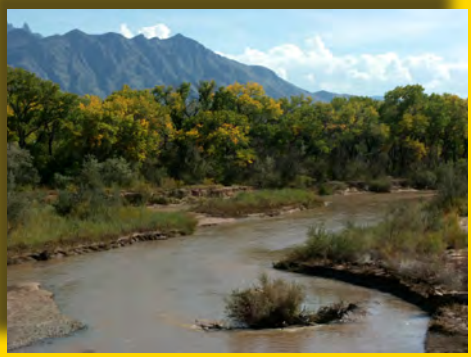
State of New Mexico
NONPOINT SOURCE MANAGEMENT PROGRAM




2016 Annual Report

New Mexico Environment Department
Surface Water Quality Bureau
Watershed Protection Section

State of New Mexico
Nonpoint Source Management Program

2016 Annual Report

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The Bureau of Land Management, New Mexico State Forestry Division, United States Forest Service, the New Mexico Department of Game and Fish, and the Natural Resources Conservation Service.

Copies of this and other reports are available on the Surface Water Quality Bureau website:

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BUTCH TONGATE
Cabinet Secretary - Designate

J. C. BORREGO
Deputy Secretary

January 27, 2017

William K. Honker
Director, Water 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 2016 Nonpoint Source Management Program Annual Report. In this report we document 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 2016 for each:

1. Under the **watershed-based planning** objective, local cooperators, with technical assistance from our staff, completed the Lower Animas River Watershed-Based Plan and the Watershed-Based Plan for the Mora River – Upper Canadian Plateau in 2016. The plans were reviewed by Region 6, and meet the planning elements in the *Nonpoint Source Program and Grants Guidelines for States and Territories*.

2. We report the successful completion of two projects funded under Section 319 that **address water quality problems**. We are also glad to report that NMED is supporting three new projects that implement watershed-based plans beginning in 2016, also funded under Section 319.

3. To better **protect water quality**, New Mexico's Nonpoint Source Program staff issued conditional certification for five new Section 404 permits and reviewed 47 projects covered by existing Section 404 permits for consistency with their certifications. Nonpoint Source Program staff also carried out their responsibilities related to surface water quality protection under the New Mexico Mining Act.

4. Related to **education and outreach,** four issues of the newsletter *Clearing the Waters* were published in 2016. Additional publications, workshops, and field tours were included in

projects completed in 2016. Of special note, an average of 47 attendees shared technical information on wetlands conservation and management at four day-long Wetlands Roundtable meetings conducted as part of Wetlands Program projects.

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

6. Finally, we report promising developments related to **interagency cooperation** and coordination. The five National Forests in New Mexico are developing new Land and Resource Management Plans (often referred to as forest plans) that will implement the 2012 Planning Rule, which requires components for the maintenance and restoration of water quality. The Natural Resources Conservation Service (NRCS) reported implementation under the National Water Quality Initiative (NWQI), with enough information for NMED staff to estimate reductions in pollutant loading from those efforts.

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 (505-827-2819) or Abe Franklin of my staff (505-827-2793).

Sincerely,

Shelly Lemon

Shelly Lemon

Bureau Chief (Acting)
Surface Water Quality Bureau

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Executive Summary

This annual report to the United States Environmental Protection Agency (EPA) provides an overview of Clean Water Act (CWA) Section 319 Nonpoint Source Management Program related activities conducted in New Mexico in 2016. Polluted runoff, or nonpoint source (NPS) pollution, is defined by 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." 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 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 milestones for which a specific schedule is provided in the Nonpoint Source Management Program are reported on pages 4-8. Significant achievements include:

- A request for proposals (RFP) for comprehensive projects that will revise existing Watershed-Based Plans (WBP) or develop new WBPs was completed in 2016, with four new projects underway in September 2016.
- Four watershed-based planning projects were completed in 2016. The Watershed-Based Plan for the Mora River – Upper Canadian Plateau (Project 13-D) and The Lower Animas Watershed-Based Plan (Project 14-F) resulted in EPA-accepted WBPs. Two others are in final review.
- The Moreno Valley Wetlands Action Plan (WAP) was completed, and the Comanche Creek WAP was updated in 2016. The Comanche Creek WAP may provide critical information for the Comanche Creek WBP now under development.
- An RFP for projects that implement WBPs was completed with three new projects beginning in May 2016. A similar RFP for additional projects was released in October 2016.
- State-funded watershed and riparian restoration projects were developed and managed in 2016 with seventeen projects in progress at the beginning of the year and four state funded restoration projects successfully completed during this year.
- A Success Story nomination was submitted to EPA for Bluewater Creek in December 2016.
- Two on-the-ground projects funded under Section 319 were completed.
- Two new Wetlands Program Development projects were awarded funding by EPA, and five projects funded under CWA Section 104(b)(3) Wetlands Program Development Grants were completed this year.

In addition, 4 National Forests, the Bureau of Land Management, the Natural Resources Conservation Service, the New Mexico State Forestry Division, and the New Mexico Department of Game and Fish provided information for the report on their activities related to NPS pollution control in 2016.

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 2016 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 Section 319 projects, and those implemented by the state-funded River Stewardship Program, 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 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 kinds of NPS pollution are temperature, nutrients, and bacteria.

Runoff flowing off a dirt parking lot into San Vicente Creek in Silver City, New Mexico.

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. At the heart of the Section 319 program in New Mexico is working with stakeholders to seek solutions through collaboration in developing and implementing watershed-based plans that mitigate NPS pollution.

Mora watershed landowners at an informal open house at the Watrous Fire Station to discuss NPS pollution and possible mitigation strategies.

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 as 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). The current NPS Management Plan was approved in early 2015 and is available at https://www.env.nm.gov/swqb/wps/Plan/.

Our ultimate goal is to manage a balanced program that addresses both existing impairments (as listed in the *State of New Mexico CWA §303(d)/§305(b) Integrated Report*) and prevents future impairments. The focus on existing impairments is directed at impaired waters in three different impairment categories. The large majority of these waters have one or more approved Total Maximum Daily Loads (TMDLs) that set quantitative goals for impairment parameters. The TMDL is the total amount of pollutant a waterbody can assimilate daily and still meet water quality standards. In calculating a TMDL for an impaired waterbody, a target value of pollutant load reduction is also provided. Most of these streams are within Category 4A in the *State of New Mexico CWA §303(d)/§305(b) Integrated Report*. A smaller number of priority streams are thought to be impaired by low flow conditions rather than excessive pollutants. Thirteen such streams are listed in the 2016-2018 *State of New Mexico CWA §303(d)/§305(b) Integrated Report* under Category 4C. The remaining category (Category 4B) is for streams with sufficient planning completed that a TMDL is not required. Sandia Canyon, an ephemeral drainage on the Pajarito Plateau, is New Mexico's only stream with an approved Category 4B demonstration.

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://www.epa.gov/sites/production/files/2015-09/documents/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. NMED supports watershed-based planning through a competitive statewide request for proposals (RFP), conducted approximately annually, and through technical support provided to partner agencies and stakeholder groups interested in water quality. More information on watershed-based planning is available at https://www.env.nm.gov/swqb/wps/WBP.

The overall, long-term goal of New Mexico's NPS Management Program is:

> *To implement an adaptive watershed-based restoration and protection program with the active assistance of stakeholders, for all watersheds within New Mexico, to meet and maintain water quality standards and designated uses of surface water and ground water resources.*

NPS Management Program Milestones

NMED seeks to meet this long-term goal by taking specific actions described in the NPS Management Plan taken over approximately a five-year period. The NPS Management Plan includes at its core 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 Ground Water 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 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	2016 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 was completed in 2015 (www.env.nm.gov/swqb/wps/WBP).
1	Watershed Based Planning	A small procurement process is developed to update existing watershed plans.	2015	Milestone not met in 2016.
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.	Three WBPs covering 19 priority watersheds (in the Animas, Mora, and Rio San Antonio watersheds) were completed in 2016, meeting this milestone for 2016. In 2014 through 2016, five WBPs covering 60 priority watersheds have been completed.
1	Watershed Based Planning	Existing WBPs are updated.	2016, 2017, and 2018: 2 plans each year are updated, one plan each year is accepted by EPA.	Milestone not met for 2016.

Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	2016 Status
2	Addressing Water Quality Problems	Watershed restoration projects described in WBPs or accepted alternative plans are initiated in two priority watersheds per year.	2 watersheds per year, 2014 through 2018.	This milestone was met. Three Section 319 projects that implement WBPs were initiated in 2016, with planned activities in seven priority watersheds.
2	Addressing Water Quality Problems	Wetlands Action Plans (WAPs) are implemented in at least one priority watershed per year.	1 watershed per year, 2014 through 2018.	A wetlands project (funded under Clean Water Act Section 104(b)(3)) implementing a WAP in the Comanche Creek watershed was completed in 2016.
2	Addressing Water Quality Problems	Improve water quality in priority watersheds, meeting EPA performance measures (Success Stories).	2 watersheds annually, 2014 through 2018.	Milestone not met in 2016.
3	Water Quality Protection	NMED will fund post-fire actions that reduce sedimentation and protect aquatic habitat.	Any year in which a major and unnaturally intense wildfire occurs in the watershed of a cold or cool water stream.	No major wildfires occurred in 2016.
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 2016-2018 *CWA §303(d)/§305(b) Integrated Report* with a 1% reduction in impaired stream miles.

Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	2016 Status
4	Education and Outreach	*Clearing the Waters* is published quarterly.	Quarterly	This milestone was met for 2016 with publication of four issues of *Clearing the Waters* (www.env.nm.gov/swqb/Newsletters).
4	Education and Outreach	*Clearing the Waters* circulation increases to 2000 by 2018.	2018	This milestone is scheduled for 2018. *Clearing the Waters* circulation was 1,321 at the end of 2016.
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	Milestone was met. The Virtual Library (www.allaboutwatersheds.org) had 131,171 in hits in 2015 and 168,046 hits in 2016 for a 28% increase in traffic.
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	Milestone met. NRCS reported that 40 acres of forest stand improvement (thinning) and 40 acres of woody residue treatment (prescribed fire) were implemented in the Arroyo Pecos-Gallinas River watershed, and WPS developed a load reduction estimate from that.
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	Milestone met. The NPS Annual Report was submitted in January 2016.

Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	2016 Status
6	Interagency Cooperation	USACE approves a programmatic agreement with NMDOT to establish the framework for an APRM program.	2015	This milestone was met in 2014.
6	Interagency Cooperation	The MOU between NMED and USFS is renewed.	2017	Not scheduled for 2016.
6	Interagency Cooperation	The grant from DOE that supports the work of the DOE Oversight Bureau is re-issued.	2018	Not scheduled for 2016.
6	Interagency Cooperation	A revised NPS Management Plan is submitted to the EPA Regional Administrator.	2018	Not scheduled for 2016.

NPS Management Program Objectives Completed in 2016

- An RFP for comprehensive projects that will revise existing WBPs or develop new WBPs was completed in 2016, with four new projects underway in September 2016.

- WPS continues to provide contract oversight and technical assistance for watershed-based planning. Four watershed-based planning projects were completed in 2016. The *Watershed Based Plan for the Mora River – Upper Canadian Plateau* (FY 13-D) and the *Lower Animas Watershed-Based Plan* (FY 14-F) resulted in EPA-accepted WBPs. A third project, *Watershed-Based Planning within the Upper Rio San Antonio Drainage Basin* (FY 12-J), completed in 2015, resulted in an EPA-accepted WBP in May 2016.

- The Moreno Valley Wetlands Action Plan (WAP) was completed, and the Comanche Creek WAP was updated in 2016. These are available at www.env.nm.gov/swqb/Wetlands/WAP. The Moreno Valley WAP is currently a stand-alone document but will be integrated (either as a new section or as an appendix)

with the Cimarron WBP in 2017. The Comanche Creek WAP may provide critical information for the Comanche Creek WBP now under development.

- An RFP for projects that implement WBPs was completed with three new projects beginning in May 2016. These projects are funded with Section 319 watershed project funds. A similar RFP for additional projects was released in October 2016.

- WPS continued to provide contract oversight and technical assistance for ongoing implementation projects. Three of the five implementation projects scheduled to be complete in 2106 were completed as planned. The other two projects are discussed below in the **NPS Management Program Problems and Concerns** section below.

- State-funded watershed and riparian restoration projects were developed and managed in 2016 with fifteen projects already in progress at the beginning of the year. An RFP for River Stewardship Program projects was released in January 2016. Contracts are in review for new projects expected to begin in early 2017. The New Mexico Legislature passed funding for the River Stewardship Program during the 2016 legislative session, and these funds were included in the 2016 RFP.

- A Success Story nomination was submitted to EPA for Bluewater Creek in December 2016. Bluewater Creek upstream of Bluewater Reservoir was delisted for turbidity in 2010 and nutrients in 2014. The Success Story nomination describes a Section 319 project implemented by WildEarth Guardians and management of feral horses by the Cibola National Forest along with statistical evidence that water quality improved.

- NMED senior management delegated responsibility to WPS to identify key National Environmental Policy Act (NEPA) documents for federal consistency reviews, and to provide reviews directly to the federal agencies. WPS reviewed four proposed projects with potential impacts to surface water quality in 2016.

- NMED carried out its responsibilities under Section 401 of the Clean Water Act, regarding dredge and fill permits. The US Army Corps of Engineers developed new Nationwide Permits (NWPs) under Section 404 in 2016, with a target approval date in 2017. NMED provided input to the Corps during their development of the regional conditions that will facilitate more effective certification by NMED in 2017. This activity is described further in a section below.

- NMED carried out its duties under the New Mexico Mining Act. SWQB staff conducted water quality reviews at active and proposed mining sites, reviewed Mining Act permit applications, inspected mine sites, and ensured that mining activities will not violate surface water quality standards. Sixteen reviews were conducted in total, as detailed in a section below.

- NMED staff presented information on the NPS Management Program, including priorities for Section 319 and River Stewardship funding, to soil and water conservation districts (SWCDs) at regional meetings and statewide conferences of the New Mexico Association of Conservation Districts.

2016 was a relatively wet year in New Mexico, with no fires of significant size or intensity. No activities related to fire outlined in the NPS Management Program were warranted in 2016. The winter of 2016-2017 has seen near average precipitation, and current predictions suggest that precipitation in New Mexico during the first three months of 2017 may be slightly below average. Fire behavior may be somewhat greater in 2017 than in 2016 as a result.

Interagency Cooperation Highlights

NMED continues to forge and maintain relationships to promote interagency cooperation. This is critical in New Mexico where over 30% of the land and more than 50% of perennial stream miles are 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 9, 2016 between staff from all five National Forests in New Mexico, the USFS Regional Office, and several SWQB programs. SWQB staff and staff from the national forests provided updates on 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, with a draft forest plan and accompanying draft Environmental Impact Statement expected to be released in April 2017. The Carson National Forest plans to release a preliminary draft of its forest plan in spring 2017, and expects to release a Draft Proposed Plan and Draft EIS for public comment in fall 2017. The Santa Fe National Forest completed their Assessment Report and Need-for-Change document in 2016, is currently collecting public input on draft plan components, and plans to release their draft forest plan and accompanying draft Environmental Impact Statement in June 2017. The Gila National Forest is completing their Assessment Report and Need-for-Change document in early 2017. The Lincoln National Forest completed initial scoping in 2016, anticipates releasing a draft Assessment Report for public review in spring 2017, and plans to present a Need-for-Change document in summer 2017. 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.

Another topic included in the November coordination meeting with USFS addressed possible revisions to the New Mexico Water Quality Protection Agreement, a Memorandum of Understanding (MOU) between the USFS Southwest Region and NMED. The MOU is slated for renewal in 2017. Each National Forest also presented their progress implementing Watershed Restoration Action Plans.

The Natural Resources Conservation Service (NRCS) reported progress implementing the National Water Quality Initiative (NWQI) in New Mexico in 2016. The NWQI priority watersheds in New Mexico are still: Arroyo Pecos-Gallinas River (hydrologic unit code, or HUC, 130600010805), Mossman Arroyo (HUC 130301020801), Anthony Wash – Rio Grande (HUC 130301020803), Rincon Arroyo-Rio Grande (HUC 130301020404), Tonuco Draw-Rio Grande (HUC 130301020502), Alameda Arroyo-Rio Grande (HUC 130301020608), and Achenback Canyon-Rio Grande (HUC 130301020704). Relative to plans for 2016 described in the 2015 NPS Annual Report, NRCS reported that 40 acres of forest stand improvement and 40 acres of woody residue treatment were completed in the Arroyo Pecos-Gallinas River watershed in 2016. WPS staff used the Revised Universal Soil Loss Equation to estimate that this effort reduced sediment loading

by 0.8 tons per year, phosphorus by 2 lbs/yr, and nitrogen by 3 lbs/yr.

No other on-the-ground work under NWQI was reported for 2016, but NRCS provided a summary of work planned under NWQI in future years, on page 74 in the section below, **Additional Management Practices by Non-NMED Agencies**.

In 2016, the New Mexico Department of Transportation (NMDOT) formally initiated the Advance Permittee-Responsible Mitigation (APRM) program for three locations and is currently in the process of evaluating the mitigation properties using the New Mexico Rapid Assessment Method (NMRAM) USACE regulatory module. NMDOT solicited via RFP for a Land Trust to establish conservation easements on two of the properties.

The NMED Construction Programs Bureau (CPB) reported that the Arroyo de los Montoyas project, expected to reduce *E. coli* loading to the Rio Grande, was completed in 2016. CPB hopes that the project, funded under the Clean Water State Revolving Fund, will serve as an example for other communities in the future. As outlined in an MOU between NMED and the New Mexico Finance Authority, CPB is now responsible for oversight of water projects, including watershed restoration and management projects, funded through the Water Trust Board. WPS staff provide review of work completed under the watershed restoration and management projects to support CPB in their oversight.

This section mentions several projects by their titles and project numbers. More information on all Section 319 and River Stewardship Program projects is available at: www.env.nm.gov/swqb/wps/documents/NMED_319_and_RSP_Project_List.pdf.

NPS Management Program Objectives for 2017

The WPS has identified the following activities from the 2014 NPS Management Plan to meet Program Objectives in 2017.

- An RFP for comprehensive projects that will revise existing watershed-based plans or develop new watershed-based plans will be released in 2017, with new projects planned to start the spring of 2018.

- WPS will continue to provide contract oversight and technical assistance for ongoing watershed-based planning projects. Six watershed-based planning projects, all scheduled to be complete in 2018 or later, are listed in the following table.

Project Number(s)	Project Title	Project completion date	Streams included	Number of priority watersheds in project area
14-I	Ute Reservoir Watershed-Based Plan for Water Quality Restoration (Ute Reservoir WBP)	January 31, 2018	Canadian River, Pajarito Creek, Ute Creek	22
15-S, 16-F	Rio Fernando de Taos Watershed Based Plan	April 1, 2019	Rio Fernando de Taos	2

Project Number(s)	Project Title	Project completion date	Streams included	Number of priority watersheds in project area
16-G	Watershed-Based Planning within the Upper Agua Chiquita Drainage Basin	June 30, 2019	Agua Chiquita Creek	2
16-H	Upper Pecos Watershed-Based Plan Update and Revision	December 31, 2018	Pecos River, Holy Ghost Creek, Soldier Creek, Cow Creek	5
16-I	Watershed-Based Plan for the Upper Rio Grande Watershed, Comanche Creek Subwatershed	June 30, 2019	Comanche Creek	1
16-J	Rio de las Vacas Watershed-Based Plan	May 31, 2020	Rio de las Vacas	3

- WPS plans to submit a final WBP for Black Canyon Creek to EPA in spring 2017. WPS also plans to submit a draft WBP for Embudo Creek, by June 30, 2017.
- The Cimarron WBP (www.env.nm.gov/swqb/wps/WBP/Accepted/Cimarron) will be revised in 2017, as a deliverable under the project, "Ponil Creek Restoration Project, Phase II" (Project 14-D). The Moreno Valley WAP will be integrated into the Cimarron WBP, as a source of information used to identify new projects.
- The RFP released in October 2016 for projects that will implement WBPs, to be funded with Section 319 watershed project funds, will be completed. The resulting new projects are scheduled to begin in August 2017.
- WPS will continue to provide contract oversight and technical assistance for ongoing implementation projects. Two Section 319 implementation projects are scheduled to be complete in 2017. These are "Ponil Creek Restoration Project, Phase II" (Project 14-D) and "Upper Jaramillo Creek Water Quality Improvement Project" (Project 15-C).
- State-funded watershed and riparian restoration projects will be developed and managed in 2017. Eleven River Stewardship Program projects are in progress in early 2017. New River Stewardship Program projects under an RFP released in 2016 are expected to begin in early 2017. If the New Mexico Legislature passes funding for the River Stewardship Program during the 2017 legislative session, another RFP will be developed soon thereafter.
- At least one Success Story nomination will be submitted before September 1, 2017.

- NMED will invite NRCS to participate in a technical coordination meeting on pollutant load reduction modeling for work funded under NWQI.

- NMED will continue to carry out its responsibilities under Section 401 of the Clean Water Act, regarding dredge and fill permits. USACE developed new NWPs under Section 404 in 2016, with a target approval date in March 2017. NMED will certify, certify with conditions, or deny certification of these permits.

- NMED will continue to carry out its duties under the New Mexico Mining Act. Surface Water Quality Bureau staff will conduct water quality reviews at active and proposed mining sites, review Mining Act permit applications, inspect mine sites, and ensure that mining activities will not violate surface water quality standards.

- The SWQB part of the NMED web site is scheduled to be reformatted into WordPress in 2017. During this transition, content will be reformatted and updated to provide more intuitive access to key information. SWQB staff will also continue to encourage stakeholders to sign up for the SWQB mailing list (managed with the GovDelivery email delivery system) via the link on the main SWQB webpage.

- NMED staff will present information on the NPS Management Program, including priorities for Section 319 and River Stewardship funding, to SWCDs at regional conferences of the NMACD.

- The New Mexico Water Quality Protection Agreement, an MOU between the USFS Southwest Region and NMED, will be revised and approved before its current termination date of August 31, 2017.

- The New Mexico Nonpoint Source Management Program is scheduled to be revised in 2019. In 2017, a plan to complete that revision with substantive involvement from cooperating agencies and stakeholders will be developed and included in a Section 319 grant application to EPA. In the latter half of 2017, the initial steps in carrying out that plan will be implemented.

NPS Management Program Problems and Concerns

The NPS Annual Report for 2015 described internal challenges with procurement. Contract development through RFPs, small procurements, and contract amendments continued to be challenging in 2016. Relative to a year ago, staffing in NMED's Administrative Services Division (ASD) and SWQBs Financial Section has become more stable, and the contracts workgroup has helped people within different units understand administrative and programmatic requirements. The error rate for developing and processing documents and requests seems to have decreased, but RFPs are still requiring more than a year to complete. While the Standard Operating Procedures (SOPs) for procurement processes completed in 2016 have not been adopted, they are useful references for some staff.

Two watershed-based planning projects completed in 2016, for Black Canyon Creek (Project 12-C) and Embudo Creek (Project 12-H), have not resulted in EPA-accepted watershed-based plans. EPA reviewed the Black Canyon Creek WBP and provided comments in November, and WPS plans to submit a final WBP for Black Canyon Creek addressing EPA comments in spring 2017. WPS also plans to submit a draft WBP for Embudo Creek, completed by WPS staff with input from cooperators, by June 30, 2017.

In an effort to prevent some of the problems that occurred with these projects, contracts for newer WBP projects are structured so that in order for a contractor to be paid, they must submit a deliverable (along with documentation of expenses incurred as previously required), and the NMED project officer must accept the deliverable before certifying an invoice. Each project includes several tasks, and each task description specifies at least one deliverable. Another improvement has been inclusion of clearer timelines in each WBP project. The schedules within workplans attached to contracts now allow at least three months within the project term for completion of a quality assurance project plan (QAPP), if one is required. Workplans also allow at least thirty days for stakeholder review (including NMED review) of the draft WBP, at least thirty days for the contractor to address comments, followed by at least sixty days for EPA to review the WBP, and time for a revision by the contractor following EPA review, all within the project period.

Two on-the-ground 319 projects and one River Stewardship Program project were terminated in 2017 prior to the projects being completed. These were "Urban Green Infrastructure Retrofit Pilot Project in Albuquerque" (Project 12-F), "Riparian Restoration along the Rio Cebolla, NM with Emphasis on Sediment Reduction" (Project 15-D), and "Post-Fire Restoration of the Rito de los Frijoles at Bandelier National Monument Visitors' Center" (Project 15-N). Each was terminated for a different reason. Project 12-F could not be completed because the landowner host, who had committed matching funds for construction with a strong letter of support as the project was being developed, did not follow through by providing that support within the term of the project. Project 15-D was to take place on the Santa Fe National Forest (SFNF), which early in the project term decided to implement the fencing task with other funding, as part of a protection plan for the endangered New Mexico meadow jumping mouse. Notably, SFNF created a full riparian pasture rather than merely discouraging riparian grazing with drift fences, which may result in more significant water quality improvement than the Section 319 project would have produced. The U.S. Fish and Wildlife Service communicated that the two other on-the-ground components (road reclamation and earthen cattle tanks) would not be consistent with newly completed guidelines for protecting the endangered Jemez Mountain salamander. We considered amending the scope of work to allow construction of trick tanks (a less ground-disturbing livestock watering facility), but the contractor did not have in-house experience with trick tanks. The third project was terminated because the National Park Service, which had supported the project, lost their in-house capacity to complete the necessary hydrologic analysis of the project, and their technical support group in Fort Collins favored a spot-treatment to protect a historic structure rather than the natural channel design approach for a larger affected reach.

The above three projects were affected by lack of detailed planning or full commitment by stakeholders. In evaluating proposed projects, the degree of development and commitment of stakeholders are evaluated and scored as part of the decision whether or not to go forward with each project. Some risk is inherent in the selection process, that should be understood and minimized, but can't be completely eliminated. Potential ways to reduce the risk are to weight relevant evaluation criteria more heavily in the RFP, and to provide training to staff and cooperators to recognize and evaluate potential problems and develop more technically and financially sound solutions earlier in the project terms. The rate of early termination of projects will be monitored in future years before evaluating these options further.

Pollutant Load Reduction Reporting

Section 319(h)(11) of the Clean Water Act requires each state to report to EPA on an annual basis "reductions in nonpoint source pollutant loading," as a component of the Nonpoint Source Management Program Annual Report. EPA and NMED use the Grants Reporting and Tracking System (GRTS) to implement this reporting requirement. EPA set a deadline of February 28, 2017 for reporting 2016 load reductions. Information reported by NMED is available on line at http://tinyurl.com/NM-2016-Load-Reductions, and will be complete after February 28.

Effectiveness Monitoring of NPS Pollution Controls

Data collection for the Effectiveness Monitoring Program in 2016 has expanded both the baseline and post-implementation data sets, which strengthened the statistical analysis to determine the effects of restoration projects. The Analysis of Covariance (ANCOVA) using the Upstream/Downstream Before/After study design showed improvements on two streams this year: Comanche Creek and Bluewater Creek.

On Comanche Creek an updated ANCOVA showed a mean decrease in temperature of 0.7° with greatest effect at the higher temperature range. Although this is not enough to meet the standard, it shows a significant improvement due to restoration. This improvement augments the Success Story previously recognized for Comanche Creek following a de-listing for sediment and improvement in channel width to depth ratio.

The SWQB nominated Bluewater Creek this year as the next potential Success Story after effectiveness monitoring showed a dramatic increase in canopy cover and an associated decrease in stream temperature. Densiometer readings at 12 transects showed a significant increase in canopy cover from 4 to 57 percent, and the ANCOVA showed a decrease in temperature across the entire range, with a mean reduction of 1.6°C

Bluewater Creek before restoration in 2009 (left) and after restoration in 2016 (right). Note cliffs in the background that indicate same photo point location.

due to the project. The Success Story nomination is currently under review by EPA.

As in previous years, the SWQB continued to collect effectiveness monitoring data on multiple streams to determine the effects of restoration projects on water quality. This monitoring provided baseline data for a new project on Cow Creek, and additional post-implementation data for existing projects to strengthen the statistical analysis.

Stream temperature monitoring continued in 2016 on nine streams. Temperature loggers recorded values every 15 minutes upstream and downstream of project reaches, and additional sites where tributary inputs could have significant effects. Sondes also recorded field parameters related to nutrient impairment on the Rio de las Vacas, including dissolved oxygen, pH, conductivity, and turbidity.

Waterbody	Start Date	2016 Comments
Comanche Creek	2009	ANCOVA results show mean temperature decrease of 0.7°C and greater effect at higher temperatures.
Rio de los Pinos	2009	Temperature monitoring continued for analysis in 2017.
Middle Ponil Creek	2009	Temperature and canopy monitoring conducted by the Cimarron Watershed Alliance.
Bluewater Creek	2009	De-listed for nutrients. Canopy cover increased dramatically from 4 to 57 percent. ANCOVA indicates temperature reduction across the full range, with a mean reduction of 1.6°C. Success Story nomination submitted to EPA.
San Antonio Creek	2009	Post-implementation temperature monitoring continued at all locations for analysis in 2017.
Redondo Creek	2010	Temperature monitoring continued - Flow was observed to have moved to a new channel on the south edge of the valley, therefore a new station was established there. A bear attack occurred in the restoration area in the spring.
Rito Peñas Negras	2010	Temperature monitoring continued on the upper and lower reaches by SWQB staff in conjunction with cooperator WildEarth Guardians, who also continued geomorphic and vegetation monitoring.
Jaramillo Creek	2012	Monitoring continued at all stations. This was the third year of monitoring, but the first year of monitoring following the completion of exclosures by WildEarth Guardians.
Rio de las Vacas	2012	Monitoring continued on the Lower Rio de Las Vacas, and flow was observed cutting into the bank around the “Digger Log” structure. Deployed sondes to measure field parameters during the fall index period on the Middle Rio de Las Vacas.
Cow Creek	2015	Collected 2nd year of baseline temperature monitoring at 4 sites: upstream, downstream, and bracketing Bull Creek tributary.

Results from preliminary data analysis are consistent with the general trend observed in past years, where 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 grows over the years. Data collection and analysis will continue into the future in order to account for the lag time.

In November the Effectiveness Monitoring Program coordinator led a workshop in Santa Fe on analysis of long-term datasets with ANCOVA, using Excel. The workshop was attended by five cooperators and five SWQB staff. This workshop was similar to previous offerings, covering data collection, validation, and analysis. Another workshop is planned for 2017 in southern New Mexico. Updates to the spreadsheet templates added capacity for multiple years of baseline and post-implementation data, as well as the ability to handle different logging intervals (15, 30, and 60-minute data).

The Effectiveness Monitoring Program Coordinator also participated again this year on the RFP committee to select projects for 319 funding for watershed-based planning projects. This was the eighth year in a row serving on the committee, and the coordinator is the only member that participates each year. This will be the case again in 2017 for the 319 On-the-Ground proposal reviews currently underway.

Additional highlights in 2016 include:

- Participating in the EPA National Nonpoint Monitoring Conference in Salt Lake City UT, October 2016;
- Assisting the Monitoring, Assessment, and Standards Section (MASS) with water quality sampling on the Upper Canadian Basin survey;
- Touring project areas with visiting EPA staff; and
- U.S. Army Corps of Engineers Wetland Plant ID Training.

Summaries of 319(h) Projects Completed in 2016

Black Canyon Watershed-Based Plan (12-C)

Project Budget:	CWA 319(h): $30,553	Match: $15,264	Project Total: $45,817
Watershed:	Upper Gila (HUC 15040001)		
Sub-watersheds:	Headwaters Black Canyon (HUC 150400010702) Outlet Black Canyon (HUC 150400010704)		
Impairments	TMDL for temperature		

Project Overview

Black Canyon Creek is a small tributary to the East Fork of the Gila River in southwest New Mexico. Over the past 30 years, the watershed has been heavily impacted by livestock grazing and multiple wildfires. This has led to severely degraded conditions in the creek and associated riparian corridor which includes a lack of streamside vegetation, channel incision and widening, and associated loss of floodplain storage capacity. The result has been an increase in water temperature that threatens its status as a quality trout fishery. Based on current New Mexico Water Quality Standards, Black Canyon Creek is impaired for temperature. Black Canyon Creek has also been identified as a crucial recovery water for the threatened Gila trout (*Oncorhynchus gilae*).

In 2012, CWA 319 funds were awarded to the Upper Gila Watershed Alliance to develop a watershed-based restoration plan that addresses the temperature impairment in Black Canyon Creek from Black Canyon Campground to the headwaters. Since the temperature data to develop the TMDL were from a single sampling site at the bottom of the assessment unit at Black Canyon Campground, a sampling plan was developed to deploy thermographs at select sites up to the headwaters of Black Canyon Creek. Additional work included field reconnaissance, one cross section, collection of stream canopy measurements, and stakeholder engagement.

Project Activities

Nine temperature loggers were deployed in mid-May 2012 at select sites from the NMED monitoring station downstream of Black Canyon Campground to approximately one half mile below the headwaters in Reeds Meadow. Canopy measurements were also collected at the time of deployment. All mainstem temperature loggers deployed in 2012 exceeded the WQ standard. Temperature loggers were also deployed in Black Canyon Creek above Aspen Canyon and at Bonner Canyon from June 10 to September 30 2015. Both loggers exceeded the WQ standard shortly after deployment.

On June 21, 2016, real time "grab" temperature data were recorded at select locations from the Aldo Leopold Wilderness Boundary to just above the confluence with Aspen Canyon. This consisted of taking single point measurements with a hand held probe. This included collecting temperature data from the mainstem of Black Canyon Creek, three adjacent springs, Aspen Canyon above the confluence with Black Canyon, and the outflow of the one remaining beaver dam in the project reach. Water temperatures in Black Canyon Creek ranged from a low of 18.5 ºC at the start of a gaining reach to a high of 31.2 ºC just upstream of where

the stream dried out. This analysis provided a greater level of detail found in either the TMDL or the prior thermograph data gathered as part of this planning effort. Based on the stream temperature data collected and field reconnaissance, three mitigation measures were prescribed.

Leaving the Diamond Bar Allotment at Rest - Due to degraded conditions, cattle were removed from the watershed in 2006 and the grazing permit has not been renewed. Although the permit is up for renewal in 2017, the GNF has no plans to re-issue the permit at this time. It is critical to the recovery of the riparian area and mitigation of the temperature impairment that the Diamond Bar grazing allotment remain at rest until the riparian area reaches a more stable condition.

Encourage Beaver Activity - Beaver (*Castor canadensis*) build dams that can provide a variety of ecological services. In recent years facilitating beaver activity to restore watersheds has become a recognized tool to address problems of channel incision, loss of riparian habitat, and impaired water quality including temperature. The water impounded behind a beaver dam raises the shallow groundwater table and sub-irrigates the surrounding area. The increase in available water promotes riparian plant growth increasing canopy cover and shade. The deeper water of the pond also increases hyporheic exchange and raises the water table.

Planting Riparian Vegetation - Canopy measurements collected in the fall of 2015 showed the riparian vegetation was concentrated in pockets with entire sections of the stream populated with little woody vegetation and primarily upland plants. The prescriptive treatment is to expand riparian vegetation beyond these pockets to include the entire perennial portions of the stream. Planting will primarily consist of willow, and cottonwood. Pole planting sites have been determined and prioritized primarily based on the potential for establishment and long term success. *Carex* species are very common above the confluence with Aspen Canyon and contributes to streambank stability, shading and sediment removal. Local *Carex* may be harvested and used on an experimental basis as streambank stabilization to reduce stream width where woody canopy may not be an appropriate or effective treatment.

A stretch of Black Canyon Creek that is shallow and devoid of any woody vegetation that would provide shade and reduce heating from solar radiation.

Outreach and Watershed Restoration Plan

A very limited prescribed Outreach Program was developed due to the remoteness of the Black Canyon Creek and sparse population. As a result, outreach was directed at the stakeholders who have the greatest vested interest in the area and success of the project and include: The Gila National Forest, the New Mexico Department of Game and Fish, the Gila Trout and Chihuahua Chub Recovery Team, the Mesilla Valley Fly Fishers and the Gila/Rio Grande chapter of Trout Unlimited.

A draft of *The Black Canyon Riparian Restoration Plan - A Watershed-Based Plan to Reduce Stream Temperature and Improve Habitat for Gila Trout* was submitted for review to project stakeholders and the EPA in the fall of 2016. Comments were received in November and a final draft is expected to be complete by March 31, 2017.

An Updated Watershed-Based Plan for the Lower Embudo Watershed (12-H)

Project Budget:	CWA 319(h): $243,779.06 Match: $225,866.69 Project Total: $469,645.75
Watershed:	Upper Rio Grande (HUC 13020101)
Sub-watersheds:	Cañada del Ojo Sarco (HUC 130201010907) Cañada del Ojo Sarco/Embudo Creek (HUC 130201010908) Arroyo de la Mina/Embudo Creek (HUC 130201010909)
Impairments	TMDLs for sedimentation/siltation and turbidity. Also listed for temperature.

Project Activities

The Updated Watershed-Based Plan for the Lower Embudo Watershed project encompasses approximately 94 square miles located on the western slopes of the Sangre de Cristo Mountains. The watershed is managed by the US Forest Service (~50 square miles), Bureau of Land Management (~25 square miles), State Land Office (~10 square miles) and private landowners (~10 square miles). Livestock production is an important land use in the watershed as are small farms and fruit orchards, though these are less abundant today than in the past. The impaired reach of the Rio Embudo begins from below the confluence with Cañada de Ojo Sarco and runs to the Rio Grande – approximately 7.8 miles in river length. Probable sources for the impairments include site clearance, channelization, loss of riparian habitat, off-road vehicles, rangeland grazing, streambank modifications/destabilization, unknown sources and natural sources. The Rio Embudo supported an important fish population that began to decline after the 1970's.

In 2012, CWA 319 funds were awarded to Arid Lands Institute to develop a watershed-based plan to address the levels and sources of sediment pollution in the Embudo Creek watershed and to develop strategies to reduce the sediment pollutant loads identified in the TMDL. To identify the likely sediment and erosional sources, field data from October 2013 to February 2015, which included 661

Members of the Embudo water sampling team collecting water samples for suspended sediment analysis on the Rio Embudo, April 2014.

sediment and turbidity samples, were interpreted using analytical geospatial modeling and the Revised Universal Soil Loss Equation (RUSLE) model.

Project Outcome

The RUSLE model is land use independent and can be used on cropland, disturbed forestland, rangeland, construction sites, mined land, reclaimed land, and other lands where rainfall and its associated overland flow cause soil erosion. The RUSLE relates soil conservation practices to other factors such as topography and soil characteristics to soil loss and erosion.

The total measured suspended sediment flux at the lower Embudo monitoring station in 2014 was 19,200 tons/year, 62% occurring during July summer monsoons. This information was input into the RUSLE model to improve understanding of the sediment transport processes with regards to land cover and land use practices and to help determine type and location of Best Management Practices (BMPs) for the watershed. The watershed-based plan (WBP) describes fourteen management measures and associated BMPs that are anticipated to have beneficial impacts to the watershed and reduce the rate of soil loss. These include prescriptive measures for forest restoration, rangeland restoration, soil conservation, road management strategies, and stream channel stabilization techniques. Because of the high resolution of the data collected as part of this WBP update, it may also be used to adjust the turbidity TMDL calculated in 2005.

Additional work included a stakeholder survey and various community meetings including the annual Celebrando las Acequias, an annual gathering exploring land, water and culture in the Lower Embudo Valley. The local community also assisted in data collection and provided input regarding probable sources of pollution and the types of best management practices that have been successfully utilized in the past. Although the funding agreement for this project has ended, the WBP is still in draft and will be made available to the public as soon as it is finalized - hopefully in the near future.

Watershed-Based Plan for the Mora River – Upper Canadian Plateau (13-D)

Project Budget:	CWA 319(h): $159,665.41 Match: $182,726.65 Project Total: $342,392.06
Watershed:	Mora (HUC 11080004)
Sub-watersheds:	The project encompasses twelve 12-digit watersheds
Impairments	TMDL for Nutrients

Project Summary

The Mora Watershed – Upper Canadian Plateau project area is located within the Mora Watershed in northeastern New Mexico in both Mora and San Miguel Counties. The project area begins approximately 50 miles downstream of the Mora River headwaters and extends downstream to the USGS stream gage east of Shoemaker. The elevation descends from 8,500’ on Black Mesa and the Turkey Mountains to 5,900’ at the eastern downstream edge of the watershed. The watershed is mostly comprised of plains and rangeland with

some piñon-juniper forest, canyon lands, and agricultural valleys. Mostly intermittent streams and some perennial streams come from mountain sources to the north and west. Some flatter areas with small depressional wetlands or intermittent playas are scattered throughout the rangelands. The project area is approximately 477 square miles (305,280 acres) and includes twelve 12-digit hydrologic unit code watersheds.

Using the available monitoring data, field assessments, and stakeholder input, the Hermit's Peak Watershed Alliance (HPWA) developed a Watershed-Based Plan for the lower Mora River valley. The WBP identifies projects that address nutrient impairments, as well as measures that have secondary benefits to overall water quality and healthy riparian vegetation. These secondary benefits include in situ water storage and filtering of upland runoff polluted with agricultural sediments, chemicals, ash, and residential wastes.

Project Outcome

A comprehensive suite of measures is presented in the WBP that approaches watershed work from a holistic perspective, recognizing the interconnected nature of all watershed elements. Restoration and management measures address root causes of watershed degradation that impact water quality and land health. All measures strive to reduce bare ground and reinstate abundant and diverse plant communities in upland and riparian areas with a focus on resilient native plants. They rebuild healthy soil ecosystems that enable the watershed's sponge to function and sequester and regulate nutrient movements by improving water infiltration and limiting erosion. They do this by providing carefully planned livestock management with specific tools like fencing, water development, herding, and rangeland improvements. Improvements to agricultural activities that maintain year-round plant cover and use regenerative farming practices like no-till and cover cropping systems are offered. Improved management provides benefits to both landowners and watersheds.

Landowners and stakeholders in the lower Mora Watershed were identified and engaged through public records research, "word-of-mouth" information, mailing information about the project along with a questionnaire, interviews, and 19 educational events held to inform locals of the work and solicit their ideas and knowledge. These events were part of the Land Stewardship Series hosted by HPWA beginning in 2013. This series provides a variety of educational presentations to the public about topics relevant to both land stewardship and watershed health. Landowners and managers are the target audience but others benefit as well. This series of continued, small and usually simple educational programs seems to be a very cost-effective means of providing landowner support and education, with approximately 319 participants.

Land Stewardship Series event - Harvesting and Conserving Water from Rural Roads.

In order to offer the incentives and technical and financial support needed to act on these measures, conservation, planning and regulatory tools such as Conservation Easements, Wetland Mitigation Banks, and financial assistance programs from various government agencies were recommended. The development of recommended riparian/stream buffers and best management practices provide clear guidance for land use planning efforts. Work with County, State and Federal agencies to improve on

regulatory or non-regulatory guidelines to support management and restoration measures are also complementary efforts. As a high priority, landowners need educational opportunities that explain specific techniques that may be practically implemented. Direct one-on-one work with landowners is likely to be most successful.

EPA accepted the WBP on August 9, 2016 (www.env.nm.gov/swqb/wps/WBP/Accepted/Rio%20Mora/LowerRioMoraWBPFinal.pdf).

Cow Creek Direct Implementation Pilot Project (13-E)

Project Budget:	CWA 319(h): $14,043.43	Match: $4,101.80	Project Total: $18,145.23
Watershed:	Pecos Headwaters (HUC 13060001)		
Sub-watersheds:	Headwaters Cow Creek (HUC 130600010101)		
Impairments	TMDL for temperature		

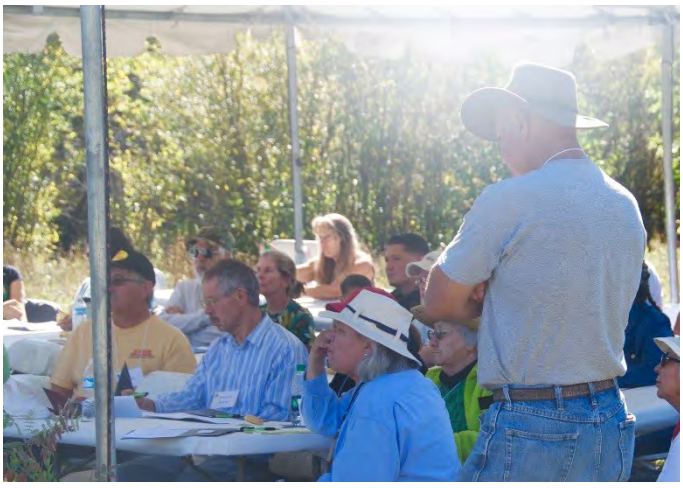
Project Summary

The project took place on Cow Creek, northeast of Pecos, New Mexico. Cow Creek is a significant tributary to the Pecos not far downstream from the headwaters, and has been recently impacted by fire, resulting floods and drought. A lack of stream bank vegetation (shade) is the primary cause of the temperature impairment in the stream. The goal of this project was to increase plant number and density on the banks and encourage stakeholder involvement. The project funded a planting workshop hosted by the Upper Pecos Watershed Association which providing planting instruction and information on protecting native riparian vegetation for shade. This effort implemented project #25 in the Upper Pecos Watershed Protection and Restoration Plan.

Project Outcome

A planting workshop was held September 26, 2015 for landowners along Cow Creek from Lower Colonias to the northern Forest Service boundary. Workshop presenters demonstrated planting techniques, willow cutting and willow whip staking techniques, and plant care recommendations. Presenters and nursery representatives also distributed dozens of samples of trees to workshop participants. More than 30 landowners attended. The workshop was well attended, but follow-on work (including plantings) experienced low community participation. In total, 8 landowners received and planted seedlings during and after the workshop.

The distributed plants were cared for by the



Participants learn the basics of riparian plant care and planting techniques at the Cow Creek Workshop.

landowners until planting in the spring of 2016. The success rate was high. Three of the visited landowners scored 100% survival rates. Two landowners had a 75%-80% survival rate. Die-back was probably due to browse by gophers, wildlife, and/or livestock. The Upper Pecos Watershed Association, who hosted the workshop, considers the project a success because it made significant inroads in this rural community which has historically been skeptical of outside assistance. NMED-SWQB considers the project a success since it is an early effort at executing a "small procurement" project with an abbreviated procurement process.

Middle RIO de las Vacas Water Quality Improvement Project (14-C)

Project Budget:	CWA 319(h): $278,648	Match: $197,512	Project Total: $476,160
Watershed:	Jemez (HUC 13020202)		
Sub-watersheds:	Outlet Rio de las Vacas (HUC 130202020105) San Pablo Canyon (HUC 130202040105)		
Impairments	TMDL for nutrients and temperature.		

Project Summary

The project is located on the Santa Fe National Forest south of the San Pedro Parks Wilderness and adjacent to Forest Road 120, primarily in the Outlet Rio de las Vacas watershed. Land uses in this rural watershed are grazing and recreation. Previous restoration activities were conducted to improve wetland habitat, reduce erosion, stabilize the stream channel, and protect some existing plantings with "hemi-exclosure" fences.

A lack of riparian vegetation and the resultant absence of shade cover is the primary cause of the temperature impairment. The probable sources of impairment include loss of riparian habitat, rangeland grazing, and streambank modifications/destabilization. The primary goal of this project was to reduce stream temperature by reducing incident solar radiation on the stream. Objectives were to re-establish and protect riparian vegetation, reduce access of livestock and grazing ungulates, and restrict OHV use in the riparian area. The primary management measure to reduce temperature was to increase midstory and overstory riparian canopy cover within the project area to provide shade and subsequently reduce the width to depth ratio of the stream. The primary management measure to achieve reductions in nutrient loading were to reduce livestock and ungulate use along the stream corridor, stabilize streambanks, and increase bank and floodplain ground cover which filter upslope runoff.

Data collection included taking cross sectional and longitudinal profiles to assess geomorphology, deploying temperature data loggers at select locations, and collecting percent canopy with densiometers to assess shade. In addition, the Spreadsheet Tool for Estimating Pollutant Loads (STEPL) was used to estimate reduction to pollutant loads from project implementation. Photopoints were also taken before, during, and after project implementation.

Partners and providers of match for the project included WildEarth Guardians, American Forests, National Forest Foundation, Colorado College, Santa Fe National Forest, and volunteers.

Project Outcome

The project included pole planting more than 40,000 willow, 800 narrowleaf cottonwoods, 800 aspen, and 600 riparian forage shrubs along 3.5 miles of the Rio de las Vacas. Willow species included coyote, bluestem, Bebbs, strapleaf, and pacific willow, all of which are native and appropriate to the elevation of the project site. The rational for these plant densities was to increase success of plant establishment and increase shade as quickly as possible.

To protect the riparian plantings and to facilitate other riparian plant growth, approximately two-dozen elk exclosures with pedestrian access were constructed to reduce impacts from livestock, elk, and OHV activity. The exclosures were built to complement the previously existing hemi-fencing structures along the stream. In addition, approximately 600 individual tree exclosures were constructed for cottonwood, alders, and aspen planted outside elk exclosures. To help eliminate unpermitted livestock from an adjacent allotment, fencing repair and maintenance was completed on approximately 1 mile of pasture fence. To further reduce impacts from ORV use to the riparian area, approximately ½ mile buck and pole fencing structures were also constructed.

To reduce the demand on the Rio de las Vacas for livestock watering, while still allowing for grazing outside the riparian area, WildEarth Guardians also constructed three water tanks (one trick tank and two earthen berm tanks, both of which collect rainwater) for livestock and wildlife use in two adjacent grazing allotments in San Pablo Canyon. Such drinkers are crucial to the long-term success of a riparian fencing project such as this, and also demonstrate the benefits of alternate water sources to the local community.

Community planting days allowed local members of the public to participate in restoring the riparian area, and to understand why restricting certain activities in the riparian area is necessary to protect water quality and the health of the river.

The Rio de las Vacas in April 2014 prior to project implementation- there is no woody vegetation and the left stream bank is unstable and eroding (left). The Rio de Las Vacas in September 2015 following pole planting and seeding (right). The stream has narrowed, streambanks have vegetative armouring to protect from erosion and shading has increased, helping to reduce temperature.

Lower Animas Watershed-Based Plan (State Funded) (14-F)

Project Budget:	State Funds: $287,540	Project Total: $287,540
Watershed:	Animas (HUC 14080104)	
Sub-watersheds:	Cox Canyon (HUC 140801041001)	
	Tucker Canyon - Animas River (HUC 140801041003)	
	Estes Arroyo - Animas River (HUC 140801041004)	
	Flora Vista Arroyo - Animas River (HUC 140801041005)	
	City of Farmington - Animas River (HUC 140801041006)	
Impairments	TMDLs for total nitrogen, total phosphorus, *E. coli*, and temperature.	

Project Summary

The Animas is an ecologically and politically complex river, crossing three EPA regions, two states and one tribe, three counties, four cities, a diverse range of soils and geology, and multiple ecological life-zones as it flows from its alpine headwaters in the San Juan Mountains of Colorado to its confluence with the San Juan River in the semi-desert sagebrush scrub lands of Farmington, New Mexico.

The goal of the watershed-based planning process was to compile information and present it in a way that relates water quality data to land use and pollutant sources, identify the best management practices that will best address these sources, and create a strategic plan that managers can use to move forward with implementation. The project focused on nutrients and *E. coli*. Two separate datasets were examined in development of the WBP.

Project Outcome

The WBP incorporates two new sets of water quality data. The first set sought to replicate prior sampling by targeting "hot-spot" inflows identified as priorities, and looking further upstream in drainage networks to see if new information could be discerned about the sources of nutrient pollution. The results of this sampling mirrored the original dataset in two important ways: First, the hotspots varied from sampling to sampling, and second, when pollutant loads from each inflow were examined instead of the concentrations, the cumulative loads flowing into the Animas were much lower than the load already in the mainstem of the river. This is where the second new dataset helped to fill an important data gap.

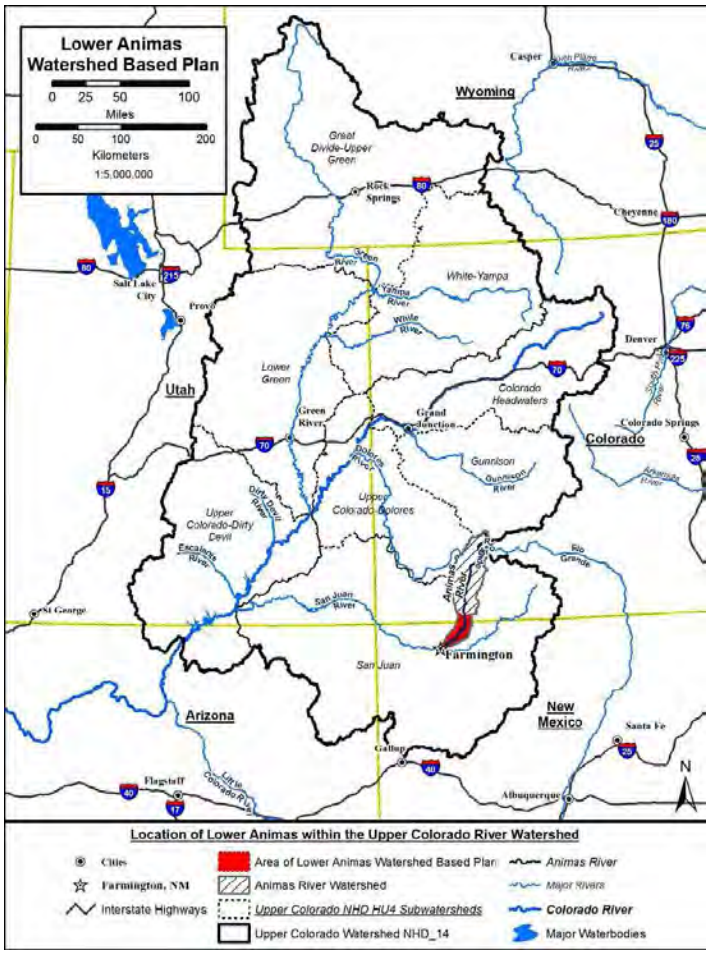
A microbial source tracking study identified the most prevalent bacterial sources to be ruminants and humans. It also measured bacteria and nutrient concentrations more frequently than previous studies had, providing a much better picture of the variability in nutrient and bacteria loading over the course of a year. While a two-fold increase in total nitrogen load from one site to another might seem quite substantial on a single sampling day, it looks quite different in the context of a site that ranged from 200 to 20,000 lbs of nitrogen per day over the course of a year. This type of variability was seen for nitrogen, phosphorus, and *E.coli* pollutant loads.

Looking more closely at this variability, pollutant loads at a single spot on the river were routinely 100 times higher following storm events than when it hadn't rained. Without directly sampling inflows dur-

ing storms, it is still unknown which tributaries contribute the most during storm events, and the proportion of pollutant loads that are stored or recycled within the channel remains a data gap as well. However, if 1% of storm loads were retained, that could account for almost the entirety of the loads observed at baseflow.

The two datasets changed the focus to targeting pollutant sources on the landscape, especially ones that reach the river via storm runoff. Directing on-the-ground restoration efforts at addressing runoff throughout the watershed will make it much easier to address pollutant sources by land-use category, and recommend specific management measures to achieve the load reductions we need.

The San Juan Watershed Group held 17 regular meetings during the term of the grant. All meetings were open to the public and most meeting summaries are available at the SJWG website: www.sanjuanswcd.com/watershed.



Location of the Lower Animas River planning area within the Upper Colorado Basin.

The San Juan Watershed Group completed the Lower Animas Watershed-Based Plan (LAWBP) to address nutrient impairments on the Animas River north of Aztec, New Mexico. Planning techniques included: (1) stakeholder engagement building on a core of working groups from two local watershed groups, the San Juan Watershed Group (based in New Mexico) and Animas Watershed Partnership (based in Colorado); (2) identifying pollutant sources within the six subwatersheds using a substantial existing data set and new targeted sampling; (3) identifying priority areas and management measures; (4) estimating current loads and possible reductions in the Lower Animas mainstem and 6 focal subwatersheds utilizing STEPL or a similar model; and (5) developing an implementation plan including milestones, criteria, education/outreach, and costs.

The Lower Animas River Watershed-Based Plan was accepted by EPA on August 9, 2016. The plan can be viewed at: https://www.env.nm.gov/swqb/wps/WBP/Accepted/Lower%20Animas/LowerAnimas-WBP_Aug2016_FINAL.pdf.

The New Mexico 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 River Stewardship Program builds on the success of past efforts with 319 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 Clean Water Act grants, ensuring that New Mexico continues to receive these funds.

Projects are selected through a Request for Proposals (RFP) process that complies with state procurement rules. 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 to include:

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.
3. Projects that improve urban water quality and stream habitat.

To date, the New Mexico Legislature has appropriated a total of $4.8 million to fund restoration projects through the River Stewardship Program. The table below provides a summary of funding by year. Summary data for approved projects are available at www.env.nm.gov/swqb/wps/documents/NMED_319_and_RSP_Project_List.pdf.

Appropriation Year	Amount (in millions)	Use of funds
2014	$2.3	12 restoration projects were funded. The projects were summarized in the 2015 NPS Annual Report and full descriptions will be provided in the annual report of the year of project completion (2018 or earlier).
2015	$1.0	6 restoration projects have been selected through the procurement process. The projects will begin in 2017 and be completed by 2019.
2016	$1.5	8 restoration projects have been selected through the procurement process. The projects will begin in 2017 and be completed by 2020.

Kewa North Bosque Demonstration Area: Restoring Riparian and Wetland Functions and Diversity

Project Budget:	$228,018 in state funds
Watershed:	Rio Grande - Santa Fe (13020201)
Sub-watersheds:	Galisteo - Rio Grande (130202010604)

Project Overview

Santo Domingo Pueblo is located along the Rio Grande north of Bernalillo a few miles downstream of Cochiti Dam. The dam was constructed in the 1960's to mitigate impacts from flooding due to heavy run-off with a secondary purpose of providing recreation and wildlife resources. The Rio Grande is incised approximately seven feet in the project area resulting from the dam and additional water management activities including: the Peña Blanca Riverside Drain, jetty jacks, rip-rap and sediment dredging. There is no longer natural regeneration of riparian vegetation because of lack of flooding and ground water is too deep.

Despite the alterations to the hydrologic cycle, Pueblo lands contain a unique 300-acre spring fed wetland and a cottonwood-willow bosque along seven miles of the Rio Grande. The Kewa wetland has been identified as the largest natural wetland along the Rio Grande, from its headwaters in Colorado to its outlet in Texas. It contains multiple springs, cattail marshes, wet meadows, two beaver ponds, riparian woodlands and what are likely the lowest elevation fens in the southwestern US. However, the Kewa wetland has been negatively impacted by grazing from trespass livestock and the incursion of non-native vegetation, specifically Russian olive and salt cedar.

This project used several techniques to improve wildlife habitat and ecological functioning of the bosque and wetlands, including: fencing to keep out livestock, construction, planting and irrigation of shallow depressions in the bosque, removal of non-native vegetation in the wetland, and planting of native riparian vegetation.

Project Activities

The Pueblo Natural Resources Department built corral traps to lure, capture and remove trespass cattle and horses from the wetlands. They also installed 0.4 miles of fencing needed to completely enclose and protect the wetlands. Fencing around the wetlands was innovatively constructed of the metal rods and cable from recycled jetty jacks that were pulled out of banks of the Rio Grande. Jetty jacks were 1950s-era erosion control structures that are now obsolete.

The Pueblo also contracted with Boss Reclamation to remove non-native riparian vegetation from 193 acres of the wetlands by mechanical extraction. Pueblo staff hand cut and applied herbicide to an additional 130 acres in the subsequent three years, including in the areas that were too wet for me-

Santo Domingo tribal members planting trees in shallow depressions excavated in the bosque.

chanical extraction. Native vegetation was then planted in the wetlands in 2013 and 2014. A total of 1,537 cottonwoods, 1,120 black willows and 840 coyote willows were planted. The plants were sourced from Bosque del Apache National Wildlife Refuge, Santa Ana Nursery, Caballo Reservoir, HydraAquatics, and local fields.

To aid in the establishment and recruitment of vegetation in the bosque area, three shallow depressions totaling 4.26 acres were excavated. Irrigation lines and a concrete floodgate control structure were installed. A total of 213 cottonwoods and 216 black willows were planted in the depressions. These areas were flood irrigated in the spring of 2013 and 2014 to simulate natural flooding. The spring of 2015 was wet enough to irrigate the depressions without adding water. Prior to irrigation, the depressions were also fenced for protection from livestock that swim across the river, and individual trees were wrapped for protection from beaver.

High school students from Santa Fe Indian School assisted with monitoring vegetation response in the project area. Post-germination monitoring indicated that in 2016, 109 naturally re-generated cottonwoods were growing. The cottonwoods had more natural re-generation, but the planted willows had a higher survivorship than the planted cottonwoods.

Bar 6 Canyon Riparian Restoration Project

Project Budget:	$65,219 in state funds
Watershed:	Upper Gila - Mangas (15040002)
Sub-watersheds:	Swan Canyon (150400020602)

Project Overview

Bar 6 Canyon is an intermittent tributary of the Gila River located in the Burro Mountains of the Gila National Forest in Grant County. The total stream distance from the project area downstream to the confluence with the Gila River is 13 miles. Located at the northernmost edge of the Chihuahuan Desert, the Burro Mountains are semi-arid and water for wildlife is scarce. Bar 6 Canyon and its tributary, Spring Canyon, provide the only naturally occurring surface water in the area. The watershed has been impacted by historic land use practices, as well as more modern activities such as grazing the riparian areas, woodcutting, and a county road constructed within the Bar 6 channel. A few remnant cottonwoods and black willows point to a degraded watershed where head cutting has lowered the water table and diminished alluvial surface water storage and subsequent spring flow.

The overall goal of the Bar 6 Project was to promote the long-term health of the watershed. Specific objectives were to repair down-cutting, restore flood plain access, stabilize streambanks with vegetation, create pools for wildlife, and fence the riparian area from cattle. The project was implemented by the Upper Gila Watershed Alliance with cooperation from the Gila National Forest and the grazing permittee. The project was designed and constructed by Stream Dynamic, Inc. using the principals of natural channel design.

Project Activities

The installation of a cattle drinker at a spring upstream of the project area by the US Forest Service created an alternate water source for livestock and provided an opportunity to restore sections of the riparian area. Project activities included stabilizing the stream banks in Bar 6 Canyon, creating boulder-lined step

Constructed rock cross vane prevents head cuts from migrating upstream.

pools for wildlife habitat, constructing a grazing exclosure to allow native vegetation to flourish, and planting willows, cottonwoods, and other riparian species to jump-start the recovery process. A total of 54 rock structures (Zuni bowls, cross vanes, one-rock dams, gully plugs, step pools, and rock rundowns) were built in Bar 6 and Spring Canyons. A 20-acre wildlife-friendly fence exclosure was constructed along the creek channel in Bar 6 Canyon. Fifty students and teachers from Aldo Leopold Middle School assisted by planting 114 native trees, shrubs and forbs. The Upper Gila Watershed Alliance shared information about the project in their newsletter.

La Mancha Wetland Project Phase II

Project Budget:	$199,000 in state funds
Watershed:	El Paso - Las Cruces (13030102)
Sub-watersheds:	Achenback Canyon - Rio Grande (130301020704)

Project Overview

This project is located along the Rio Grande in Dona Aña County just north of the town of Mesilla. Historically, the Rio Grande in the project area had a wide floodplain with a sinuous and sometimes braided, meandering channel with small oxbows, sloughs, ciénegas, marshes, and other associated riparian features. In the early 1900's Elephant Butte and Caballo Dams were constructed upstream to store water for agricultural purposes and reduce impacts from flooding. Three diversion dams, about 350 miles of drains, and approximately 300 miles of canals and laterals provide irrigation water for over 4,000 farms. In addition, the river is constrained by levees through most of Dona Aña County. This highly regulated system has resulted in an altered hydrograph with chronic dewatering of the river in the non-irrigation season and replacement of spring pulses with a relatively uniform flow throughout the growing season. Most of the associated natural aquatic habitat is gone.

The result of these modification and management practices has been a degradation of the river ecosystem. Ecological processes such as flooding have been eliminated, along with most riparian woodlands, wetlands, and wet meadows associated with the river. The changes have been devastating to the native fish community. Two-thirds of the 18-22 native fish species found in this reach of the Rio Grande have disappeared.

The goal of the La Mancha Wetland project was to restore aquatic and riparian habitat diversity along the Rio Grande, and restore nursery and spawning habitat for several native fish species: Gizzard shad, River carpsucker, Flathead catfish, Longnose gar and Blue catfish. The Southwest Environmental Center was the primary contractor for the project. The project area is on approximately six acres of land. Half of the area

is privately owned by Southwest Environmental Center. The other half is federal land managed by the U.S. International Boundary and Water Commission.

The project is approximately two miles upstream from a prior habitat restoration project, the Picacho Wetlands, located within the Mesilla Valley Bosque State Park. The proximity of the two wetlands increases the likelihood that they collectively will restore sufficient habitat to sustain populations of native fish from year to year, using a "habitat bead" approach to river restoration.

The design plan view of the La Mancha Wetland along the Rio Grande in southern New Mexico.

Project Outcome

The project consists of a 1.23 acre excavated pond. The pond was excavated to below groundwater and shaped to include shallow areas with emergent vegetation. The pond excavation was completed in February 2016 by subcontractor Stream Dynamics, Inc. A volunteer work weekend was held in March 2016 to plant trees, remove weeds, install bat houses, install ground water monitoring wells, and install vehicle barriers.

Although the pond is designed as native fish habitat, it is also supporting numerous other terrestrial, avian and aquatic species. A volunteer bio blitz was held in May 2016 to identify species in the wetland. Bio blitz participants and scientists have observed or heard Woodman toad, Plains leopard frog, Muskrat, Great blue heron, Green heron, Black-crowned heron, American coot, and several duck species.

The next phase of the project will be to connect the wetland to the Rio Grande. The pond will be connected to the river by a channel that will cross the floodway and penetrate the flood control levee via a culvert. The culvert will be gated to allow controlled flows into the pond. With the gates open, and when flow levels in the river are at 1200 cfs or greater, water will flow from the river into and out of the pond. At other times of lower flows in the river, the ponds will hold water but be isolated from the river. The project will have the ef-

fect of simulating a side channel that holds water year-round and is seasonally connected to the main channel. The Southwest Environmental Center is applying for a change in point of diversion of surface water rights, so that a connecting channel can be constructed between the pond and the river.

Bank Stabilization and Habitat Enhancement, a Red River Restoration Project

Project Budget: $274,911 in state funds
Watershed: Upper Rio Grande (13020101)
Sub-watersheds: Middle Red River (130201010303)

Project Activities

The project area is located on the Red River within the Town of Red River on the downstream (west) side of town in what was formerly called the Ballfield Reach. The Red River is tributary to the Rio Grande and has been negatively impacted by historic land uses including: mining, draining of large wetlands, floodplain development, removal of riparian vegetation, straightening of the river channel, and infrastructure encroachments on the active channel. Prior to the project, this section of the river was shallow and wide, and contained minimal fish habitat.

Cross vane constructed at the Red River Westside Fishing Park controls the grade, aerates river water, and provides fish habitat.

The Town of Red River subcontracted with Riverbend Engineering to design the project based on natural channel design principles. Andamo Sanchez Excavation and Construction constructed the project. The overall goal of the project was to stabilize banks and to enhance fish habitat for recreational fishing. Specific objectives of the project included:

- To re-establish the dynamic equilibrium form of the river, by modifying the dimension, pattern and profile as needed.
- To revegetate the river banks and floodplain with native riparian species.
- To utilize a mix of large rocks, woody debris, riparian transplants, etc. to ensure short term stability of the river's form, with the most natural look possible.
- To improve aquatic habitat and biomass holding capacity with increased structure, bed form diversity, increased channel depth, increased shade and decreased water temperatures.
- To support the aquatic food chain, with deciduous riparian vegetation at the channel edges and eddy habitat for the macro-invertebrate population.
- To support increased use of the riparian corridor by avian and terrestrial species.

- To provide increased recreational opportunities for people along the river, including fishing, walking, river aesthetics, handicap accessibility and child's play.

Project Outcome

The project treated 1,425 linear feet of river with an engineered design that included construction of five rock cross vanes, placement of two wood lunker boxes, bank fill, and several habitat boulders. Mature willows were transplanted from areas of dense vegetation, and willow poles and riparian container plants were planted on the south bank. Disturbed areas were seeded and mulched. Two permanent interpretive signs were installed and the area was re-named the Red River Westside Fishing Park. The park is easily accessible and open to the public for recreation. Pre- and post-implementation monitoring of the river geomorphology indicates that the river is now narrower and deeper, and has more habitat for fish.

Wetlands Program

Wetlands Program Plan Update

In February, 2015, EPA approved the update of the New Mexico Wetlands Program Plan which laid out a pathway to continue program development for the following five years. The Plan is available at www.epa.gov/wetlands/state-and-tribal-wetland-program-plans#r6. The SWQB Wetlands Program and its partners have made substantial progress in the development of a robust program that focuses on measures that will restore and protect New Mexico wetlands. Through this updated 5-year Wetlands Program Plan we hope to continue progress towards a comprehensive and sustainable Wetlands Program for New Mexico.

Funding Awarded to the Wetlands Program 2016

Two new Wetlands Program Development projects were awarded funding by EPA Region 6 in 2016. The grants for these projects total $533,904.00 awarded through the FY15-16 EPA Wetlands Program Development Grant Program authorized by CWA Section 104(b)(3). These projects advance the development of our statewide wetlands program and are consistent with our approved 10-year Wetlands Assessment and Monitoring Strategy and 2015 Wetlands Program Plan.

Wetlands Standards, Wetland Action Plans, and Improved Non-Regulatory Program Elements for New Mexico

This 3.5-year project will achieve six key capacity-building activities of the 2015 New Mexico Wetlands Program Plan for a comprehensive wetlands program:

1. Wetlands Water quality standards and designated uses package will be developed for the Southern High Plains playas in NM.
2. The framework for incorporating data into our SWQB database will be improved by a protocol for specifying wetlands assessment units (AUs).
3. We will work with local watershed groups to develop three Wetlands Action Plans (WAPs) as addendums to their WBPs.
4. Our WAP process will be improved by working with the Wetlands Conservancy Project to improve local government involvement, multi-stakeholder activities, and working with land trusts.
5. Wetlands quality and quantity will be increased by providing two significant trainings: crew leader training for volunteer restoration, and trainings for roads/transportation personnel.
6. The use of NMRAM data collection for riverine wetlands will be augmented by conducting an "All Hands" data collection effort.

Mapping and Classification of Wetlands, Southwestern New Mexico

This is a 4-year project to map and classify wetlands in southwestern New Mexico as part of our efforts to complete updated National Wetland Inventory mapping on all of New Mexico's wetlands. Products will include wetlands mapping and classification covering approximately 7,240 square miles, (~120 quadrangles), preparation of reference materials, base maps, functional correlation, and assemblage of information for the Arizona/New Mexico Mountain, Arizona/New Mexico Plateau, and the Chihuahuan Desert ecoregions, a vast

area of New Mexico where little wetlands information or mapping was previously available.

Wetlands Roundtables

The New Mexico Wetland Roundtables are part of a Wetlands Program Development Grant from EPA Region 6 to foster partnerships and collaboration for the restoration and protection of wetlands and riparian resources in New Mexico and are conducted on a semi-annual schedule. Attendees include government agencies, NGOs, and community stakeholders. In 2016, the Wetlands Program hosted four Wetlands Roundtables, two in the spring and two in the fall. The theme of both the fall Wetlands Roundtables was the 100-Year Celebration of the National Park Service and Monuments.

The spring Southern Wetlands Roundtable was co-sponsored by the National Wild Turkey Federation-Mesilla Valley Longbeards Chapter, and held at Las Cruces City Hall on April 11, 2016. Presentations included "La Mancha Wetland Restoration on the Rio Grande," "Extinct and Endangered Southwestern Wetlands," "National Wild Turkey Federation Habitat Projects," "New Mexico Wetlands and Citizen Science," "Rapid Assessment Results in the Gila Watershed," and an update by the USACE as well as lively discussions among the 36 attendees.

Leoncita False Foxglove (Agalinis calycina) ia a rare southwestern wetland species only known in 2 locations from tthe presentation"Extinct and Endangered Southwestern Wetlands," given by Bob Sivinski at the Southern Wetlands Roundtable on April 11, 2016.

The spring Northern Wetlands Roundtable was co-sponsored by the Western Landowners Alliance and was held in Santa Fe on April 18, 2016. Presentation topics included an update by the Corps of Engineers and presentations on "Climate Trends and New Mexico's Seasonal Outlook," "Western Landowners Alliance Working Lands Perspectives," "Rio Grande Wetland Jewels Project," "The Corrales Bosque Task Force," "The Future of the New Mexico Riparian Council," and roundtable discussions among the 41+ participants about National Forest Planning revisions, wetlands protection, and the resiliency of wetlands in the face of weather and climate challenges.

The fall Northern Wetlands Roundtable was co-sponsored by the Las Amigos de Valles Caldera and held in Santa Fe on November 14, 2016. Presentations included "Wetland Restoration at the Valles Caldera National Preserve," "Water Resources of Pecos National Historic Park," "Wetland Restoration in Sequoia National Park, Pecos National Historic Park, and Hubbell Trading Post National Historic Monument," "Wa-

ter Resources and Wildlife of the BLM Rio Grande del Norte National Monument," "Share With Wildlife Projects," " NMDOT Advance Permittee-Responsible Mitigation Program," and an update by the Corps of Engineers as well as lively discussions among the 75+ attendees.

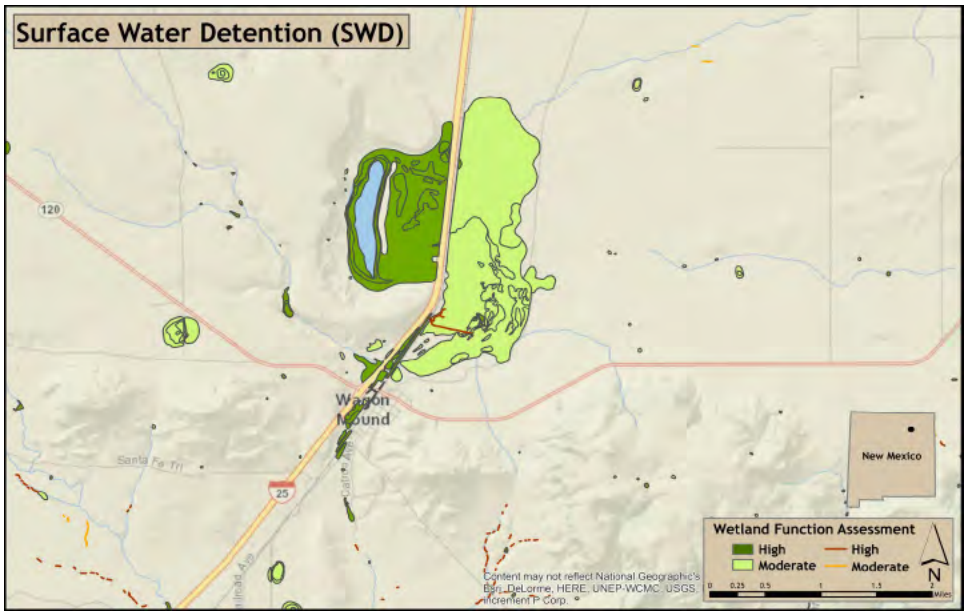
The fall Southern Wetlands Roundtable was co-sponsored by Rio Grande Return and was held in Las Cruces City Hall on December 7, 2016. The meeting not only highlighted National Parks but also the 100-year celebration of the Migratory Bird Treaty Act. Presentation topics included an update by the Corps of Engineers and presentations on "Wetlands and Water from the World's Largest Gypsum Dunefield: the hidden story of White Sands National Monument," "Celebrating 100 years of the Migratory Bird Treaty Act and Rio Grande Corridor Wetlands Protection and Restoration Projects," "Rattlesnake Springs Wetland at Carlsbad Caverns National Park," "Restoring a Severely Incised Cienega," "Slick Rock Springs Systems in the Peloncillos Wilderness Area of Southeastern Arizona," "NMDOT Advance Permittee-Responsible Mitigation Program," and discussions among the 36+ participants about the National Parks, the future of wetlands project funding, planning and future of Rattlesnake Springs, and cienegas.

Wetland Projects Completed in 2016

Five Wetlands Program projects funded under CWA Section 104(b)(3) Wetlands Program Development Grants were completed this year. Final reports with more detailed information on each of these projects will be posted at www.env.nm.gov/swqb/Wetlands/projects.

Mapping and Classification for Wetlands Protection, Northeastern New Mexico Highlands and Plains

The SWQB Wetlands Program, in cooperation with the Saint Mary's University of Minnesota Geospatial Services and a Project Advisory Committee, completed mapping and classification of wetland resources within 19,755 square miles (12,643,344 acres) in northeastern New Mexico and in U.S. Forest Service Wilderness Areas as part of our Landscape Level 1 assessment strategy. Mapping included Cowardin classification of all wetlands in the project area including linear wetlands, playas and isolated wetlands, and deepwater habitats in the Canadian, Dry Cimarron, Upper



Sample of wetland mapping of functions. The map shows where wetlands are performing the Surface Water Detention function as well as its performance of that function relative to other wetlands.

Gallinas, Upper Pecos and Upper Rio Grande drainage areas. Also, riparian areas were mapped and classified in these areas according to A System for Mapping Riparian Areas in the Western United States developed by the U.S. Fish and Wildlife Service. This entire landscape level assessment was tailored to arid region wetlands representing the first demonstration of this classification suite in the west. The Cowardin Classification of these wetlands is available on the USFWS National Wetlands Inventory Wetland Mapper at https://www.fws.gov/wetlands/data/mapper.html.

Based on the final mapping 163,355 acres (1.3 percent of the project area) are wetland, deepwater or riparian habitat. Palustrine system wetlands make up 82% of the wetlands, lacustrine 14%, and riverine 4% based on the Cowardin Classification system. a total of 10,567 acres of riparian areas were also mapped and classified.

The also project included significant outreach and technical transfer components to let stakeholders on both the local and national level know that these wetland mapping products exist, including development and distribution of interactive PDF map books for 10 important wetland sites in Northeastern New Mexico (Angel Fire, Eagle Nest, Hwy 19 Canadian River Crossing, Maxwell Wildlife Refuge, Pecos, Raton, Rio Fernando de Taos, Upper Red River, Ute Park, and the Village of Mora.

New Mexico Wetlands, From Plan to Action Phase 3

The SWQB Wetlands Program carried out this Project to further four objectives under our Wetlands Program Plan.

Objective 1:

Develop Water Quality Standards for Wetlands. Currently, wetlands are included in the definition of Surface Waters of the State in New Mexico's Water Quality Standards codified in 20.6.4 NMAC. This project reviewed narrative standards developed by other States and tribes, assessed the completeness of our own State's wetlands data collections to support wetland standards, and identified data gaps. New Mexico's efforts to develop wetlands water quality standards was included in the 100th edition of Non-Point Source News Notes in October 2016.

Objective 2:

Expand and Improve the Wetlands Action Plan Program This Project developed 4 additional Wetlands Action Plans (WAPs) for watersheds or regions in New Mexico. WAPs were developed for Upper Burro Cienega Closed Basin Watershed in Grant County, Upper Pecos Watershed in San Miguel County, Upper Gallinas Watershed in San Miguel County, and Moreno Valley Watershed in Colfax County. These plans have proved invaluable to engage stakeholders, expedite restoration, and improve protection of wetlands in

Slope Wetlands in the Moreno Valley, Colfax County, New Mexico.

their areas of coverage. In addition, stakeholders use the plans for fund raising and grant applications including River Stewards state funding. The WAP Program involves the integration of wetlands issues into the watershed mission, and promotes a new level of stewardship of wetlands through cooperative approaches. Through numerous avenues including Wetlands Program Development Grants, New Mexico has completed 16 Wetlands Action Plans in New Mexico. Some of these plans can be found at https://www.env.nm.gov/swqb/Wetlands/WAP/, and soon all completed WAPs will be available through the SWQB Wetlands Program website.

The Wetlands Action Plan Guidance was also updated and improved. The Wetlands Action Plan Guidance update addresses data gaps, and includes a recommendation relating to supplementing strategies for implementing watershed based plans.

Objective 3:

Apply Anti-Degradation Policies to Protect ONRW Wetlands. In 2009, 4,930 acres of New Mexico wetlands in USFS wilderness were nominated as Outstanding National Resource Waters (ONRW). This nomination allows the most protective anti-degradation water quality standards to apply to wetlands. The Wetlands Program developed recommendations for improved protective measures and worked with USFS staff in all National Forests in New Mexico with ONRW Wilderness Wetlands to implement and strengthen the use of protective BMPs that protect wetlands from degradation by human activities that commonly occur in wilderness wetlands.

To this end, the document "Review of USFS Best Management Practices for Outstanding National Resource Waters Wilderness Wetlands" was developed and reviewed by USFS, and the SWQB Wetlands Program presented the results of this study at the NMED USFS annual meeting in 2015, met with USFS staff involved with grazing and recreation, and provided comments regarding ONRW wetlands to National Forests in New Mexico involved in Forest Plan Revisions, (Gila, Santa Fe, Carson and Lincoln).

Objective 4:

Continue to promote the use of NMRAM. The Wetlands Program and its contractor, University of New Mexico Natural Heritage New Mexico, conducted three New Mexico Wetlands Rapid Assessment Method (NMRAM) trainings as part of the Project. These training workshops provided agency personnel, tribal personnel, NGOs and contractors with the skills and information to perform assessments using the NMRAM. Two 2.5-day field and classroom trainings were conducted in the Santa Fe area for 41 participants. In addition, a presentation and one-day training were conducted as part of a EPA-sponsored Southwest Tribal Workshop in Albuquerque, targeting tribes throughout the western US. The overall goal is to train technical personnel in wetlands rapid assessment methods so that data can be collected throughout the State, and to contribute to the NMED Wetlands Program baseline assessment of New Mexico wetlands.

Innovative Design and Restoration of Slope Wetlands in the Comanche Creek Watershed, New Mexico

The Comanche Creek Watershed is highly valued for its majestic views and recreational opportunities, such as hiking, camping, fishing, and hunting. Comanche Creek and its tributaries are designated as ONRWs receiving the highest level of protection under the State's anti-degradation policy. Comanche Creek is home to

native Rio Grande Cutthroat Trout, but the water temperature is not optimal for these fish to thrive. Comanche Creek is listed as impaired for temperature on the Clean Water Act (CWA) Section §303(d) list of impaired waters (2016).

The SWQB Wetlands Program and its partners surveyed, restored, and protected more than 94 acres of degraded slope wetlands in the Grassy and Springwagon sub-watersheds of the Comanche Creek Watershed in the Carson National Forest. This project was designed to test innovative techniques for protecting and restoring slope wetlands in New Mexico, and to share the results with other potential users and the public. Restoration structures were made from natural materials available in the area: rocks, logs, branches, sod dug

Grassy Creek (left) and Springwagon Creek (right). Volunteers building log step fall structures to arrest erosion in head-cuts, preventing the slope wetlands upstream from drying.

on-site, and soil excavated by hand shovel or heavy machinery.

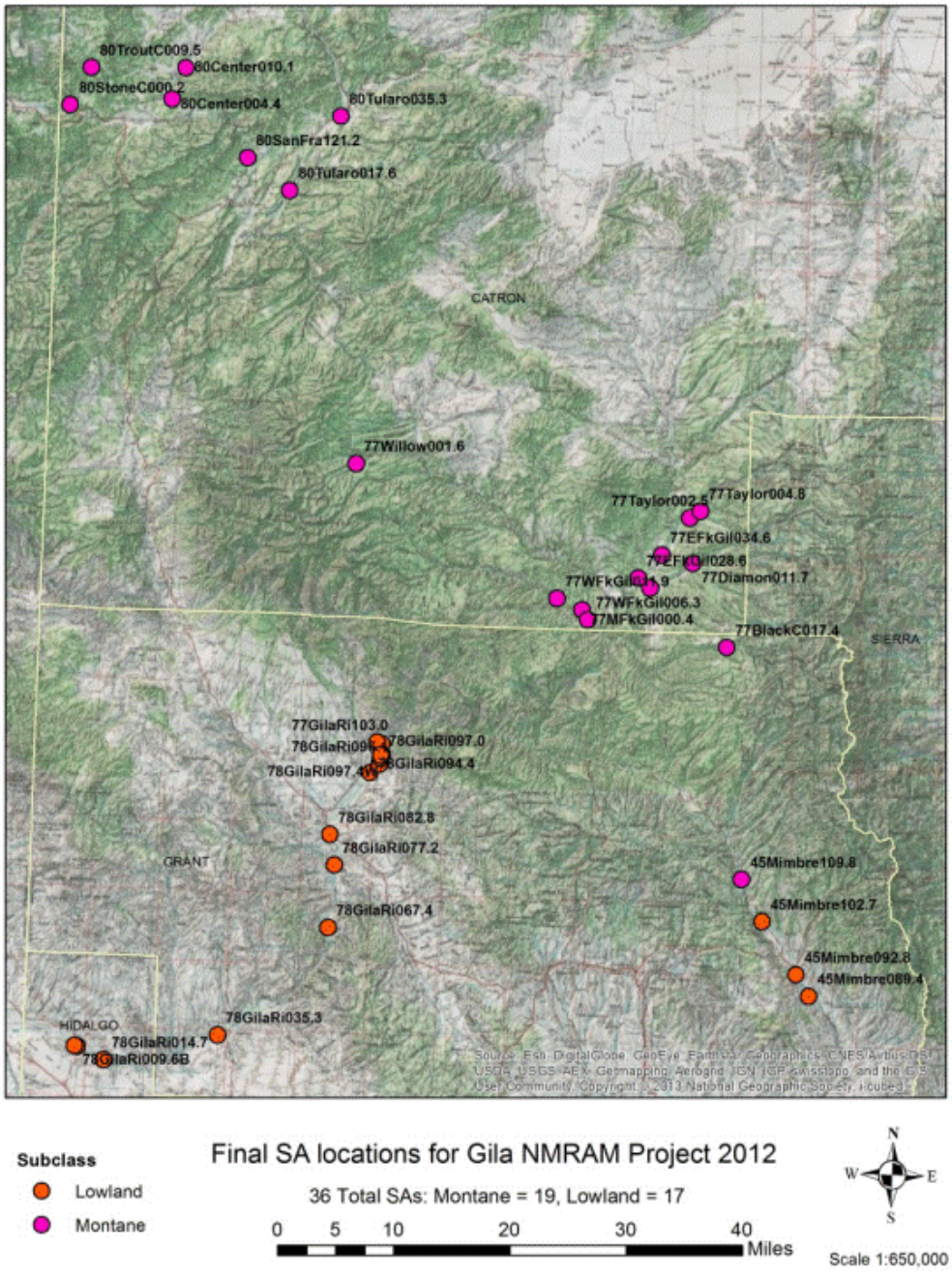
The Project resulted in the design of restoration techniques and the installation of restoration structures that were either new and innovative designs specifically for slope wetlands, or designs that were successful elsewhere and modified for slope wetland restoration. These included log and rock step fall structures; plug and pond, and plug and spread treatments; flow splitters; media lunas; worm ditches; sod plugs; and burrito dams, to name a few. The results of the slope wetland characterization and development of restoration designs and techniques are included in a SWQB Technical Guide, *Characterization and Restoration of Slope Wetlands in New Mexico, A Guide for Understanding Slope Wetlands, Causes of Degradation and Treatment Options,* which can be found at https://www.env.nm.gov/swqb/Wetlands/TechnicalGuides/02/SlopeWetlandTechnicalGuide02.pdf.

Rapid Assessment of Riverine Wetlands in the Gila Watershed, Southwestern New Mexico

This Project was a continuation of the development of wetlands rapid assessment methods geared towards New Mexico arid land wetlands, with a focus on riverine wetlands in the Gila/San Francisco and Mimbres watersheds. The Project was designed to test the Montane Riverine NMRAM as developed by previous projects on the Upper Rio Grande, to expand the reference domain to the mountain ranges of Southern New Mexico and to refine the subclass description for montane riverine wetlands. The project also resulted

in the development of the first NMRAM for large river systems (Lowland Riverine NMRAM). This Project included the continued enhancements of the SWQB SQUID database to accept and store NMRAM data and supported several meetings of the New Mexico Wetlands Roundtable. The development of NMRAM has been shared locally and nationally through presentations and public events.

Assessing Beaver Habitat on Federal Lands in New Mexico



This project: 1) updated wetland mapping for 3,900 square miles in Northern NM near the Jemez Mountains where beaver populations are known to occur; 2) identified beaver habitat on all federal lands in NM using a Geographic Information System (GIS) model; and 3) convened experts at a Beaver and Wetlands Workshop to exchange information and promote recovery of dam-building beaver populations throughout New Mexico.

The completed NWI mapping is available at: www.fws.gov/wetlands/data/mapper.html. The Beaver Habitat Assessment Model is available at: https://gis.web.env.nm.gov/SWQB/. The model is a useful planning tool that provides a landscape scale assessment of potential beaver habitat. Sixty-five participants from state and local agencies, organizations, tribes and landowners attended the 2013 Beaver and Wetlands Workshop. The workshop focused on: the science of beaver and wetlands; the Beaver Habitat Assessment Model; a tool for predicting where beaver habitat can be established; the Utah Beaver Management Plan – 2010-2020, and how it was developed with multiple stakeholders; and strategies and techniques to protect property from beaver so that humans and beaver can co-exist without conflict.

Active beaver dams on El Rito Creek help to rewet the floodplain and recharge the hyporheic zone and increasing resilience to climate variability and drought.

More information on this project is available on a dedicated web page at www.env.nm.gov/swqb/Wetlands/projects/Beavers.

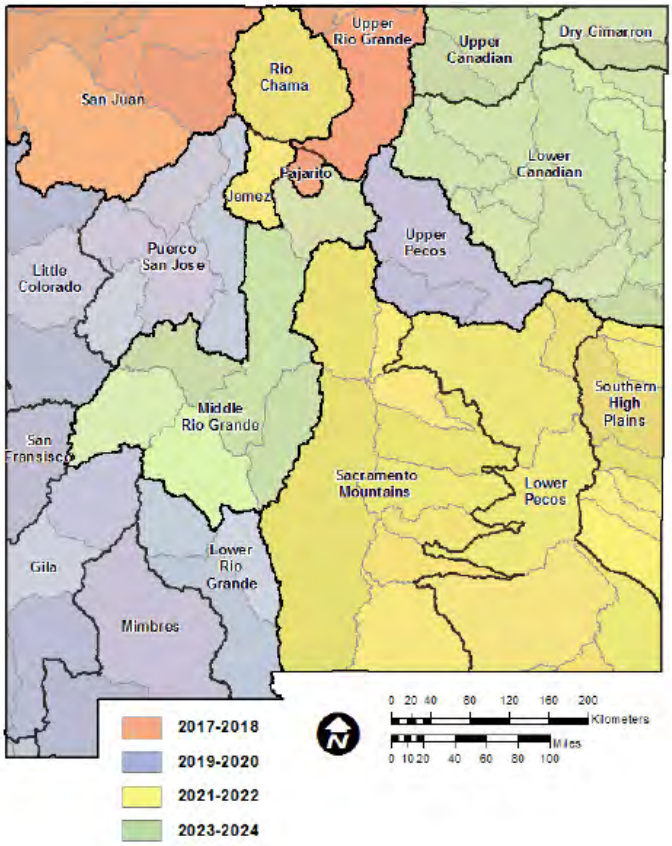
Other Water Quality Protection Programs

Monitoring, Assessment and Standards Program

Water Quality Surveys

Similar to many states, the SWQB utilizes a targeted, rotational watershed approach to ambient water quality monitoring. Monitoring efforts in 2016 focused on the second year of the Canadian River – Dry Cimarron River watershed surveys. The survey included sampling data from 154 monitoring locations within 82 stream assessment units and 10 lake assessment units covering 1,553 stream miles and 10,691 lake acres. The watersheds surveyed include the Dry Cimarron River (169 stream miles, 2,710 mi^2 watershed), the Cimarron and Upper Canadian (561 stream miles, 4,440 mi^2 watershed), the Mora and Lower Canadian (751 stream miles, 19,800 mi^2 watershed), and portions of the Upper and Lower Rio Grande (as part of the Large Rivers supplemental investigation). A summary of the 2015-2016 watershed survey will be available early in 2017 from the SWQB website (www.env.nm.gov/swqb/MAS). In 2017, the focus of monitoring rotates to the Upper Rio Grande and San Juan River watersheds. A field sampling plan will be developed with cooperator and public input in early 2017 with initiation of data collection in Spring 2017.

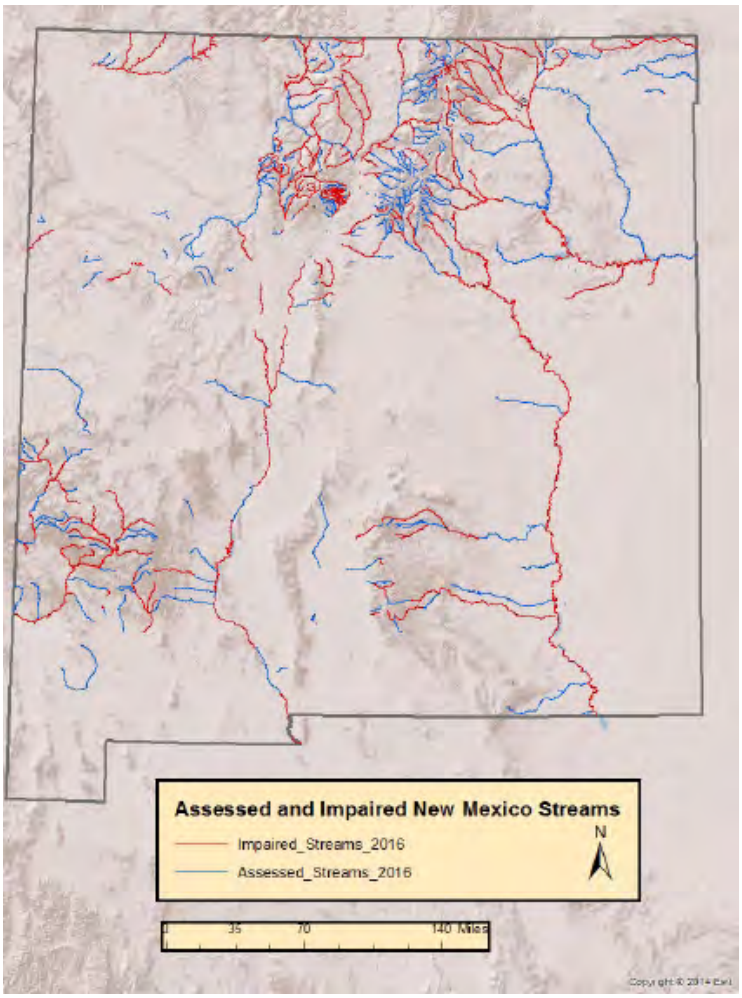
Proposed 8 Year Survey Plan



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

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*.

According to the *State of New Mexico CWA §303(d)/§305(b) Integrated Report*, nearly 4,069 out of 7,734 stream miles (53%) have identified impairments where water quality does not support the designated uses. Approximately 58,408 out of 89,073 (66%), 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. Non-point sources (NPS) of pollution such as rangeland grazing, on-site treatment systems and loss of riparian habitat are the leading probable 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 has issued fish consumption advisories for a variety of fish species in 26 lakes and reservoirs and three rivers due to elevated concentrations of various contaminants, including mercury, dichlorodiphenyltrichloroethane (DDT), and polychlorinated biphenyls (PCBs).



The 2016-2018 *State of New Mexico CWA §303(d)/§305(b) Integrated Report* and supporting documents are available at: www.env.nm.gov/swqb/303d-305b/2016-2018.

In 2017 the SWQB will begin the process of preparing the 2018-2020 *State of New Mexico CWA §303(d)/§305(b) Integrated Report* by reviewing and updating the 2016 Assessment Protocol. Of particular note, the "Nutrient Assessment Protocol for Wadeable, Perennial Streams" will go through a major revision based on the *New Mexico Nutrient Thresholds for Perennial Wadeable Streams – FINAL DRAFT Report,* which identifies phosphorus and nitrogen impairment thresholds based on stream response. This will help interpret New Mexico's narrative plant nutrient standard for assessment, TMDL development, and NPDES implementation.

Water Quality Standards Update-Triennial Review

The federal Clean Water Act (CWA) related regulations in 40 C.F.R. Part 131 and the provisions in the New Mexico Water Quality Act (Chapter 74, Article 6 NMSA 1978) require the State to develop, review, revise and adopt water quality standards (WQS) that protect public health or welfare, enhance the quality of water, and serve the purposes of the CWA. New Mexico's Standards for Interstate and Intrastate Surface Waters (20.6.4 NMAC) establish WQS that consist of designated uses for surface waters of the State, the water quality criteria necessary to protect the uses, and an antidegradation policy to protect the water quality.

While the WQS may be revised as needed, the CWA at 33 U.S.C. §1313(c)(l), and the water quality standards rules at 20.6.4.1 O(A) NMAC also require the State to initiate a comprehensive review and to update the WQS rules from time to time, or at least every three years, in a process known as the Triennial Review.

The SWQB began identifying priorities for the current Triennial Review in 2012 and initiated the 2013 Triennial Review with an informal scoping phase for public feedback during April and May of 2013 to identify priorities for potential changes to the WQS. Proposals for changes were developed into a discussion draft which was noticed for public review and comment during April and May of 2014.

Throughout the Triennial Review process, SWQB met and worked with groups when requested to discuss their concerns. The SWQB presented its 2013 Triennial Review proposals to the Water Quality Control Commission (WQCC) in public hearings held October 13-16, 2015 (Pleading Log Item 58). The WQCC granted approval of the proposals at the September 13, 2016 Commission meeting. WQCC approved updates to 20.6.4 NMAC are planned for publication in the New Mexico Register in early 2017. Following publication, the proposals will be submitted to EPA for final approval under CWA Section 303(c). In accordance with federal regulations in 40 CFR 131 .21, changes adopted by the WQCC for actions under the CWA, such as under CWA Sections 303(d), 305(b), 401, 402 or 404, shall not be implemented until EPA grants final approval.

Proposals approved by the WQCC include:

- Segment-specific standards for aquatic life protections in the Mimbres and San Juan River basins.
- A new temporary standard procedure in 20.6.4.10 NMAC.
- Updates to the piscicide provision in 20.6.4. I 6 NMAC for applications under the EPA permit program and for public input or hearing requests when applications are not covered under an EPA permit.
- Listing of ephemeral waters under Section 20.6.4.97 NMAC pursuant to Subsection C of Section 20.6.4.15 NMAC.

Use Attainability Analyses and Aquatic Life Use Changes

A Use Attainability Analysis (UAA) is a regulatory tool established in the water quality standards (20.6.4.15 NMAC) in which a multi-faceted approach is used to evaluate the environmental and economic factors affecting the attainment of a use for a water body. The application of the UAA process is allowed under certain conditions as stipulated in the state's standards and in federal regulations (40 CFR 131.IO(g)). SWQB has subsequently developed another tool, the Hydrology Protocol (HP), a technical procedure in the SWQB's Water Quality Management Plan (WQMP) which is a required Clean Water Act document ap-

proved by WQCC and EPA. The HP may be used to distinguish between ephemeral, intermittent and perennial streams and rivers in New Mexico. It also generates documentation of the attainable aquatic life uses supported by those waters as a result of the flow regime. The UAA process alone or in combination with the HP has been applied to support aquatic life use refinements and revisions to the WQS. Such refinements as allowed under the CWA and the WQS are important because they help assure that appropriate water quality standards are applied to a waterbody.

Several UAA proposals were developed during the 2013 Triennial Review and approved by WQCC at the September 13, 2016 Commission meeting. Many of these were based on the HP and are the basis for listing ephemeral waters under Section 20.6.4.97 NMAC. The HP-based UAA proposals presented included five drainages on Chino Mines property and 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. Additionally, 20 stream segments with similar characteristics in various locations across the state were approved for adoption into the standards as ephemeral waters.

The WQCC also approved several non-HP UAA proposals to support changes to aquatic life uses and segment-specific temperature criteria for two segments on the Animas River and for three segments on the Mimbres River. All information about the Triennial Review including the UAA proposals and associated pleading log filings and exhibits are available online at:www.nmenv.state.nm.us/swqb/Standards/TR2013.

Other Standards Updates

Investigations of aquatic life uses and temperature criteria for UAAs in the Gila River and Mimbres watershed, Dog Canyon, Tecolote Creek, and Rio Ruidoso are in progress. In addition to this ongoing UAA work, the SWQB Monitoring, Assessment and Standards Section records UAA suggestions in a tracking spreadsheet. This information is also considered during every CWA Section 305(b)/303(d) listing cycle. Data needs for standards changes and the availability of critical data are evaluated and if needed, more collections will be scheduled. The data for candidate UAA work are compiled and used in the development of documents to support recommended revisions. Depending on the timing, petitions for standards revisions based on UAAs are generally part of a Triennial Review. However, hearings for interim standards revisions (i.e., revisions between Triennial Reviews) are conducted as necessary, as determined by the SWQB.

SWQB is working closely with EPA to develop a temporary standards implementation plan. The goal of this project is to review and develop approaches for implementation of temporary standards for numeric nutrient narrative water quality standards in New Mexico. This goal is intended to be accomplished through collaboration with applicable NPDES permittees for the purpose of developing a temporary nutrient water quality standard proposal for a subset of up to 21 nutrient impaired waters with NPDES permits (with or without TMDLs). The project is expected to take 12-18 months to complete (by June 2018).

Visit the SWQB Standards web pages for updates, at: www.env.nm.gov/swqb/Standards.

TMDL Update

Under §303(d)(1) of the Clean Water Act, states are required to identify waters of the state that are not meeting their designated uses as established in 20.6.4 NMAC. A Total Maximum Daily Load (TMDL) is required for each pollutant identified in an impaired water body. The TMDL is designed to establish the assimilative capacity of a water body to a pollutant and still support its designated uses. The TMDL document also serves as an implementation plan to reduce the pollutant loading and restore the water body to its designated uses.

Seven TMDLs were approved by the WQCC and EPA for segments in the Rio Puerco watershed in June: Rio Puerco (sedimentation), La Jara Creek (acute aluminum and chronic aluminum) and Nacimiento Creek (acute aluminum, chronic aluminum, uranium, and turbidity). Fifteen TMDLs were approved by the WQCC and EPA in September for assessment units in the following streams: Clear Creek (*E. coli* and nutrients), East Fork Jemez (nutrients), Jamarillo Creek (nutrients), Jemez River (*E. coli*), Rio Guadalupe (nutrients) and Pecos River (*E. coli)*. WQCC approved the Rio Ruidoso nutrient TMDL in November, but final review and approval by EPA is still pending.

Three TMDLs are currently in development and planned for public comment and WQCC determination in 2017: Santa Fe River (*E. coli)*, Galisteo Creek (temperature), and Bluewater Reservoir (nutrients). SWQB plans to seek EPA approval for removal of the Cieneguilla Creek dissolved aluminum TMDL due to removal of the criteria from the Water Quality Standards. The dissolved aluminum criterion was replaced by hardness-based total aluminum criteria in the previous Triennial Review. Additional monitoring data collected during the 2015-2016 Canadian River survey will be assessed for a determination of designated use support. Plans for TMDL development or TMDL alternatives for 2017 include the Mimbres watershed and Raton Creek watershed.

Updates to the List of TMDLs and links to approved and pending TMDLs are available from the NMED Surface Water Quality Bureau TMDL web pages at: www.env.nm.gov/swqb/TMDL/List.

Ground Water Quality Bureau

Permitting and Compliance Assistance for Large Capacity Septic Tank Leachfields and Surface Disposal Facilities

Under Objective 5 of New Mexico's Nonpoint Source Management Plan, the Ground Water Quality Bureau (GWQB) works to protect ground water quality from non-point source pollution attributed to large capacity septic tank and leachfield systems (septic systems) and septage disposal facilities, sludge disposal facilities, and landfarms (surface disposal facilities). All surface disposal facilities and facilities discharging greater than 5,000 gallons per day of domestic wastewater to septic systems are required to obtain and maintain individual Discharge Permits through GWQB. Each Discharge Permit includes conditions and requirements intended to preserve, protect, and improve New Mexico's ground water quality for present and future generations.

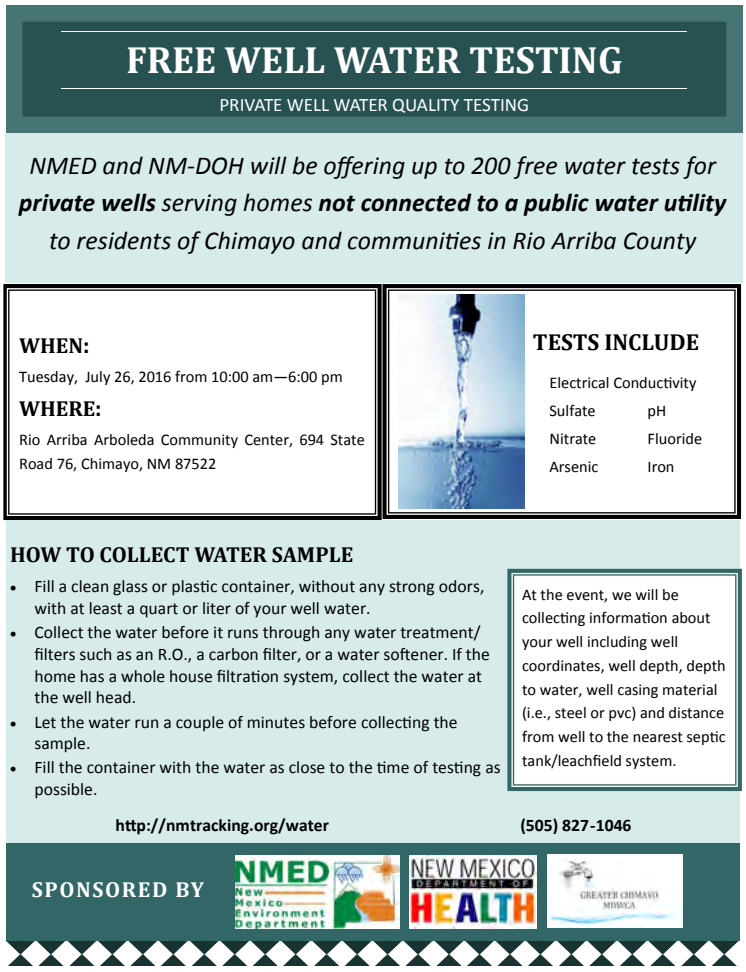
Technical personnel in the GWQB review Discharge Permit applications, prepare and issue Discharge Permits, perform compliance assistance activities for permittees, and enforce Discharge Permit requirements for septic systems and surface disposal facilities. Throughout the permitting and compliance assistance process, GWQB staff provide outreach materials, assistance forms, and direct communication with permittees to aid them in meeting the requirements of their Discharge Permits. In addition, technical personnel perform routine site inspections to ensure that septic systems and surface disposal facilities are discharging pursuant to their Discharge Permits. Through these activities, GWQB can monitor discharges to ground water and require corrective action if contamination is detected. GWQB permitting and compliance activities for septic systems and surface disposal facilities support the goal of this project by aiding in the protection of ground water from these non-point sources that have the potential to discharge nitrogen compounds, metals, and organic compounds. In 2016, GWQB issued 15 New, Renewal, or Renewal and Modification Discharge Permits.

New Mexico Water Fair and Water-Quality Outreach Program

Residents of New Mexico primarily rely on ground water for drinking water, 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 NPS pollution, predominantly household septic tank/leachfield systems, cesspools and inappropriate agricultural practices. However, the extent and severity of potential contamination of drinking water 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 prohibitive.

Inspection of a permitted septic tank/leachfield system reveals corrective actions are required.

To identify possible non-point source water quality problems in rural New Mexico communities, GWQB has conducted free testing of domestic wells ("water fairs") throughout the state for over 10 years. However, a more comprehensive Water Fair Program was needed to reach more domestic well owners and to educate them about water quality issues and how they can help preserve or improve water quality in their communities. During the last several years, these activities have been carried out as an EPA-funded Water Fair Program. 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. 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 receives 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 NPS water quality problems.



Flyer announcing the Chimayo Water Fair held July 26, 2016.

The Water Fair Program is also a great outreach tool. Water quality outreach events include the demonstration of a ground water simulation model (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. Through the Water Fair Program, many families in rural New Mexico have become more knowledgeable about water quality, potential for contamination, and pollution prevention. In 2016, GWQB conducted 9 water fairs, receiving a total of 965 water samples. Overall, the amount of water fairs conducted and the level of public participation in 2016 proved to be a success.

To learn more about the Water Fair Program, visit www.env.nm.gov/gwb/NMED-GWQB-WaterFairs.htm.

CWA Section 401 Certification Activities

NMED 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 (USACE) comply with state water quality standards. Since April 2012, the SWQB has issued informal confirmation of NWP activities, and formal 401 certification is generally required only for 404 individual permits or when new permits are developed.

A series of cross vanes in the Rio Ruidoso permitted under NWP 27 for Aquatic Habitat Restoration, Establishment and Enhancement Activities.

As part of the 401 certification process, NMED consults with USACE in development of permits and processing procedures for situations specific to New Mexico. There was one Letter of Permission (LOP), and one Regional General Permit for use in New Mexico issued by USACE in 2016. On May 12 2016, USACE released for public notice the intent to issue a LOP procedure to expedite Section 404 and Section 10 authorization for excavation activities when they would not pose substantial adverse individual or cumulative impacts on the aquatic environment. The excavation activities permitted in the LOP primarily regard clearing flood related sediment and debris from infrastructure and reducing flood hazards. Following the public comment period, NMED provided 401 Certification of the LOP on August 4, 2016 and USACE issued the Final LOP on September 12, 2016. On September 7, 2016 USACE released a public notice of a draft Regional General Permit (RGP) for crossings of waters of the U.S. within the state of New Mexico associated with the maintenance, repair, or removal of utility lines where the activity does not qualify for coverage under Nationwide Permit 12 because the activity would result in a change in pre-construction contours below the Ordinary High Water Mark (OHWM). Following the public comment period, NMED provided conditional 401 Certification of the RGP for Utility Line Maintenance, Repair or Removal on November 17, 2016 and USACE released the RGP for use on November 28, 2016.

In addition to these activities, USACE released for public comment the re-issuance of all Nationwide permits (NWPs) on June 1, 2016. This includes regional issues concerning the proposed NWPs including associated Regional Conditions. As part of this process, NMED began developing a conditional 401 Certification of the NWPs in November, 2016. The final decision documents and NWPs are anticipated to be released in March of 2017.

CWA Section 401 Water Quality Certification Activities 2016	
Confirmations	
Corps Authorizations under NWPs	43
Corps Authorizations under LOP	2
Corps Authorizations under RGP	2
Total	47
Certifications	
Utility Line Maintenance RGP Certification	1
Letter of Permission for Excavation Certification	1
Individual Permits Certified	3
Total	5

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 the Surface Water Quality Bureau (SWQB), Ground Water Quality Bureau (GWQB), and the Air Quality Bureau (AQB) to review mining applications and otherwise support the work of the New Mexico Mining and Minerals Division (MMD) of Energy, Mining and Natural Resources Department (EMNRD). This work involves reviewing applications, site inspections, hydrologic interpretations, and evaluating water quality standards against proposed mining activities. The SWQB discusses Best Management Practices (BMPs) and other mitigation measures with MMD in an effort to implement 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. The team also participates in meetings and reviews documents in collaboration with EMNRD, United States Forest Service (USFS), New Mexico State Lands Office (SLO), United States Army Corps of Engineers (USACE), United States Environment Protection Agency (USEPA), and others.

At the Brie I mine, newly completed earthwork is shown to the left of the fence compared to two-year old reclamation work on the right.

In 2016, staff from the SWQB reviewed numerous mining notices, applications, close-out plans, operation 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 activities that occurred in 2016:

- A modification to expand the permit boundary for the Brie I humate mine in McKinley County was reviewed and found to have minimal environmental impact if operated and reclaimed in accordance with the previously approved permit. NMED had no objection to the partial release of financial assurance that was associated with completed reclamation work at the Brie I humate mine, the Horizon Ag-Products' screen

facility, and the Pueblo Alto humate mine in McKinley County. The Eagle Mesa humate mine in Sandoval County, the Fruitland exploration project in McKinley County, and the Cottonwood Exploration Project also in McKinley County all applied for humate exploration permits. SWQB recommended a number of BMPs focused primarily on reducing erosion risks to ensure that surface water quality standards are not exceeded as a result of exploration activities.

- SWQB visited the Horizon Ag-Products' mill and processing facility in Cuba, New Mexico to check on newly designed stormwater management controls which included two sediment detention ponds. The sediment detention ponds will be able to hold stormwater runoff originating from the industrial site and allow sediment to be contained minimizing the potential effects to receiving waters.
- SWQB commented on a permit modification for the Menefee Mill in Sandoval County and provided technical support to the permittee regarding the National Pollutant Discharge Elimination System (NPDES) permitting program, and made recommendations for the closeout/reclamation plan that would further protect surface water quality.
- SWQB worked with MMD and USFS in addressing a need to remediate gullies and manage mine waste as part of a permit modification for the El Capitan Iron Mine.
- SWQB reviewed plans to begin additional reclamation efforts for portions of the Nacimiento copper mine near Cuba, and provided technical support to the USFS for evaluating several potential reclamation plans with regards to water quality.
- SWQB reviewed a permit renewal for the York Canyon Surface Mine for which ongoing reclamation efforts such as erosion monitoring, grading, and seeding are expected to have beneficial impacts to water quality in the Vermejo River.
- SWQB contributed to an NMED environmental determination for the active status permit change for the Mt. Taylor uranium mine. A number of BMPs (including an upgraded ion exchange water treatment plant to remove uranium from groundwater), a Stormwater General Permit, and an NPDES permit which includes daily water quality sampling will ensure that new mining activities do not exceed water quality standards.
- SWQB attended a cooperating agency meeting held by the USFS to discuss the proposed Roca Honda uranium mine which is currently going through evaluation under the National Environmental Policy Act. SWQB will continue to participate in the review of the proposal.
- SWQB was active in reviewing both an Environmental Impact Statement (EIS) and an updated Mine Operations and Reclamation Plan for the Copper Flat copper mine in Sierra County. Portions of the mine lie on Bureau of Land Management property and they issued a draft EIS in summer 2016. Following the EIS, the mine operator submitted an application under the Mining Act to renew operations at the mine.
- In Socorro County, SWQB reviewed and submitted comments for an updated closure-closeout plan for the Dicaperl pearlite mine.
- SWQB also issued two water quality certifications for in-stream placer mines. The first was on Bear Creek, a perennial tributary of the Gila River near the continental divide in Grant County, and the second on an ephemeral tributary to the Rio Grande in Sierra County.

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 (BLM)

Watershed	Project Description	Water Quality Benefits
Rio Bonito (Middle Rio Bonito)	Salt Cedar, Russian Olive, and Siberian Elm chemical treatment (25 acres) Trail maintenance (5 miles)	• Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover. • Improve aquatic and riparian habitat.
Rio Bonito (Middle Rio Bonito)	Installed 1 longitudinal peaked stone toed protection streambank stabilization structure	• Stabilize stream bed and banks. • Improve aquatic and riparian habitat.
Tularosa Valley (Outlet Taylor Canyon) (Crater Wells) (Headwaters Butler Tank Draw) (Butler Tank Draw)	Cholla chemical treatment (237 acres)	• Increase herbaceous ground cover. • Decrease erosion.
Upper Pecos – Long Arroyo (Lloyds Canyon) (Loco Draw Long Arroyo) (L-N Ranch) (Rio Hondo Pecos River) (Culp Ranch) (King Ranch) (Loco Draw) (Salt Cedar Lake) (Sampson Well) (Westfall Tanks) (Lake Van Pecos River) (East Sand Tank)	Mesquite chemical treatment (41,996 acres)	• Increase herbaceous ground cover. • Decrease erosion.

BLM (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Arroyo Del Macho (Middle Arroyo)	Mesquite chemical treatment (846 acres)	• Increase herbaceous ground cover. • Decrease erosion.
Upper Pecos (Denton L7 Ranch)	Mesquite chemical treatment (846 acres)	• Increase herbaceous ground cover. • Decrease erosion.
Long Arroyo (Presier Lake)	Prescribed burn on 4,820 acres mesquite	• Increase herbaceous ground cover. • Decrease erosion.
Rio Bonito (Middle Rio Bonito)	Prescribed burn on 1,441 acres of pinyon juniper	• Increase herbaceous ground cover. • Decrease erosion.

New Mexico State Forestry Division

Watershed	Project Description	Water Quality Benefits
Canadian Headwaters (Headwaters Vermejo River)	Timber Harvests (98 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.
Middle San Juan, Animas, & Upper San Juan; AZ-NM-CO	Salt Cedar and Russian Olive removal (704 acres)	• Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover. • Decrease risk of high intensity wildfire.
Rio Chama; NM-CO (Rio Nutrias-Rio Puerco)	Ponderosa-mixed conifer thinning, piling (41.8 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Rio Grande-Santa Fe (Santa Fe River)	Ponderosa, pinon and juniper thinning, piling (20 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
Cimarron; New Mexico (Eagle Nest Lake-Cimarron River)	Ponderosa, mixed conifer, thinning, piling, burning (731.9 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Tularosa Valley (Tularosa Creek) (Sheet Camp Draw)	Ponderosa, pinon and juniper thinning, chipping (310 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
San Francisco; AZ-NM (Outlet Tularosa River)	Ponderosa pine thinning, mastication (88.5 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
San Francisco; AZ-NM (Deep Creek-San Francisco) (Centerfire Creek-San Francisco)	Ponderosa pine thinning, mastication (512.4 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Rio San Jose (Bluewater Creek)	Pinon and juniper thinning, mastication, lop and scatter (384.8 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Rio Grande-Albuquerque (City of Albuquerque-Rio Grande)	Ponderosa, pinon and juniper thinning, piling and mastication (382 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, pinon and juniper thinning, piling and mastication (310 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
Tularosa Valley (Garton Lake)	Ponderosa, pinon and juniper thinning, piling and mastication (286 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Rio Puerco (La Canada de la Lena-Rio Puerco)	Ponderosa thinning, piling (146.6 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Upper Gila-Mangas; AZ-NM (Mangas Creek)	Ponderosa, pinon and juniper thinning, piling and mastication (4308 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Pecos Headwaters (Headwaters Gallinas River ; Cow Creek-Pecos River)	Ponderosa pine thinning, chipping, piling (372.3 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Carrizo Wash; AZ-NM (Upper Largo Creek)	Pinon-juniper, ponderosa thinning, chipping (2582.3 acres)	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Upper Rio Grande; CO-NM (Pojoaque Creek)	Mixed conifer pile burning (35 acres)	• Decrease risk of high intensity wildfire. • Reduce fuels loading.
Plains of St. Agustin (Sugar Loaf Canyon)	Ponderosa pine burning (2356.1 acres)	• Decrease risk of high intensity wildfire. • Reduce fuels loading.
Rio Grande – Albuquerque (Arroyo del la Matanza – Rio Grande) (Canon Monte Largo – Rio Grande)	Salt Cedar and Russian Olive removal (196.6 acres)	• Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover. • Decrease risk of high intensity wildfire.

U.S. Forest Service Projects

Carson National Forest

Watershed	Project Description	Water Quality Benefits
Upper Rio Grande 13020101 Cañada del Ojo Sarco 130201010504	Entrañas Green Fuelwood -Commercial thinning in ponderosa pine type (210 acres)	• Increase herbaceous ground cover. • Decrease erosion.
Upper Rio Grande 13020101 Cañada del Ojo Sarco 130201010504	Ojo Sarco South Green Fuelwood -Commercial thinning in ponderosa pine type (100 acres)	• Increase herbaceous ground cover. • Decrease erosion.
Upper Rio Grande 13020101 Outlet Rio Grande del Rancho 130201010907	McGaffey Fire -Wildfire Natural Ignition in ponderosa pine and dry mixed conifer type (524 acres)	• Increase Herbaceous Ground Cover. • Decrease risk of extreme wildfire and associated erosion.
Upper Rio Grande 13020101 Headwaters Rio Grande de Rancho 130201010502 Rito de la Olla 130201010501	Road Decommissioning -Reslope natural contours and build tank traps at pinch-points to restrict illegal vehicle and off-road access on non-system and user-created routes. Remove non-functioning culverts on routes. (89 miles) -Improved 7,135 acres and protected 9.77 miles of stream	• Reduce sedimentation in streams by preventing vehicle trespass in wet meadows, riparian areas, and across streams. • Decrease erosional damage caused by route creation and soil compaction. • Improve water drainage and filtration.
Rio Chama 13020102 Montoya Canyon-Canjilon Creek 130201020901	Canjilon Wildland Urban Interface Project - 155 acres of mastication for hazardous fuels reduction - 954 acres of thinning/piling/lop & scatter for hazardous fuels reduction Canjilon Lakes Sanitation/Forest Health Project - 180 acres of sanitation/lop & scatter for forest health	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of extreme wildfire and associated erosion.

Carson National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Rio Chama 13020102 Martinez Canyon-Canjilon Creek 130201020904 Cedar Grove Cemetary-Arroyo Blanco 130201020502	Canjilon Wildland Urban Interface Project - 134 acres of thinning/piling for hazardous fuels reduction - 124 acres of thinning/lop & scatter for hazardous fuels reduction - 96 acres of pile burning for hazardous fuels reduction	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of extreme wildfire and associated erosion.
Rio Chama 13020102 Lopez Canyon-Canjilon Creek 130201020902	Canjilon Wildland Urban Interface Project - 368 acres of thinning/lop & scatter for hazardous fuels reduction	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of extreme wildfire and associated erosion.
Rio Chama 13020102 Outlet El Rito 130201021103 Headwaters El Rito 130201021102	El Rito Canyon Landscape Restoration Project - 244 acres of thinning/piling for hazardous fuels reduction - 674 acres of thinning/lop & scatter for hazardous fuels reduction	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of extreme wildfire and associated erosion.
Rio Chama 13020102 Rio Tusas-Rio Vallecitos 130201021404 Cañada de Agua-Rio Vallecitos 130201021403	Agua/Caballos Project - 184 acres of individual tree selection/timber sale treatments	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of extreme wildfire and associated erosion.

Carson National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Rio Chama 13020102 Cañada del Agua-Rio Tusas 130201021302	Rock Tank Fire - 137 acre natural wildfire ignition	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of extreme wildfire and associated erosion.
Rio Chama 13020102 Cañada Biscara-Rio Tusas 130201021301	Maquinita Vegetation Management Project - 158 acres of commercial thinning/group selection - 146 acres of improvement cuts/lop & scatter for forest health - 188 acres of broadcast burning for hazardous fuels reduction	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of extreme wildfire and associated erosion.
Upper Rio Grande 13020101 Cañada de Tio Gordito-Arroyo Aguaje de la Petaca 130201010803	Tio Gordito Restoration Project - 2,668 acres of broadcast burning Red Mesa Project - 33 acres of broadcast burning for hazardous fuels reduction - 164 acres of pile burning for hazardous fuels reduction	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of extreme wildfire and associated erosion.
Upper Rio Grande 13020101 Carson Reservoir-Arroyo Aguaje de la Petaca 130201010805	Tio Gordito Restoration Project - 362 acres of commercial thinning/group selection	• Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of extreme wildfire and associated erosion.
Black Copper Creek 130201010301	Black Copper/Red River Grazing Allotment - Rested Allotment: 10,418 acres rested in watershed from grazing impacts	• Increase in herbaceous ground cover • Decreased erosion and improved ground cover. • Riparian forage along Black Copper Creek improved.
Bobcat Creek 130201010301	Bobcat Grazing Allotment - Rested Allotment: 6,284 acres rested in watershed from grazing impacts	• Increase in herbaceous ground cover. • Decreased erosion and improved ground cover.

Carson National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Columbine Creek 130201010303	Columbine Grazing Allotment - Rested Allotment: 9,016 acres rested in watershed from grazing impacts	• Increase in herbaceous ground cover. • Decreased erosion and improved ground cover. • 1.0 mile of riparian forage along Black Copper Creek improved.
Bull Creek, Lake Fork Creek, Lagunitas Creek and adjacent Hart Lake. 130201010302	Lakefork/Baldy Grazing Allotment - Rested Allotment: 8,271 acres rested in watershed from grazing impacts	• Increase in herbaceous ground cover. • Decreased erosion and improved ground cover. • 3.0 mile of riparian forage along the headwaters of Bull Creek, Lake Fork Creek, Lagunitas Creek and adjacent Hart Lake improved.
Sawmill Creek 130201010301	Sawmill Grazing Allotment - Rested Allotment: 2,055 acres rested in watershed from grazing impacts	• Increase in herbaceous ground cover. • Decreased erosion and improved ground cover. • 1.5 mile of riparian/wetland forage along Sawmill Creek improved.
McCrystal Creek 110800020203	Valle Vidal Grazing Allotment – 3.0 mile pasture division fence built	• Improved watershed condition on 1.920 acres related to improved livestock distribution and control.
McCrystal Creek 110800020203	Noxious weed removal on 219.5 acres from McCrystal Creek and Middle Ponil Creek	• Improve watershed condition.
Comanche Creek 130201010102	Wetland restoration and watershed improvement on 154 acres	• Stabilize stream channel to reduce erosion. • Improve/stabilize wetlands. • Improve habitat and water quantity delivery to native trout streams. • Increase water yield and storage. • Reduce head cut migration.
Red River 130201010303	Riparian planting along 0.2 mi. of stream banks of Red River	• Planting of willows and narrow leaf cottonwood for stabilization of stream banks and restoration of riparian vegetation along stream banks of the Red River adjacent Eagle Rock Lake.

Carson National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Bitter Creek	Livestock Grazing Exclosure 2A - Bitter Creek headwater wetland stabilization (2. 5 acre), stabilization of 0.3 mi. of native trout stream habitat and protection of 0.3 mi. of stream channel from livestock grazing impacts	• Construct livestock exclosure in headwaters of Bitter Creek to allow for wetland restoration and stabilization of headwater stream channel habitat for native Rio Grande cutthroat trout.
Red River 130201010304	Questa Lama WUI – El Medio CFRP 40 acres of thinning	• Forest thinning to reduce fuel loading and improve watershed condition and improve forest health of Ponderosa Pine forest type.
Red River 130201010304	Forest Road stabilization/restoration of drainage and road prism -0.7 miles	• Re-establish road prism and road drainage on FDR 132 A 1 (level 2 road) with severe erosion rutting (2.5 – 3 ft deep ruts) of road surface.

Cibola National Forest

Watershed/HUC No.	Project Description	Water Quality Benefits
Rio San Jose (13020207) Agua Medio - Bluewater Creek (130202070201)	Ponderosa Pine thinning (1590 acres)	• Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.
Rio San Jose (13020207) Bluewater Lake - Bluewater Creek (130202070206)	Road decommissioning (5.4 miles)	• Decrease erosion, concentrated runoff. • Improve ground cover. • Reduce sediment yield.
Rio San Jose (13020207) Bluewater Lake - Bluewater Creek (130202070206)	Ponderosa Pine thinning (497 acres)	• Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.

Cibola National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Rio San Jose (13020207) Headwaters Cottonwood Creek (130202070202)	Road decommissioning (10 miles)	• Decrease erosion, concentrated runoff. • Improve ground cover. • Reduce sediment yield.
Rio San Jose (13020207) Headwaters Cottonwood Creek (130202070202)	Prescribed Fire (191 acres)	• Improve ground cover. • Reduce sediment yield.
Rio San Jose (13020207) Ojo Redondo - Bluewater Creek (130202070205)	Ponderosa Pine thinning (1490 acres)	• Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.
Rio San Jose (13020207) Upper San Mateo Creek (130202070301)	Ponderosa Pine thinning (117 acres)	• Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.
Zuni River (15020004) Upper Rio Nutria (150200040201)	Riparian Fencing (1 acre)	• Improve riparian condition. • Protect stream banks. • Reduce sediment yield. • Reduce stream temperatures.
Elephant Butte Reservoir (13020211) Limestone Canyon - Alamosa Creek (130202110601)	Stream stabilization structures (1.5 acres)	• Improve stream stabilization. • Reduce bank erosion. • Reduce sediment yields.
Rio Grande – Santa Fe (13030301) Headwaters San Pedro Creek (130202010501)	Ponderosa Pine and Pinyon-Juniper thinning (154 acres)	• Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.
Western Estancia (13050001) Arroyo de Chilili (130500010402)	Ponderosa Pine and Pinyon-Juniper thinning (1680 acres)	• Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.

Cibola National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Rio Grande – Albuquerque (13020203) Upper Tijeras Arroyo (130202030201)	Ponderosa Pine and Pinyon-Juniper thinning (40 acres)	• Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.
Rio Grande – Albuquerque (13020203) Upper Hells Canyon Wash (130202030401)	Ponderosa Pine and Pinyon-Juniper thinning (145 acres)	• Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.
Western Estancia (13050001) Mesteno Draw (130500011001)	Ponderosa Pine and Pinyon-Juniper thinning (190 acres)	• Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.
Western Estancia (13050001) Upper Arroyo de Manzano (130500011002)	Ponderosa Pine and Pinyon-Juniper thinning (177 acres)	• Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.
Upper Canadian (11080003) Canon Hondo - Canadian River (110800030507)	Salt Cedar Removal and Retreatment (255 acres)	• Improve riparian condition. • Improve bank stability. • Reduce sediment yields.

Gila National Forest

Watershed/HUC No.	Project Description	Water Quality Benefits
Y Canyon – 1302020806 (La Jolla Canyon-130202080601)	Moraga PJ and Grassland Thinning ~1650 acres Burro TSI #1 and 2, hand thin 400 acres	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover. • Thin current pinion/juniper stand, improving grassland restoration. • Improve riparian function.
Canovas Creek-Coyote Creek (150200010302)	Miller Fire- 145 acre managed wildfire	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.

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) (Sim Yaten Canyon – Alamosa Creek 130202110607) (Wildhorse Canyon 130202110608)	North Wahoo Allotment - entire allotment was kept in non-use for resource protection; South Wahoo Allotment – entire allotment was kept in non-use for 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.
Palomas Creek-Rio Grande 1303010102 (North Fork Palomas Creek-130301010206) (South Fork Palomas Creek-130301010207) (Mud Spring-130301010204) (Circle Seven Creek-130301010205)	Hermosa Allotment – entire allotment was kept in non-use for 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.
Sapillo Creek-Gila River 1504000109	Salt cedar treatment along the Gila River. Approximately 228 acres	• Reduce the spread of noxious weeds to improve riparian and watershed health.

Gila National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Caballo Reservoir 1303010104 (Seco Creek-130301010403) (North Seco Creek-130301010401)	Hermosa Allotment – entire allotment was kept in non-use for 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.
Caballo Reservoir 1303010104 (Headwaters Las Animas-130301010406) (Cave Creek-130301010405)	Animas Allotment – entire allotment was kept in non-use for resource protection; Hermosa Allotment – entire allotment was kept in non-use for resource protection – approx. 19,012 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.
Cuervo Arroyo-Rio Grande -1303010202 (Jaralosa Creek 130301020207) (Outlet Tierra Blanca 130301020204) (Headwaters Berenda Creek 130301020208) (Headwaters Tierra Blanca 130301020203)	Mackey Allotment – entire allotment was kept in non-use for resource protection Berenda Allotment - 1.5 miles of fence reconstruction on the headwaters of Tierra Blanca, Berenda, and Donahue Riparian planting at upper Tierra Blanca spring (2 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 velocities, erosion and sedimentation. • Protection of riparian vegetation and water quality from ungulate grazing activities. • 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. • Increase herbaceous ground cover. • Improve riparian function.
Rito Creek 1502000301 (Upper Mangas Creek 150200030101)	Slaughter Mesa – 50 acres thinning/encroaching tree removal Slaughter Mesa Prescribed Fire – 941 acres of broadcast burning	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.

Gila National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Gallinas Canyon – Mimbres River 1303020201 (Powderhorn Canyon – Mimbres River - 130302020101) (Allie Canyon – Mimbres River – 130302020102) (Sheppard Canyon – Mimbres River – 130302020103) (Noonday Canyon – 130302020104) (Noonday Canyon – Mimbres River – 130302020105)	Mimbres Allotment – entire allotment was kept in rest 33,556 acres McKnight Thinning- 78 acres T-Bird Thinning- 23 acres 3-Circles Piles Rx- 14 acres Sheppard Allotment- entire allotment was kept in rest 18,224 acres Powderhorn Allotment- entire allotment was kept in rest 36,864 acres Stitzel Wildfire- 73 acres Cold/ Hot Spring Allotment – Reconstructed Upton Tank Allie/Avalanche Allotment – Reconstructed ½ mile of Redstone – Allie Avalanche allotment boundary fence.	• 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. • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion. • Improved livestock management resulting in improved watershed condition and herbaceous ground cover due exclusion of livestock in the Signal Fire BEAR area of the allotments.
Headwaters San Vicente Draw – 1303020202 (Cameron Creek-130302020204)	Ft. Bayard-Cameron Creek Rx Burn	• Improve watershed condition and herbaceous ground cover.
Lampbright Draw – 1303020204 (Headwaters Lampbright Draw-130302020401)	Fierro Allotment – Reconstructed Horseshoe Tank, and Fierro well Fierro Allotment Reconstructed ½ mile of allotment boundary fence between Allie/Avalanche and Fierro allotments	• Increase herbaceous ground cover by improving watershed condition and livestock/wildlife distribution, resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Increased herbaceous ground cover due to improved livestock management.

Gila National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Cow Spring Draw-Seventy-six Draw 1303020214 (Headwaters Cow Spring Draw-130302021402)	White Signal/Ferguson Allotment - Completed White Signal/Ferguson EA Pocketknife Well - Installed new solar pump	• Voluntary reduction of permitted livestock, numbers (2,520 AUMs down to 1,632 AUMs). The 888 AUMs reduction will improve watershed condition and increase herbaceous ground cover which will result in an increase of stabilized soils, reduce runoff, erosion and sedimentation.
Upper Largo Creek 1502000302 (El Caso Spring Canyon 150200030201) (Sawmill Canyon-Largo Creek 150200030202)	Slaughter Mesa ~ 2,863 acres of thinning/encroaching tree removal Slaughter Mesa ~ 718 acres of thinning/encroaching tree removal	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Headwaters East Fork Gila River 1504000104 (Taylor Creek 150400010402) (Hoyt Creek 150400010401) (Diamond Creek-East Fork Gila River 150400010407)	Turkey Run and Corduroy Allotments - 0.5 miles of fence reconstruction on north rim of 74 Draw Burnt Wildfire – 188 acres Mesa Wildfire – 18 acres Rocky Wildfire – 10 acres Sapillo Allotment- entire allotment was kept in rest 62,091 acres; Mimbres Allotment – entire allotment was kept in rest 33,556 acres	• Improve riparian vegetation to reduce erosion. • Increase herbaceous vegetation. • Decrease risk of extreme wildfire and associated erosion. • 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.
West Fork Gila River – 1504000106 (Little Creek - 150400010603)	Turkey Wildfire-6,920 acres; McKenna Wildfire- 10,210 acres	• Decrease risk of extreme wildfire and associated erosion.

Gila National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Middle Fork Gila River 1504000105 (Canyon Creek-Middle Fork Gila River - 150400010505) (Indian Creek Canyon-Middle Fork Gila River - 150400010507) (Snow Canyon - 150400010503) (Gilita Creek-150400010502)	McKenna Wildfire- 10,210 acres Turkey Wildfire-6,920 acres; Snow Canyon WRAP completion which included riparian restoration, streambank stabilization, gully control, sediment reduction and Dipping Vat Campground BMPs Willow Creek Well- installed to keep livestock off of riparian areas by providing another water source	• Decrease risk of extreme wildfire and associated erosion. • Improve riparian vegetation for vegetation, wildlife, and water quality benefits. • Improve road drainage for water quality benefits. • Sediment reduction and erosion control. • BMPs implementation. • Increase herbaceous ground cover.
Outlet East Fork Gila River 1504000107 (Tom Moore Canyon -150400010701) (Headwaters Black Canyon 150400010702) (Apache Creek 15400010703) (Outlet Black Canyon - 150400010704)	Timber Wildfire- 2,800 acres Sapillo Allotment- entire allotment was kept in rest 62,091 acres Mimbres Allotment – entire allotment was kept in rest 33,556 acres	• Decrease risk of extreme wildfire and associated erosion. • 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.
Headwaters Tularosa River 1504000401 (Canon del Buey 150400040102)	Slaughter Mesa - 100 acres thinning/ encroaching tree removal	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.

Gila National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Headwaters Burro Cienega-1504000302 (Hall Draw-Burro Cienega - 150400030201)	C Bar Allotment – Reconstructed White Top Solar Pump and Divide Windmill	• Improved watershed condition and herbaceous ground cover due to improved livestock distribution on the allotment, resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.
Lordsburg Draw 1504000304 (Headwaters Thompson Canyon-150400030403) (Gold Hill Canyon-Lordsburg Draw-150400030401)	White Signal/Ferguson Allotment - Completed White Signal/Ferguson EA C Bar Allotment – Reconstructed White Top Solar Pump and Divide Windmill	• Voluntary reduction of permitted livestock, numbers (2,520 AUMs down to 1,632 AUMs). The 888 AUMs reduction will improve watershed condition and increase herbaceous ground cover which will result in an increase of stabilized soils, reduce runoff, erosion and sedimentation. • Improved watershed condition and herbaceous ground cover due to improved livestock distribution on the allotment, resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.
Headwaters Tularosa River – 1504000401 (Cold Springs Canyon – Tularosa River 150400040108)	RMEF funded reconstruction of Squirrel Springs tank and storage tank	• Improve the management of the cattle distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Increase water yield.
Sapillo Creek – 1504000108 (Rocky Canyon-Sapillo Creek – 150400010802)	Gattons Park Thinning- 49 acres Gattons Park 1 Rx- 58 acres broadcast burning Mimbres Allotment – entire allotment was kept in rest 33,556 acres Sapillo Allotment- entire allotment was kept in rest 62,091 acres	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover. • Thin current pinion/juniper stand, improving grassland restoration.

Gila National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Outlet Tularosa River 1504000402 (Sign Camp Canyon-150400040205) (Headwaters North Fork Negrito Creek 150400040202) (Long Canyon-Tularosa River – 150400040201) (South Fork Negrito Creek 150400040203) (Outlet North Fork Negrito Creek 150400040204)	Deep Creek allotment entered non-use ~500 acres Collins Park Well reconstruction Divide Forest Restoration Project, hand thin 1875 acres of grassland, 1751 acres of woodland, and 682 acres of ponderosa pine. Work done in conjunction with the Forestry Division of EMNRD Shooter Stewardship, thin 320 acres Six Project, thin 667 acres Deer Re-offer, thin 228 acres Doe Gun Timber Sale, thin 95 acres Deep Canyon-Jon S and Tularosa Pasture fence repair/replace; 2 mi School Fire- 7,315 acre wildfire managed for multiple resource objectives	• 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. • Increased efficiency of pump via solar power provides year-round access to water. • Improved water access for wildlife and livestock. • Decrease risk of extreme wildfire and associated events. • Increase herbaceous ground cover. • Decrease erosion. • Improve road drainage. • Improve the management of the cattle distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.
Centerfire Creek-San Francisco River – 1504000403 (Largo Canyon 150400040310) (Cienega Canyon-San Francisco River -150400040311) (Starkweather Canyon 150400040309)	Spur Fire- 2,243 acres of a managed wildfire Black Bob-SU pasture fence repair/replacement; ~3.5 miles Black Bob-East Mess Box well construction and storage tank. Collaborated with Desert Fish Partnership Funding	• Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover. • Improve the management of the cattle distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Well and storage tank with a year-round supply of water for wildlife and cattle. Will reduce impact on nearby San Francisco River by cattle through reduction of livestock traffic along the riparian corridor.

Gila National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Deep Creek-San Francisco River 1504000404 (Devil's Creek 150400040404) (Outlet Saliz Canyon 150400040402) (Deep Creek 150400040405) (Saliz Canyon-San Francisco River 150400040403) (Headwaters Saliz Canyon 150400040401)	Deep Creek allotment entered non-use (resource protection) ~8,200 acres in this 6th code Deep Creek allotment entered non-use (resource protection) ~1,433 acres in this 6th code Deep Creek allotment entered non-use (resource protection) ~17,844 acres in this 6th code Frisco Plaza Well expansion, which included installation of a 5000 gal storage tank, troughs, and associated plastic pipeline Leggett Starkweather TSI, hand thinning 531 acres. Work done in conjunction with the Forestry Division of EMNRD	• 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, reduction in runoff, erosion and sedimentation. • Decrease risk of extreme wildfire and associated events.
Pueblo Creek-San Francisco River 1504000406 (Mineral Creek 150400040605) (Vigil Canyon 150400040604) (Lower Pueblo Creek 150400040602)	Entire Deep Creek allotment entered non-use (resource protection) ~100 acres in this 6th code Riparian exclosure around Vigil Spring with riparian planting, road reroute. Completion of Vigil Canyon WRAP – 8 acres Jones Draw Tank cleanout Juniper thinning – 400 acres Stock tank cleaned	• 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. • Reduce risk of wildfire. • Improve riparian vegetation for vegetation, wildlife, and water quality benefits. • Improve road drainage for water quality benefits. • Reduce sediment load. • Thin current pinion/juniper stand, improving grassland restoration.

Lincoln National Forest

Watershed/HUC No.	Project Description	Water Quality Benefits
Arroyo Del Macho and Rio Hondo, New Mexico	Revention Draw-Arroyo Del Macho and Gyp Spring Canyon	• West Mountain Prescribed Fire—Prescribed fire on 84 acres.
Rio Penasco, New Mexico	Cox Canyon-Rio Penasco-(Upper Rio Penasco and Wills Canyon)	• Upper Rio Penasco Electric Fencing—temporary electric fence installed to protect riparian habitat for Endangered New Mexico Meadow Jumping Mouse.
Upper Pecos-Black New Mexico Texas	Turkey Canyon and Turkey Canyon Dark Canyon	• Goat Prescribed Burn—2430 acres of prescribed burning.
Rio Hondo, New Mexico	Upper Rio Ruidoso—(Cedar Creek)	• Admin Site Pile Burning—22 acres of pile burning following treatment.
Rio Hondo, New Mexico	Devils Canyon—(Eagle Creek)	• Ski Run Road Pile—burning of one acre of slash.
Arroyo Del Macho and Rio Hondo, New Mexico	Aragon Creek and Gyp Spring Canyon--	• West Mountain Dozer Push—385 acres of dozer push.
Rio Hondo, New Mexico	Carizo Creek—Carizo Creek	• Perk Grindstone—134 acres of prescribed burning.
Rio Hondo, New Mexico	Water Hole Canyon	• Smokey Bear Wildfire—666 acres treated with wildfire.
Rio Penasco, New Mexico	Sixteen Spring Canyon--	• 16 Springs 222 acres of fuels treatments.
Rio Penasco, New Mexico	Perk Canyon	• Jim Lewis—1321 acres of fuels treatment.
Upper Pecos-Black New Mexico, Texas	North Rocky Arroyo—Rocky Arroyo	• Guad Burns—721 acres of wildfire burns.
Upper Pecos-Black New Mexico, Texas	Upper Last Chance Canyon--	• Mailbox D Fuels Treatments—1576 acres of fuels treatments.

Lincoln National Forest (continued)

Watershed/HUC No.	Project Description	Water Quality Benefits
Rio Hondo, New Mexico	Upper Rio Ruidoso (Rio Ruidoso), Maverick Canyon, Alamo Canyon	• Turkey Gavilan Thin and Burn—841 acres of thinning and prescribed burning.
Tularosa Valley, New Mexico, Texas	Fresnal Canyon (Karr Canyon Creek and Fresnal Creek) and Alamo Canyon	• Alamo Peak Deck Sale—334 acres of timber sale subsequent to fuels treatment.

New Mexico Department of Game and Fish

Watershed/HUC No.	Project Description	Water Quality Benefits
Pecos River	Aquatic habitat improvement on two miles within two reaches (Mora and Bert Clancy Fishing Areas) on 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	Removal and control of non-native vegetation (tamarisk and Russian olive) and replanting of native riparian vegetation.	• Remove non-native riparian vegetation and replace native vegetation to improve riparian health.
Rio de Los Pinos	Aquatic habitat improvement on two miles of the upper Rio de Los Pinos 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.
Cimarron River	538 acres of thinning in wet mixed conifer and aspen at the Colin Neblett Wildlife Management Area.	• Decrease risk of extreme wildfire and associated erosion.
Upper Pecos River	600 acres of mesquite control to improve habitat for Prairie Chickens at the Claudell Prairie Chicken Area.	• Increase herbaceous ground cover.

The Natural Resources Conservation Service (NRCS) (Planned for 2017 and later)

Watershed	Project Description	Water Quality Benefit
Anthony Wash - Rio Grande	5,083 feet of Irrigation Ditch Lining	• Decreased sediment runoff.
	300 feet of Irrigation Pipeline	• Decreased nutrient and pesticide runoff.
	82.8 acres of Irrigation Water Management	
	15 Structures for Water Control	
Alameda Arroyo – Rio Grande	4,072 feet of Irrigation Ditch Lining	• Decreased sediment runoff.
	1,140 feet of Irrigation Pipeline	• Decreased nutrient and pesticide runoff.
	72.9 acres Cover Crop	
	40 Structures for Water Control	
Arroyo Pecos - Gallinas River	156.5 acres Woody Residue Treatment	• Prevention of sediment runoff.
	(4) Grade Stabilization Structures	• Reduced sediment runoff.
	156 acres Forest Stand Improvement	• Prevention of sediment runoff.
Mossman Arroyo - Rio Grande	1 Waste Storage Facility	• Decreased sediment runoff. • Decreased airborne dispersal of *E. coli.*
	800 feet Windbreak/Shelterbelt Establishment	• Decreased nutrient and pesticide runoff. • Decreased airborne dispersal of *E. coli.*
	3,526 feet Irrigation Pipeline	
	1 Pond Sealing or Lining, Flexible Membrane	• Reduced leaching of nutrients to groundwater.
	3 Pumping Plants	• Decreased airborne dispersal of *E. coli*.
	2 Waste Transfers	• Decreased airborne dispersal of *E. coli.*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