu Reservoir (130201021003)	Rio Chama Machine Piling (375 acres) ponderosa pine. Fuerte Prescribe burn (36 acres) ponderosa pine. Potrero Spring #5-804 acres range vegetation improvement. Ojitos Pipeline-1,120 acres range vegetation improvement.	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover. • Decrease erosion.
Canones Creek (130201021005)	Caidos de la Jara, construct earthen tank-203 acres range vegetation improvement.	• Increase herbaceous ground cover by improving watershed condition and herbaceous ground cover due to improved livestock and wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.
Rito Penas Negras (130202020101)	Jarosa Boundary Fence-1,028 acres range vegetation improvement.	• Improve the management of the cattle distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.
Headwaters Rio Cebolla (130202020103)	Cerro Grante Tank, construct earthen tank-452 acres range vegetation improvement.	• Increase herbaceous ground cover by improving watershed condition and herbaceous ground cover due to improved livestock and wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.

New Mexico Department of Game and Fish

Watershed/HUC No.	Project Description	Water Quality Benefits
Pecos River	Aquatic habitat improvement on 0.5 mile within two reaches (Jamie Koch and Tererro Wildlife Areas) of the upper Pecos River including increasing pool habitat and diversity with large boulders, developing point bars, and planting native riparian vegetation.	• Reduce width-to-depth ratios and water temperature • Stabilize stream banks and reduce sedimentation
San Juan River	Aquatic habitat improvement on 0.5 mile within one reach of the upper San Juan River including increasing pool habitat and diversity with large boulders, developing point bars, and planting native riparian vegetation.	• Reduce width-to-depth ratios and water temperature • Stabilize stream banks and reduce sedimentation • Removal of non-native riparian vegetation and replace with native vegetation to increase riparian zone health.
Plains of San Agustin	Ponderosa thinning (700 acres)	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover
Rio Chama	Decadent shrub removal. Reseeding following treatment (120 acres) Ponderosa Thinning (260 acres) Prescribed Fire (2000 acres)	• Decrease sheet flow and erosion • Increase herbaceous ground cover • Decrease risk of extreme wildfire and associated erosion.
Blanco Canyon	Decadent shrub removal. Reseeding following treatment (500 acres)	• Decrease sheet flow and erosion • Increase water yield • Increase herbaceous ground cover
Carrizo Wash	Prescribed Fire (4000 acres) Ponderosa Thinning (260 acres)	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover
Lost Draw	Mesquite Removal (500 acres) Lovegrass Removal/Reseeding (150 acres)	• Increase herbaceous ground cover. • Decrease erosion.

Natural Resources Conservation Service:

The Natural Resources Conservation Service (NRCS) in New Mexico delivers voluntary programs, products and services that help local people protect and improve natural resources on non-federal lands. This includes addressing the resource concern of water quality. For more Information visit: www.nrcs.usda.gov/wps/portal/nrcs/site/nm/home.

NRCS Field Offices across New Mexico have assisted individuals and groups of land users to address water quality resource concerns in a number of ways that support the goals of the New Mexico Environment Department's NPS program goals.

Below is a summary of some of the practices supported by NRCS in 2014 which are likely to be most relevant to water quality improvement and protection in New Mexico. In general, these practices conserve soil, promote infiltration of precipitation, and reduce runoff of sediment and nutrients. The information was provided to NMED by eight digit watershed, without identifying specific water bodies that may have benefited, and has been condensed here for brevity.

- Conservation cover or cover crops were applied on 25,290 acres.
- 29 grade stabilization structures were installed.
- Grazing management of various kinds (other than prescribed grazing or managing access to water) was applied on 1,145,631 acres.
- Prescribed grazing was conducted on 695,913 acres.
- Livestock access to water bodies was managed on 5,636 acres.
- Nutrient management was conducted on 8,771 acres.
- Riparian forest buffer was created on 6 acres.
- Streambank protection was supported on 1,722 acres.
- Wetland enhancement was supported on 7 acres.

NRCS Programs That Address Water Quality Resource Concerns Statewide.

Following is a brief description (provided by NRCS) of NRCS Programs and Partnerships that participants are using to address water quality resource concerns statewide.

- Environmental Quality Incentive Program (EQIP)
- In 2014, no new NWQI Contracts were written.
- Conservation Stewardship Program (CSP)
- Conservation Technical Assistance (CTA)

- NRCS Partnerships that address water quality using innovative approaches to leverage dollars and expertise:
- Agricultural Water Enhancement Program (AWEP)
- Cooperative Conservation Partnership Initiative (CCPI)

- Conservation Innovation Grants (CIG)
- Small Watershed Program
- American Indian Nations
- NM Acequia Associations
- State and Local Governments
- Other Non-Profits and NGOs
- NM Association of Conservation Districts
- NM Coalition of Conservation districts

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