

State of New Mexico
**NONPOINT SOURCE
MANAGEMENT PROGRAM**



2020 Annual Report

*New Mexico Environment Department
Surface Water Quality Bureau
Watershed Protection Section*





State of New Mexico Nonpoint Source Management Program 2020 Annual Report

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

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

www.env.nm.gov/surface-water-quality/watershed-protection-section/



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January 29, 2021

Charles Maguire
Water Division Director
U.S. Environmental Protection Agency, Region 6
1201 Elm Street, Suite 500
Dallas, Texas 75270

Dear Director Maguire:

I am pleased to submit New Mexico's 2020 Nonpoint Source Management Program Annual Report (Report). In this Report we document the progress made in meeting the program milestones set forth in New Mexico's Nonpoint Source Management Plan.

The Nonpoint Source Management Program has six core objectives and I would like to briefly highlight our accomplishments made during Federal Fiscal Year 2020 for each:

1. Under the watershed-based planning objective, EPA accepted watershed-based plans for Comanche Creek, Embudo Creek, and the Rio Fernando de Taos. These plans and EPA's comment letters are posted at <https://www.env.nm.gov/surface-water-quality/accepted-wbp>.
2. In the area of water quality improvement, five new on-the-ground projects that implement watershed-based plans, funded under Clean Water Act Section 319, began. Nine new state-funded River Stewardship Program (RSP) projects began. Four Section 319-funded watershed implementation projects and seven RSP projects were completed and are summarized in this report.
3. To better protect water quality, staff reviewed fifty-one projects authorized by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act and confirmed their consistency with the state's existing Section 401 certification of the Nationwide Permits. Staff also conducted document reviews and site visits to ensure surface water quality protection under the New Mexico Mining Act. In addition, The New Mexico Environment Department (NMED) submitted comments on approximately 89 projects requiring analysis under the National Environmental Policy Act or requiring NMED review under other laws.
4. Related to education and outreach, four issues of the newsletter *Clearing the Waters* were published in Federal Fiscal Year 2020 (www.env.nm.gov/surface-water-quality/newsletters).

Mr. Charles Maguire
January 29, 2020
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5. In ground water quality protection, NMED's Ground Water Quality Bureau (GWQB) conducted three water fairs where local residents could have well water tested. GWQB also issued five permits for large septic tank leach field systems and surface disposal sites.

6. Finally, to better cooperate with other agencies on water quality protection and improvement, staff from NMED's Watershed Protection Section attended six soil and water conservation district (SWCD) board meetings, with three different SWCDs. NMED also funded one competitively awarded project with a SWCD. In addition, several other state and federal agencies provided information for the report on their activities related to NPS pollution control in Federal Fiscal Year 2020.

The Report notes several specific instances where the COVID-19 pandemic delayed or prevented milestone attainment, as well as more general problems posed by the pandemic that interfered with program objectives completion. We are proud of our accomplishments despite these setbacks and look forward to a more productive year as 2021 unfolds.

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 (505-470-5018) or Abe Franklin of my staff (505-946-8952).

Sincerely,

Shelly Lemon Digitally signed by Shelly Lemon
Date: 2021.01.29 12:06:33 -07'00'

Shelly Lemon, Bureau Chief
Surface Water Quality Bureau

Cc: Kyla Chandler, State and Tribal Grants Project Officer, US EPA Region 6
Rachel Renz, Nonpoint Source Program, US EPA Region 6
Rebecca Roose, Director, NMED Water Protection Division
Abe Franklin, Program Manager, NMED Watershed Protection Section



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Executive Summary

Polluted runoff, or nonpoint source (NPS) pollution, is defined by United States Environmental Protection Agency (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 ground water. 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 Clean Water Act (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, watershed-based planning, implementation of best management practices (BMPs), and monitoring to assess implementation efficacy.

This annual report to the EPA is required by Section 319(h)(11) of the Clean Water Act. It provides an overview of Nonpoint Source Management Program related activities conducted in New Mexico from October 1, 2019 through September 30, 2020.

Towards the objective of **completing watershed-based plans**, EPA accepted watershed-based plans for Comanche Creek, Embudo Creek, and the Rio Fernando de Taos. These plans and EPA’s comment letters are posted at <https://www.env.nm.gov/surface-water-quality/accepted-wbp>.

Towards the objective of **water quality improvement**, NMED did not submit a NPS Success Story nomination during the reporting period. Five new on-the-ground projects that implement watershed-based plans, funded under Section 319, began. Nine new River Stewardship Program (RSP) projects began. Four 319-funded watershed implementation projects and seven RSP projects were completed and are summarized in this report.

In the area of **water quality protection**, staff reviewed fifty-one projects authorized by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act, and confirmed their consistency with the state’s existing Section 401 certification of the Nationwide Permits. Staff also conducted document reviews and site visits to ensure surface water quality protection under the New Mexico Mining Act. NMED also submitted comments on approximately 89 projects requiring analysis under the National Environmental Policy Act or requiring NMED review under other laws.

With the objective of **sharing information on surface water quality**, four issues of the *Clearing the Waters* newsletter were published.

New Mexico’s NPS Management Program includes aspects related to **protection of ground water** as well. In 2020, the Ground Water Quality Bureau (GWQB) issued five New, Renewal, or Renewal and Modification Discharge Permits. GWQB also conducted three water fairs across New Mexico where residents brought approximately 258 well water samples for analysis of common pollutants such as nitrate.

To better **cooperate with other agencies on water quality protection and improvement**, staff from NMED’s Watershed Protection Section attended six soil and water conservation district (SWCD) board meetings, with three different SWCDs. NMED also funded one competitively awarded project with a SWCD. In addition, the Natural Resources Conservation Service, New Mexico Department of Game and Fish, New Mexico State Forestry Division, Bureau of Land Management, and four national forests provided information for the report on their activities related to NPS pollution control in 2020.



Introduction

This annual report to the United States Environmental Protection Agency (EPA) provides an overview of non-point source (NPS) management related activities conducted in New Mexico in federal fiscal year 2020 (October 1, 2019 through September 30, 2020) by the Watershed Protection Section (WPS) Surface Water Quality Bureau (SWQB) of the New Mexico Environment Department (NMED). 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 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).

Most funding to support the New Mexico Nonpoint Source Management Program was provided through Section 319(h) grants awarded to NMED by EPA. Activities and projects reported are CWA Section 319 projects, and those implemented under the state-funded River Stewardship Program (RSP), the New Mexico Wetlands Program, CWA Section 401 activities, New Mexico Mining Act activities, and NPS projects implemented by other natural resource agencies outside of NMED.



The left photo is of an IDEXX Quanti-Tray indicating results of “too numerous to count” (i.e., more than 2,419.6 colony forming units of E. coli per 100 mL) for a sample collected from the lower Gallinas River at La Liendre near the location of the upper photo.

What is Nonpoint Source Pollution?

According to information from EPA at www.epa.gov/nps,

NPS pollution generally results from land runoff, precipitation, atmospheric deposition, drainage, seepage or hydrologic modification. NPS pollution, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. NPS pollution is caused by rainfall or snowmelt moving over



and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters and ground waters.

Nonpoint source pollution can include:

- Excess fertilizers, herbicides and insecticides from agricultural lands and residential areas;
- Oil, grease and toxic chemicals from urban runoff and energy production;
- Sediment from improperly managed construction sites, crop and forest lands, and eroding streambanks;
- Salt from irrigation practices and acid drainage from abandoned mines;
- Bacteria and nutrients from livestock, pet waste and faulty septic systems;
- Atmospheric deposition and hydromodification.

As in most other states, NPS pollution is the leading cause of water quality problems in 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, watershed-based planning, 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.

Section 319 contains three main strategies for addressing NPS pollution:

- Requires states to prepare assessment reports of their NPS pollution problems.
- Requires each state 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.

New Mexico's NPS Management Program is described in the *New Mexico Nonpoint Source Management Plan* approved by EPA on August 1, 2019. The plan is available to review at <https://www.env.nm.gov/surface-water-quality/nps-plan>.

The NPS Management Program is supported largely by Section 319(h) grant funds. Recent years' funding awarded by EPA for New Mexico's NPS Management Program has been stable, with annual funds averaging \$1.9 million in fiscal years 2014-2020, and increasing an average of one percent each year.



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

Two sections of the CWA designed to help understand both point sources and nonpoint sources statewide 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 Section 303(d)/305(b) Integrated Report (Integrated Report, for short)*. Current and past Integrated Reports are available at www.env.nm.gov/surface-water-quality/303d-305b.

In New Mexico, the most common NPS impairments in streams are caused by (in order of prevalence, based on the *2020-2022 Integrated Report*) temperature, nutrients, *E. coli*, suspended or settleable solids (including turbidity and stream bottom sediments), and aluminum. In lakes and reservoirs, the most common water quality parameters in excess of water quality standards are mercury in fish tissue, polychlorobiphenyls (PCB's) in fish tissue, temperature, eutrophication (nutrient impacts), and dichlorodiphenyl-trichloroethane (DDT) in fish tissue.

These pollutants prevent designated uses from being fully supported in many of New Mexico's waters. Designated uses not fully supported in New Mexico's assessed rivers and streams (with the percentage not supporting in parentheses) include aquatic life uses (45%), primary and secondary contact (14%), wildlife habitat (2%), livestock watering (1%), irrigation (1%), and domestic water supply (1%). Most of these impairments are primarily or entirely caused by NPS pollution.

The majority of NPS pollution in New Mexico's streams is preliminarily attributed to unidentified sources, unmanaged or improperly managed rangeland grazing, on-site treatment systems (e.g., septic systems), drought-related impacts, wildlife other than waterfowl, and loss of riparian habitat. The *2020-2022 Integrated Report* provides probable source summary information only for waters with Total Maximum Daily Loads (TMDL). No lakes in New Mexico had approved TMDLs when the *2020-2022 Integrated Report* was prepared, so pollutant source summaries for lakes are not provided.

Photo of unauthorized discharge into the Pecos River.





New Mexico's Nonpoint Source Management Program

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 to protect ground water resources.

2020 Active Projects

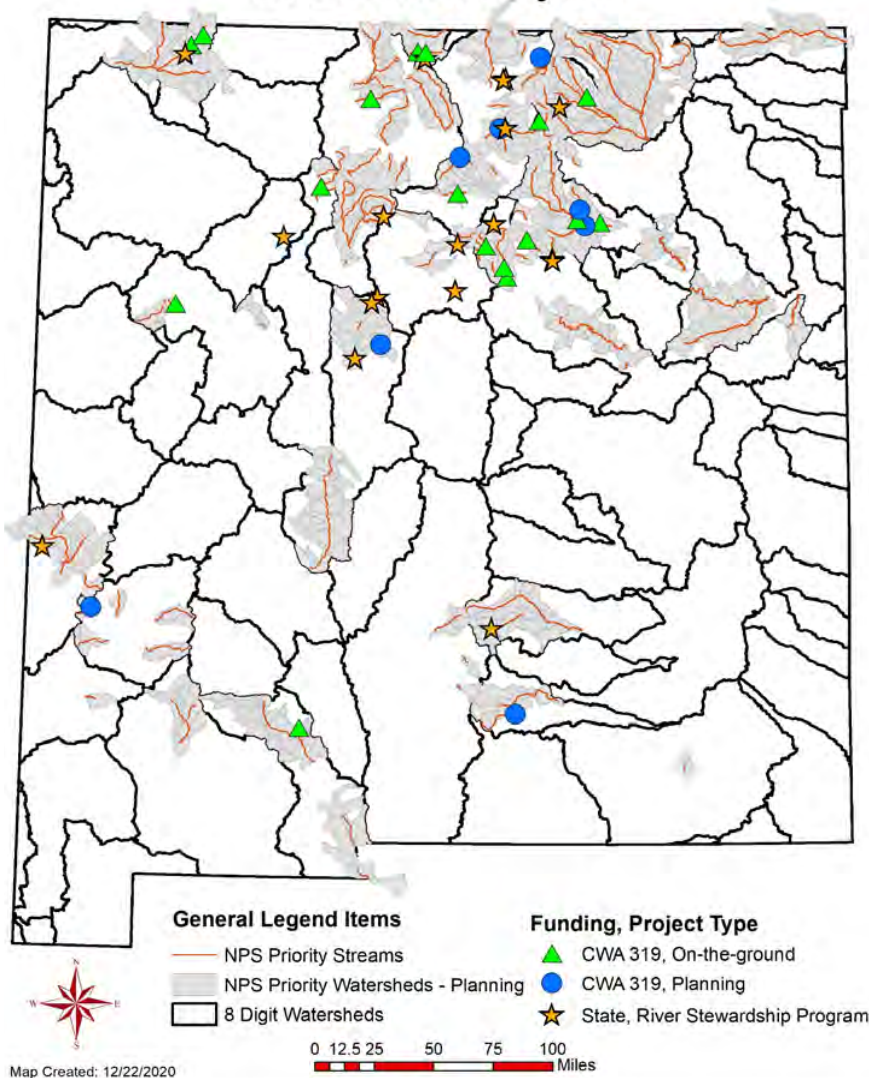


Figure 1: Section 319 and River Stewardship Program projects active in 2020.

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 by EPA in August 2019 and is available at: www.env.nm.gov/surface-water-quality/nps-plan.

The NPS Management Program includes activities carried out by NMED staff to meet the objectives of the program and directs funding to support watershed-based planning projects, watershed-implementation projects, and RSP projects. The NPS Management Program also relies on established resource protection programs, national and state NPS pollution prevention programs, and activities of other land management and resource protection agencies to address NPS pollution. New Mexico identifies programs and activities that will facilitate the achievement of surface water quality standards, using a voluntary approach to implement water quality improvements.

NMED reports how CWA Section 319(h) funds and state matching funds are used, in EPA's Grants Reporting and



Tracking System (GRTS). The funding is allocated to projects. Projects other than statewide projects are depicted in Figure 1, above.

Five tables below list projects in progress or completed in 2020, including staff activities, Section 319 funded watershed-based planning projects, Section 319 funded implementation projects, and state-funded projects. The tables include links to GRTS for more detailed information for each project. The available information includes contact information for project managers, project work plans, and (for completed projects) final project reports.

Staff Activities

Activities carried out by NMED staff in SWQB and the GWQB implementing the NPS Management Program statewide in 2020 are represented as projects in the following table. More information about work done under these projects is presented in sections below.

Table 1: Projects represented in GRTS describing staff activities, 10/1/2019 – 9/30/2020.

Grant Number	Project Number	Project Title	Project End Date	Section 319 Funds	State Funds	Summary Report
99610119	20-A	NEW MEXICO NON-POINT SOURCE MANAGEMENT PROGRAM FY 2020	06/30/2020	\$995,609	\$0	VIEW
99610119	20-B	GROUND WATER QUALITY BUREAU PROGRAMS FY 2020	06/30/2020	\$132,613	\$145,507	VIEW
99610119	21-A	NEW MEXICO NON-POINT SOURCE MANAGEMENT PROGRAM FY 2021	06/30/2021	\$1,231,488	\$0	VIEW
99610119	21-B	GROUND WATER QUALITY BUREAU PROGRAMS FY 2021	06/30/2021	\$150,000	\$150,000	VIEW

The budgets above for Projects 20-A and 20-B are actual funds spent. The budgets for Projects 21-A and 21-B are the projected expenditures (amounts approved by EPA). Actual amounts that will be spent on Projects 21-A and 21-B may be lower due to vacancy savings and other reduced costs.

Watershed-Based Planning Projects

An important component of the NPS Management Program 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* (www.epa.gov/nps/319-grant-current-guidance). A WBP expands on the information provided in a TMDL by identifying causes and sources of impairment, recommending management measures, estimat-



ing 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 subgrant process, conducted approximately every other year, and through technical support provided to partner agencies and stakeholder groups interested in water quality. WBP projects completed or in progress in 2020 are listed in Table 2 below. Completed WBPs and more information on watershed-based planning are available at www.env.nm.gov/surface-water-quality/wbp.

Table 2: Watershed-based planning projects completed or in progress, 10/1/2019 – 9/30/2020.

Grant Number	Project Number	Project Title	Project End Date	Section 319 Funds	Local Match	Summary Report
99610117	16-F	Rio Fernando de Taos Watershed-Based Plan (Part 2)	05/17/2020	\$49,756	\$32,712	VIEW
99610117	16-G	Watershed-Based Planning within the Upper Agua Chiquita Drainage Basin	04/30/2021	\$63,165	\$42,136	VIEW
99610117	16-I	Watershed-Based Plan for the Upper Rio Grande Watershed, Comanche Creek Subwatershed	05/31/2020	\$24,524	\$18,222	VIEW
99610118	18-E	Willow Creek Watershed-Based Planning Project	06/30/2021	\$92,865	\$63,059	VIEW
99610118	19-C	Sapello River Watershed-Based Plan	06/30/2021	\$132,646	\$88,855	VIEW
99610118	19-G	Rio Embudo Watershed-Based Plan Completion Project	12/19/2019	\$33,182	\$0	VIEW
99610119	20-D	Upper Tijeras Creek Watershed-Based Plan	12/31/2021	\$53,369	\$65,826	VIEW
99610119	20-E	Wolf Creek Update to the Watershed-Based Plan for the Mora River – Upper Canadian Plateau	12/31/2022	\$75,577	\$55,562	VIEW

Watershed Implementation Projects

Through a combination of funding programs, partnerships, and education and outreach activities, New Mexico encourages interested parties to implement WBPs to control or reduce the degree of water quality impairments. The following table lists New Mexico’s current and recently completed Section 319 watershed implementation projects.



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Table 3: Section 319 Watershed Implementation Projects completed or in progress, 10/1/2019 – 9/30/2020.

Grant Number	Project Number	Project Title	Project End Date	Section 319 Funds	Local Match	Summary Report
99610117	16-C	Temperature Reduction and Riparian Habitat Restoration in Upper Cow Creek (Part 2)	06/30/2020	\$220,841	\$168,550	VIEW
99610117	16-D	Rio Nutrias Watershed-Based Plan Implementation Phase I (Part 2)	09/30/2020	\$142,348	\$103,698	VIEW
99610117	17-R	On-The-Ground Improvement Projects for the Mora River – Upper Canadian Plateau Phase 1A	06/30/2020	\$262,310	\$431,582	VIEW
99610117	17-S	Upper Rio San Antonio Watershed On-The-Ground Restoration to Improve Water Quality	03/02/2020	\$17,980	\$7,722	VIEW
99610117	17-T	Lower Animas Watershed-Based Plan Implementation Projects	12/31/2020	\$229,644	\$156,400	VIEW
99610117	17-V	Elk Run Erosion Prevention Project	06/30/2020	\$79,712	\$0	VIEW
99610117	17-W	Stream Restoration on the Upper Rio San Antonio	06/30/2021	\$100,822	\$0	VIEW
99610117	17-Y	Restoring the Rio Quemado Riverine Wetland on Los Potreros Open Space, in Chimayo, NM (Part 1)	06/30/2021	\$42,559	\$28,372	VIEW
99610117	17-Z	Watershed Project Implementation for the Mora River-Upper Canadian Plateau Phase 1B (Part 1)	06/30/2021	\$93,066	\$62,044	VIEW



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Table 3: continued

Grant Number	Project Number	Project Title	Project End Date	Section 319 Funds	Local Match	Summary Report
99610117	17-AA	Rincon Arroyo Watershed Stabilization Project to Reduce E. coli loading to the Rio Grande (Part 1)	06/30/2021	\$108,786	\$72,524	VIEW
99610117	17-AB	Temperature and Erosion Reduction in Lower Cow Creek – Phase II (Part 1)	06/30/2021	\$150,000	\$100,000	VIEW
99610118	18-C	Temperature Reduction and Erosion Reduction in Lower Cow Creek	12/31/2021	\$156,017	\$104,200	VIEW
99610118	18-J	On-the-Ground Improvement Projects for the Upper Gallinas River and Porvenir Creek, Phase III	09/30/2021	\$314,858	\$209,950	VIEW
99610118	18-K	Lower Animas Watershed Based Plan Implementation Projects Phase 2	12/31/2020	\$148,450	\$102,000	VIEW
99610118	18-L	Dalton Canyon Creek Water Quality Improvement Project	06/30/2022	\$199,561	\$133,263	VIEW
99610118	19-D	Upper Rio Puerco Sediment and Turbidity Reduction Road Maintenance Workshops	05/31/2021	\$25,557	\$16,400	VIEW
99610118	19-H	Reynold Draw-Blue-water Creek Riparian Conservation Project	12/31/2020	\$170,454	\$113,650	VIEW
99610118	19-I	North Ponil Restoration Project (Part 1)	06/30/2022	\$130,000	\$87,036	VIEW
99610119	20-O	Reducing Fecal Waste in the Rio Fernando de Taos	12/31/2022	\$47,891	\$33,262	VIEW



River Stewardship Program

A key part of the NPS Management Program is the state-funded RSP. The goal of RSP is to fund projects that enhance the health of rivers by addressing the root causes of poor water quality and stream habitat. In most recent years the New Mexico Legislature has appropriated capital outlay funds for RSP to design and construct projects that improve surface water quality or river habitat statewide and to provide state matching funds required by the terms of any federal grant under the Clean Water Act. Annual funding has ranged from \$500,000 to \$2,300,000. In 2020, a Request for Proposals (RFP) was completed and nine new RSP projects began. Table 4 below lists New Mexico’s current and recently completed RSP projects.

Table 4: River Stewardship Program (RSP) projects completed or in progress, 10/1/2019 – 9/30/2020.

Grant Number	State Funding Code	Project Number	Project Title	Project End Date	State Funds	Summary Report
99610117	16A2644	17-E	Enhancing Aquatic Habitat Conditions in the Galisteo Creek in Galisteo, New Mexico	06/30/2020	\$169,942	VIEW
99610117	16A2644	17-G	Rewinding the Gallinas River in the City of Las Vegas	06/30/2020	\$315,166	VIEW
99610117	16A2644	17-I	Constructing Diverse Native Bosque Habitat on Two River Bars at the Pueblo of Santa Ana	06/30/2020	\$121,405	VIEW
99610117	16A2644	17-L	Two Rivers Park Restoration Project	06/30/2020	\$179,079	VIEW
99610117	16A2644	17-M	Bosque del Bernalillo Storm Water Quality and Habitat Enhancement to the Rio Grande Project	06/30/2020	\$139,867	VIEW
99610118	16A2644	18-G	Upper Rio San Antonio Watershed Restoration to Improve Water Quality	06/30/2020	\$199,721	VIEW
99610118	16A2644	18-H	Village of Questa Fishing Park (Reach A) Stream Restoration Project	06/30/2020	\$157,257	VIEW



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Table 4: continued

Grant Number	State Funding Code	Project Number	Project Title	Project End Date	State Funds	Summary Report
99610119	A19D2428	20-F	Adair Spring Restoration	06/30/2023	\$57,848	VIEW
99610119	A19D2428	20-G	Riparian Restoration in Torreon Wash Watershed	06/30/2023	\$174,113	VIEW
99610119	A19D2428	20-H	Valle de Oro National Wildlife Refuge Unit 2 Wetland Development and Water Quality Improvement Project	06/30/2023	\$160,000	VIEW
99610119	A19D2428	20-I	Animas River Habitat Enhancement and Bank Stabilization Project	06/30/2023	\$138,324	VIEW
99610119	A19D2428	20-J	Wetland and Stream Restoration of Lower Jaramillo Creek	06/30/2023	\$227,493	VIEW
99610119	A18C2273	20-K	Restoration of Trout Habitat on the Cimarron River	01/31/2023	\$304,282	VIEW
99610119	A18C2273	20-L	Rewinding the Gallinas River in the City of Las Vegas – Phase II	06/30/2022	\$457,494	VIEW
99610119	A19D2428	20-M	Santa Fe River – East Alameda Rain Garden and Camino Escondido Zuni Bowls	06/30/2023	\$167,342	VIEW
99610119	A19D2428	20-N	Pecos River Cowles Restoration Project	06/30/2023	\$281,119	VIEW



Red River Aquatic Habitat Restoration Project

In 2018, the New Mexico Office of Natural Resources Trustee (ONRT) and NMED signed a Memorandum of Agreement for WPS to manage an aquatic habitat restoration project on the Red River within the municipal limits of the Village of Questa. EPA and ONRT authorized the costs of this project to be reported as match to Section 319 grants. The project’s basic information is represented in the following short table:

Table 5: Red River Aquatic Habitat Restoration Project.

Grant Number	State Funding Code	Project Number	Project Title	Project End Date	State Funds	Summary Report
99610118	SWQONRRRIV	19-F	Red River Aquatic Habitat Restoration Project	06/30/2023	\$1,211,974	VIEW



The Red River Aquatic Habitat Restoration Project will add habitat complexity to stream reaches such as this one within the Village of Questa.

A more comprehensive listing of Section 319, RSP, and other state-funded projects is available at:

www.env.nm.gov/surface-water-quality/nmed_319_and_rsp_project_list.



NPS Management Program Accomplishments in 2020

NMED seeks to meet the long-term goal of the NPS Management Program with specific actions described in the NPS Management Plan taken over approximately a five-year period. The NPS Management Plan includes at its core six objectives aimed at reducing and preventing NPS pollution in New Mexico: **1) Complete WBPs to Enable Effective Implementation, 2) Improve Water Quality, 3) Protect Water Quality, 4) Share Information on Surface Water Quality, 5) Protect Ground Water Quality, and 6) Cooperate with other Agencies on Water Quality Protection and Improvement.** With each objective is a list of activities necessary to achieve the objective and verification milestones used to evaluate whether objectives have been attained. 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 six program objectives, activities, and corresponding milestones from the NPS Management Plan are listed below, along with reports of progress made under each applicable activity in federal fiscal year 2020 (October 1, 2019 through September 30, 2020). Use of italics below indicates text cited directly from the NPS Management Plan. Non-italics text is used to provide progress for 2020.

Objective 1 – Complete WBPs to Enable Effective Implementation

To produce WBPs that meet all nine elements identified in the Nonpoint Source Program and Grants Guidelines for States and Territories, and acceptable alternatives to WBPs, for an average of three priority watersheds per year.

Objective 1 Verification Milestones and Reports of Progress

- *In 2019 through 2023, at least one WBP per year, covering at least one priority watershed each, will be supplemented, updated, or completed, and accepted by the EPA as meeting the nine elements of WBPs.*

EPA accepted three watershed-based plans as meeting the requirements of the Nonpoint Source Program and Grants Guidelines for States and Territories in 2020. They are for Comanche Creek (covering one priority watershed), Embudo Creek (covering one priority watershed plus most of two additional priority watersheds), and the Rio Fernando de Taos (covering two priority watersheds). These plans and EPA's comment letters are posted at www.env.nm.gov/surface-water-quality/accepted-wbp.

A Solicitation for Applications (SFA) was conducted in calendar year 2019 and agreements for two new planning projects (one for the upper Tijeras Creek watershed, the other for the Wolf Creek watershed) were approved in January 2020. The upper Tijeras Creek project follows completion of a TMDL for nutrients for a portion of Tijeras Creek. The Wolf Creek project is to identify ways of improving the hydrology of this Category 4C stream, and as such the plan will be a WBP alternative. The Tijeras Creek project will support achievement of this milestone in a future year.



- *Development of an index to use Recovery Potential Screening (RPS) to prioritize watershed-based planning projects will be reported in the NPS Annual Report for 2020. Recovery Potential Screening is described in depth at www.epa.gov/rps.*

The SFA completed in 2020 for watershed-based planning projects did not utilize RPS. A report of NMED's use of RPS is included below under a related milestone for watershed implementation projects.

- *One or more streams are included within assessment category 5-alternative, as a result of cooperative WBP completion by WPS, MASS, and stakeholders, by 2022.*

Early work began last year (2019) to develop a WBP for American Creek, within the Cimarron River watershed, for impairments identified there during the 2016-2017 Upper Canadian water quality survey. The WBP is primarily an in-house project carried out by SWQB staff, with support from the Cimarron Watershed Alliance as a component of Project 19-I listed in Table 3 above. At this stage information collected through field work and meetings with stakeholders is needed to identify and describe management measures for the WBP. This work was to happen in 2020 but was canceled because of COVID-19 precautions.

- *An inventory of watersheds covered by WAPs and an associated GIS coverage (posted on the SWQB mapper web site at <https://gis.web.env.nm.gov/oem/?map=swqb>) is completed, to update the list of priority watersheds for implementation, in 2019.*

This work was completed in federal fiscal year 2020. The result is available to review in the Surface Water Quality Bureau mapper linked above, in a new group called "Wetland Action Plans."

- *A post-fire response plan or project work plan that qualifies as a WBP alternative will be submitted to EPA within two years of any major wildfire occurring in the watershed of one or more streams with a coldwater or cool water aquatic life designated use and a fire severity that falls outside the natural range of variability for the affected forest types.*

The fire season in 2020 was moderate in New Mexico, with several fires exceeding 5,000 acres, but these fires were not nearly as destructive to water quality as in some previous years such as 2011, 2012, or 2013. NMED began developing post-fire rehabilitation projects to address some impacts from the Medio Fire (near Santa Fe) and Tadpole Fire (near Silver City), which both burned in 2020. Project work plans for these projects were submitted to EPA after the period covered by this report.

- *Watershed plans include information from major land owners and land management agencies, and all states, Indian nations, pueblos, and tribes, within their planning areas.*

The three watershed-based plans completed in 2020 were completed through stakeholder involvement processes. Each included some participation by public land management agencies, private landowners, non-governmental organizations, and local organizations. The watersheds covered by these three plans do not include any other states, Indian nations, pueblos, or tribes, within their areas.



Objective 2 – Improve Water Quality

Effective watershed-based NPS restoration programs are implemented, using multiple funding sources, in identified priority watersheds at an average of three new watersheds per year.

Objective 2 Verification Milestones and Reports of Progress

- *Water quality conditions are improved in one priority watershed annually in 2019 through 2023 because of projects or improvements in land management funded or encouraged by New Mexico's NPS Management Program. Some actions leading to this water quality improvement likely will have been initiated before 2019.*

Unfortunately, NMED did not meet this milestone in 2020, as the Effectiveness Monitoring coordinator was battling cancer and had to go on extended leave starting in December 2019 and returned to work in July 2020. His hours were also reduced in November 2019 and continued to be reduced after his return to work.

In his absence other NMED staff explored several potential NPS Success Stories, but the conclusion for each of them was that data were insufficient to demonstrate that water quality had improved. NMED explored several potential Type 1 NPS Success Stories and found that while water quality impairment delistings and NPS activities were sometimes coupled, the reasons for the de-listings were either changes in the water quality standards or assessment methods. We chose not to nominate such success stories because the framework is intended to represent clearer documentation of success than would be possible with available data.

While Type 1 NPS Success Stories require an official impairment delisting associated with NPS projects or improved watershed management, Type 2 Success Stories can be based on evidence of water quality improvement even without a de-listing. Statistical analysis of water quality data before and after restoration can provide such evidence.

The Effectiveness Monitoring coordinator is currently conducting an Analysis of Covariance to evaluate a Type 2 Success Story for San Antonio Creek on the Valles Caldera National Preserve, which has shown improvement in stream temperature following restoration projects. Additionally, the Effectiveness Monitoring Coordinator is considering Cold Springs Creek in southern New Mexico as a potential Type 1 Success Story, based on mine reclamation and a delisting that may follow assessment of metals data collected in 2020. Therefore we are optimistic to get back on track after a very rough year.

More information about NPS Success Stories, including New Mexico's past NPS Success Stories, is available at www.epa.gov/nps/success-stories-about-restoring-water-bodies-impaired-nonpoint-source-pollution.

- *Begin implementation of watershed restoration projects described in WBPs or WBP alternatives to reduce NPS pollutant loads within two priority watersheds per year in 2019-2023.*

This milestone was met again in 2020. A Solicitation for Applications (SFA) for projects that



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implement WBPs, funded with Section 319 watershed project funds, was released in January 2020. Five resulting new projects (Projects 17-Y, 17-Z, 17-AA, 17-AB, and 20-O listed in Table 3, above) began in September 2020 as a result. One of the new projects (17-Y) implements a Wetlands Action Plan, which according to the NPS Management Plan is a WBP alternative.

- *Report on the use of RPS to prioritize watershed implementation projects in the NPS Annual Report for 2020.*

WPS used RPS in the SFA that was conducted in 2020. The index that was developed is described at <https://www.env.nm.gov/surface-water-quality/funding-sources>, and can be reviewed in a GIS environment at <https://gis.web.env.nm.gov/oem/?map=swqb> (in the Nonpoint Source Program group).

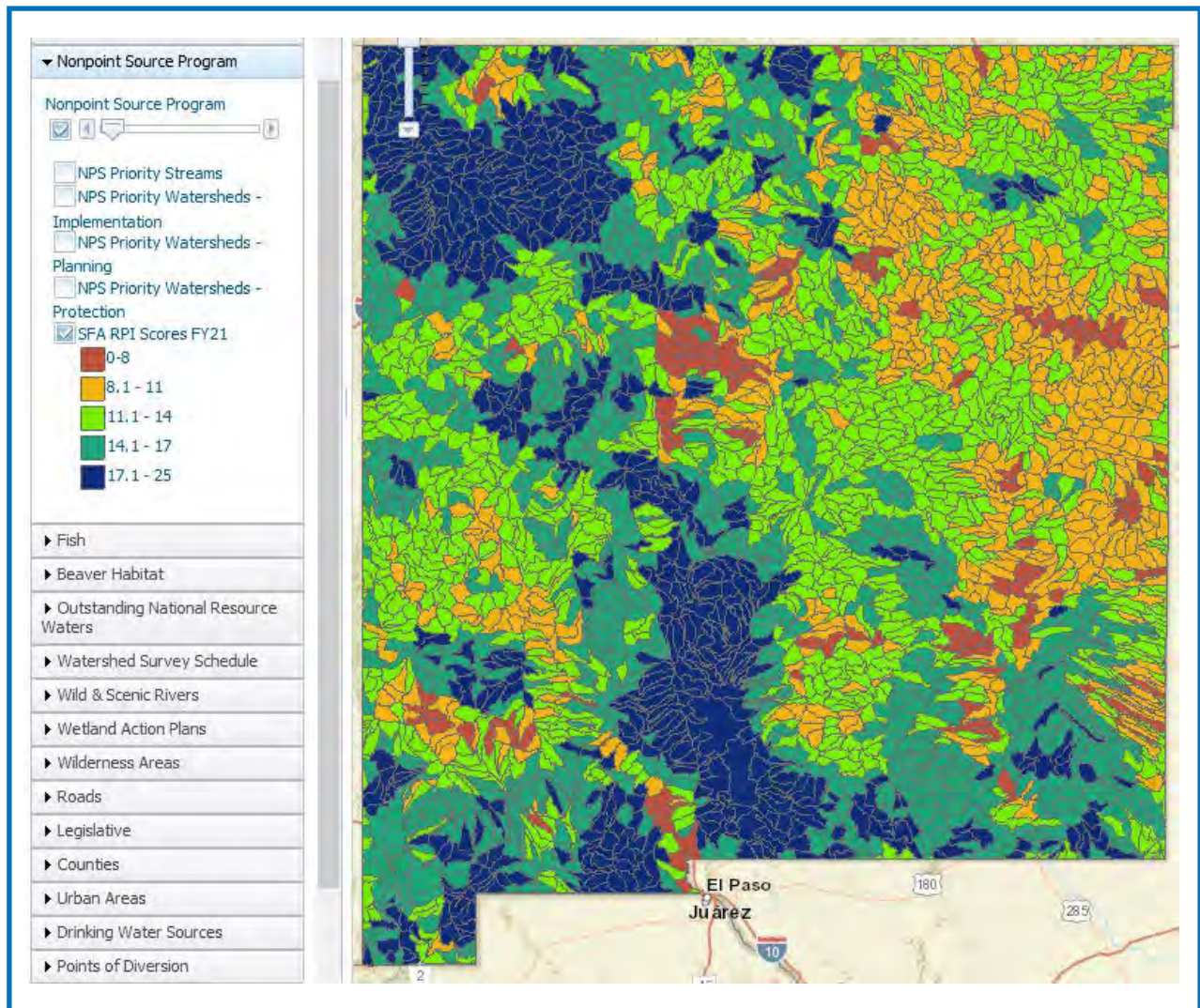


Figure 2: Recovery Potential Integrated (RPI) scores used in the SFA conducted in 2020.



As seen in Figure 2 (above), watersheds with little development (both lower-elevation arid watersheds and high-elevation forested watersheds) tended to have the highest Recovery Potential Integrated (RPI) Scores. Urban, agricultural, and/or watersheds with little public land tended to have low RPI scores. These scores were used to assign points to project applications. RPI score appeared to have not affected project selection. All applications received had RPI scores near the middle of the available range, so were not very different from one another in that regard. Applicants did not change the locations of proposed projects based on RPI scores. Applications not selected for funding were not selected based on other reasons, and changing that outcome based on RPI score (e.g., had RPI score been assigned more points in the scoring system, or had a different RPI score been used) would not have been appropriate for selecting projects with the greatest potential for water quality improvement.

RPI score was removed from the Fiscal Year 2022 SFA for watershed implementation projects. While the index provided an objective score based on the project location, the range of scores was not large enough to differentiate between recovery potentials within the group of applications. Therefore, it was not useful in the project evaluation and selection process. Additionally, inclusion of RPI score may serve as an obstacle for some applicants in that it is another component they need to consider in developing an application. At this time WPS wishes to encourage as many applicants as possible. If there is a great increase in the number of applications in the future, refining the RPS tool and developing a more robust RPI score to serve as an initial screening step may be useful.

- *Water quality improvements are documented in each NPS Management Program Annual Report.*

Water quality improvements are documented in the sections **NPS Pollutant Load Reduction Reporting, Summaries of Section 319 Projects Completed in 2020**, and **Summaries of River Stewardship Program Projects Completed in 2020**, below.

- *The NMED Construction Programs Bureau provides a summary of activities related to use of the Clean Water SRF to protect or improve water quality for each NPS Management Program Annual Report.*

The Clean Water State Revolving Fund (SRF) 2021 Project Priority List (available at www.env.nm.gov/construction-programs/cpb-forms-and-documents) includes two projects that address nonpoint source pollution. One would help Hodges Oil Company address substandard petroleum storage tanks (a component of New Mexico's NPS Management Program), and the other would assist the New Mexico Department of Health with the purchase of equipment to measure per- and polyfluoroalkyl substances (PFAS). PFAS are an emerging pollutant (meaning they are not well understood yet, and do not have specific surface water quality standards), that are nonetheless a nonpoint source and point source pollution concern almost everywhere in the United States.

A priority ranking system for point source and NPS projects is also available at the link above. The criteria make clear that NPS projects are eligible for funding. Yet, the Construction Programs Bureau receives few applications for NPS projects. SRF is a loan program. The volun-



tary nature of NPS pollution control seldom justifies expenditure by local agencies who are conventional SRF applicants.

Objective 3 – Protect Water Quality

The quality of surface water resources is maintained through coordinated activities, permitting programs, and technical assistance provided to assist cooperating agencies and landowners with efforts to understand water quality and protect surface waters from NPS pollution.

Objective 3 Verification Milestones and Reports of Progress

- *NMED will document procedures for SWQB to enforce regulations at 20.6.2 NMAC pertaining to refuse in a watercourse in 2019.*

In 2020, NMED staff developed a draft Standard Operating Procedure (SOP) for responding to complaints related to surface water quality, including complaints of refuse disposed in watercourses. Unfortunately, the SOP is rather complex, in part because relevant regulations are not limited to those at 20.6.2 NMAC. Also, several situations occur where state regulations not specific to surface water quality, or local regulations, apply and other parts of NMED or local agencies often should be consulted in developing appropriate responses to complaints. The SOP is currently in review by Surface Water Quality Bureau managers, and a serviceable version may be complete in 2021.

- *The NPS Annual Report will include a summary of actions taken to prevent and abate disposal of refuse in watercourses.*

NMED responded to several complaints or reports of disposal of refuse in watercourses in 2020. Some examples follow. SWQB received a call from a homeowner in Red River complaining about a patio being built into the river. SWQB staff and the U.S. Army Corps of Engineers (the Corps) conducted a site inspection and found that the patio was an unauthorized discharge. The Corps sent the property owner a Notice of Violation and the patio was removed. SWQB received several calls about a backhoe in the Pecos River. SWQB staff conducted a site visit and took photos of the small rock dams which were created. The Corps sent the property owners Notices of Violation, and the dams were removed. Staff were informed of a backhoe backhoe in Tesuque Creek, and conducted a site inspection. A backhoe was in the creek and a rock wall was being built on the bank. Staff spoke with the engineer on site and informed them that they needed a permit from the Corps for that type of work. The Corps sent a Notice of Violation and the property owner applied for an After-the-Fact permit. Staff worked with NMED Solid Waste Bureau (SWB) and San Miguel County to address an illegal dumping concern in the upper Gallinas watershed and visited the area to ensure that the trash had been properly disposed of. US EPA Region 6 referred a complaint to NMED regarding an abandoned gravel mine northeast of Tierra Amarilla. Several NMED bureaus coordinated to address this concern. Sand and gravel operations are not regulated under the New Mexico Mining Act. Industrial sand and gravel facilities, both active and inactive, may require industrial stormwater permits under the National Pollutant Discharge Elimination System (NPDES),



which in New Mexico is an EPA responsibility. SWQB received a complaint through US EPA Region 6 regarding a residential sewer drain. SWQB referred the complaint to NMED Environmental Health Bureau which manages the liquid waste permitting program (e.g., for septic systems). A Notice of Violation was issued to the responsible party. SWQB staff received a complaint of water potentially contaminated with fertilizer, pesticides, or fungicide being discharged from a greenhouse in Radium Springs. Staff investigated the site, and evidence did not support the complaint. A gas production company boring a pipeline under the Black River released drilling mud to the river through fissures in the riverbed. NMED entered into a settlement agreement with the company and a mitigation project is being developed to be funded by the company. A complaint of earth-moving within the arroyo channel of Yapple Canyon near Truth or Consequences was referred to the Corps. They stated the arroyo is ephemeral and thus non-jurisdictional under the new Navigable Waters Protection Rule (NWPR).

- *Within two years of any major wildfire occurring in the watershed of one or more streams with a coldwater or cool water aquatic life designated use, with severity outside the natural range of variability for the affected forest types, NMED will fund post-fire actions that reduce sedimentation and protect aquatic habitat, with support of Section 319 watershed project funds.*

This milestone was not met. NMED was unable to develop a project to address the Ute Park Fire of 2018 (which straddled the Cimarron River in Colfax County), because the primary landowner did not have the capacity to work with NMED on developing such a project. The Ute Park Fire burned primarily on Philmont Scout Ranch, owned by the Boy Scouts of America (BSA). Philmont normally hosts around 20,000 scouts per year, and their fees comprise a significant portion of BSA's annual budget. Philmont was closed in 2018 (because of the fire) and 2020 (because of the COVID-19 pandemic), and BSA filed for Chapter 11 bankruptcy in February.

- *A summary of CWA Section 401 certification activity will be reported annually in the NPS Management Program Annual Report.*

The purpose of Section 401 is to ensure that discharges of dredged or fill material into waters of the United States permitted or authorized by the U.S. Army Corps of Engineers (the Corps) under Section 404 comply with State water quality standards. In 2017, SWQB certified the Section 404 Nationwide Permits (NWPs) which include a condition set by the Corps that NMED be notified of work to be conducted under the permits and have the opportunity to review the projects for consistency with water quality certification conditions (e.g., conditions requiring BMPs). A new Section 401 certification is required for new individual Section 404 permits or when new Regional General Permits (RGPs) or other permits are developed. An individual Section 401 certification is also required for any project in an ONRW unless covered by NWP 27 for aquatic habitat restoration.

As part of the Section 401 certification and review process, NMED consults with the Corps and applicants in the development of permit conditions and processing procedures for situations specific to New Mexico. Most Section 401 work in 2020 was in reviewing projects covered by NWPs. In 2020, WPS staff reviewed fifty-one projects and confirmed their con-



sistency with the state’s Section 401 certification of the NWP. During 2020, NMED certified two individual permits. One was for a diversion dam on the Pecos River that diverts water to the Lisboa Springs Sate Fish Hatchery, and the other was for a sewer line in Ruidoso with an alignment very close to the Rio Ruidoso and which crosses the Rio Ruidoso many times.

NMED waived one Section 401 certification of an individual Section 404 permit in 2020. This was for the Lomas Encantadas Subdivision in Rio Rancho, which will place over five miles of ephemeral arroyo channels into a storm sewer system. NMED decided that the project could not be certified and water quality be maintained in these arroyos. Yet, the Corps permit included some conditions, such as a mitigation requirement (involving improvement of an upland vegetation community near the project site), that would be of some benefit. Had NMED denied the certification, the applicant may have withdrawn their application and completed the project without a permit, because the waters of the project area were probably no longer jurisdictional under NWPR.

NMED provided ten comments to EPA on a Proposed Rule for Section 401 certifications on October 21, 2019. These comments are available at <https://tinyurl.com/NMED-comments-on-EPA-401-Rule>. NMED found that the Proposed Rule conflicts with the intent of the Clean Water Act and has significant legal and policy implications for states’ authority to protect water quality within their borders. Regardless, the rule was issued on September 11, 2020 and NMED had to comply with the requirements, after the period covered by this report, when certifying new Section 404 NWPs.

As mentioned above in a couple of examples, NMED’s ability to protect Waters of the State under Section 401 has been reduced by the NWPR, which defines Waters of the United States (WOTUS) and became effective on June 22, 2020. NWPR removed federal jurisdiction of ephemeral waters, which are the majority of waters in New Mexico. As a result of NWPR, the Corps no longer requires Section 404 permits for the placement of dredged or fill material into ephemeral channels and NMED has seen a significant decrease in project notifications. Ephemeral waters have important ecological and hydrological significance in the arid and semi-arid Southwest, as was documented by EPA and others. NMED expects to see a decline in water quality throughout the state as a result of NWPR.

The Corps issued revised and new NWPs in the September 15, 2020 Federal Register, well before the five-year period covered by existing NWPs is to end in 2022. The Corps provided an opportunity to comment on the proposed NWPs separate from the state certification. NMED’s comment is available at <https://tinyurl.com/NMED-comments-on-USACE-NWPs>. The outcome of this permitting process and NMED’s Section 401 water quality certification will be reported in the NPS Annual Report for federal fiscal year 2021.

- *A summary of activities related to the New Mexico Mining Act will be reported annually in the NPS Management Program Annual Report.*

A separate section below summarizes the Mining Act activities carried out under the NPS Management Program in 2020.



- *A summary of significant developments related to ONRWs will be provided in the NPS Management Program Annual Report.*

At least two wildfires burned in watersheds with ONRWs in 2020. Both were on lands managed by the United States Forest Service (USFS). While fire is a natural disturbance process in southwestern forests, USFS often considers some aspect of a larger fire event to constitute an emergency (e.g. when human life or infrastructure are threatened) and initiates suppression activity. In 2020, USFS implemented a policy of full suppression, as a result of the COVID-19 pandemic. This was to prevent air pollution that could impact infected individuals and exacerbate a potential shortage of hospital resources (which sometimes experience an increase in admissions due to respiratory problems associated with fire, even in normal years).

The Antidegradation Policy in New Mexico’s water quality standards at 20.6.4.8 NMAC allows for short term water quality degradation in ONRWs “[w]here an emergency response action that may result in temporary and short-term degradation to an ONRW is necessary to mitigate an immediate threat to public health or safety...” In these situations, 20.6.4.8 NMAC requires “the discharger [to] notify the department of the emergency response action in writing within seven days of initiation of the action” and “within 30 days of initiation of the emergency response action, the discharger shall provide a summary of the action taken.”

On June 10, the Gila National Forest provided a verbal report of an accidental fire retardant slurry drop into Little Creek, and ONRW in the Gila Wilderness. A subsequent detailed written report submitted by the Gila National Forest on July 7 indicated that retardant misapplications had occurred over Little Creek and Little Turkey Creek (both ONRWs) on June 7, and over Little Creek again on June 11. This was during the Turkey and Good Fires, which merged on June 12 and became known as the Good Fire.

Figure 3 provides an example of what this looked like on the ground. PHOS-CHEK® MVP-Fx was the brand of the retardant used during these drops, and has a red color. It contains 75-85% mono-ammonium phosphate, 8-12% diammonium phosphate, and <15% undisclosed performance additives that are considered a trade secret. Among potential water quality concerns is the nutrient loading



Figure 3: Channel view of retardant drop at Little Creek, looking downstream, on June 12, 2020.



associated with this product. USFS collected water quality data (field parameters, not water chemistry) from three sites on Little Creek on June 12, and upstream and downstream water quality were similar. Impacts of nutrient enrichment, if any, were not yet apparent in the dissolved oxygen and pH data collected. SWQB conducted a water quality survey in the greater Gila and San Francisco watersheds in 2019 and 2020, including a site on lower Little Creek, and the data that were collected will be used to evaluate water quality standards attainment of Little Creek during the next assessment cycle.

Two projects requiring Section 404 permit coverage in ONRWs were implemented in 2020. Both were under NWP 27 for aquatic habitat restoration. One was to restore the functions of historic log dams which were constructed in the early 1900s along Beaver Creek, in the Pecos Wilderness. This was part of Project 18-J (a Section 319 project) listed in Table 3 above. Another project was to restore slope wetlands in the Vidal Creek headwaters. Vidal Creek is a major tributary of Comanche Creek, and both are ONRWs. This was a project of the New Mexico Department of Game and Fish, and partially implements the Comanche Creek WBP.

- *A summary of federal consistency review under NEPA will be reported annually in the NPS Management Program Annual Report.*

NMED's environmental review coordinator in the Office of the Secretary receives most requests for comments on NEPA documents, forwards them to the NMED bureaus, and applicable bureaus usually prepare comments. The coordinator compiles the comments and submits them to the requesting agency.

In federal fiscal year 2020, NMED submitted comments on approximately 89 projects. SWQB contributed to approximately 62 of these comment letters. Most of the SWQB comments were standard statements informing project proponents of the need to comply with Sections 402 and 404 of the Clean Water Act, and providing more background to assist them in doing so. Some SWQB comments also provide a summary of applicable water quality standards. WPS contributed project-specific recommendations to eighteen of the SWQB comments. Some examples of these include:

- Comments on draft Environmental Impact Statements (EISs) for the Forest Plans for the Cibola, Santa Fe, and Carson National Forests. These plans are major policy documents used by each national forest to manage public lands that will be applicable for perhaps decades. The SWQB portion of NMED's comments focused on prioritizing water quality improvements in impaired ONRWs and on grazing management. The plans were still in development at the end of the reporting period.
- Comments on a scoping letter for the Comexico mineral exploration project in the upper Pecos watershed. The SWQB portion of NMED's comments provided detailed recommendations for BMPs as well as on other regulatory programs to help minimize the impacts of this project on water quality.
- Technical review of the water quality analysis done for the New Mexico Unit of



the Central Arizona Project, which included proposals to divert the Gila River. NMED recommended the No Action Alternative in the Department's comment on the draft EIS.

- Comments on a draft Environmental Assessment for the Northern New Mexico Riparian, Aquatic, and Wetland Restoration Project developed by the Carson, Cibola, and Santa Fe National Forests. The comment recommended that specific restoration structures and methods be included, and the Forests granted that request.
- Comments on several watershed and water quality improvement projects on Willow Creek which the Gila National Forest proposed to exempt from NEPA under categorical exclusion. The NMED comment supported the projects and recommended that the Forest participate in a current project to develop a WBP for Willow Creek (Project 18-E in Table 2 above).
- *A summary of activities related to forest restoration will be reported annually in the NPS Management Program Annual Report.*

NMED continued to participate in the state Forest and Watershed Restoration Act (FAWRA) program managed by New Mexico State Forestry. No new projects with a riparian or wetland focus were developed in 2020, but several projects which may prevent water quality degradation were authorized. More information about FAWRA, including a list of projects that began in state fiscal year 2021, is available at www.emnrd.state.nm.us/SFD/FAWRA.html. Additional effort by the Forestry Division in the area of forest restoration is summarized below in the section, Additional Management Measures Implemented by Non-NMED Agencies.

- *The biennial State of New Mexico CWA §303(d)/§305(b) Integrated Report and List will provide summaries of water quality survey activity, analysis, and conclusions in 2020 and 2022. The NPS Annual Report for these years will provide the percentage of assessed stream miles or watersheds designated as impaired, for comparison with previous years.*

The 2020-2022 *Integrated Report* was not completed in the reporting period. It was approved by the New Mexico Water Quality Control Commission (WQCC) on December 18, 2020 and was approved by EPA on January 22, 2021.

Of 7,835 miles of streams with assessment status provided in the 2020-2022 *Integrated Report*, 4,091 (52%) were classified as impaired (Category 4 and 5 waters). Of 8,657 miles of streams with assessment status provided in the 2020-2022 *Integrated Report*, 4,525 (52%) are classified as impaired. The main reason the number of stream miles reported increased is that the earlier report was based on National Hydrography Dataset (NHD) Medium Resolution surface drainage network and waterbodies, and the more recent report is based on NHD Plus High Resolution data.

Current and previous versions of the *Integrated Report* are available at <https://www.env.nm.gov/surface-water-quality/303d-305b/>.



- *A summary of activities and accomplishments under the Wetlands Program will be provided in each NPS Management Program Annual Report.*

This summary is within the Wetlands Program section below.

- *At least one project outlined in a WAP supported with Section 319 watershed project funds will begin by 2021.*

This milestone was met. One such project did begin, in September 2020. It is called “Restoring the Rio Quemado Riverine Wetland on Los Potreros Open Space, in Chimayo, NM,” and is listed as Project 17-Y (with a link to more information) in Table 3 above.

WAPs were an eligible type of plan (a WBP alternative) in the SFA completed in 2020, as well as in the SFA in progress in early 2021.

- *The NMED Construction Programs Bureau will provide a summary of activities related to the use of the Clean Water SRF to protect or improve water quality for each NPS Management Program Annual Report.*

This information is reported above under **Objective 2 (Improve Water Quality)**.

Objective 4 – Share Information on Surface Water Quality

General public awareness of NPS pollution and water quality is increased and maintained through an effective education and outreach program using strategically selected educational resources available throughout the State.

Objective 4 Verification Milestones and Reports of Progress

- *SWQB will organize a data sharing network to solicit external data, meeting data quality standards, that will be assessed in the State of New Mexico CWA §303(d)/§305(b) Integrated Report and List for 2022-2024. The data collected by non-NMED partners will be submitted in 2021.*

A Data Sharing Network was organized in 2020. This is a list of approximately fifty people from various organizations in New Mexico that were invited to attend a Data Sharing Network workshop planned for 2021. The network includes people from federal, state, and local agencies, tribal governments, soil and water conservation districts, nonprofits, and for-profit businesses engaged in collection of surface water quality data.

- *Watershed groups will address water quality problems as indicated by verification items listed above [related to WBP completion and implementation], accurately drawing on information resources for which the SWQB is responsible.*

Milestone met. Each of the three WBPs completed in 2020 accurately summarize the listing status, TMDLs, and water quality data available for their respective watersheds. Also, the five new watershed implementation projects that began in 2020 were based on applications sub-



mitted by various stakeholders including watershed groups, in which the applicants correctly cited the current *Integrated Report*, TMDLs, WBPs, and other program information resources maintained by SWQB.

- *The SWQB email list, used for various surface water quality informational purposes (including distribution of Clearing the Waters), is maintained above 2,000.*

Milestone not met. On September 25, 2020 the list had 1,802 addresses. October 1, 2019 the list had 1,706 addresses, and had shown slight increases each year since 2014.

- *Clearing the Waters will be published quarterly with an email circulation of at least 2,000.*

Clearing the Waters (www.env.nm.gov/surface-water-quality/newsletters) was published on October 18 2019, December 30 2019, April 20 2020, and August 31 2020. The distribution for each issue included approximately 1,790 on the SWQB email list plus another sixty-five mailed hard copies for each issue that was completed in October, December and April. Mailing became logistically more challenging after mid-March due to the COVID-19 pandemic, and after the April 2020 issue NMED opted not to send out hard copies of the August issue.

- *Educational opportunities provided for the public and private sector, and completed small publication projects, will be reported in the NPS Management Program Annual Report.*

WPS staff performed fewer outreach and education activities in 2020 (October 1, 2019 through September 30, 2020) than in previous years because of the COVID-19 pandemic.

Staff participated in a joint meeting of the Santa Fe and Carson National Forests, as docents explaining portions of the Forest Plans they had contributed to, for the general public. WPS staff also worked a booth (with other NMED staff) during Environmental Day at the Roundhouse on January 28, 2020. Staff attended an outreach event at the Valle de Oro National Wildlife Refuge in March.

Additional outreach and education activities were conducted as part of the Wetlands Program, summarized in a separate section below.

Objective 5 – Protect Ground Water Quality

The quality of ground water resources is maintained through the water fair and water-quality outreach program along with permitting and compliance assistance for large capacity septic tank leachfields with efforts to understand water quality and protect ground water from NPS pollution.

Objective 5 Verification Milestones and Reports of Progress

- *The GWQB will report to EPA-Region 6 in the Semi-Annual Report summarizing GWQB activities conducted under the CWA Section 319 grant for the New Mexico Water Fair and Water Quality Outreach Program and Permitting and Compliance for Large-capacity Septic Tank Leachfields.*



The Ground Water Quality Bureau (GWQB) works to protect ground water quality from NPS pollution attributed to large capacity septic tank and leachfield systems (septic systems) and septage disposal facilities, sludge disposal facilities, and land farms (surface disposal facilities). Technical personnel in 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. In 2020, GWQB issued five New, Renewal, or Renewal and Modification Discharge Permits.

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. To identify possible NPS water quality problems in rural New Mexico communities, GWQB conducts free testing of domestic wells (“Water Fairs”) throughout the state. In 2020, GWQB conducted three water fairs, receiving approximately 258 water samples. Water fairs were conducted in the following communities Corrales, Espanola, and Santa Fe. Water fairs were largely curtailed after mid-March relative to past years, because of COVID-19 precautions.

The GWQB is up-to-date in semi-annual reporting to EPA in GRTS.

Objective 6 – Cooperate with other Agencies on Water Quality Protection and Improvement

With assistance provided by the WPS and other SWQB programs, federal and State agencies in New Mexico actively manage a variety of natural resources to protect and restore water quality.

Objective 6 Verification Milestones and Reports of Progress

- *A Memorandum of Agreement (MOA) to allow NMED to fund on-the-ground restoration projects on United States Forest Service (USFS) managed land will be drafted and under review by NMED and USFS by December 2019. The MOA will be signed and effective by December 2020.*

This milestone was not met.

WPS staff drafted a programmatic agreement using a template provided by the Forest Service and submitted it for review by the Forest Service on November 6, 2019. The agreement as drafted would have allowed the funding of EPA-approved WBP implementation projects, without further approvals by the Forest Service or NMED. A person responsible for grants and agreements for the Southwestern Region of the Forest Service reviewed the agreement and attended the annual Forest Service / SWQB coordination meeting on November 20, 2019. The Forest Service reviewer determined that the main agreement would have to refer to Supplemental Project Agreements (SPAs), that would be approved individually by the Forest Service and NMED (in addition to EPA approval of project work plans). Though complex, the advantage of this approach is that the Forest Service and NMED could agree on the template for SPAs as an attachment to the main agreement, thus overcoming challenges experienced in the past (and which prompted this effort) related to the agencies’ use of different templates. WPS



completed a revised draft programmatic agreement citing SPAs that would be individually approved and provided it to the Forest Service for review on September 16, 2020. Forest Service review of the revised agreement was not completed during this reporting period.

- *The Memorandum of Understanding (MOU) between NMED and the Southwestern Region of the USFS, scheduled to expire in 2022, will be renewed.*

This milestone is scheduled after the October 1, 2019 – September 30, 2020 reporting period.

- *The MOU between NMED and the BLM New Mexico State Office, which does not have a termination date, will be reviewed and revised if appropriate, and implemented. The resulting activities will be reported in the NPS Annual Report.*

NMED reviewed several Bureau of Land Management (BLM) projects as part of the federal consistency review summarized under Objective 3, above.

In the previous (2019) reporting period, NMED reviewed the draft Resource Management Plan (RMP) for the area managed by the Carlsbad Field Office of the Bureau of Land Management, which directly affects water quality in the Black, Delaware, and Pecos rivers. NMED submitted comments on the draft EIS for the RMP, and the RMP will affect land management decisions over a large portion of southeastern New Mexico for decades. BLM had not completed the final EIS for this RMP by the end of 2020.

In February 2020, BLM and the Bureau of Indian Affairs released a Draft RMP Amendment and Draft EIS for a revision of the Farmington area RMP that would change policy for oil and gas development within the Mancos shale and Gallup sandstone formations. BLM and BIA manage the subsurface resources under BLM and BIA land (tribal trust lands and individual Indian allotments), as well as under land owned or managed by the State of New Mexico, the Forest Service, the National Park Service (NPS), the Bureau of Reclamation (BOR), New Mexico Game and Fish, private landowners, and Navajo Tribal fee lands. The draft RMP Amendment stated that BLM does not have jurisdiction over water quality or use, and that regulations around water quality and use are under the jurisdiction of the State of New Mexico. NMED's comment pointed out that the MOU between NMED and the BLM state office approved in 1992 establishes responsibilities of both agencies with respect to water quality management and states that "the [WQCC] has designated the BLM as a management agency for water quality protection within the context of the New Mexico Water Quality Management Plan and the New Mexico Nonpoint Source Management Program" – a designation that is continued in the current NPS Management Plan. NMED asked BLM to include analysis of impacts of each alternative on water quality standards attainment, including compliance with the Antidegradation Policy and Implementation Plan at 20.6.4.8 NMAC. The estimated publication date of the proposed final RMP Amendment and EIS is April 2021 and the Record of Decision is expected in June 2021.

The BLM submitted summaries of activities related to water quality management and non-point source pollution control in the section **Additional Management Practices by Non-NMED Agencies** below.



- *The grant from the DOE that currently supports the work of the DOE Oversight Bureau will be re-issued in 2023.*

This milestone is scheduled after the reporting period for this report.

- *The summary of activities and accomplishments under the Wetlands Program provided in each NPS Management Program Annual Report will include a description of the Wetlands Roundtable meetings.*

See the **Wetlands Program** section below for a description of the Wetlands Roundtable meetings.

- *For each year starting in 2019 and through 2023, NRCS will report that agricultural BMPs funded under NWQI or other conservation programs have been implemented during the calendar year and will provide sufficient details to enable WPS staff to estimate pollutant load reductions for water quality impairments identified by the State.*

During the State Technical Committee meeting hosted by NRCS on October 15, 2020, NRCS staff reported that \$989,346 in NWQI funds were obligated in federal fiscal year 2020, compared with \$398,382 obligated in 2019, and \$177,391 in 2018. NRCS also informed attendees that beginning in fiscal year 2021 the NWQI watersheds in the Las Cruces area will need a watershed assessment completed before being eligible for financial assistance again. NRCS has not considered the Paso del Norte WBP, an EPA-accepted WBP available at <https://www.env.nm.gov/surface-water-quality/accepted-wbp>, to satisfy their requirement for planning. The WBP lacks the level of detail needed for management measures beyond the manure management practices described in the WBP.

NRCS provided a description of recent work implemented under NWQI, in the section **Additional Management Practices by Non-NMED Agencies** below. Most of the work reported by NRCS reduces pollutant loading to surface water by reducing runoff and erosion. WPS staff used the Revised Universal Soil Loss Equation (within the EPA Region 5 model spreadsheet) to estimate pollutant load reductions for establishment of 35.4 acres of cover crop under NWQI in the Anthony Wash - Rio Grande Watershed (HUC 130301020803). The cover crop was assumed to be present in four months per year when the acres would otherwise be fallow, on a 0.5% slope 400 feet long. Cover cropping reduced sediment loading by approximately 0.8 tons per year, phosphorus by 1.5 lb/yr, and nitrogen by 2.9 lb/yr. Soil is typically made up of about 1% viable bacteria. If 0.1% of those bacteria are *E. coli* (which have a mass of about 1×10^{-12} gram each), then the sediment load reduction equates to approximately 7.7×10^{12} colony forming units (CFU) per year of *E. coli* load reduction. This result averages about 2.1×10^{10} CFU per day, about 0.1% of the load reduction goal in the TMDL of 2.5×10^{13} CFU per day at moderately high flows (around 534 cubic feet per second, based on data from 1966-2006).

Additional coordination would result in more accurate estimates of pollutant load reductions, for additional practices

- *The NPS Annual Reports for 2019 through 2023 will include information about the Farm Ser-*



vice Agency's (FSA's) riparian buffer sub-program within the Conservation Reserve Program (CRP) and report on any efforts to coordinate on future projects.

As suggested by FSA staff, WPS staff submitted a Freedom of Information Act (FOIA) Request to FSA on August 25, 2020 to obtain location information, including GIS shape files, for the approximately 8,000 acres enrolled in the CRP riparian buffer sub-program in New Mexico. Knowing the locations of the acres enrolled would allow us to determine if any of the acres are in areas with WBPs where we could combine efforts to increase acreage. Having this information would also allow the WPS to assist and support FSA by reaching out to producers, providing recognition and publicity for FSA and their programs and encouraging or funding complementary implementation activities such as off-riparian water sources or grazing BMPs on adjacent lands.

The FOIA response we received from FSA was not informative as it just provided names and addresses of participants who received funds from FSA under CRP. The locations of the riparian acres were not included, and it was not clear if the list was solely for the riparian buffer program. One spreadsheet provided a code specific for the riparian buffer sub-program, but the main sheet only listed the other codes. Efforts to clarify the FOIA response with FSA staff have not been successful. WPS staff will continue to work with FSA to obtain county or watershed information as to where the riparian buffers are located.

- *SWQB attendance at SWCD meetings will increase, and each year starting in 2019 the NPS Annual Report will include at least one profile of a project intended to protect or improve water quality implemented by an SWCD or SWCD clients.*

WPS staff attended fewer soil and water conservation district (SWCD) meetings in 2020 than in 2019 for two reasons. The COVID-19 pandemic prevented state staff from participating in in-person meetings, and some districts did not develop methods for conducting meetings virtually, or were slow in doing so, so the overall number of meetings that could have been attended was reduced in 2020. Also, one staff member who regularly attended meetings of the Ciudad SWCD left NMED in June.

The WPS program manager attended a meeting of the Taos SWCD virtually in July to describe the upcoming opportunity for the District to apply for funds to implement the WBPs in the area where the District has jurisdiction.

In 2020, SWQB attended six SWCD board meetings, with three different SWCDs. All three of these SWCDs are among the eight SWCDs whose jurisdictions, because they contain most of New Mexico's assessed stream miles, are identified as priorities in the NPS Management Plan.

- *By 2022, NMED will fund at least one competitively awarded water quality or aquatic habitat improvement project with an SWCD with which NMED has not had an agreement within the previous ten years.*

This milestone was completed in 2019, with the approval of a new project with Cuba SWCD (see the 2019 NPS Annual Report for details). A new project was also approved with Ciudad



SWCD in January 2020. This is the “Upper Tijeras Creek Watershed-Based Plan” project (Project 20-D in Table 2, above). NMED’s most recent previous project with Ciudad SWCD was implemented in 2013-2016, so it would not qualify as meeting this milestone.

- *Statewide planning efforts related to water resources will give serious consideration to water quality protection and restoration and convey accurate summaries of information generated by SWQB programs.*

WPS staff are participating on the Climate Action Team (CAT) formed following an executive order from Governor Lujan Grisham. WPS staff specifically are part of the “natural resource resilience” team. Input to the CAT report and milestones included actions to reduce the impacts of fire on water quality and increase resiliency to climate changes. Beginning with the FY22 SFA, NMED will award additional points to projects in watersheds in which a major wildfire has occurred. Eligible projects will help reduce impacts of major wildfires, with severity outside the range of natural variability for the affected forest types, to waters with cold water or cool water designated uses. The on-the-ground projects that result from the plans, will increase watershed resiliency to climate change and wildfires by increasing and improving wetland and riparian areas. These areas are critical in storing and maintaining the quality of our surface waters, functions which will be essential in times of climate change.

- *The NPS Management Program Annual Report will be submitted to EPA by January 31 and will be made available to the public by early February, each year.*

The 2019 NPS Annual Report was submitted to EPA on January 31, 2020. It is available to the public at <https://www.env.nm.gov/surface-water-quality/nps-annual-reports/>.

- *A revised plan describing the New Mexico NPS Management Program will be submitted by the Governor of New Mexico, or by the Governor’s designee, to the EPA Regional Administrator, in 2024. The plan will reflect input and review by implementing agencies and organizations.*

Effort on a new NPS Management Plan is scheduled to commence in 2022.

NPS 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 GRTS to implement this reporting requirement. EPA set a deadline of February 28, 2021 for reporting calendar year 2020 load reductions. Information reported by NMED for calendar year 2019 is available on line at <https://tinyurl.com/NM-2019-Load-Reductions>, and for calendar year 2020 at <https://tinyurl.com/NM-2020-Load-Reductions>. Calendar year 2020 reporting will be complete at the end of February.





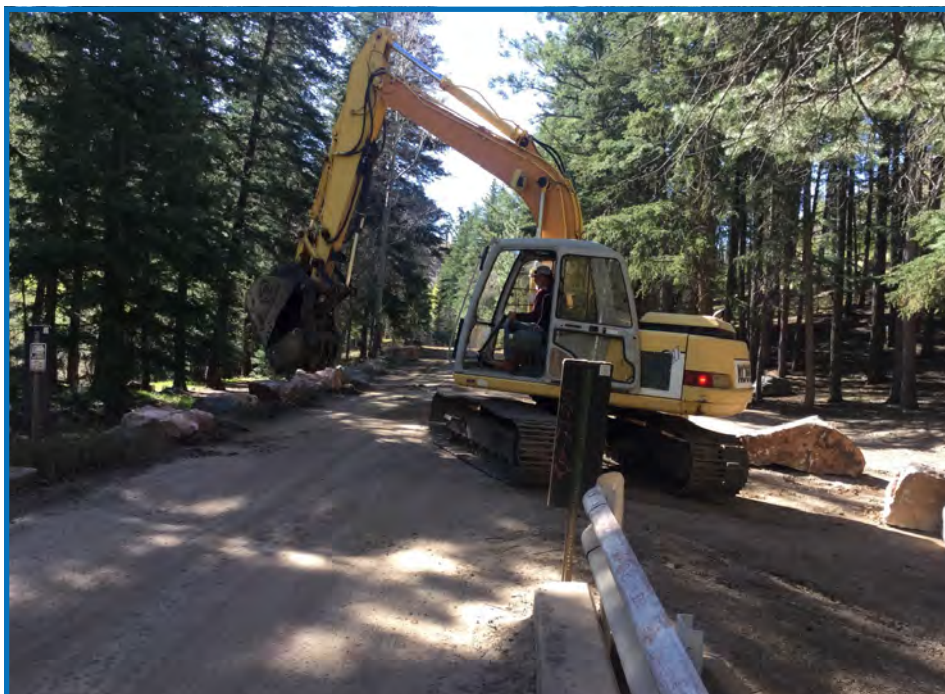
Summaries of Section 319 Projects Completed in 2020

Temperature Reduction and Riparian Habitat Restoration in Upper Cow Creek (15-U and 16-C)

Project cost: \$236,166 (Section 319 funds), \$170,579 (Match)

This project is in the Cow Creek watershed near the town of Pecos on public lands managed by the Santa Fe National Forest in San Miguel County. Cow Creek is a popular fishing and camping destination for residents of nearby Santa Fe and Albuquerque, but public lands along the creek are few and the available spots to recreate are limited which results in very heavy impact to streamside vegetation and bank stability. The Upper Pecos Watershed Association with their subcontractors Riverbend Engineering and Pathfinder Environmental worked with the Forest Service to implement BMPs to improve stream condition and user experience. The selected BMPs included: placement of large boulders along the margin of Forest Road 92 and between pedestrian camping areas and roadside parking areas in order to prevent the public from driving vehicles into the camping areas and on to the creek bank, willow planting along the streambank, decompacting soils and reseeding denuded areas to slow stormwater flows and reduce sediment loading, streambank stabilization and improved geomorphic complexity in the stream through constructed pools.

Construction was completed in November 2017, and included improvements at 7 streamside camping areas spanning a 1.8 mile reach of the Cow Creek. Hundreds of willow and cottonwood cuttings and whole-crown transplants were installed along the streambank to provide streambank stability and shading. Site monitoring in 2018 demonstrated the need for additional reseeding in some areas and new boulder placement in areas where vehicle trespass was on-going. This additional work was completed in October 2018. Historically low snowpack during the winter of 2018/2019 resulted in many reaches of Cow Creek going dry, however constructed pools throughout the project area retained water and served as refugia for aquatic species.



Installing rock bollards along Forest Road 92 to prevent vehicle access to Cow Creek. October 2018.



Rio Nutrias Watershed Based Plan Implementation Phase I (15-R and 16-D)

Project cost: \$270,062.12 (Section 319 funds), \$202,719.27 (Match)

The Rio Nutrias originates in the Tusas Mountains in Rio Arriba County. This cold clear trout stream becomes progressively more turbid as it passes from land managed by the Carson National Forest onto private, state, and BLM-managed land before entering the Rio Chama Canyon below El Vado Reservoir. Based mainly on data collected where Highway 84 crosses the Rio Nutrias, NMED completed a Total Maximum Daily Load for total suspended solids for the Rio Nutrias in 2004. The consulting firm Aguas Norteñas, working with Cebolla / Nutrias Watershed Group, completed a WBP in 2015 to better characterize the turbidity problem and identify solutions. Continuing her work with the Cebolla Nutrias Watershed Group, Aguas Norteñas principal Jessica Johnston developed and managed this project starting in 2016.

This project was the first major implementation of the WBP, and included the following main elements:

- Streambank stabilization on 0.9 miles of streambank stabilization on the Rio Nutrias
- 0.6 miles of riparian fencing
- 198 acres of sagebrush removal and grass seeding
- Seven erosion control structures (livestock tanks) reconstructed on state land
- Engineering design and cost estimate for culvert replacement on County Road 317
- 300 acres of piñon/juniper thinning on state land (reported as matching effort)



Photo above; Lower pond, in June 2016, prior to its reconstruction.

Photo right; Lower pond, after reconstruction.

The streambank stabilization included the removal and proper disposal of approximately 500 tires that remained in the creek after several tire bail structures failed. The erosion control structures involved reconstruction of three failed earthen livestock tanks in series. These tanks had become major sources of sediment as the head



cutting arroyo channel progressed into sediment stored behind the failed dams. At the lower of the three livestock ponds, a series of four smaller ponds was installed downstream of the original pond outlet. These seven structures together are expected to prevent many tons of sediment per year from entering the Rio Nutrias and the Rio Chama.



Rio Fernando de Taos Watershed-Based Plan (15-S and 16-F)

Project cost: \$113,747 (Section 319 funds), \$153,078 (Match)

This WBP covers the Rio Fernando de Taos watershed, where three sections of the Rio Fernando were listed as impaired by *E. coli* and have Total Maximum Daily Loads for *E. coli*, among other impairment parameters. The plan was developed by Amigos Bravos under contract to NMED and involved a relatively extensive data collection effort in which Amigos Bravos repeated sampling for *E. coli* at some sites and added sites based on results obtained as the project progressed. Amigos Bravos also conducted extensive public outreach through a series of meetings, follow-up communications, volunteer monitoring, and coordination with public agencies in the area.

Example management measures described in the WBP include a homeless shelter waste disposal campaign, backyard livestock waste management, rest-rotation or deferred-rotation grazing management, riparian pasture fencing, pet waste disposal resources at trailheads and parks, and a private land livestock and pet fencing cost-share program, among others. This WBP is already being partially implemented through a new on-the-ground project, called “Reducing Fecal Waste in the Rio Fernando de Taos” (Project 20-O).

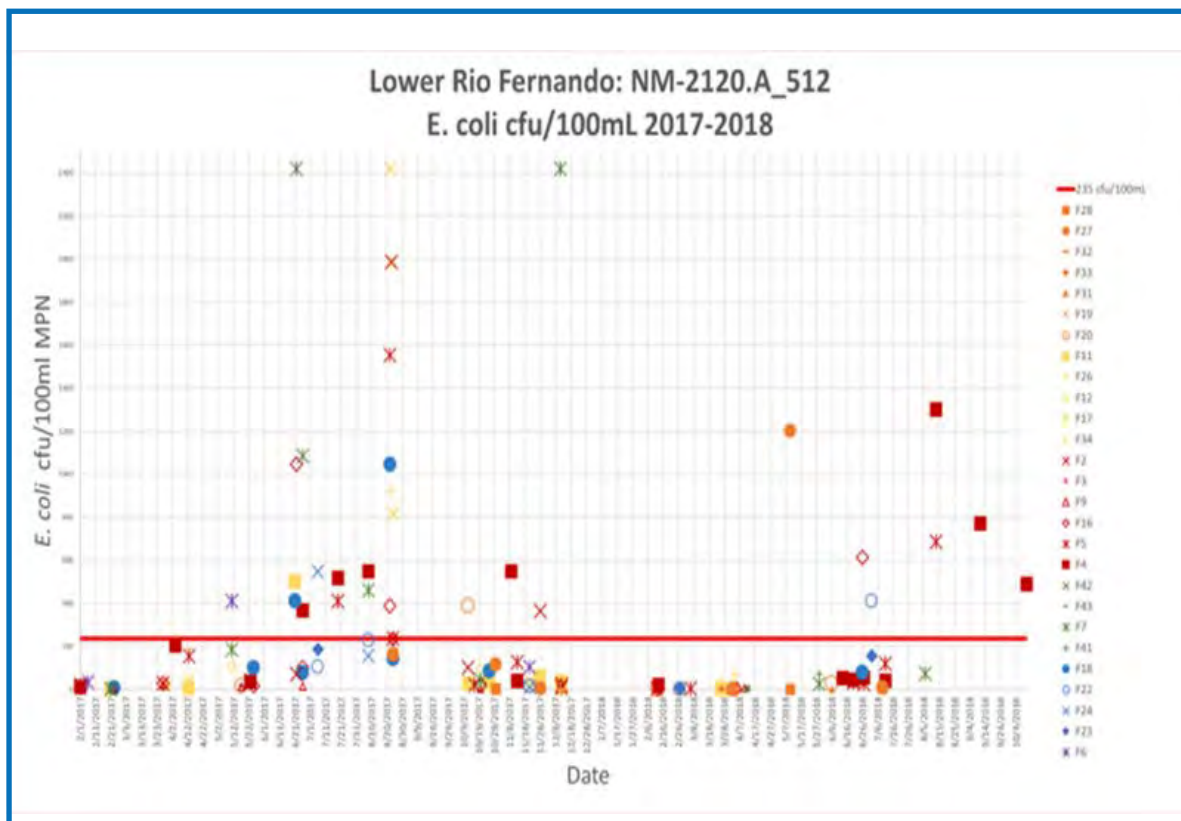


Figure 4-9 from Rio Fernando de Taos WBP: “Lower Rio Fernando de Taos *E. coli* results from February 2017 – October 2018. Sample sites are grouped by color according to catchment area and listed in order from the top of the lower watershed at the mouth of Taos Canyon (F28) to the confluence with the RPdT (F6).”



Watershed-Based Plan for the Upper Rio Grande Watershed, Comanche Creek Subwatershed (16-I)

Project cost: \$24,524 (Section 319 funds), \$18,222 (Match)

The Comanche Creek watershed is almost entirely within the Valle Vidal Unit of the Carson National Forest, and the stream itself is an Outstanding National Resource Water. After several restoration projects, NMED “de-listed” the stream for sediment, and it was subsequently recognized as a Nonpoint Source Success story by EPA in 2013.

Despite this success, the stream still does not meet its temperature standard, and this WBP completed by the Quivira Coalition analyzes this thorny problem and potential solutions. Goal-setting in most TMDLs for temperature relies on a model called SSTEMP, in which canopy cover is the main driver for temperature that can be influenced by land management.

Some Comanche Creek Working Group participants considered the canopy cover increase goal in the TMDL from 4.5% to 54% to be unrealistic and wanted to explore the potential for temperature reduction through increasing hyporheic flow. Hyporheic flow is the flow of water in shallow groundwater near a stream. The healthier the riparian area and adjacent wetlands, as well as wetlands in tributary drainages, the greater the potential for those areas to deliver cool water to the stream, supporters of this idea contended. The Quivira Coalition explored these possibilities through scientific literature review and concluded that projects that enhance hyporheic exchange are appropriate for reducing stream temperature, along with more conventional approaches such as maintaining existing elk enclosures.



Dan Guevara, NMED-SWQB, retrieving a temperature logger from Comanche Creek on August 30, 2016.

Photo credit: Alan Klatt, NMED-SWQB.



On-The-Ground Improvement Projects for the Mora River – Upper Canadian Plateau Phase 1A (17-R)

Project cost: \$262,310 (Section 319 funds), \$431,582 (Match)

The Mora On-the-Ground project’s objective was to reduce nonpoint source pollution in the lower Mora River. The Watershed Based Plan for the Mora River, accepted in 2016, was developed to address nutrient impairments identified in TMDLs from 2007 and 2015.

The improvement in water quality from the project is significant. Twenty-one projects were completed along the Mora River designed to decrease total nitrogen and total phosphorus loads in the river. Load reduction modeling indicates a total nitrate decrease of 5.22 lbs./day because of implemented projects and total phosphorus decrease of 0.91 lbs./d

The ambitious project included establishing effective long-term relationships with landowners, such as the Black Willow Ranch, the Fort Union Ranch, the King Ranch and the Goetsch Family Farm. In fact, a large part of this project was educational outreach and establishing relationships with landowners. Although the COVID-19 pandemic required the cancellation of some events, several workshops were held before March 2020. These included a hands-on workshop



Cottonwood is caged to protect from grazing.



Fence river crossing for riparian enclosure.

to build 11 one-rock dams on Wolf Creek at Fort Union Ranch with the Albuquerque Wildlife Federation, a prescribed fire workshop, a regenerative agriculture planning charette, a keyline plow design and pasture restoration workshop and several presentations at New Mexico Highlands University on watershed and stream health. Getting the word out to the community on how restoration measures improve water quality is critical in getting their buy-in and support.



Elk Run Erosion Prevention Project (17-V)

Project cost: \$79,712 (Section 319 funds)

This project was designed to reduce sediment and nutrient loading into Ninemile and Cieneguilla Creeks from Elk Run, a road within the Taos Pines Subdivision in Angel Fire, Colfax County, NM. Completing drainage improvements on Elk Run partially implements the Cimarron Watershed-Based Plan available at <https://www.env.nm.gov/surface-water-quality/accepted-wbp> and Cieneguilla Creek's Total Maximum Daily Loads for stream bottom deposits, turbidity, phosphorus, and nitrogen.



An example erosion prevention treatment of the small ephemeral channel adjacent to the road.

would not make it over the out slopes and therefore the single address on the road would be inaccessible if a fire occurred. A subsequent meeting in the field and additional effort to identify alternatives did not resolve these concerns. The contractor removed the out slopes a few days after they were constructed. Several other structures in the adjacent small ephemeral channel and culvert cleanouts were completed as planned.

The Elk Run Erosion Prevention Project was offered as a case study in lessons learned at the 2020 National NPS Workshop. A detailed 18-minute presentation is available at <https://www.youtube.com/watch?v=C4DixYHQKK0&feature=youtu.be>.

NMED implemented this project through a general services contract with Reineke Construction, a vendor on a State of New Mexico price agreement for Ecological Restoration Projects. The contract was signed on November 22, 2019. Work began in the field on May 25, 2020 and ended on June 16, 2020.

During the planning stages of this project, members of both the Taos Pines Special Assessment District (SAD) and the Taos Pines Homeowners Association (HOA) were involved and agreed to the project. When members of the SAD drove by the work and noted the height of the out slopes, they became concerned about access. One member of the SAD contacted the local Fire Marshal. The Fire Marshal determined that his equipment



An example erosion prevention treatment of the small ephemeral channel adjacent to the road.



Rio Embudo Watershed-Based Plan Completion Project (19-G)

Project cost: \$33,182 (Section 319 funds)

This WBP covers the lower Rio Embudo watershed in the vicinity of Dixon, where the Rio Embudo is listed as impaired by temperature, turbidity, and sedimentation, and has a Total Maximum Daily Load for total suspended solids. The WBP focusses on sediment, and the lower watershed is where the lion's share of this sediment originates. The WBP provides a comprehensive description of watershed issues and available information, and prioritizes potential future projects including thinning treatments (combined where possible with prescribed fire), seeding, water source construction or removal, fence management, riparian buffer establishment, restoration of riparian areas in such ways that natural stream functions are restored across the floodplain, improvements to drainage of unpaved roads and driveways, growing cover crops, terracing, establishing contour buffer strips, building soil conservation structures, mulching and composting, and applying restorative, rotational grazing practices. The plan was developed through a project completed by the Arid Lands Institute and Ecotone Landscape Planning, LLC in 2015 (Project 12-H), and was completed in January 2020 by Ecotone under a separate professional services contract.



Figure 3.9 from Rio Embudo WBP, an example of the use of arroyo bottoms as dirt roads and driveways, which constitute major sources of sediment to the Rio Embudo.



Figure 5.3 from Rio Embudo WBP, an example of a "perched wetland" with potential for retaining sediment. This example on BLM land was stabilized in 2013. The WBP identifies several locations where similar work would have the double benefit of enhancing small wetlands and preventing sediment loading to the Rio Embudo.



Summaries of River Stewardship Program Projects Completed in 2020

Enhancing Aquatic Habitat Conditions in the Galisteo Creek in Galisteo, New Mexico (17-E)

Project cost: \$169,942 (River Stewardship Program funds)

This project was implemented by Ecotone Landscape Planning, LLC within the Galisteo Creek open space utilized by residents of Galisteo. Aquatic habitat conditions in Galisteo Creek had degraded due to a profusion of Russian olives, salt cedar, Siberian elm, and juniper trees. In several locations, the stream was not covered by vegetation, likely contributing to increased water temperature and Galisteo Creek’s water quality impairment listing. The non-native plants contributed to considerable aggradation of the floodplain and prevented the regeneration of native wetland plants. Galisteo Creek in places had dug itself deeper into the valley bottom, reducing opportunities for overbank flooding necessary to sustain diverse wetland conditions.



To address these problems, eight acres of Russian olive and tamarisk removal was completed. Riparian functions were improved by removing part of a berm (restoring surface flow to an oxbow wetland), channel relocation and construction of a floodplain bench in one area, installation of three post vanes, and installation of three post and wicker grade controls. These actions reconnected the channel with the floodplain. Finally, about 4,000 willow whips, 150 cottonwood poles, and 60 native berry plants were planted across 6 acres to jump-start the riparian vegetation community.

Photo above; View upstream along flow-path restored by berm removal, 2018. Some riparian planting had already been implemented. Photo right; View upstream along flowpath restored by berm removal, 2019. Note increased vigor of riparian vegetation.



This project was part of a larger effort, over ten years and costing over \$300,000 from four major funding sources plus private donations and in-kind support. Hundreds of hours of volunteer work, local institutional and agency support, and community support led to a thorough restoration of this 28 acre open space.



Rewinding the Gallinas River in the City of Las Vegas (17-G)

Project cost: \$315,166 (River Stewardship Program funds)

The project area is an urban stretch of the Gallinas River in downtown Las Vegas. Gallinas River Park is accessible to the community for recreational and educational activities and historically has been the most degraded section of the river as it flows through the nearby rural and urban areas from Montezuma to the Las Vegas National Wildlife Refuge. The goals of the Rewinding the Gallinas River project were to restore and demonstrate a healthy, functioning river and riparian area within the practical constraints of this urban reach, improve urban water quality, enhance stream, fish and wildlife habitat and attenuate floods.

Project goals were met with instream and streambank improvements that include: 1) Lower water temperatures by reducing and maintaining channel width in over-wide areas thereby lessening solar exposure and overheating, by creating deep pools to store cold water and cool incoming water, and by creating streambanks more capable of supporting riparian vegetation shade; 2) Improve stream flow consistency by improving streambank water storage and slowing water flows; 3) Mitigate floods, drought and fire by creating stable instream structures and streambanks well anchored with riparian vegetation that can withstand flood events without excessive erosion, and by reducing entrenchment that will improve floodplain access lessening flood impacts and improving water storage in floodplain soils; and 4) Enhance fish and wildlife habitat by recreating lost instream structural diversity (cold pools, well oxygenated riffles, and hiding cover) and by enhancing riparian habitats to fuel instream biota and provide streamside wildlife habitat.

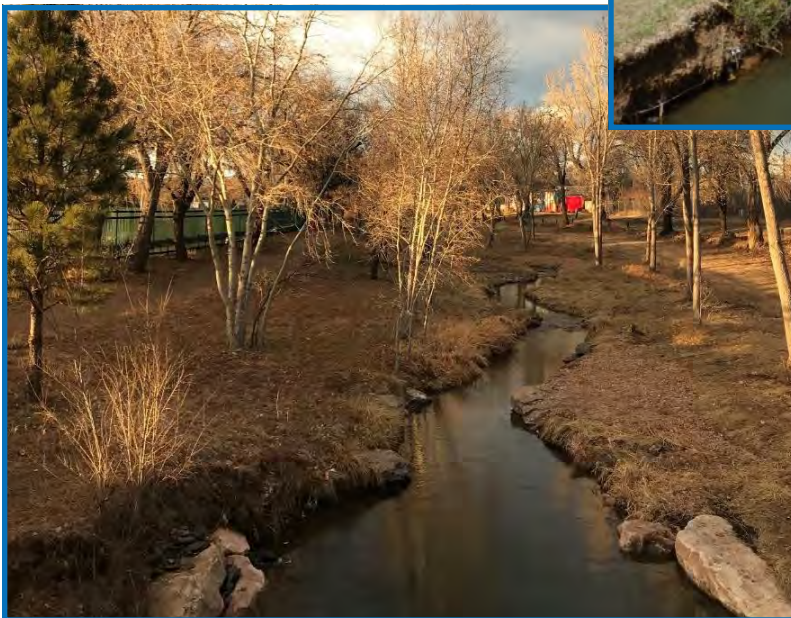


Photo above; Preconstruction photo point shows stream reach where channel had been straightened and is severely entrenched with minimal riparian vegetation.

Photo left; Postconstruction.

One of the project goals was achieved by adding micro-sinuosity and a number of stream features, such as pools, riffles, and cross-vanes designed to increase the residence time of a water parcel within the stream and allow it to cool before moving downstream.



Constructing Diverse Native Bosque Habitat on Two River Bars at the Pueblo of Santa Ana (17-I)

Project cost: \$121,405 (River Stewardship Program funds)

The Pueblo's bosque is experiencing rapid change thought to be the result of climate change and population growth (Final RSP Project Report, Pueblo of Santa Ana, Department of Natural Resources). Groundwater levels have been dropping, monsoon season and precipitation has become less predictable, and cottonwoods and in some years juniper have been dying. Over the last decade, the Pueblo has focused on creating bosque habitat closer to the river channel, specifically within existing river bars. Any additional wetted acres becomes a benefit to these areas. This project fully met Goal 1 – Objective 1 as demonstrated by inundating, construct-

ed secondary, channels at lower flows while the river bar surface remained dry. Goal 2 – Objective 1 was met by planting novel species to the river bar (but not novel to the Pueblo's bosque) and having those plants survive. These plants are expected to increase cover and diversify structure in these areas over the next ten years. Goal 2 – Objective 2 was also met. During (Pueblo) NEPA surveys, the Pueblo's Range and Wildlife Division sectioned off approximately 10 acres of mixed native – exotic vegetation that was becoming appropriate habitat for the Southwest willow flycatcher. The Restoration Division removed this section from construction activities including exotic species eradication. Additional acres of exotic vegetation was removed south of the project site, thereby exceeding the acres originally proposed in the original scope of work (Project summary is from the Final RSP Project Report, Pueblo of Santa Ana, Department of Natural Resources).



Photo on left, shows a school of larval fish.

Photo courtesy of the Pueblo of Santa Ana.



Photo above, showing pole plantings along the Rio Grande bank line. Photo courtesy of the Pueblo of Santa Ana.



Two Rivers Park Restoration Project (17-L)

Project cost: \$179,079 (River Stewardship Program funds)



Cross-vane structure with newly formed scour pool and willow pole plantings at Two Rivers Park, June 2019.

This River Stewardship Program project was implemented within the Two Rivers Park on the Rio Ruidoso in the Village of Ruidoso. The Rio Ruidoso is a perennial stream which originates west of the Village in the Sierra Blanca and Sacramento mountains and runs through the center of the Village; Two Rivers Park provides public access to the river. Thousands of tourists and locals visit the park annually to enjoy picnicking, fishing, playing in the river and walking along its banks. Unfortunately, extensive use by recreationists results in trampling and erosion of the adjacent banklines and many high-use areas are devoid of vegetation. These issues promote significant sedimentation within the Rio Ruidoso. Due to straightening and confinement of the Rio Ruidoso, it contains

minimal hydrologic diversity within the 0.5 river mile project area. The result is a river comprised primarily of riffles and fast-moving water which provides limited habitat for fish and other aquatic life dependent on pools and runs during their life cycles. The assessment unit that includes Two Rivers Park is impaired for temperature, turbidity, nutrient/eutrophication, total phosphorous and *E. coli*. This project focused on addressing the temperature and turbidity impairments.

Rocky Mountain Ecology implemented this project to reduce sedimentation from adjacent high-use areas into the Rio Ruidoso, increase stream shading, and increase diversity of pools, runs and riffles, thereby increasing aquatic biodiversity. This was accomplished by constructing three new in-stream structures and modifying one existing structure to create scour pools. Disturbed areas were seeded with a native seed mix and approximately 75 narrow-leaf cottonwood and 500 willow poles were planted in key locations to provide shade and bank stabilization. Temporary fencing and boulders were installed in high-use areas where trampling and relatively steep slopes contributed to erosion. Post construction geomorphic data indicates that the cross-vane structures resulted in newly created scour pools averaging 1.5 feet in depth and that the structures raised the average grade upstream also resulting in pool formation. It is likely that the newly created pools will enhance habitat for aquatic species including fish and macroinvertebrates by adding hydrological diversity, structural diversity (i.e., areas of cover) and cooler temperature microsites. The pool locations were supplemented with willow and cottonwood plantings on their perimeters to further increase ecological richness of the project area.

An additional benefit of the project was increased public awareness through signage at the park and an article published in the Ruidoso News, describing the River Stewardship Program and the ecological restoration activities implemented at Two Rivers Park.



Bosque del Bernalillo Storm Water Quality and Habitat Enhancement to the Rio Grande Project (17-M)

Project cost: \$139,867 (River Stewardship Program funds)

This project is located in Bernalillo, NM along Sheriff’s Posse Rd. approximately 0.25 miles south of US 550. This new facility is located on the Coronado Arroyo, which conveys storm water from portions of the City of Rio Rancho and the Town Bernalillo, ultimately discharging to the Rio Grande. The water treatment portion of this site is being constructed approximately 900-ft upstream of the confluence with the Rio Grande. Designed

by Southern Sandoval County Flood Control Authority’s (SSCAFCA’s) internal engineering design team, the concept for this project is to divert stormwater runoff from commercial buildings and parking lots into a meandering water quality infiltration trench (horseshoe feature shown in the photo below) where the flow is passively treated before it returns to the main arroyo and the Rio Grande. As flow enters the infiltration trench, it is provided the opportunity to filter through the surrounding sandy soils and remove oils and other suspended contaminants commonly found in urban/rural storm water discharges before discharging into the Rio Grande. For more information about this project, check out SSCAFCA’s website.

OVERALL FINISHED PROJECT PHOTOS:



Drone Video Credit: <https://www.sscafca.org/bosque-de-bernalillo-water-quality-project-afb-2017-01/>.



On-the-ground features.

Photo Credits: Alan Klatt, NMED-SWQB





Upper Rio San Antonio Watershed Restoration to Improve Water Quality (18-G) **Project cost: \$199,721 (River Stewardship Program funds)**

The Rio San Antonio is located within Rio Arriba County and is part of the Carson National Forest and the Tres Piedras Ranger District. A watershed-based plan was approved by EPA in 2016 that primarily focused on a temperature impairment associated with the removal of riparian vegetation and streambank destabilization. SWQB's 2017-2018 water quality survey again identified temperature and *E. coli* impairments and identified a new aluminum impairment while removing previous listings for nutrients and dissolved oxygen. Chimayo Conservation Corps and Rocky Mountain Ecology was awarded a River Stewardship Program Project in March of 2017. This project faced multiple challenges due to COVID-19 and the judicial order that halted tree cutting activities related to the Mexican spotted owl, but ultimately completed one 10,000 gallon water tank, three 0.5-1-acre exclosures that included willow and cottonwood plantings, and 22 one-rock-dams.



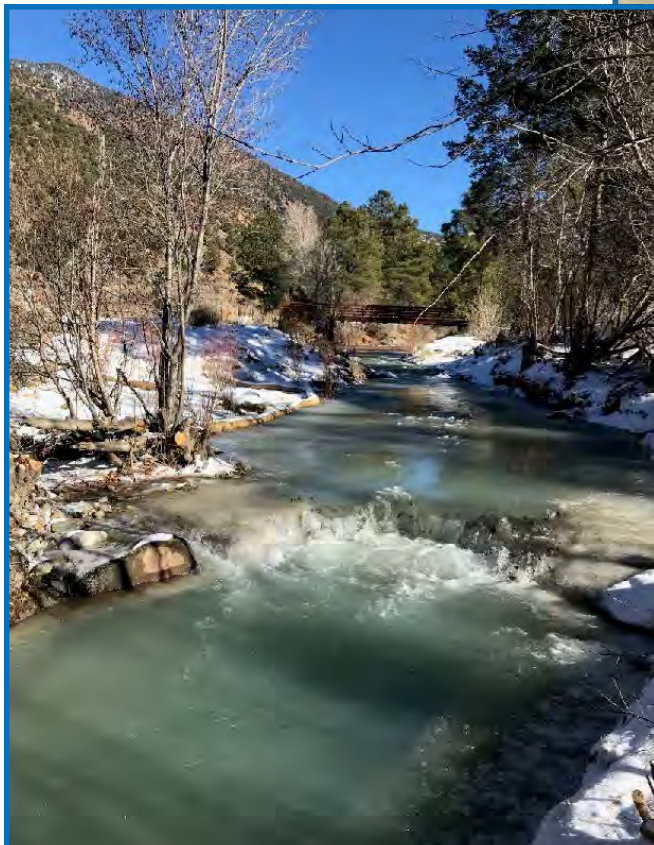
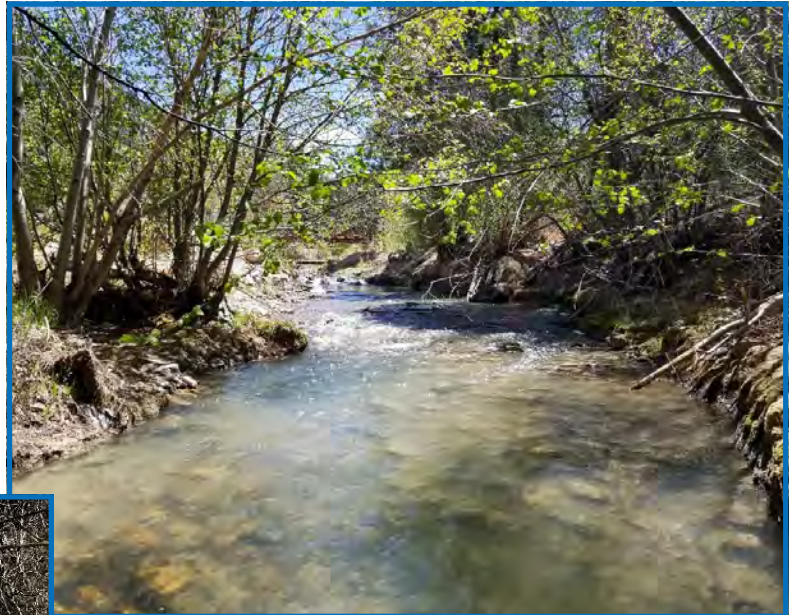
This rainwater harvester provides an alternative water source for cattle and eases some riparian stress.



Village of Questa Fishing Park (Reach A) Stream Restoration Project(18-H) Project cost: \$157,257 (River Stewardship Program funds)

The Village of Questa implemented this project in a 1,100 foot reach of the Red River downstream of Eagle Rock Lake (“Reach A”). Design objectives included improved in-stream habitat, reduced stream-bank erosion, increased density & diversity of riparian vegetation, and improved public access to the river through trails and riparian treatments. Seven cross-vanes were constructed, each creating new pool habitat for trout. The project also raised the bed of the stream, reducing incision of the channel to reduce near bank shear stress (and associated erosion) and provide access of flood flows to flood plan features to support more riparian vegetation. The project also included small constructed floodplains, willow planting, and several smaller in-channel or bank boulder and log features to promote more complex fish habitat in this reach.

Riverbend Engineering provided the design and construction oversight for this project,



and Andamo Sanchez Excavation and Trucking completed the construction. During the term of the project Chevron Mining Inc. donated the project area to the Village of Questa. The project is part of a watershed-wide partnership between the Village of Questa, Town of Red River, Chevron, NMED, New Mexico Department of Game and Fish, Carson National Forest, Trout Unlimited, Taos Soil and Water Conservation District, and the Questa Economic Development Fund.

Photo above; Looking upstream at bridge by Eagle Rock Lake at the top of project area, before construction in 2018. While much of the reach had good bank vegetation (dense alders), the river was overly wide, and shallow.

Photot left; Same location as the photo above, post-construction in 2018. Pictured is an example of seven installed cross-vanes.



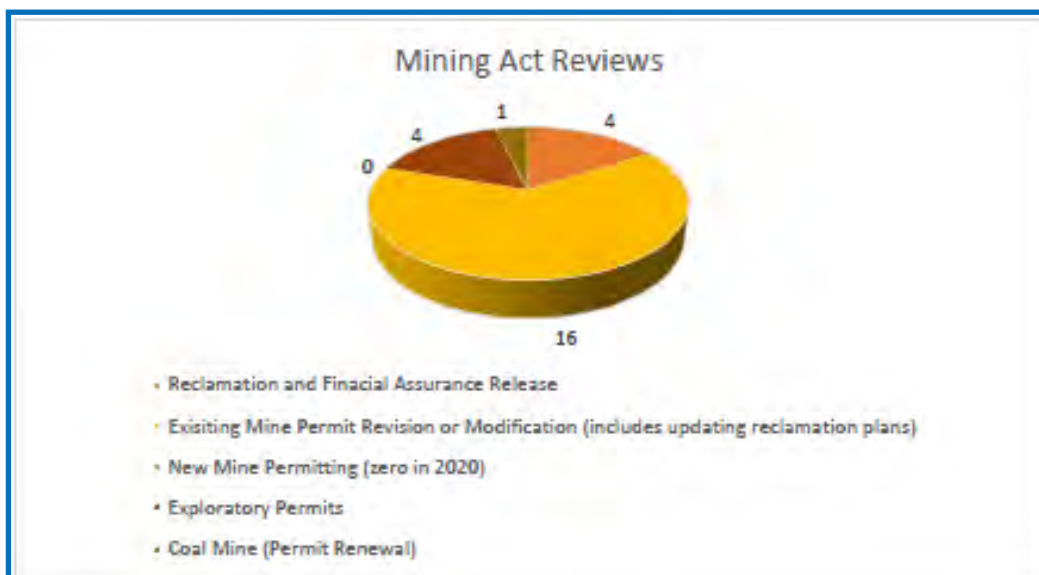
New Mexico Mining Act

The New Mexico Mining Act 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 applications 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.

NMED has a Mining-Act team that includes representatives from SWQB, 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. SWQB discusses 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, New Mexico Department of Game and Fish (NMDGF), USFS, New Mexico State Land Office (SLO), the Corps, EPA, and others.

In 2020, SWQB staff reviewed and submitted comments on twenty-five Mining Act submissions from MMD. The majority of mining permit activity this year was for revisions or modifications to existing permits.

In Northern New Mexico, SWQB staff reviewed two humate related mining permits, both located in McKinley County (the Brie I Mine and the Black Spring Mine). Humate is a highly organic substance from which





humic acids can be extracted and used as a soil amendment in agriculture. Both of these permit modification requests were for the release of financial assurance (FA) that is held by EMNRD-MMD until reclamation success is achieved by meeting earthwork and revegetation requirements. Northern New Mexico staff also reviewed a request for the release of financial assurance for the El Cajete pumice mine in Sandoval County. For each of these mines, SWQB recommended additional information following the original permit application to help support and document the reclamation efforts. Fully reclaimed mine sites protect waters of the state by preventing sediment that may contain heavy metals or other contaminants to downgradient water bodies.

SWQB staff in northern New Mexico continued reviewing reclamation plans for four uranium mines (Old Stope Leach Mine, Section 12 Mine, and the St Anthony Mine, and Mt Taylor). Cleaning up old uranium mines is a lengthy process and involves radiological surveys to establish Clean-up Action Levels for radiochemical parameters (e.g. uranium, gross alpha, radium 226-228, thorium 230). Radioactive materials are consolidated into repositories which are covered with clean soil and planted with vegetation. The goal is to stabilize the material against erosion and prevent rainfall from interacting with the material by removing water via evaporation and transpiration before it can infiltrate into the repository. Northern New Mexico staff reviewed an additional four reclamation permits for Tijeras Mine and Mill's reclamation of Quarry 1, changes to the Post Mining Land Use at the Chevron Questa Mine (from forestry and water management to wildlife habitat and industrial/commercial), Cunningham Hill Mine's reclamation plans for an open pit lake, and Ray Claims (changing the Post Mining Land Use from wildlife to recreation or a combination of the two). SWQB provided comments to strengthen the reclamation plans with respect to protecting surface water during and following reclamation activities.

All of New Mexico saw few mine exploration permits compared to previous years, and the majority of Mining Act comment requests came from existing mines that were modifying their permits to update closure plans or expand operations. One of the four exploration permits reviewed by SWQB proposed "remining" an existing reclaimed tailings pile in Luna County. The 50-acre tailings are the post-extraction wastes from copper, silver and gold ore from that were active near Silver City during 1950s- 1990s. The project proponents anticipate developing three separate product streams from the tailings material—industrial abrasives derived from quartz and garnet, metals including titanium and iron, and cementitious products based from silicate fines. If the

Inspection of the Lhoist chemical lime processing facility in Grant County. Lhoist has proposed a final reclamation plan for the facility which has been inactive for over a decade.





project advances as conceived, the tailings pile will essentially be converted to merchantable material and the site returned to native rangeland vegetation. Although promising, SWQB comments recommended a demonstration of “proof of concept” at a pilot scale prior to implementing large scale production.



NMED staff meet with the operators of the Billali Mine in Grant County to discuss mine water discharge to Bitter Creek.

Two additional Mining Acts actions from southern New Mexico are notable for their impacts to water quality. The Billali Mine, a small underground gold mine in Grant County applied for a NPDES permit to direct discharge groundwater from their mine into an adjacent ephemeral drainage, Bitter Creek. The mine has struggled for years with finding a suitable location to discharge the water and earlier in the year received a “Notice of Deficiency” from the Environment Department for unpermitted pumping of the mine water. The mine water has consistently passed State water quality standards up to and including drinking water standards, so discharge to the creek is largely a non-issue. Still, SWQB stipulated that routine monitoring of water quality be completed during operational periods at the mine.

Finally, the SWQB is working with Freeport-McMoRan Incorporated on establishing water quality standards for a new proposed pit lake that will be formed in the future at the Tyrone copper mine facility in Grant County. Pit lakes are often exempt from water quality standards in New Mexico when they are situated on private lands. The future pit lake at Tyrone will be located, at least in part, on public lands managed by the Bureau of Land Management, thus the lake would be considered a “water of the state” and subject to applicable water quality standards. The SWQB has requested water chemistry modeling to determine potential water quality both when mining is completed, but also for a duration of 100 years post-mining.



Wetlands Program

Funding Awarded to the Wetlands Program in 2020

One new Wetlands Program Development project was awarded funding by EPA Region 6 in 2020. The federal grant totals \$393,584.00 in federal assistance awarded through the FY19-20 EPA Wetlands Program Development Grant Program authorized by CWA Section 104(b)(3). This project advances the development of our statewide wetlands program and is consistent with the 2019 Wetlands Program Plan for New Mexico.

“Working with Depressional Wetlands and Refining Wetlands Assessment and Monitoring for New Mexico.” This project includes a variety of tasks that will achieve key capacity-building activities of the 2019 New Mexico (NM) Wetlands Program Plan for a comprehensive wetlands program. Project tasks include:

- 1) Current wetlands monitoring and assessment progress will be reviewed, and an update and refinement of “2012 State of New Mexico Assessment and Monitoring Program Strategy for Wetlands” will be performed. The update will guide future wetlands long-term monitoring and management activities and continue to integrate wetlands assessment into state water quality monitoring and assessment activities.
- 2) “All Hands Phase 2” data collection will be conducted to add to the reference set of wetland condition for New Mexico and increase the use of New Mexico Rapid Assessment Method (NMRAM) by trained and certified partners.
- 3) A wetlands water quality standards and designated uses package for Lowland Riverine Wetlands in New Mexico will be developed.
- 4) Because of the limited scope of current and pending federal protection for wetlands, this task will explore the scope of current wetlands protection and prepare a series of steps that would be required by the state, including partnerships with local agencies, to develop the authority, capability, and documentation needed to increase wetlands protection in New Mexico. Preliminary data will be gathered, and options analyzed for increasing wetlands protection, including drafting a New Mexico Wetlands Protection Act.
- 5) Outreach to local watershed groups and other partners will be completed to engage stakeholders and develop two Wetlands Action Plans (WAPs), one addendum to a Watershed Based Plan and one for a subclass of isolated wetlands.
- 6) Work on depressional wetlands will be continued to increase Wetlands Program capacity to protect and restore depressional wetlands through two subprojects; preliminary research and characterization of one poorly understood subclass of depressional wetlands, and local capacity building and restoration demonstration on Playas of the Southern High Plains (SHP) subclass.
- 7) Technical transfer of project products and outreach will include presentations at conferences and roundtables, updated Wetlands Program webpages, and a story map. Products include updated Monitoring and Assessment Strategy for NM, water quality standards development for Lowland Riverine Wetlands, NM Wetland Protection Report, two Wetlands Roundtables, depressional wetlands report, SHP Playas restoration Technical Guide, two WAPs, Story Map, and the results of NMRAM All Hands campaign included in the NMRAM Manual.



Wetlands Roundtables

The SWQB Wetlands Program hosted four Wetlands Roundtables, two in the Fall 2019 and two in the Spring 2020.

The Fall Southern Wetlands Roundtable was conducted in Las Cruces on November 19, 2019. More than 27 participants attended this Southern Wetlands Roundtable and the meeting was co-sponsored by an anonymous contributor. Morning presentations included “Conserving Aquatic Mollusks and Crustaceans in New Mexico,” “Candidate Conservation Agreements for the Texas Hornshell Mussel,” and “Wetlands and the Climate Crisis.” Davena Crosley of SWQB Las Cruces office presented “Implementing Wetlands Action Plans: A Funding Opportunity” just before the lunch break. In the afternoon the WPC presented an update of “SWQB Wetlands Program Activities and an Introduction to Keyline Design” as a rollout of the newest SWQB Technical Guide prepared under Wetlands Program Project CD 01F109-01C (Keyline Design for Restoration of Headwater Slope Wetlands in the Holman Creek Wetlands Complex.) The afternoon also included a “Regulatory Update” by the Corps of Engineers. The final presentations included “Gila Box RNCA study: TMDL, RAM, Rosgen and Vegetation Classification” by BLM staff, and “Landscape Level Wetland Mapping and Classification in the Sacramento Mountains: What Can We Do With the Data Now That We Have It?” that was presented remotely by Saint Mary’s University Of Minnesota Geospatial Services. The Agenda, sign-in sheet and presentations are included as deliverables with this report.

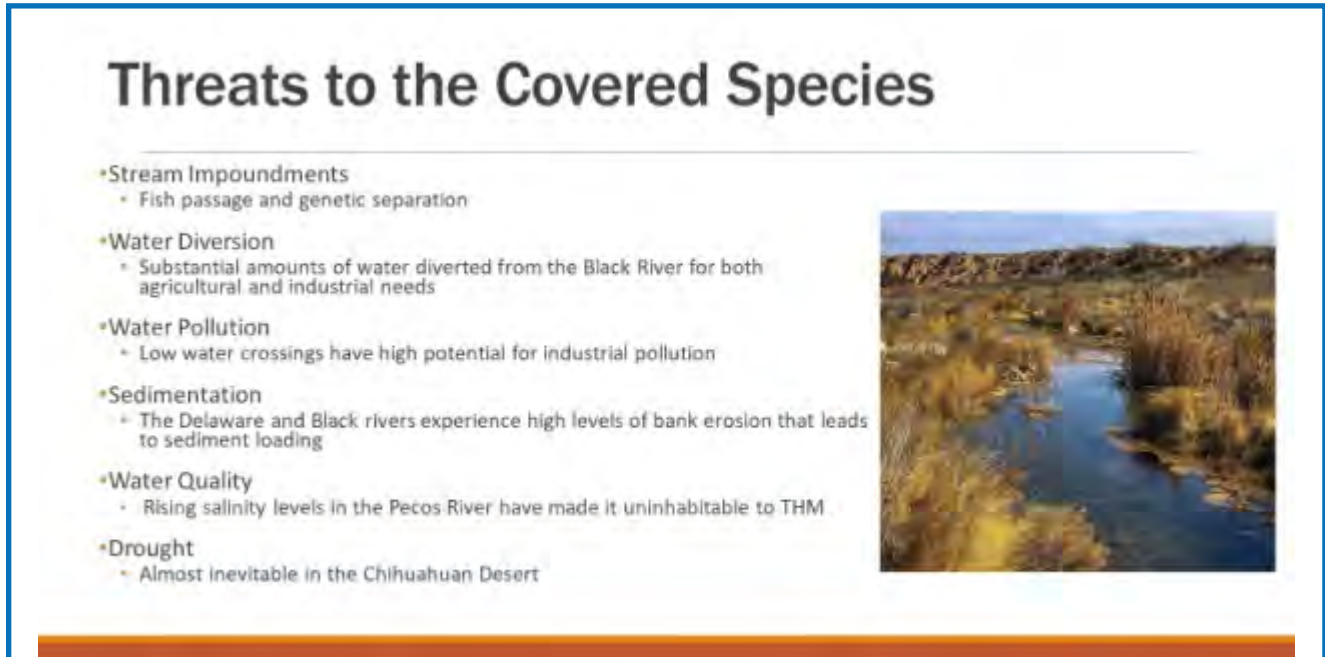


Figure 1. The endangered Texas Hornshell Mussel is only found in a nine-mile stretch of the Black River and one mile stretch of the Delaware River in southeastern New Mexico. Matt Ramey of the Center for Excellence in Hazardous Materials Management (non-profit) explains the role of Candidate Conservation Agreements with agencies and landowners in protecting and improving critical habitat for this species at the Southern Wetlands Roundtable on November 19, 2019.



Figure 2. The Solicitation for Applications for On-The-Ground Water Quality Improvements was presented in order to encourage applications for CWA Section 319 restoration funding. What's New in the applications process was highlighted.

New for FY2020

- ▶ **Wetlands Action Plans (WAP)**
 - ▶ Projects that implement WAPs to improve or protect wetlands in a measurable way
- ▶ **Conservation Opportunity Areas (COA)**
 - ▶ Priority points will be awarded to projects within New Mexico Department of Game and Fish identified COAs
 - ▶ [more information at www.nmerf.org](http://www.nmerf.org)
- ▶ **Recovery Potential Screening (RPS)**
 - ▶ Priority points will be awarded for projects based on the RSP scores of their 12-digit watersheds
 - ▶ [More information at www.epa.gov/rps](http://www.epa.gov/rps)

The Fall Northern Wetlands Roundtable was conducted in Santa Fe on December 9, 2019. More than 66 participants attended this Roundtable including special guests from EPA Region 6, Curry Jones and Tom Nystrom. In addition, representatives from U.S. Senators Tom Udall and Martin Heinrich’s offices were in attendance. The meeting was co-sponsored by the Albuquerque Wildlife Federation. Presentations included “To Key or Not to Key: When to Use the Keyline Approach to Restoring Wetlands,” “Wetland Restoration Implementation Realities,” and “Hermit’s Peak Watershed Alliance: 10 Years of Ecological Restoration, Environmental Education and Community Action.” An update on Clean Water Act 404 enforcement by EPA Region 6 (Tom Nystrom) and an update by the Corps of Engineers provided the regulatory portion of the Roundtable. Afternoon presentations included “Low-Tech, Process-Based Restoration Applications on the Santa Fe National Forest,” “Share with Wildlife and Bison-M” and “Dealing with Ravenna Grass, the Latest Invasive in the Rio

Grande Valley,” and provided ideas for lively discussions about restoration and research among the attendees. The final presentation was by Abe Franklin (SWQB) rolling out the CWA Section 319 Solicitation for Applications that will include wetland projects that improve water quality, “Implementing Wetlands Action Plans: A Funding Opportunity.”

Figure 3. Amina Sena and Lea Knutson of the Hermit’s Peak Watershed Alliance presented the accomplishments of the watershed group celebrating 10 years of ecological restoration, environmental education and community action at the Northern Wetlands Roundtable on December 9, 2019.

Accomplishments – On-the-Ground

- ◆ 3 Watershed Based Plans
- ◆ 15 Management & Restoration Plans
- ◆ 14 Miles of Stream and Riparian Areas Improved
- ◆ 43,000 Acres of Uplands Improved
- ◆ 4,926 Acres of Improved by Managing Livestock
- ◆ 35 Landowners with projects
- ◆ 200 Education Programs
- ◆ 5,500 People Engaged
- ◆ 42 Internships and Professional Jobs



Rio Cebolla/Lake Fork Confluence, 7/18/2019



Figure 4. Cecil Rich, Santa Fe National Forest Fish and Aquatic Program Manager, presented low-tech processed-based river and wetland restoration using Beaver Dam Analogues (BDAs) at the Northern Wetlands Roundtable December 9, 2019.

The SWQB Wetlands Roundtables took on a new look for Spring 2020 considering restrictions for group meetings that had just commenced due to COVID-19. The SWQB Wetlands Program conducted two very successful Wetlands Roundtables remotely through Webex conferencing in the Spring of 2020 and both the Northern and Southern Wetlands Roundtables exceeded expectations in remote participant attendance. The New Mexico Wetlands Roundtables are conducted four times each year, twice as the Northern Wetlands Roundtable and twice as the Southern Wetlands Roundtable, as 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.

More than 128 participants attended the day-long Northern Wetlands Roundtable that was held remotely on March 24, 2020. Presentations included “New Mexico Rapid Assessment Method All Hands Initiative: Tracking Our Best Natural and Restored Riverine Wetland Sites,” “Updates on the New Mexico Water Data Act,” and “Limestone Canyon Legacy Project” for the morning session along with an update by the Corps of Engineers about the WOTUS rules and Nationwide Permit status. In the afternoon, the presentations included “Rio Grande Water Fund,” “Beaver as a Simple, Cost-effective Tool for Wetlands Enhancement: What it will take in New Mexico,” and “Considering Groundwater and Geomorphology in Wetland Restoration.” Questions and roundtable discussions were conducted through the chat room associated with the meeting.

The Southern Wetlands Roundtable was held remotely through Webex conferencing on April 30, 2020 - the second day-long Webex Webinar Roundtable during the COVID-19 stay-at home order with more than 82 participants in attendance. The Southern Wetlands Roundtable is normally conducted in Southern New Mexico and focuses on wetland and water quality issues that affect the southern half of the state and statewide. The Southern Wetlands Roundtable webinar was successful in attracting many new participants that normally cannot travel but have a keen interest in the topics presented.

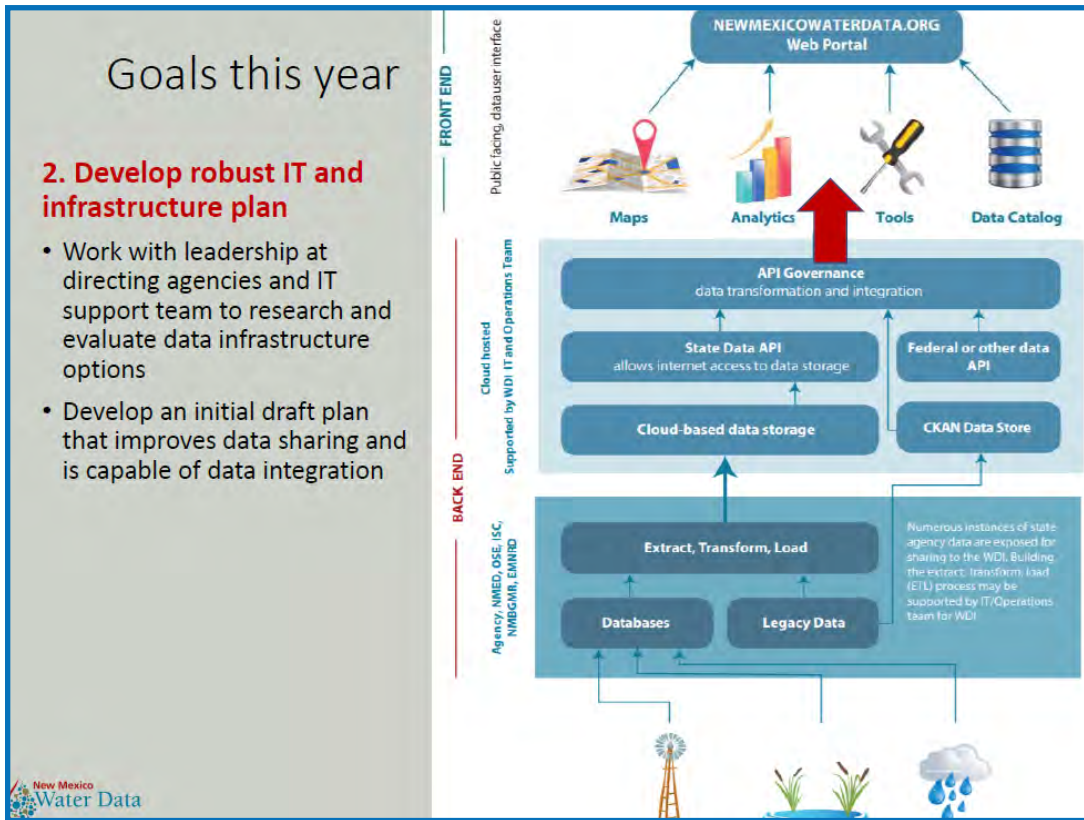
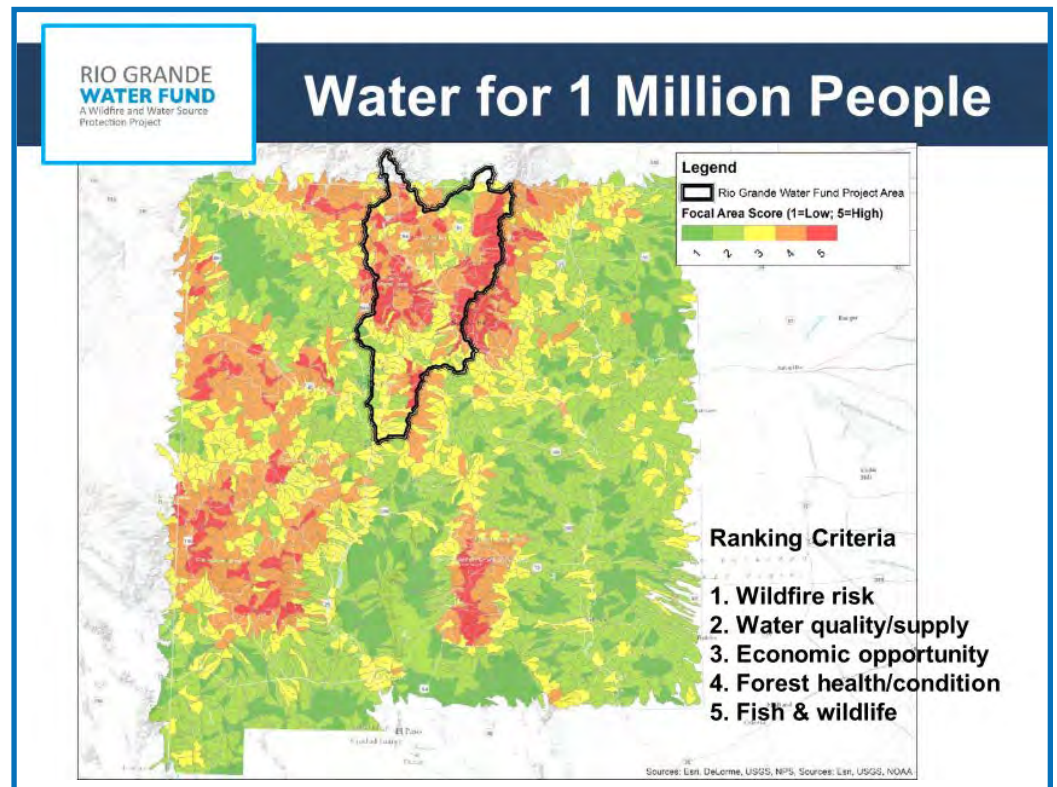


Figure 5. Water resources data sharing update supported by House Bill 651 Water Data Act was provided by Dr. Stacy Timmons in the presentation on “Updates on New Mexico Water Data Act” at the Northern Wetlands Roundtable Webinar on March 24, 2020.

Figure 6. The remarkable achievements of the “Rio Grande Water Fund”, a largescale effort to make the Upper Rio Grande more resilient to climate change and sources of water pollution was presented by Collin Haffey of the Nature Conservancy.





Pre-Colonial Grassland as shown on the right.

One poorly placed culvert can alter the entire watershed drainage network as shown below.

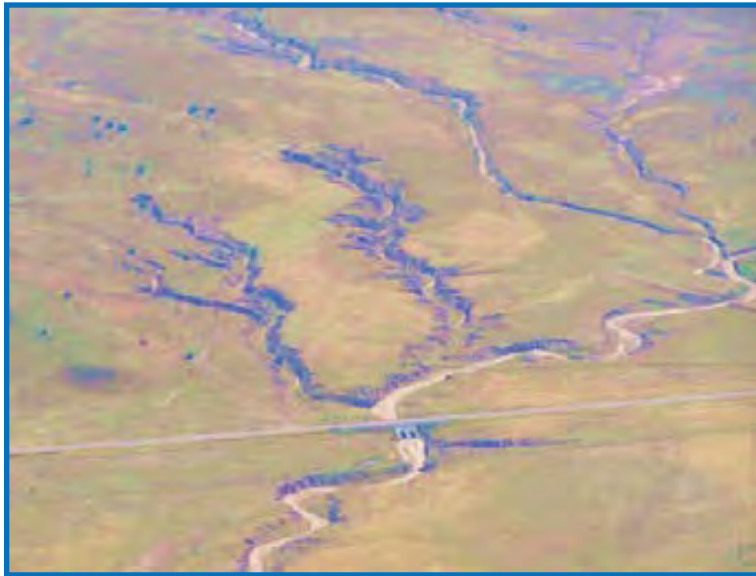


Figure 7. Van Clothier of Stream Dynamics, Inc. presented “Hydrological Restoration of Degraded Grasslands in Arid and Semi-arid Communities” to convey the message of finding balance in land use to transform the cycle of drought, erosion and flooding into watershed health.

FY19 Projects

- Arizona black rattlesnake
- Bendire’s thrasher
- Chihuahua chub
- Disease strain evaluation
- Gray vireo
- Peñasco least chipmunk
- Springsnails
- Bosque Ecosystem Monitoring Program
- Desert Willow Wildlife Rehab Center
- New Mexico Wildlife Center
- River Source
- Wildlife Rescue Inc. of NM



Figure 8. Virginia Seamster of NM Department of Game and Fish highlighted recent projects funded in FY18, FY19 and FY20 through “Share With Wildlife” Program. Proposals for new projects (FY21) will be accepted through May 29, 2020.

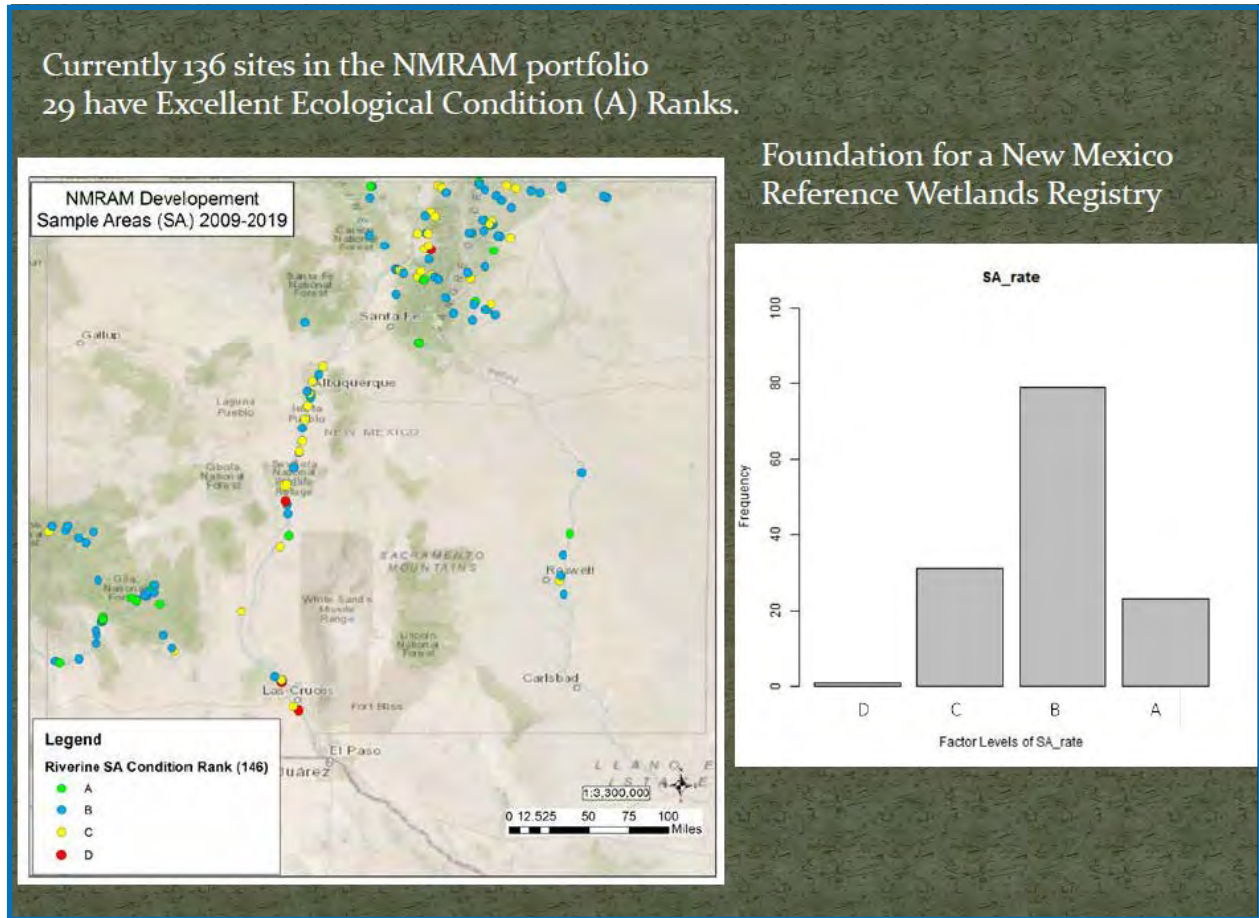


Figure 9. The goal of the presentation “New Mexico Rapid Assessment Method All Hands Initiative: Tracking Our Best Natural and Restored Riverine Wetland Sites,” given by Dr. Esteban Muldavin, was to reach out to potential “All Hands” monitoring teams to use the NMRAM to add to a Reference Wetlands Site Registry.

Presentations included “Beaver as a Simple, Cost-effective Tool for Wetlands Enhancement: What it will take in New Mexico,” an update about wetland and riparian species research funded by “Share with Wildlife” and new features of “Bison-M,” and “New Mexico Rapid Assessment Method All Hands Initiative: Tracking Our Best Natural and Restored Riverine Wetland Sites” for the morning session. An update by the Corps of Engineers about the recently released WOTUS rules and Nationwide Permit status was provided in the afternoon, as well as “Mills Canyon Restoration Project Using Cocoons,” and a refresher in “Range Hydrology and Restoration.”

Wetland Projects Completed in 2020.

No Wetlands Program projects funded under CWA Section 104(b)(3) Wetlands Program Development Grants were completed this year.



NPS Management Program Problems and Concerns

The problem discussed in the 2019 NPS Annual Report (in which WildEarth Guardians disclosed allegations of fraud associated with their contracts with the State of New Mexico) continued to have some repercussions in 2020. Chimayo Conservation Corps (CCC), a contractor working for NMED to implement the Project “Upper Rio San Antonio Watershed On-The-Ground Restoration to Improve Water Quality” (Project 17-S in Table 3, above), had planned to work with WildEarth Guardians as a subcontractor on this project. NMED had notified CCC in 2019 that they would not be able to subcontract with WildEarth Guardians. CCC, unable to find a replacement for WildEarth Guardians, exercised their option to terminate the contract effective March 2, 2020.

As noted in the 2019 NPS Annual Report, the funds remaining in the incomplete, terminated projects total about \$770,000, from three funding sources. Funds in the oldest Section 319 grant (under Assistance Agreement 996101-17) have been allocated to new projects developed through a state price agreement (Project 17-W in Table 3, above) and through the SFA for WBP implementation projects completed in 2020 (Projects 17-Y, 17-Z, 17-AA, and 17-AB in Table 3, above). Project 17-W will be complete by the termination date of the grant (June 30, 2021). The latter four projects are being partially funded under this grant and will be completed under newer grants. Unfortunately, the funding plan for these projects has been a challenge for NMED financial staff to understand, and as we near the end of the grant term we are uncertain that sufficient budget will be allocated to this funding source for NMED to fully utilize it.

The project, “Upper Rio Puerco Sediment and Turbidity Reduction Road Maintenance Workshops” (Project 19-D) listed in Table 3 above) is behind schedule, because the coordinator of the Rio Puerco Management Committee (RPMC) resigned. Cuba SWCD relied on that individual to manage the project. The BLM had notified stakeholders that henceforth RPMC would be managed under the Federal Advisory Committee Act (FACA), and the group essentially disbanded while BLM began the process of reassembling the group under FACA. Cuba SWCD communicated informally that their board had voted to terminate the agreement with NMED to implement this project, but has not notified NMED of that termination per the terms of an MOA to implement the project. NMED will encourage Cuba SWCD to continue with the project under a newly assembled RPMC in 2021.

The COVID-19 pandemic has impeded progress on several NPS program elements noted above, and more generally, has inhibited communication and collaboration necessary for successful project development and administration. Internet access and connectivity for staff teleworking in rural areas of New Mexico has been a challenge which required additional technological tools provided to those staff. Overnight travel, while not prohibited, has been avoided to the extent that no NMED staff working on the NPS program have stayed in hotels since mid-March, 2020. Meetings are being conducted virtually, and project site visits, site visits to respond to complaints, outreach events, and site visits for state regulatory programs (e.g. for Section 401 reviews or Mining Act reviews) have been cut back to approximately 10% of normal. Although progress has been made in electronic document routing and approval, administrative processes have been generally taking more time because supplemental communications to ensure understanding of document routing and review requests are now more cumbersome. For example, phone listings for agency staff are often for land lines that may no longer exist or that are not being used while staff are teleworking.



Several items listed in the section **NPS Management Program Objectives for 2020** from the 2019 NPS Annual Report were carried over to the section below, **NPS Management Program Objectives for 2021**. Our intent was to complete these items in 2020, but they weren't completed for a variety of reasons. The WPS program manager and team supervisors will follow up over the course of 2021 to ensure that more of these items are completed in 2021.

NPS Management Program Objectives for 2021

The WPS has identified the following activities from the 2019 NPS Management Plan to meet program objectives in 2021.

- A Solicitation for Applications (SFA) for projects to revise existing WBPs or develop new WBPs will be released and completed in 2021, with one to three new planning projects to begin in approximately July 2021.
- WPS will continue to provide oversight and technical assistance for five ongoing watershed-based planning projects listed in Table 2 above.
- WPS staff will adapt the Escudilla Landscape Watershed Restoration Action Plan (WRAP), a Forest Service document, into a WBP in 2021. EPA reviewed this plan in 2018 and recommended specific changes to meet the nine WBP elements. The WRAP and EPA's comments are available at www.env.nm.gov/surface-water-quality/draft-wbp.
- WPS will continue to provide oversight and technical assistance for ongoing implementation projects. Five Section 319 implementation projects are scheduled to be complete in 2021. These are Lower Animas Watershed Based Plan Implementation Projects (Project 17-T), Stream Restoration on the Upper Rio San Antonio (Project 17-W), On-the-Ground Improvement Projects for the Upper Gallinas River and Porvenir Creek, Phase III (18-J), Lower Animas Watershed Based Plan Implementation Projects Phase 2 (18-K), and Reynold Draw-Bluewater Creek Riparian Conservation Project (19-H). Several other projects listed in Table 3 above that apparently will end in 2021 will be continued under other grants (i.e., projects denoted as Part 1 will continue as Part 2). As noted above, the cooperating agency for the project Upper Rio Puerco Sediment and Turbidity Reduction Road Maintenance Workshops (Project 19-D) may exercise their option to terminate this project prior to completion (and without completing any work under the project). The termination date for the project is currently May 31, 2021. NMED will offer an extension if Cuba SWCD wishes to complete the project.
- State-funded watershed and riparian restoration projects will be developed and managed in 2021. No RSP projects are scheduled to be completed in 2021. NMED plans to release a RFP to develop new RSP projects. The goal is to release the RFP in June 2021.
- Projects to address post-fire impacts to the Rio en Medio and Bear Creek will be developed in 2021. NMED plans to utilize an existing price agreement for ecological restoration projects developed by NMDGF to conduct the procurement for these projects.



State of New Mexico Nonpoint Source Management Program 2020 Annual Report

- At least one NPS Success Story nomination will be submitted before July 1, 2021.
- NMED will document procedures for SWQB to enforce regulations at 20.6.2 NMAC pertaining to refuse in a watercourse in 2021.
- NMED will continue to carry out its responsibilities under Section 401 of the Clean Water Act, regarding dredge and fill 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.
- SWQB will conduct three workshop for the Data Sharing Network, and solicit external data for assessment in the *State of New Mexico CWA §303(d)/§305(b) Integrated Report and List* for 2022-2024. The data collected by non-NMED partners will be submitted in 2021.
- NMED will work with USFS further to develop a programmatic MOA to allow NMED to fund WBP implementation projects on USFS-managed land, with the goal of the MOA being signed and effective by December 2021.
- WPS staff will reach out again to the Farm Service Agency (FSA) to request information about FSA's riparian buffer sub-program within CRP and report on any efforts to coordinate on future projects.
- WPS staff will renew efforts to attend SWCD meetings, with a focus on eight priority SWCDs listed in the NPS Management Plan: Colfax, East Rio Arriba, San Francisco, Tierra y Montes, Taos, Grant, Cuba, and Santa Fe - Pojoaque. The purpose of this meeting attendance is to inform SWCD staff and cooperators of NPS program goals and opportunities, and to seek opportunities to collaborate on water quality projects.
- The WPS program manager will invite one or more SWCDs to submit summaries of projects intended to protect or improve water quality to be included in the NPS Annual Report for 2021.





Additional Management Practices by Non-NMED Agencies

The following land management agencies implemented various projects and best management 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 instability, excessive nutrients, and excessive water temperature. The following summaries were submitted by the agencies and included here with minimal editing.

The Natural Resources Conservation Service

The Natural Resources Conservation Service (NRCS) provided the following summary of projects implemented in calendar year 2020. Several watersheds highlighted below are priority watersheds under the National Water Quality Initiative (NWQI). More information on NWQI is provided above under, **Objective 6, Cooperate with other Agencies on Water Quality Protection and Improvement**, on page 26.

Animas River Watershed NWQI (NRCS NM Team 1)

Tucker Watershed

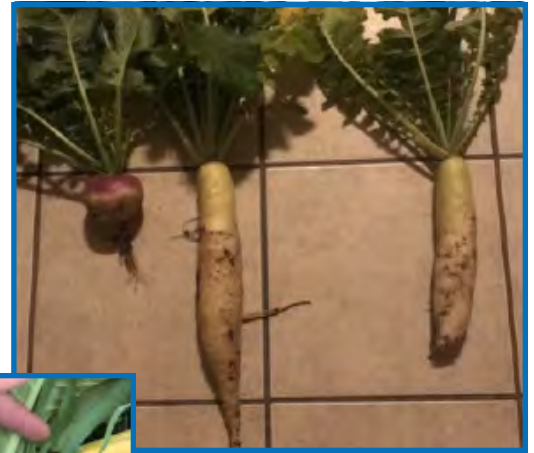
In program year 2020 under the NWQI watershed, NRCS had a producer install an irrigation sprinkler system to improve the efficiency of water application. This sprinkler system has helped to control the amount of water applied to each field efficiently and with less water use. It also has reduced the amount of sediment runoff from flood irrigation application which improves the water quality of the Animas River. The producer completed the installation of two side roll sprinkler systems on each field which total 7.6 acres of hayland. The previous system was estimated to use an average of 750 gpm to irrigate the field. Due to the length and slope of the field it would take several days to irrigate. By installing the sprinkler system, water application has been reduced to less than half of the estimated rate per day. With the installation of this system thru the NRCS NWQI Watershed funding, NRCS has assisted the producer financially with \$32,257.00 to better manage the water application to reduce sediment and nutrient run off.

Pumping Plant with Chemigation Valve, Filter, and flow meter installed May 2020.





*New Sideroll Sprinkler on 7.6 acres field installed
May 2020.*



*Cover crop production
Spring 2020.*



Anthony Wash - Rio Grande Watershed; subaccount – Vado – Arroyo – Rio Grande (NRCS NM Team 9)

In FY 2020 NRCS continued its efforts in the Vado – Arroyo and the Picacho Drain - Watersheds of the Rio Grande River in Southern New Mexico.

2,355 ft, of Concrete Lined Ditches were installed on 35.4 acres of Watershed. These lined ditches assisted with decreased sediments, nutrient, bacteria and pesticide runoff. Collectively, with the water quality benefits and increased irrigation water efficiencies, additional core practices (i.e. cover crop) were installed on the 35.4 acres planned acres that will assist with improving soil health, reducing soil loss (seasonal erosion) and improving soil carbon (add organic matter, improve water infiltration, soil aeration and tilth).



Photo left; Previously installed 340 Cover Crop was implemented through NWQI.

Photo below; Fields have now been prepared for an additional Winter Cover Crop.

In the Vado – Arroyo Rio Grande Watershed NRCS assisted with 2,355 feet of concrete ditch lining that included 36 Structures for Water Control and 4 36” Slide Gates as well as 35.4 acres of Cover Crops. All practices could contribute to decreased nutrient, bacteria, pesticide or sediment runoff as well as airborne dispersal of *E. Coli*. Along with the water quality benefits and increased irrigation



efficiencies, these practices (i.e. cover crop) assisted with improving soil health, reducing soil loss (seasonal erosion) and improving soil carbon (add organic matter, improve water infiltration, soil aeration and tilth). With this new system, well water with excessive salts will be mixed with surface Elephant Butte Irrigation District (EBID) water reducing excessive salts back in ground water.

Photo left; Lined Ditches and Structures for Water Control installed through the NWQI.



New Mexico Department of Game and Fish

Edward Sargent Wildlife Management Area Habitat Enhancements and Stream Improvements

The Department installed 4 enclosure fences to protect 24 acres of riparian habitat along the Rio Chamita on Edward Sergeant Wildlife Management Area (WMA) to decrease browsing pressure and increase herbaceous ground cover and regrowth of riparian vegetation. This project builds on 15 acres enclosed last year. The Department also installed 30 Beaver Dam Analogue and Post Assisted Log Structures within the original 15-acre enclosure this year. The Department continued creating fire breaks to prevent catastrophic wildfire, and improved 13 miles of roads by repairing head cuts and installing check dams to redirect runoff away from streams and arroyos. These improvements will reduce erosion and prevent sediment from entering Nabor Creek, Rio Chamita, and the Rio Chama.



Photo montage; Sargent Wildlife Management Area with post assisted log structures, beaver dam analog, and enclosure fencing.

Rio Chama Wildlife Management Area Erosion Control Improvements

The Department created 11 miles of fire breaks to prevent catastrophic wildfire, and improved roads by raising road elevation, repairing head cuts, and installing soil check dams to redirect runoff away from streams and arroyos on the Rio Chama WMA. The Department also installed a winter hike-in parking area allowing public access but preventing winter road and off-road vehicle damage that will hopefully help reduce destabilization and erosion. These improvements will reduce erosion and prevent sediment from entering the Rio Chama.

Comanche Creek Watershed Improvements

The Department collaborated with U.S. Forest Service and several non-profit organizations to improve wetland habitat as part of a large-scale watershed restoration effort. The Department installed hundreds of wetland structures (e.g., log jams, rock erosion control structures, sod and floodplain benches, excavated flood channels) within upper Vidal Creek to stabilize banks, slope wetlands, and encourage floodplain connectivity. These structures improve wetland habitat condition, increase soil water storage, and decrease erosion.



*Photo above;
Litter collection at Ladd S. Gordon
Complex.*

*Photo below;
W.S. Huey habitat improvement plant-
ings.*



Ladd S. Gordon Waterfowl Complex (Bernardo and La Joya Wildlife Management Areas)

The Department removed an additional 325 acres of invasive Russian olive and tamarisk from Bernardo WMA, building on invasive removal efforts last year. The Department also planted over 1,200 native trees and shrubs as part of initial restoration efforts in these areas. Volunteers with Americorps NCCC partnered with the Department to remove almost one ton of litter from over 1,000 acres surrounding wetlands on the Ladd S. Gordon Complex.

W.S. Huey Wildlife Management Area

After finalizing bridge improvements from last year, the Department densely planted a 4-acre patch surrounding the new bridge with native woody plants to stabilize soil and improve habitat. The Department also planted approximately 25 acres of levees and wetland edges with woody plant species around a new wetland installed last year. We also seeded approximately 70 acres with native herbaceous species around new and existing wetlands.

Canadian River Riparian Habitat Restoration

The New Mexico Department of Game and Fish (Department) collaborated with the U.S. Forest Service to replant approximately 54 acres (6.75 river miles) along the Canadian River within the Kiowa National Grasslands. Efforts focused on planting native riparian vegetation (willow, cottonwood, and native shrubs) in an area of intense salt cedar eradication, and removal of fencing around plantings from previous years where protection of saplings was no longer necessary. These plantings provide additional shade to the stream, stabilize streambanks, reduce erosion and sedimentation, contribute woody debris and nutrients to the river, and help maintain in-stream habitats for native fish.

Pacheco Canyon

The Department collaborated with U.S. Forest Service fire and fuels staff to implement 106 acres of a cut and pile forest thinning treatment surrounded by approximately 29,000 feet of fire-line (consisting of a 60-foot swath of mastication with a scratch line). The fire-lines interacted with the Medio wildfire to help moderate fire severity and slowed the spread of the fire, thereby mitigating negative impact to the watershed.



Milnesand Prairie-Chicken Area

Department staff cooperated with the US Fish and Wildlife Service Partners for Fish and Wildlife (PFW) Program to implement a prescribed burn on 1,084 acres of State Game Commission Lands (Milnesand Prairie Chicken Wildlife Management Area), 551 acres of State Trust Land leased by NMDGF, and approximately 320 acres of private land. The objective of this burn was to return fire to the landscape to remove invasive vegetation, enhancing nutrient cycling, remove excessive debris (fuel loads), and improve forage for wildlife. The “Milnesand Prescribed Burn” served as the inauguration of a cooperative agreement between the Department and PFW to bring prescribed fire to Department Wildlife Management Areas and adjacent public and private lands across New Mexico.



Milnesand prairie chicken prescribed burn.

Rio Chama Aquatic Habitat Project

The New Mexico Department of Game and Fish partnered with the US Army Corps of Engineers, Bureau of Land Management, Santa Fe National Forest, Carson National Forest, New State Lands Office, Trout Unlimited, and National Fish and Wildlife Foundation to improve fish habitat and riparian health along 2 miles of the Rio Chama below Abiquiu Dam. The purpose of the project was to improve instream habitat for resident and stocked trout species (e.g., rainbow trout and brown trout) and native fish species (e.g., Rio Grande chub and Rio Grande sucker). Flows in this reach of the Rio Chama are controlled by Abiquiu Dam operations and vary seasonally. Extremely low flows during winter months limited overwintering habitat required by these fish species. River channel morphology lacks complexity and refugia



for these fish species during extreme high summer flow periods. The project utilized several rock and large woody debris structures and channel shaping to increase habitat complexity and connectivity. The project also focused on improving riparian habitat to increase functionality and overall health the of the river corridor by grading adjacent flood plain areas and planting native riparian trees, grasses, and sedges.

Photos; Rio Chama aquatic habitat improvements.



Urraca Wildlife Management Area Wet Mixed Conifer Forest Restoration



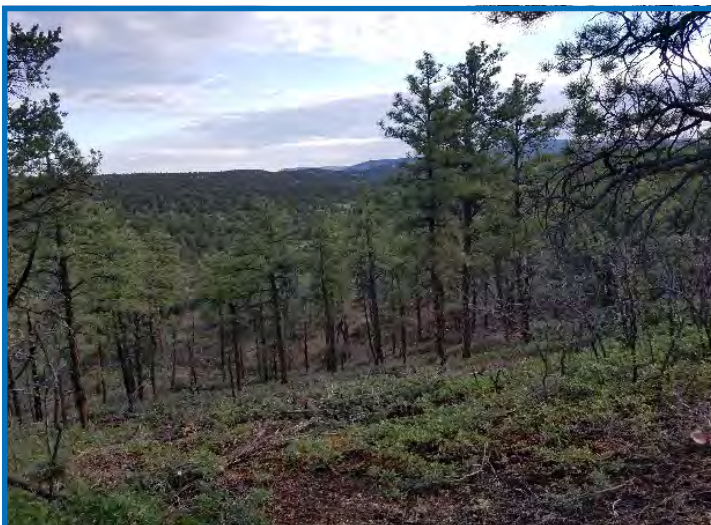
The Department collaborated with U.S. Forest Service fire and fuels staff to develop a prescription to improve 350 acres of wet mixed conifer and aspen stands. Masticators implemented the project in a mosaic fashion, spreading out the areas affected, and keeping chip depth to a minimum while reducing vertical fuel loads.

Photo left; Urraca Wildlife Management Area forest restoration.

American Creek Ponderosa Pine Restoration

The Department collaborated with U.S. Forest Service wildlife, fire and fuels, and timber staff to implement 450 acres of thinning to restore ponderosa pine forest on the Tres Piedras Ranger District.

Photot right; Tres Piedras ponderosa pine thinning.



Mertz Ranch Ponderosa Pine Restoration

The Department collaborated with Bureau of Land Management forestry, fire and fuels, wildlife, and hydrology staff to implement a 750 acre lop and scatter treatment to thin ponderosa pine stands adjacent to the Cebolla Wilderness Area of the Rio Puerco District Office.

Photo left; Mertz Ranch ponderosa pine thinning.



Share with Wildlife Projects



Photo above; Data collection using digital datasheet.

[Aquatic habitat connectivity assessment for the Santa Fe National Forest](#)

This project is focused on identifying stream crossings and culverts that impact habitat connectivity for Species of Greatest Conservation Need associated with aquatic and riparian habitats. Contractors developed a digital datasheet, which includes basic aquatic and riparian habitat quality assessments, which they are pilot testing along perennial streams within the Santa Fe National Forest. Results will help identify structures that may be impeding connectivity and prioritize areas where habitat connectivity may be enhanced through alteration, maintenance, or complete replacement of structures.

[Creating the next generation of riparian habitat stewards](#)

This project, supported in 2019 and 2020, increased awareness of the need for healthy riparian habitat and good land management along rivers for the benefit of wildlife. Youth developed stewardship knowledge and ethics regarding riparian areas through repeat field experiences involving hands-on data collection, research on Species of Greatest Conservation Need, and presentation of findings. 2020 work included development of several online resources, including videos regarding what defines a riparian area, why it is important, and how to evaluate its health.

[Establishing viable imperiled springsnail refuge populations](#)

This project initiated development of husbandry techniques for establishing viable refuge populations of imperiled springsnail species in New Mexico at the Albuquerque BioPark Aquatic Conservation Facility. The project included collection of physio-chemical parameters of natural spring habitat to inform desirable conditions for captive habitat for two springsnail species found in springs adjacent to the Gila River. The team plans to utilize other funding sources to build on knowledge gained from this project and continue efforts to establish captive breeding populations of springsnails.

[Evaluation of the risk of novel pathogen transmission via riparian restoration on the Mimbres River](#)

This project assessed the risk of introducing novel pathogen strains of chytrid fungus and ranavirus into the Mimbres and Gila rivers via nursery-grown plants used in riparian habitat restoration. Use of nursery-grown plants is not currently allowed by U.S. Fish and Wildlife Service in these focal drainages, but, prior to this project, no data existed on the level of risk of pathogen spread associated with the use of such plants. Researchers collected environmental DNA (eDNA) samples in both drainages and at plant nurseries to assess presence and identify focal pathogen strains. Samples from a wetbed at one nursery tested positive for a strain of chytrid fungus different from that present in the Gila and Mimbres rivers. Thus, it appears that there may be some risk of introducing a novel lineage of waterborne pathogen to a natural system through the use of plant materials from nurseries in riparian restoration projects. Recommendations from this project include avoiding the use of plants grown



Springsnail habitat near the Gila River.



in wetbeds for riparian restoration projects, treating plant materials with a disinfectant such as Virkon S (further experimentation is needed to confirm effectiveness) or where possible, using plants collected within the same drainage as the restoration site.

Bosque Education Guide and New Mexico STEM Ready! Science Standards

This project updated several core lessons from the extant Bosque Education Guide to better align with the New Mexico STEM Ready! Science Standards. The guide, which has been presented to over 2,000 teachers since its creation, provides an extensive curriculum regarding New Mexico's riparian and aquatic habitats. The core lessons focus on using a model of the middle Rio Grande to investigate the ecology of floodplain ecosystems and how humans have affected these areas. Updating the guide will help keep these well-designed, hands on activities relevant and as useful as possible for New Mexico educators.

Bosque Ecosystem Monitoring Program (BEMP) fauna, floodplains, and fieldwork

This project incorporated state Species of Greatest Conservation Need, including the North American river otter, Rio Grande chub, and Rio Grande silvery minnow, into the BEMP curriculum, a citizen science program teaching students about ecosystem function, and emphasizing environmental education and stewardship of the Rio Grande bosque. The monitoring program includes tracking key indicators of environmental change in the Middle Rio Grande riparian ecosystem and classroom-based activities help students visualize changes in the function of the Rio Grande over the past 2,000 years.

SMNHC educating ecosystem explorers and fieldwork

The Sandia Mountain Natural History Center (SMNHC) developed a new curriculum focused on several Species of Greatest Conservation Need in New Mexico, including the Rio Grande silvery minnow. The lesson focused on the minnow considers questions about why this species is controversial and how the minnow helps to keep the Rio Grande flowing. One of the activities involves students creating a water management plan for the Rio Grande that considers the habitat needs of the minnow.

Connecting students to wildlife and habitats in New Mexico

This education project, supported in 2019 and 2020, exposed elementary and high school students to environmental science and river ecology concepts. Students learned how to monitor water quality and formulate scientific hypotheses based on data. The project featured benthic macroinvertebrates and their relationship to water quality. Students collected data using water quality probes following Standard Operating Procedures from the New Mexico Environment Department's Surface Water Quality Bureau. In 2020, focus shifted to virtual presentations and programs, including virtual summer camps, in response to COVID-19 related restrictions.



Water quality monitoring on the Rio Chama

Additional information regarding the Department's activities is available within the agency's annual reports, available at <http://www.wildlife.state.nm.us/home/publications/>. Additional information on Share with Wildlife Projects is available at <http://www.wildlife.state.nm.us/conservation/share-with-wildlife/>.



New Mexico Forestry Division

New Mexico's forests need proper forest management to help improve overall health, reduce insect and disease risk, reduce the impact of fires, and improve watershed and habitat health. through careful resource management, community engagement, and productive collaborations, New Mexico State Forestry is able to promote healthy, sustainable forests and watersheds. The primary activities undertaken by the Forestry Division to achieve these goals are watershed restoration projects, forest thinning, prescribed burning, and permitting of commercial timber sales. A total of 5,213 acres were accomplished by the Division and projects have occurred throughout the state in 2020, as shown in Figure 1. The Forestry Division accomplished 2,519 acres of watershed restoration/thinning projects as shown in Table 1, 1,299 acres of prescribed burning as shown in Table 2, and 1,395 Acres of timber sales as shown in Table 3.

Using BMP's to address NPS pollution

The New Mexico Forestry Division's forest resource management programs involve the application of both regulatory and voluntary silvicultural BMPs on State and private forest lands in New Mexico.

Through the federally supported Cooperative Forestry Assistance Program, the New Mexico Forestry Division provides technical forest resource management assistance to landowners and recommends application of NPS pollution BMPs in all silvicultural activities. Types of technical assistance range from reforestation to harvesting of mature timber. This assistance is designed to meet a wide range of landowner management objectives. In conjunction with these programs, the New Mexico Forestry Division has technical responsibility for application of forestry practices in federally funded landowner cost share programs that includes the Forest Health Improvement Program (FHI), which specifically addresses forest health issues and forest management planning, as well as various thinning programs that address wildfire threats to communities and watersheds.

The New Mexico Forestry Division has regulatory authority over all harvesting of commercial forest products where more than 25 acres are harvested from an individual private ownership in a calendar year. Harvesting is conducted under a permit issued by the New Mexico Forestry Division. As a requirement of the permit application, a harvest plan defining what will be reserved after harvest and how steep slopes will be treated to minimize soil erosion, as well as minimizing any potential impacts to stream courses, must be prepared. In addition, regulations require that all roads, skid trails, and landings be water barred and reseeded. Following completion of harvesting activities, New Mexico Forestry Division personnel complete a silvicultural water pollution-NPS assessment to determine the types of BMPs applied.

The Forestry Division provides technical assistance to partner agencies and organizations on matters related to forestry, wildland fire and watershed health. Some partnerships are formalized through legal agreements. A Cooperative Agreement between the Division and the Natural Resources Conservation Service (NRCS) provides for a shared staff position to serve as the New Mexico NRCS' State Forester, and the Division's District staff serve as Technical Service Providers to NRCS Field Offices, Area Offices, and cooperators. Agreements with the Bureau of Land Management (BLM) and the Southwestern Region of the USDA Forest Service enables the Division and BLM and USFS to collaboratively develop cross-jurisdictional, landscape-scale forest and woodland restoration treatments for improving forest health and resilience and decreasing wild-



land fire threat to forests, woodlands and watersheds. In other cases, partnerships are formed to implement grant-funded activities that promote watershed health and water quality. The Division also partners with other state agencies to support common state objectives, such as managing the New Mexico Forest and Watershed Management Coordinating Group (Coordinating Group).

Forest and Watershed Health Office

The Forestry Division established the Forest and Watershed Health Office (FWHO) to facilitate and coordinate implementation of the New Mexico Forest and Watershed Health Plan. The Plan contains twenty recommendations for state-level actions needed to achieve ecological restoration across New Mexico's landscapes.

FWHO coordinates with other entities to improve the efficiency and effectiveness of mutual efforts to protect and restore New Mexico's landscapes. The Forest and Watershed Health Coordinator chairs the Coordinating Group, whose members represent 20 agencies and organizations and the private sector. The Coordinating Group informs and advises the FWHO and makes recommendations to the State Forester in its role as the Watershed Management Subcommittee. The FWHO, together with other Division staff, the Coordinating Group and its task teams, implement action items recommended in the Plan.

FWHO contributes to watershed health and water quality directly through collaborative project planning, oversight, and implementation and through grant writing to fund such projects. FWHO participates in state and regional groups and advisory bodies involved in natural resource policy, legislative analysis, grant development and proposal evaluation, outreach and education, and strategic planning, which pave the way to more and better work getting done on the ground.

Forest and Watershed Health Office

The Forest and Watershed Restoration Act (FAWRA) was created by House Bill 266 and signed into law by Governor Michelle Lujan Grisham on March 15, 2019. FAWRA allocates \$ 2 million annually to the Energy, Minerals and Natural Resources Department, Forestry Division with the purpose of restoring forests and watersheds in the state of New Mexico and establishes a Forest and Watershed Advisory Board to evaluate and recommend projects. The objectives of FAWRA are to prioritize and fund large-scale forest and watershed restoration projects on any lands in the state that:

- increase the adaptability and resilience to recurring drought and extreme weather events of the State's forests and watersheds;
- protect above and below ground water sources;
- reduce the risk of wildfire, including plans for watershed conservation;
- restore burned areas and thin forests;
- include related economic or workforce development projects or a wildlife conservation or a habitat improvement project.

The recurring funding provided by FAWRA gives the State the opportunity to better manage its forests and watersheds, and better protect its water resources.

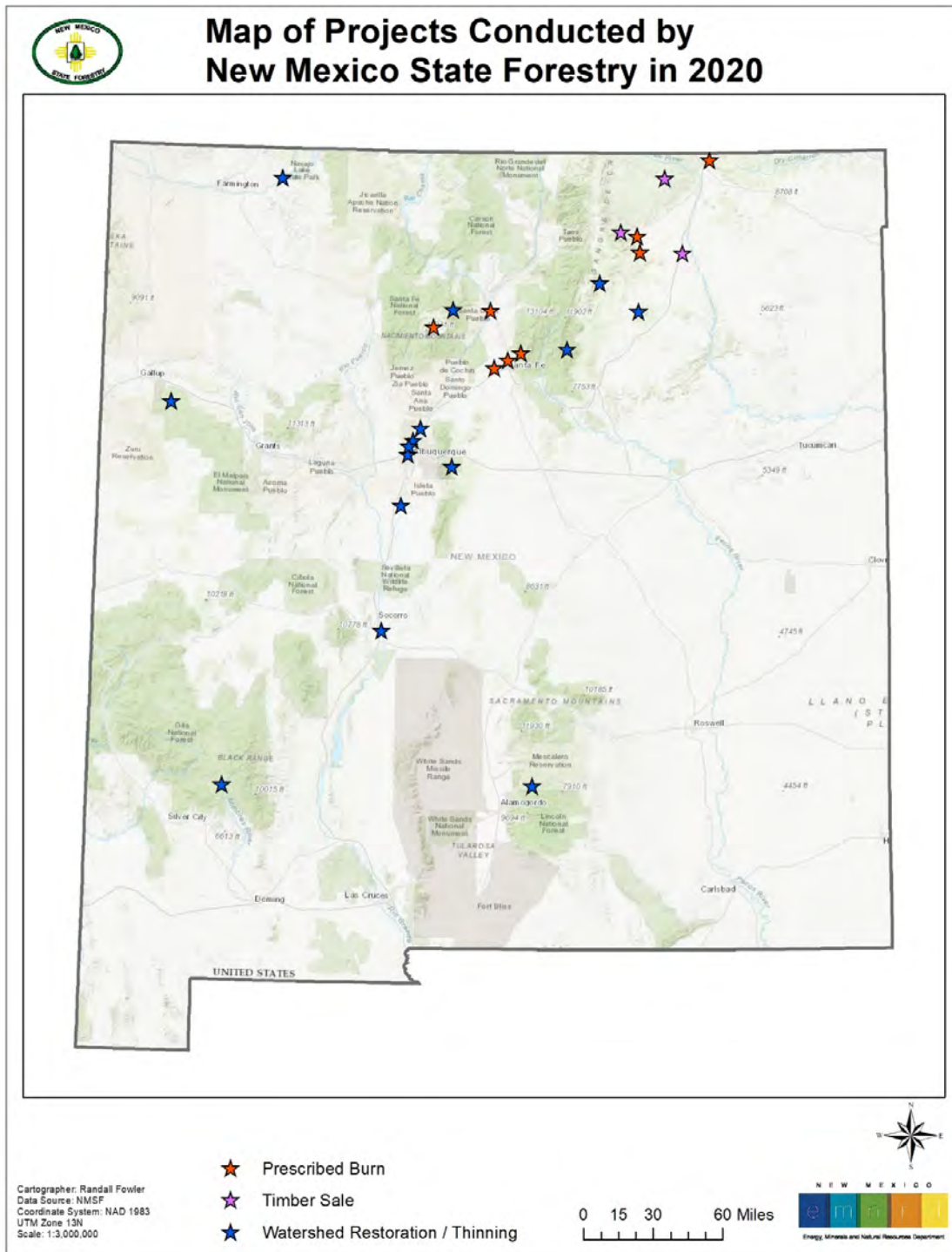


Figure 1. Map of Projects Conducted by New Mexico State Forestry in 2020



Table 1: New Mexico State Forestry Watershed Restoration Projects Accomplished in 2020

2020 New Mexico State Forestry Watershed Restoration Projects					
Project	Location	Status	Completed Acres	Watershed	Description
Gallinas Municipal Forest and Watershed Restoration Project - Phase 4	Near San Miguel	Ongoing	50	Headwaters Gallinas River (Arroyo Pecos)	Thinning
Hyde Memorial State Park Thinning	Hyde Memorial State Park	Ongoing	10	Pojoaque Creek (Rio Nambre)	Thinning
Phase I Zuni Mountain Landscape	Zuni Mountain	Ongoing	262.1	Rio Grande-Albuquerque (Tijera Arroyo)	Thinning
Cedro 2 Watershed Restoration	Cedro	Ongoing	518	Tijeras Arroyo (Lower Tijeras Arroyo)	Thinning
Canyon Tank	Near Canyon Tank Lake	Completed	350	Gallinas Canyon-Mimbres River (Allie Canyon Mibres River)	Thinning
San Juan River Restoration	San Juan River	Ongoing	194.32	Pump Canyon-San Juan River	Thinning, Mastication
Fall 2019 Albuquerque Bosque Invasive Plant Project	Albuquerque Bosque	Ongoing	20.3	City of Albuquerque-Rio Grande (City of Albuquerque)	Invasive Plant Removal
Fall 2019 Paseo Invasive plant treatment	Albuquerque Bosque	Ongoing	14	Arroyo de Las Calabacillas-Rio Grande (Sandia Wash-Rio Grande)	Invasive Plant Removal
Fall 2019 Bosque Invasive plant treatment Bosque School	Albuquerque Bosque	Ongoing	4.78	Arroyo de Las Calabacillas-Rio Grande (Sandia Wash-Rio Grande)	Invasive Plant Removal



State of New Mexico Nonpoint Source Management Program
2020 Annual Report

2020 New Mexico State Forestry Watershed Restoration Projects					
Project	Location	Status	Completed Acres	Watershed	Description
2019 - 2020 Corrales Bosque Restoration	Corrales Bosque	Ongoing	14.97	Arroyo de Las Calabacillas-Rio Grande (Sandia Wash-Rio Grande)	Invasive Plant Removal
Valencia County Bosque Fuels 2019	Valencia County Bosque	Ongoing	13.52	Canon Monte Largo-Rio Grande (Cedar Wash-Rio Grande)	Invasive Plant Removal
Red Cabin No Name Spring #1	Mescalero Reservation	Ongoing	288.8	Tularosa Creek (Nogal Canyon)	Thinning
Phase I Zuni Mountain Landscape	Zuni Mountains	Ongoing	262.1	Rio Nutria (Upper Rio Nutria)	Thinning
Turkey Mountain	Turkey Mountain	Ongoing	480.5	Wolf Creek (Outlet Wolf Creek)	Thinning
Coyote Creek State Park	Coyote Creek State Park	Ongoing	35.5	Coyote Creek (Middle Coyote Creek)	Thinning
		TOTAL	2,518.89		



Table 2: New Mexico State Forestry Prescribed Burning Accomplished in 2020

2020 New Mexico State Forestry Prescribed Burning					
Project	Location	Status	Completed Acres	Watershed	Description
Miami RX	UU Bar Ranch	Complete	300	Rayado Creek (Moras Creek)	Prescribed Burn
Powerline RX	UU Bar Ranch	Complete	100.3	Rayado Creek (Moras Creek)	Prescribed Burn
Philmont Scout Ranch-Cimarroncito Reservoir/ Demonstration Forest Unit Pile Burns	Philmont Scout Ranch	Complete	30	Eagle Nest Lake-Cimarron River (Ute Creek-Cimarron River)	Pile Burn
La Grulla RX	UU Bar Ranch	Complete	303	Rayado Creek (Moras Creek)	Prescribed Burn
Sugarite Canyon SP Pile Burn	Sugarite Canyon	Complete	1	Chicorica Creek (Upper Chicorica Creek)	Pile Burn
Philmont Scout Ranch-Crater Lake Unit Pile Burn	Philmont Scout Ranch	Complete	7	Eagle Nest Lake-Cimarron River (Ute Creek-Cimarron River)	Pile Burn
Philmont Scout Ranch-Lover's Leap Unit Pile Burn	Philmont Scout Ranch	Complete	8	Eagle Nest-Lake Cimarron River (Ute Creek-Cimarron River)	Pile Burn
Jemez RD Joaquin Pile RX	USFS Jemez Road	Complete	160	Santa Fe River (Headwaters Santa Fe River)	Pile Burn



2019 New Mexico State Forestry Prescribed Burning					
Project	Location	Status	Completed Acres	Watershed	Description
USFS Pile Burn Espanola	Near Espanola	Complete	25	Rio Chama-Rio Chama Grande (Rio Chama-Rio Grande)	Pile Burn
Baney RX on Magdalena Road	Magdalena Road	Complete	52	Santa Fe River (Headwaters Santa Fe River)	Prescribed Burn
Valles Caldera National Preserve RX	Valles Caldera National Preserve	Complete	285	Upper Jemez River (East Fork Jemez River)	Prescribed Burn
Hyde State Park Thinning	Hyde State Park	Complete	28	Pojoaque Creek (Rio Nambre)	Prescribed Burn
		TOTAL	1,299		

Table 3. New Mexico State Forestry Timber Sale Accomplishments in 2019

2019 New Mexico State Forestry Timber Sales					
Project	Location	Status	Completed Acres	Watershed	Description
Agua Fria	Springer	Ongoing	285	Rayado Creek-Cimarron River (110800020404)	Timber Sale
Crow 3	Vermejo Park Ranch	Ongoing	949	Headwaters Vermejo River (Headwaters Caliente Canyon)	Timber Sale
Ute Park Fire Salvage	Philmont Scout Ranch	Ongoing	161	Eagle Nest Lake-Cimarron River (Ute Creek-Cimarron River)	Timber Sale
		TOTAL	1,395		



United States Forest Service

Carson National Forest

During fiscal year (FY) 2020, the Santa Fe National Forest (SFNF) implemented projects that made progress towards meeting and maintaining state water quality standards as well as activities that contributed to nonpoint source management.

Projects completed and ongoing in 2020

Project	Location	Status	Completed Acres	Watershed	Description
Ring Drainage	East Side Valle Vidal	Complete	0.4	Headwater North Ponil Creek	Riparian exclosures and channel stabilization
				HUC 10800020203	
Upper Rio San Antonio Restoration	Tres Piedras RD	Ongoing	2	Cañada Tio Grande/Rio San Antonio	Riparian exclosures and BDA's
				HUC 130100050301	
La Jara Restoration	Camino Real RD	Ongoing	6.3	Headwaters Rio Fernando del Taos	Reconnect floodplain and channel stabilization
				HUC 130201010601	
Vidal Creek	West side Valle Vidal	Ongoing	2.3	Comanche Creek	Reconnect floodplain, channel stabilization
				HUC 130201010102	
FR 478 Bridge Replacement	Camino Real RD	Complete	0.1	Rio Chiquito	Replace bridge with AOP bottomless arch
				HUC 1302010503	
Midnight Meadows	Questa RD	ongoing	6.4 Acres	Cabresto Creek	Terrestrial (wetland) habitat restoration



United States Forest Service

Cibola National Forest

The Cibola National Forest and National Grasslands (CNFNG) implemented several projects that improved nonpoint source management during the fiscal year 2020. The fiscal year started on October 1, 2019 and ended on September 30, 2020. These projects included road work, vegetation treatments including prescribed burning and thinning, and reforestation. Additionally, the Forest has completed planning for a landscape scale restoration projects in the Zuni Mountains as well additional work in Mills Canyon, including an improved aquatic crossing on the Canadian River.

Road Improvements

Subwatershed: Milk Ranch Canyon-South Fork Puerco River (HUC 150200060104)

Road improvements were completed on 6 miles of Forest Road 547. These road improvements included improvement to road drainage, culvert replacement, road surfacing, and bank stabilization along Six Mile Canyon. Road drainage improvements were designed to direct water and sediment away from Six Mile Canyon to reduce sediment inputs and reduce the erosive energy of road runoff. Culverts were replaced with larger sizes to accommodate increased flows expected from climate changes as well as addressing current conditions. Road surfacing included graveling in key locations to prevent sediment from mobilizing, in addition to protecting the road. Bank stabilization occurred in areas where the road and stream were in close proximity, resulting in risks to both of these features. The road runoff was directed away from the eroding bank and large rocks were placed to direct water away from the eroding bank. The result of the road improvement activities has reduced sedimentation and improved stream stability along Six Mile Canyon. Project Summary

Canadian River Riparian Restoration

Subwatershed: Canon Vercere-Canadian River (HUC 110800030505)



1. Maintenance of Salt Cedar Control and Replanting (part of the Canadian River Riparian Restoration Project (CRRRP))
2. Completed planning for the improved crossing at Mills Canyon to provide aquatic organism passage

The project area is in Mills Canyon along the Canadian River, south of the confluence with Cimarron River and north of the confluence with the Mora River. The Canadian River provides habitat for a variety of wildlife and fish species in this area. Salt cedar treatment of salt cedar is ongoing in this reach of river through the Canadian River Riparian Restoration Project. The Canadian River Riparian Restoration Project (CRRRP) is a collaboration of eight Soil and Water Conservation Districts in northeastern New Mexico. The CRRRP's goal is to restore the watershed of the Canadian River, both on the main stem and on its

Figure 1. Planted Cottonwood at the Canadian River in Mills Canyon.



tributaries, to a healthy productive state that will provide native habitat for a variety of wildlife and improve water for communities, agriculture and recreation throughout the course of the watershed.

In FY20, maintenance of salt cedar treatments occurred as well as additional planting of native plants at Mills Canyon. This activity allows for the riparian area along the Canadian River to recover. Monitoring is occurring to assess the success of riparian plants. The cottonwood in the photo below is doing well as it establishes roots in the floodplain.

Figure 2. Low water crossing (looking upstream) and soft shelled turtle in Mills Canyon, Canadian River (May 19, 2014). Planning was completed in FY20 to reconstruct crossing to provide passage for aquatic organisms.

In addition, planning was completed to reconstruct the low water crossing at Mills Canyon across the Canadian River. This crossing was deteriorating and a source of sediment for the downstream reaches. The small fish that live in the Canadian River were unable to move across this structure during low flows, resulting in changes to their habitat and populations. An improved design was proposed for construction in FY21 and the environmental analysis is complete.

Vegetation Treatments (prescribed fire and thinning)

Subwatersheds:

Thinning: Arroyo de Tajique (HUC 130500011102) – 950 acres

Thinning: Upper Arroyo de Manzano (HUC 130500011002) – 400 acres

Thinning: Upper Rio Nutria (HUC 150200040201) – 1380 acres

Thinning: Upper Tijeras Arroyo (HUC 130202030201) – 790 acres

Prescribed Fire: Seneca Creek-Cieneguilla Creek (HUC 111001010207) – 510 acres

Prescribed Fire: Middle Sand Draw (HUC 110901030302) – 310 acres

Vegetation treatments such as prescribed fire and thinning occurred across the Cibola NF&NG in FY20. In areas where tree densities are out of the range of variability, these treatments reduce the risk of uncharacteristic fire with high intensity effects. High intensity fire effects include high sedimentation rates, turbidity, erosion,



and streambank erosion. Vegetation treatments reduce the potential for these effects and improves overall watershed condition. Prescribed fire was implemented to improve watershed condition, increase resiliency to wildfire, and improve ground cover. These benefits are expected to lead to improvements in water quality by reducing sediment inputs over the long term and improving riparian condition. Watershed condition in affected watersheds will be reassessed to determine the extent of improvement using the Watershed Condition Framework, a method used by the USDA Forest Service.

Reforestation – Doghead Fire (2016)
Subwatershed: Milbourn Draw (HUC 130500011103) – 200 acres

Two hundred acres of trees were planted in the Doghead Fire area in the Manzano Mountains to assist in the restoration of these lands from the effects of wildfire. As these trees grow, they will provide canopy cover and reduce the impact of rainfall and runoff, thereby improving downstream water quality and protecting beneficial uses.



Figure 3. Newly planted ponderosa pines in the Doghead Fire area



Gila National Forest

Outlet Saliz Canyon - Watershed Moved to an Improved Condition

Unit Name: Gila National Forest – Glenwood Ranger District

Watershed Name and HUC12 #: Outlet Saliz Canyon - 150400040402

Watershed Characteristics - Size: 14,052 acres; 97.6% FS ownership

Values:

- **Native Fish Habitat** – Saliz Canyon is a tributary of the San Francisco River. The drainage is ecologically important as habitat for several species of native fish including sensitive species such as Sonora and desert sucker, and longfin dace. The San Francisco River is occupied by these same species along with the endangered loach minnow and spikedace. Critical habitat for both listed species has been designated and includes the reach of the San Francisco River within this watershed. One other native fish, speckled dace, is present in the watershed. Saliz Canyon has been identified by the NM Department of Game and Fish, and is under consideration, for introduction of loach minnow. Saliz Canyon is one of very few streams within the Gila National Forest that currently supports a native fishery that has few or no impacts due to the presence of nonnative aquatic species. Activities impacting water quality, stream bank health, habitat connectivity, and riparian vegetation within the watershed may impact the fishery both within and downstream of the watershed.

- **Other aquatic or riparian species** – There are 7.3 miles of perennial stream which provide aquatic habitat and support riparian habitat for a variety of species that may occur within the watershed but have not been observed, including sensitive species such as: narrow-headed gartersnake and bald eagle. Critical habitat for the Southwestern willow flycatcher occurs approximately 10 miles downstream of the watershed outlet and critical habitat for the Western yellow-billed occurs approximately 8 miles downstream of the watershed outlet. The Common black hawk is known to occur within the watershed and the Chiricahua leopard frog is known to occur within Saliz Creek.



Chiricahua leopard frog

- **Blue Range Wilderness Area** – A small portion of the Outlet of Saliz Canyon watershed falls within the Blue Range Wilderness Area. The remainder of the wilderness area lies directly to the west of the watershed.

- **Roadless Area** – Approximately 81 percent of the Outlet Saliz Canyon falls within the Devils Creek Roadless Area.

Problems / Issues:

Approximately 38 percent (5,284 acres) of the Outlet Saliz Canyon watershed was burned in the 2006 Martinez Fire. A considerable number of acres burned with high and moderate severity. The fire burned primarily in the northern portion of the watershed, in particular the Gordon Canyon subbasin drainage which drains



into Saliz Canyon. Natural resource conditions diminished immediately following the fire but have been on a slow upward trend since that time. The monsoon season immediately following the fire was extremely robust resulting in onsite soil loss in the uplands and degradation of many stream channels within the watershed. The area was seeded within days of the fire's suppression but due to the exceptional monsoon season following the fire excessive runoff and erosion occurred following the fire. This watershed was rated as Functioning at Risk with the primary drivers being degraded upland watershed and riparian conditions as a result of the Martinez Fire and road proximity to Saliz Canyon, a perennial water.

Restoration objective:

The Watershed Restoration Action Plan (WRAP) prepared in 2012 for this watershed described an objective of improving watershed condition class from Functioning at Risk to a target condition class of Properly Functioning.

Specific WRAP objectives were:

- Reestablish herbaceous vegetation on upland slopes where the Martinez Fire burned;
- Increase riparian vegetation in Saliz Canyon;
- Reduce sediment movement in watershed drainage network and ultimately into the San Francisco River;
- Improve road drainage on the limited Forest Service road system located within the watershed;
- Work with Navopache Electric to move portion of power line and associated access road out of the bottom of Saliz Canyon to uplands.

Specific Project Activities –Essential Projects 1 and 2 were listed as required to move the watershed into an improved condition class. Projects 3 and 4 were optional.

1. Essential Project #1 – Riparian Improvement – COMPLETED
 - a. Attribute/ Indicator Addressed – Riparian Vegetation Condition/Water Quality
 - b. Project Description – This project will develop and improve an existing power line access route located out of the bottom of Saliz Creek for the maintenance of approximately ½ mile of Navopache electric line. The current power line access route is located in the bottom of Saliz Canyon and crosses the stream numerous times.
 - c. Partners Involvement: Navopache Electric Company.
2. Essential Project #2 – Road Drainage Improvement – COMPLETED
 - a. Attribute/ Indicator Addressed – Roads and Trails/Road and Trail Maintenance/Water Quality.
 - b. Project Description: This project will focus on implementing and improving best management practices for road drainage on Maintenance Level 3 and 2 roads within the Saliz Canyon watershed, in particular, roads in Saliz Canyon or close proximity. BMPs will include improvement of lead out ditches, road dips, and inlet and outlet features of culverts and road/stream crossings.
 - c. Partners Involvement: Catron County Road Department and Navopache Electric Company
3. Essential Project #3 (OPTIONAL) –Upland Water Source Development – DID NOT DO—COULD NOT FIND GOOD LOCATION WITHIN WATERSHED FOR TRICK TANK
 - a. Attribute/ Indicator Addressed –Range Vegetation/Riparian Condition
 - b. Project Description –This project proposes installation of a trick tank in the uplands to benefit wildlife



and improve cattle distribution. Currently in the southern portion of the watershed the only water source is Saliz Canyon.

c. Partners Involvement: New Mexico Game and Fish Department

4. Essential Project #4 (OPTIONAL) –Pinyon/Juniper Habitat Improvement/Maintenance Burns, Southern Watershed – DID NOT DO—REGION 3 IS UNDER ONGOING INJUNCTION AND ALL PRESCRIBED FIRES WERE CANCELLED. THIS PROJECT WILL BE COMPLETED ONCE INJUNCTION IS LIFTED.

a. Attribute/ Indicator Addressed – General Watershed Health

b. Project Description – This project will provide for maintenance of Pinyon/Juniper stands, reduce the risk of catastrophic wildfire, assist in restoring fire into fire adaptive ecosystems and improve wildlife habitat.

c. Partners Involvement:

d. Timeline: Starting in 2015 and continuing for 2 years

e. Estimated costs and associated Budget Line Item -\$ 158,000/NFRR

Restoration/Improvement Activities

Accomplishment (summarized list of miles, acres, things accomplished-):

- Approximately 0.50 miles of road within Saliz Creek was decommissioned. Boulders and dead trees were put in place on both ends to deter the use of this road. In addition, two 6 ft x 5 ft (approximate) sections of the north end of the road were ripped with boulders placed on both sides. Navapache Electric and Catron County partnered to move road access to the power line to higher ground by improving an existing road and lengthening it to reach the line. The Forest Construction and Maintenance Crew addressed road improvements by cleaning culverts and lead out ditches. There are limited roads in this watershed and most were well drained, thus very little maintenance was required.

Costs :

- \$20,000 Forest Service (NFWF, CMRD)
- \$10,000 Partners (Catron County)

Partners

- Navapache Electric
- Catron County

Summary: The road into Saliz Creek has been decommissioned. In addition, an existing road that goes up on higher ground and bypasses Saliz Creek was improved by Catron County. Navapache Electric now will use this route to access their powerline. Level 2 and 3 Forest system roads were improved where drainage needs were insufficient.



Road in Saliz Creek (2012)

Prescribed fire in the watershed is planned for FY2021 if the MSO injunction is lifted. The proposed trick tank will be located in an adjacent watershed, as an ideal location within Outlet Saliz Creek could not be identified.

Project Contact Sandy Taylor, Glenwood District Biologist, sandra.taylor1@usda.gov, 575-539-2481



Big Canyon – San Francisco River - Watershed Moved to an Improved Condition

Unit Name: Gila National Forest – Quemado Ranger District

Watershed Name and HUC12 #: Big Canyon – San Francisco River - 150400040308

Watershed Characteristics - Size: 16,419 acres; 95% FS ownership

Values:

- Threatened and Endangered Species Critical Habitat – Big Canyon – San Francisco River watershed has 10,265 acres of Mexican Spotted Owl habitat, 860 acres of Narrow Headed Gartersnake habitat, and 233 acres of Southwestern Willow Flycatcher habitat.
- Sensitive species – Goshawk are found within the WRAP area, with approximately 1,889 acres of post-fledgling family area.
- Native Fish Habitat – This watershed flows into the San Francisco River, which is occupied by Sonora and desert sucker, longfin dace, along with the endangered loach minnow and spikedace. Activities impacting water quality, stream bank health, habitat connectivity, and riparian vegetation within the watershed may impact the fishery downstream of the watershed.
- Roadless Area – There are 75 acres of Designated Roadless Area.

Problems / Issues:

The watershed flows into the San Francisco River which is listed as impaired for benthic macroinvertebrate community and temperature. In addition, there are numerous stock tanks and irrigation diversions on private lands that impede natural flow characteristics. Crayfish are found within the San Francisco River. While Luna Lake is above this watershed in Arizona, water from the lake discharges downstream through Big Canyon – San Francisco and may influence water quality. Livestock impacts on the Adair Spring negatively impact the health of the spring, water quality, and associated wetland and riparian vegetation. Level 2 roads in the watershed have very few drainage features, thus providing a direct connection of sediment input to drainages.

Restoration objective:

The Escudilla Landscape Watershed Restoration Action Plan (WRAP) prepared in 2018 for this watershed described an objective of improving watershed condition class from Functioning at Risk to a target condition class of Properly Functioning.

Specific WRAP objectives were:

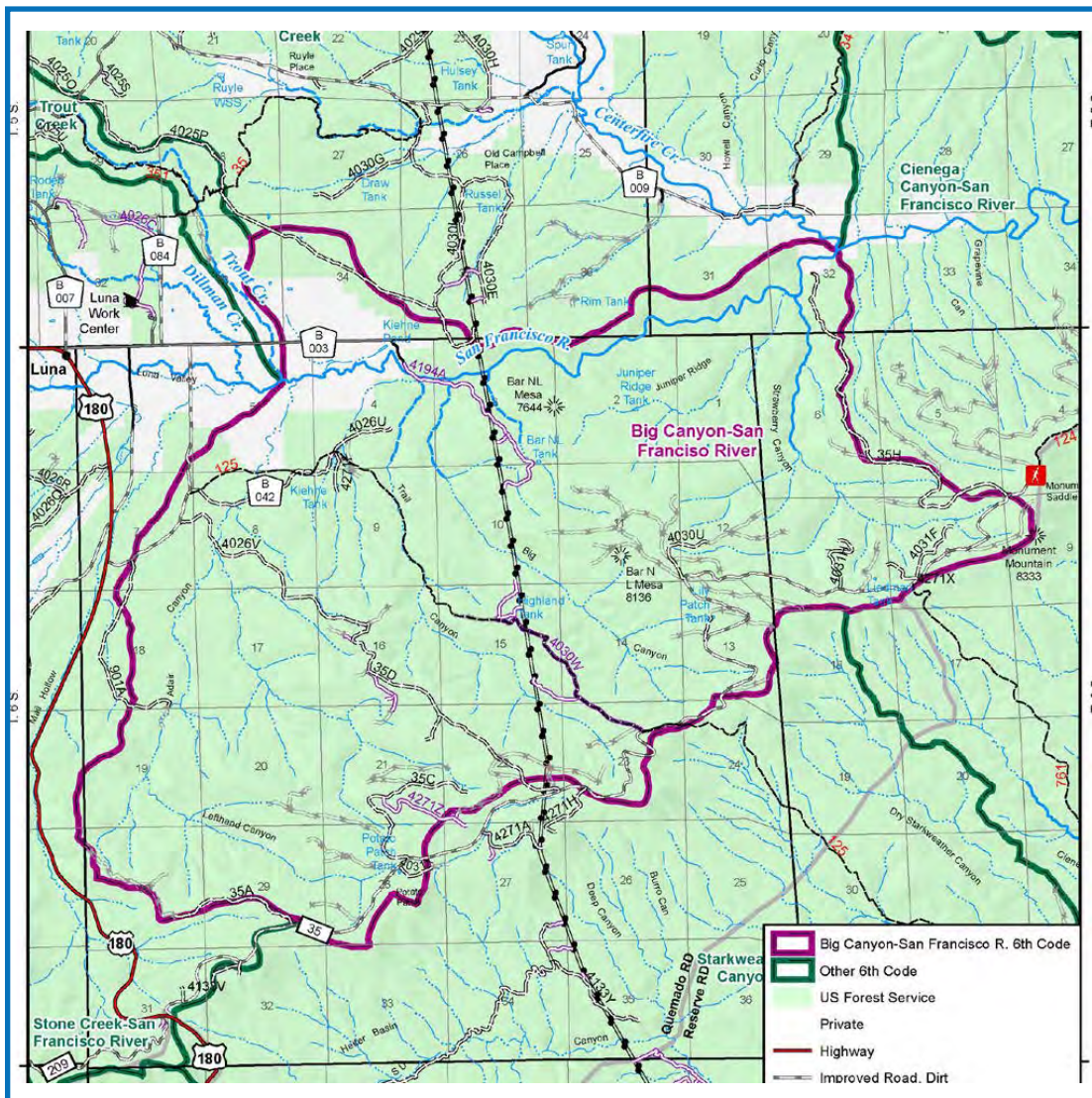
- Reduce tree and shrub overstory through mechanical/fire treatments to restore ecosystem health and watershed functionality to Forest Plan desired conditions.
- Treat fuels to reduce future risk of large uncharacteristic fire.
- Decommission routes that are currently closed or non-motorized that have been identified as contributing to watershed and terrestrial resource concerns.
- Conduct heavy road maintenance on motorized routes that are contributing to watershed degradation or lack appropriate BMPs to protect water quality and soil resources.
- Improve wildlife habitat for threatened and endangered terrestrial species through treatment of vegetative



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communities and by restoring functioning 6th code watershed conditions.

- Improve fish habitat for sensitive aquatic species through direct stream treatments and through improved upland watershed conditions.
- Rehabilitate willow populations and age classes within meadows and riparian areas.
- Improve vegetation continuity and composition of riparian species with all age classes well represented along key perennial streams (Adair Canyon). (Restore key stream reaches to Proper Functioning Condition).
- Improve upland wet meadows and valley bottoms by removing upland tree species.
- Enhance and stabilize stream systems that have active erosions and destabilization occurring
- Maintain existing sediment control structures
- Improve existing road locations, remove unauthorized routes and/or remove road generated sediment connectivity to streams.



Watershed Name
and HUC12 #:
Big Canyon – San
Francisco River -
150400040308



Specific Project Activities –Essential Projects 1 - 4 were listed as required to move the watershed into an improved condition class.

1. Essential Project #1 – Road Decommissioning (COMPLETED)

- a. Attribute/ Indicator Addressed – Roads and Trails
- b. Project Description: This project will focus on decommissioning roads identified in Luna Landscape Planning. In this watershed, there are approximately 5 miles of road identified. Current decommissioning costs are approximately \$1,500/mile. Decommissioning of a road involves reestablishing vegetation, and if necessary, initiating restoration of ecological processes interrupted or adversely impacted by the unneeded road.



Closed road prior to decommissioning

Treatments include one or more of the following treatments: Reestablishing former drainage patterns, stabilizing slopes, and restoring vegetation; Blocking the entrance to a road or installing water bars; Removing culverts, reestablishing drainages, removing unstable fills, pulling back road shoulders, and scattering slash on the roadbed; Completely eliminating the roadbed by restoring natural contours and slopes; and Other methods designed to meet the specific conditions associated with the unneeded road.

- c. Partners Involvement: Various partners have expressed interest in partnering in this effort, including New Mexico Environment Department.

2. Essential Project #2 – Road Improvement (COMPLETED)

- a. Attribute/ Indicator Addressed – Roads and Trails
- b. Project Description: This project will focus on heavy road maintenance and improving best management practices for road drainage on Maintenance Level 2 and 3 roads within the watershed. BMPs will include improvement of lead out ditches, road dips, and inlet and outlet features of culverts and road/stream crossings. Heavy road maintenance may involve some level of reconstruction of existing roadbeds to reestablish a safe and last driving surface with the intent of minimizing sediment movement off of the road. Currently there are approximately 33 miles of Maintenance Level 2 and 3 roads within the watershed. This project assumes that 40% of roads in the watershed need some degree of maintenance ranging from light to heavy.

- c. Partners Involvement: Catron County

3. Essential Project #3 – Erosion Control Structures (DROPPED – Structure turned out to be borrow pit)

- a. Attribute/Indicator Addressed – Water Quality
- b. Project Description: This project will focus on the maintenance and/or reconstruction of 1 existing erosion control structures. This structure was originally implemented in the 1980s to impede and prevent ongoing erosion and gulying. It has not received maintenance over the last several decades and is currently in disrepair. Work will include heavy equipment cleanout of the structure and some reconstruction to preclude current and future gulying and sediment movement. Certified weed-free seeding will be required



after site work is completed. Inventory and survey work will be necessary prior to beginning this project to establish necessary site design.

c. Partners Involvement: New Mexico Environment Department

4. Essential Project #4 – Wetland/Spring/Riparian Restoration – Adair Spring/Canyon (CONTRACTED OUT)

a. Attribute/ Indicator Addressed – Water Quality, Water Quantity, Aquatic Habitat, Aquatic Biota, Riparian/Wetland Vegetation, Soils

b. Project Description: This project will focus on approximately 0.5 mile/2 acres of stream/wetland/riparian restoration on Adair Spring/Adair Canyon. Current conditions include headcutting and dewatering of Adair Spring/Adair Canyon and the adjacent wet meadow system. Work would include implementation of channel and wetland restoration techniques to increase water table elevations, enhance productivity of wetland dependent species (both aquatic and vegetative), encourage deep rooted vegetation on streambanks, impede erosion processes, and restore channel stability. These techniques include placement of water control structures that reestablish macro/micro-topography and encourage natural channel form and function, streambank contouring, and reestablishment of wetland/riparian plants through natural and/or artificial means (both woody and herbaceous plants). Following treatment, Adair Spring would be fenced to exclude ungulate grazing and allow for recovery of wetland and riparian resources. All techniques will utilize minimum impact best management practices to control sediment movement and will follow necessary permitting requirements under the Clean Water Act.

c. Partners Involvement: NMED, Upper Gila Watershed Alliance



Top photo - Head of Adair Spring where livestock have access.

Bottom photo - Perennial flow downhill from Adair Spring



Restoration/Improvement Activities

Accomplishment (summarized list of miles, acres, things accomplished):

- 5.5 miles of road decommissioning
- 16 miles of heavy road maintenance conducted
- 1 sediment structure – dropped – turned out to be borrow pit and did not require maintenance
- 6 acres Adair Spring enclosure and restoration under private contract with partner – expected completion December 2020.

Costs:

- \$25,000 - Forest Service
- \$68,000 - Partner (Upper Gila Watershed Alliance –



received River Stewardship Grant from New Mexico Environment Department)

- \$10,000 in donated materials (pipe and cable)

Partners

- New Mexico Environment Department – funded River Stewardship Grant
- Upper Gila Watershed Alliance – applied for and received River Stewardship Grant for Adair Spring Enclosure. Contracted out the work and are overseeing implementation, monitoring and botanical study at the site.
- Sportsmen for Fish and Wildlife of New Mexico – donated pipe for Adair Spring Fence
- DJR – donated cable for Adair Spring Fence

Summary:

5.5 miles of roads were decommissioned, and 16 miles of Level 2 roads received heavy road maintenance. This work was completed by the Forest Construction and Maintenance Crew. This included use of heavy equipment and placement of boulders on decommissioned roads. Due to a current injunction, felling of trees that was planned in roadways did not occur. This will happen after injunction is lifted. Maintenance of Level 2 roads included installation of new drainage features, cleaning culverts and lead-out ditches, and reshaping the roadbeds where erosion was occurring. One erosion control structure identified for maintenance in satellite imagery turned out to be a borrow pit, thus Essential Project #3 was not necessary. The Adair Spring enclosure is expected to be completed in November or December 2020. Most of the expensive supplies (metal pipe and cable) for this fence were donated by the oil and gas industry in Farmington, NM. All other supplies were purchased by the Forest Service. The Upper Gila Watershed Alliance (UGWA) submitted a grant for the fence construction to New Mexico Environment Department's River Stewardship Grant. This grant was received in April 2020 and UGWA has contracted out the work to

a private contractor. UGWA has taken over the task of botanical inventory and needs of the spring, including monitoring of recovery of the wetland.

In addition, the Forest Service developed a new water source (Adair Well - \$25,000) in the same pasture as Adair Spring in July 2020 to provide an alternate water source for the permittee. Although not identified as an essential project, this project helped to alleviate the permittee's concerns about fencing of the spring and will also help to improve livestock distribution in this pasture and an adjacent pasture in the Luna Allotment. Dollars to fund the well were paid for by the Forest Service.



New solar well (Adair Well) to provide alternate water source to Adair Spring.

Project Contact Name, Carolyn Koury, Watershed Program Manager, carolyn.koury@usda.gov@usda.gov, 575-388-8378



Santa Fe Forest

During fiscal year (FY) 2020, the Santa Fe National Forest (SFNF) implemented projects that made progress towards meeting and maintaining state water quality standards as well as activities that contributed to non-point source management.

San Antonio Creek Restoration

The SFNF continued to build upon restoration activities within San Antonio Creek. Project activities that were completed during FY 2020 included the installation of 12 additional beaver dam analogues (BDAs) and 15 log baffles. BDAs alter the timing and magnitude of water delivery. These structures can increase channel-flood-plain connectivity by influencing the frequency, duration and extent of overbank flows. Increased overbank flow can recharge ground water and raise the water table, providing the water resources necessary to promote riparian expansion, attenuate peak flows and increase baseflow. Planting of native willow and cottonwood species occurred on approximately 15 acres where BDA installation occurred. Areas planted with riparian vegetation were fenced to exclude ungulates. Use the following link to access an informational video on BDAs from the SFNF; https://www.fs.usda.gov/detail/santafe/landmanagement/resourcemanagement/?cid=fsbdev7_021013



San Antonio Creek Restoration project - 12 additional beaver dam analogues and 15 log baffles were installed.



San Antonio Creek Restoration project

Road Decommissioning

Approximately 29 miles of roads were decommissioned within the Southwest Jemez Mountain Landscape Restoration Project area. Road decommissioning treatments included; blocking the entrance to remove access; slash management to provide cover, reduce erosion and stabilize the road surface; and installation of water control features to reduce erosion and sedimentation. Best Management Practices (BMPs) are prescribed for road decommissioning operations on the SFNF to control non-point source pollution. A BMP evaluation occurred for road decommissioning during FY20. This evaluation found that



Top Photo - Road decommissioning project in the Southwest Jemez Mountains.

Photo below - Commercial timber harvest part of the Southwest Jemez Mountains Collaborative Landscape Restoration.



BMPs prescribed for the selected road decommissioning project were effective for controlling nonpoint source pollution.

Forest Thinning Operations

Approximately 400 acres of commercial timber harvest occurred within the Southwest Jemez Mountain Landscape Restoration Project area during FY20. Forest thinning operations assist in restoration of ecosystem structure and function and increase resilience to undesirable, large-scale disturbances such as uncharacteristically severe wildfire and insect outbreaks. Best Management Practices (BMPs) are prescribed for forest thinning operations on the SFNF to control nonpoint source pollution. A BMP evaluation was completed on the East Fork Task Order during FY20. This evaluation found that BMPs were mostly effective for controlling nonpoint source pollution within the selected cutting unit.

Use the following link to access more information on the Southwest Jemez Mountains Collaborative Landscape Restoration Project; <https://www.fs.usda.gov/detail/santafe/landmanagement/projects/?cid=stelprd3826396>

Planning Activities

A number of proposed projects are in the planning stage that address improvement of watershed conditions and treatments to mitigate the risk for catastrophic wildfire. Two of these projects are described below. A list of proposed actions for the SFNF can be found at: <https://www.fs.fed.us/sopa/forest-level.php?110310>.

Northern New Mexico Riparian, Aquatic, and Wetland Restoration Project (NNM-RAWR)

The NNM-RAWR project has been ongoing since early in FY20. The purpose of this project is to maintain or enhance watershed and range health by restoring riparian, wetland, and associated upland and aquatic habitats and promote species recovery and diversity and allowing for sustainable human uses, such as grazing, hunting and fishing. Riparian, wetland and associated upland and aquatic restoration management include: manage the composition and productivity of key riparian vegetation to protect or enhance wildlife habitat and habitat for riparian-dependent species; improve or maintain non-stream associated riparian and wetland areas (ground water-dependent ecosystems), such as seeps, slope wetlands, springs, fens, bogs and wallows together with



their associated vegetative structure; plan, design and implement riparian habitat improvement activities to restore riparian areas that are not in a condition to meet management objectives or the desired condition; improve the rate of recovery in, and ecological function of, riparian areas that are not in a condition to meet management objectives by eliminating or reducing the impacts of management activities that may slow riparian recovery; and maintain or enhance water quality and/or wildlife and aquatic habitat through instream, riparian and wetland/upland improvements. A final decision is expected in FY 21. For more information please visit; <https://www.fs.usda.gov/project/?project=56975>

The Encino Vista Landscape Restoration Project

The Encino Vista Landscape Restoration Project has been ongoing since early FY 20. The purpose of the project is to restore overall forest health, lower fire risk, improve watershed health, and enhance wildlife habitat across the landscape. This project focuses on forest restoration and resiliency treatments to: reduce stand densities; reintroduce fire on the landscape; revitalize meadows and aspen stands; promote a diverse forest structure for a variety of wildlife species; improve watershed conditions across the landscape, which would safeguard the water supply for villages, towns and ranches within the project area as well as downstream communities, by increasing the quality and quantity of water that flows through the network of streams improving watershed function within the Encino Vista Project area; and significantly reduce the risk of catastrophic wildfire and its aftermath (flooding and debris flow). For more information please visit - <https://www.fs.usda.gov/project/?project=54965>





Bureau of Land Management (BLM)

Las Cruces District Office (Las Cruces, NM)

Watershed	Project Description	Water Quality Benefits
Caballo 13030101 Percha Creek 130301010303	Cattle Exclosure Fence Maintenance and Re-construction	<ul style="list-style-type: none"> • Reduced impacts of cattle within the perennial stream and riparian area • Improved riparian vegetation • Improved aquatic and wildlife habitat
Tularosa 13050003 Crawford-Three Rivers 130500031104	Cattle Exclosure Fence Maintenance and Re-construction Non-Native Plant Species Treatment (Salt Cedar and Russian Olive)	<ul style="list-style-type: none"> • Reduced impacts of cattle within the perennial stream and riparian area • Improved riparian vegetation • Improved aquatic and wildlife habitat
Tularosa 13050003 Middle Tularosa Creek 130500031206	Cattle Exclosure Fence Maintenance and Re-construction Non-Native Plant Species Treatment (Salt Cedar and Russian Olive)	<ul style="list-style-type: none"> • Reduced impacts of cattle within the perennial stream and riparian area • Improved riparian vegetation • Improved aquatic and wildlife habitat
Lower Rio Grande-El Paso 13030102 Headwaters Rincon Arroyo 130301020304	Repaired breaching earthen stock tank	<ul style="list-style-type: none"> • Reduced stormwater velocity • Reduced erosion and sediment transport to the Rio Grande
Lower Rio Grande-El Paso 13030102 Faulkner Canyon Creek 130301020507	Repaired breaching earthen stock tank	<ul style="list-style-type: none"> • Reduced stormwater velocity • Reduced erosion and sediment transport to the Rio Grande



Las Cruces District Office (continued)

Watershed	Project Description	Water Quality Benefits
Lower Rio Grande- El Paso 13030102 Outlet Barbee Draw 130301020303	Project Planning	<ul style="list-style-type: none"> • Completed Engineering, Archaeological, and NEPA work for an enclosure/soil stabilization project
Jornada Draw 13030103 Lyons Draw 130301030301	Project Planning	<ul style="list-style-type: none"> • Completed Engineering, Archaeological, and NEPA work for an enclosure/soil stabilization project
Jornada Draw 13030103 Shannon Draw- Jornada Lakes 130301030103	Soil stabilization within a Cattle enclosure at two separate locations	<ul style="list-style-type: none"> • Reduced erosion and sediment transport • Improved conditions for native vegetation
Elephant Butte Reservoir 13020211 Chavez Well 130202110401	Soil stabilization within a Cattle enclosure at two separate locations	<ul style="list-style-type: none"> • Reduced erosion and sediment transport • Improved conditions for native vegetation

Rio Puerco Field Office (Albuquerque, NM)

Watershed	Project Description	Water Quality Benefits
Rio Puerco 13020204 (Arroyo de Los Pinos – Rio Puerco, 130202040202)	Earthen Dam Reconstruction and Clean-Out (5 dams).	<ul style="list-style-type: none"> • Reduce downstream sedimentation. • Restore/Improve wetland habitat. • Decrease downstream bed and bank erosion by moderation of peak flows. • Prevent upstream expansion of gully erosion. • Improve livestock distribution.



Rio Puerco Field Office (continued)

Watershed	Project Description	Water Quality Benefits
Rio Puerco 13020204 (San Pablo Canyon, 130202040105; Arroyo Jarido, 130202050402)	Cattle Exclosure Fence Maintenance and Re- construction (6 exclo- sures).	<ul style="list-style-type: none"> • Reduce impacts of cattle within the stream and riparian area. • Improve riparian vegetation. • Improve aquatic and wildlife habitat.
Arroyo Chico 13020205 (Canon Medio, 130202050601; Headwaters Arroyo Piedra Lumbre, 130202050603; Arroyo Seccion, 130202050702; Arroyo Chico – Torreon Wash, 130202050705)	Earthen Dam Recon- struction and Clean-Out (15 dams).	<ul style="list-style-type: none"> • Reduce downstream sedimentation. • Restore/Improve wetland habitat. • Decrease downstream bed and bank erosion by moderation of peak flows. • Prevent upstream expansion of gully erosion. • Improve livestock distribution.
North Plains 13020206 (Headwaters Cebolla Creek, 130202060501)	Ponderosa and Ju- niper Thinning with Lop-and-Scatter Slash Treatment. (815 acres treated).	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease sheet, rill, and gully erosion.
North Plains 13020206 (Outlet Ce- bolla Creek, 130202060501)	Maintain and Improve Check Dams (10 structures).	<ul style="list-style-type: none"> • Aggrade incised channels by trapping and storing sediment. • Increase bed and bank water storage. • Increase bed and bank riparian vegetation. • Stabilize stream banks to reduce erosion.

Roswell Field Office

The BLM Roswell Field Office has undertaken several activities such as water resources, riparian, fisheries and wildlife, and fire and fuels work to reduce nonpoint source pollution. The fuels treatments, watershed treatments, and stream and riparian treatments were completed with the help of our partners the Upper



Hondo Soil Water Conservation District and the Chaves Soil Water Conservation District through assistance agreements.

Fuels and Fire Program:

Thinning of 558 acres of Pinyon and Juniper on Fort Stanton Snowy River Cave National Conservation to increase herbaceous ground cover, decrease erosion, and improve watershed health and function.

Prescribed burn of 1330 acres Pinyon and Juniper on Fort Stanton Snowy River Cave National Conservation area to decrease risk of extreme wildfire and associated erosion.

Watershed:

Chemical treatment of 90 acres of thistles on Fort Stanton Snowy River Cave NCA on Salado Creek and uplands. Chemical treatment of 107 acres of saltcedar, Russian Olive, and Siberian Elm on Fort Stanton Snowy River Cave NCA and the Rio Bonito Acquired Lands Tracts 2, 3, and 4 on the Rio Bonito and uplands to decrease erosion, increase herbaceous ground cover and improve aquatic and riparian habitat.

Chemical treatments on 24,000 acres of mesquite and Chemical Treatments on 600 acres of African Rue on uplands on BLM public land in Chaves County to decrease erosion and increase herbaceous ground cover.

Chemical Treatments on 400 acres of saltcedar on uplands on the Pecos River and the BLM Overflow Wetlands to decrease erosion and increase herbaceous ground cover.

Stream/Riparian/Fisheries/Water Resources:

Chemical Treatment of saltcedar on 2 miles of stream and riparian treatment of the Pecos River and Overflow Wetlands to decrease erosion, increase herbaceous ground cover and improve aquatic and riparian habitat.



Planting day on Rio Bonito.

Chemical treatment of saltcedar, Russian Olive and Siberian Elm on 9 miles of stream/riparian miles of the Rio Bonito on the Fort Stanton Snowy River Cave National Conservation Area to decrease erosion, increase herbaceous ground cover and improve aquatic and riparian habitat.



Plantings of cut coyote willow whips on one mile of the Rio Bonito on the Rio Bonito Acquired Lands to stabilize streambanks and decrease erosion.

Roswell Field Office staff with the help of Girl Scouts Troop members and volunteers planting cut live willow whips on the Rio Bonito on the Rio Bonito Acquired Lands for BLM National Public Lands Day.



Performed Proper Functioning Condition inventory and water quality inventory on 2 acres of wetland and spring acres on Comanche Spring and Garnsey Spring and inventory of 4 miles of stream/riparian miles

Photo left; A Proper Functioning Condition Inventory Lentic site at Comanche Spring.

on the Pecos River. The springs and the Pecos River were determined to be functioning properly. A river that is functioning properly will improve floodwater retention, improve groundwater recharge, capture sediments and aid floodplain development, develop root masses that stabilize streambanks against erosion, and dissipate stream energy associated high waterflow, which reduces erosion and improves water quality.

Constructed and installed 9 check dams on upland ephemeral streams on the Fort Stanton



Photo below; A Proper Functioning Condition Inventory Lotic



Installing Check Dams on upland Drainages, Headcuts, and Gullies on Fort Stanton Snowy River Cave National Conservation Area.

Snowy River Cave NCA to stabilize headcuts and gullies and to decrease erosion and nonpoint pollution, and silt and sedimentation to the Rio Bonito with Pecos District BLM operations staff.

Performed dam maintenance on 300 feet of Govt Spring Irrigation dam and mechanically removed and chemically treated invasive woody vegetation such as saltcedar to reduce flooding, decrease erosion, and increase herbaceous ground cover, and improve aquatic and fisheries habitat.

Water Quality:

The Water Resources, Riparian and Fisheries program monitors water quality of rivers and springs which includes water temperature, pH, conductivity, total dissolved solids, dissolved oxygen, salinity, water levels and water flow measurements.



Taos Field Office

The BLM Taos Field Office conducted multiple activities that reduce nonpoint source pollution in fiscal year 2020 including fire, forestry, fisheries and wildlife, and water resources.

Terrestrial AIM

The Terrestrial Assessment, Inventory, and Monitoring (AIM) program at the Bureau of Land Management Taos Field Office began in 2014. The AIM program uses standardized protocols and a statistically valid sample design to collect quantitative data on land health and natural resources on public lands across the nation. Data is used to help inform land management decisions on the local, regional, and national levels.

During the 2020 field season, 85 AIM plots were sampled on BLM lands in the Taos Field Office area. Additional plots were established this year in long-term pollinator collection plots to supplement ongoing research on native bees as well as in the Rio San Antonio and Cerro del Yuta Wilderness areas as part of monitoring efforts for the Dingell Act.

Since the program's implementation, a total of 496 AIM plots have been completed in the Taos Field Office including 319 plots in the Rio Grande del Norte National Monument. Over 100 AIM plots have been established in past and potential vegetation treat-



Terrestrial AIM crew members about to dig a soil pit for characterization and ecological site.



ment areas to monitor land health in response to different treatment techniques. The 2020 field season marks the end of a five-year sampling period. Beginning in 2021, established plots will be revisited annually to measure trends in land health, natural resource conditions, and responses to management over time. More information about the AIM program including both terrestrial and aquatic can be found at: <https://aim.landscapetoolbox.org/>.

Forestry and Fire Program:

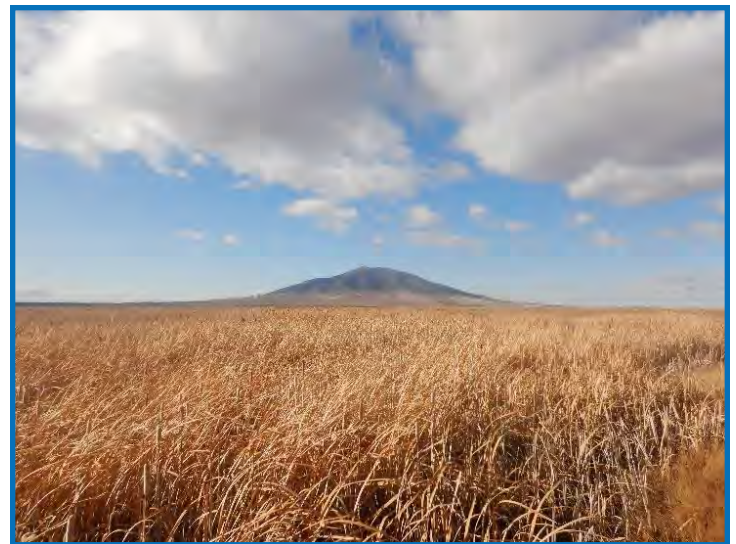
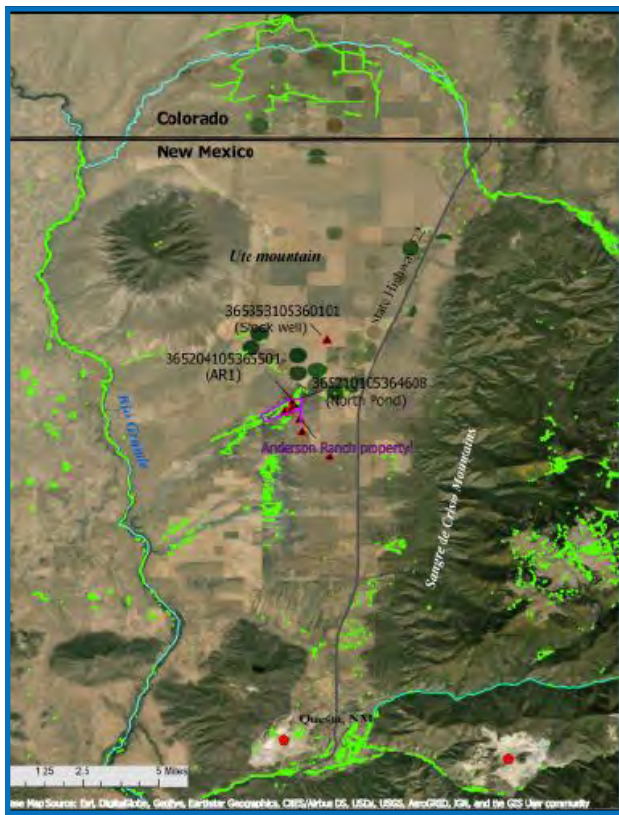
In 2020 the Fire/Forestry programs completed 55 acres of thinning. Five of those acres were within the RGDNNM and were the last acres to be completed in a CFRP project on the southern reaches of Cerro de la Olla (picture on right). The other 50 acres were completed in the rugged terrain near Chamisal and done as fuels mitigation.



Aquatic Habitat Management and Wildlife:

Anderson Ranch Wetlands Study

The Anderson Ranch property and study area, located in Taos county, north-central New Mexico, was transferred from Chevron Mining, Inc. (CMI) to the Bureau of Land Management (BLM) as part of the Natural Resource Damage Assessment Restoration (NRDAR) court-ordered settlement. The study area supports both freshwater emergent wetlands and freshwater ponds and is an important wetland in mitigating non-point source pollution. The settlement states that CMI will provide the land and a monetary settlement to support the restoration of the wetlands on the property.



To best manage the study area, the BLM requires an understanding of potential effects of climate variability and groundwater withdrawals to the wetland function. This study provides an initial hydrologic characterization of the study area, which included collection of groundwater-level and aqueous-chemistry data, completion of a vegetation survey, literature review, and data analysis. The data compiled, collected, and analyzed as part of this study indicate

that the wetlands within the study area are groundwater fed and that the water maintaining the wetlands is modern. Surface-water levels in the pond and groundwater levels in the surrounding wetland fluctuate seasonally. The hydraulic gradient in the study area is from northeast to southwest.

Evapotranspiration is a main driver of water demand within the study area. Thirty species of vegetation were identified in the August 2016 vegetation survey performed in the study area and there was a greater coverage of hydrophytes than non-hydrophytes.

Water Quality

In 2020 the fisheries, riparian and water resources program monitored water quality including pH, turbidity, water temperature, conductivity, total dissolved solids, dissolved oxygen, phosphorus, and salinity. Water



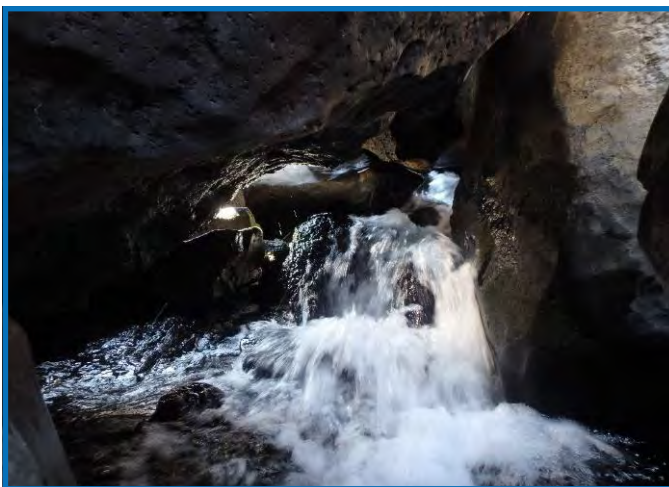
quality is tested at eleven sites starting at the Colorado State line to Velarde including six sites along the Rio Grande, two sites on the Rio Embudo, one site on each of the Rio Pueblo de Taos, Rio Hondo, and Red River. The parameters are important to determine if there are increases in non-point source pollution as well as aquatic ecological health.

Thermographs

Thermographs are deployed at 15 sites including Agua Caliente, Rio San Antonio, Rio de las Trampas, Mora River, Santa Fe River, Santa Cruz River, five sites on the Rio Grande, two sites on the Chama, and two sites on the Rio Embudo. Thermographs are important to monitor for potential non-point source pollution that can contribute to higher temperatures such as erosion, runoff, deforestation and other man-made influences. Previously the thermographs recorded water temperature every hour throughout the year to monitor temperature changes in our waterways. Starting in 2021 the thermographs will collect data every 15 minutes to align with NMED data collection.

Springs and Seeps Inventory and Surveys

The fisheries, riparian and water resources program surveyed 46 springs and seeps in 2020 including mapping locations, computing area, flow rate, microhabitat characteristics, geomorphology, water quality, riparian flora and cover, invertebrates, and vertebrates. Proper functioning condition of springs and seeps are important to control erosion and filter pollutants, improving water quality; filter sediment and aid floodplain development; and improve floodwater retention and ground water recharge. Information on springs and seeps can be found at <https://springsdata.org/>.



Two springs along the Rio Grande.



Proper Functioning Condition Analysis

The Taos Field Office Aquatic Resource Management team completed three proper functioning condition surveys that included 5 miles of the Rio Embudo upper and lower canyon sections and the Rio Trampas. All three were determined to be in proper functioning condition.



Proper functioning condition (PFC) Analysis Rio Embudo Canyon



