

CLEARING THE WATERS

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<https://www.env.nm.gov/swqb/Newsletters/index.html>

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Section 319 Projects

Three New Planning Projects Underway!

The **Watershed Protection Section** and cooperators started three new watershed-based planning projects in September, to be funded under **Section 319 of the Clean Water Act**. These projects were identified through a Request for Proposals. Here is a summary of each:

Watershed-Based Plan for the Upper Rio Grande Watershed Comanche Creek Subwatershed



The Comanche Creek Working Group, led by the Quivira Coalition, has been implementing a variety of restoration projects and planning efforts in the Comanche Creek watershed for more than a decade. These efforts helped Comanche Creek meet its water quality standard for sediment, and gained recognition as one of only six Nonpoint Source Success Stories in New Mexico, as documented at <https://www.epa.gov/polluted-runoff-nonpoint-source-pollution/nonpoint-source-success-stories>. Despite this success, Comanche Creek still does not meet its water quality standard for temperature. This project will allow the Comanche Creek Working Group to analyze possible future projects for their potential to meet this remaining challenge.

Rio de las Vacas Watershed-Based Plan

The Rio de las Vacas is a major tributary of the Rio Guadalupe, which in turn is a major tributary of the Jemez River. With a watershed of 122 square miles primarily on the Cuba Ranger District of the Santa Fe National Forest, this stream drains the San Pedro Parks Wilderness in the



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Nacimiento Mountains before passing through interesting valley reaches favored by fly fishers, interspersed with private land. The Rio de las Vacas downstream of Clear Creek is impaired by excessive temperature and nutrients, and the Rito de las Palomas and Rito Peñas Negras (two principal tributaries) have these impairments plus too much suspended or bedded sediment. In this project, the WildEarth Guardians will work with Santa Fe National Forest staff and private landowners to plan solutions to these problems.

Upper Pecos Watershed-Based Plan Update and Revision Project

The *Upper Pecos Watershed Protection and Restoration Plan* (available at www.env.nm.gov/swqb/wps/WBP/Accepted) was completed in 2012, about a year before the Tres Lagunas and Jaroso Fires swept portions of the watershed. This project will update the WBP to reflect new hydrologic conditions in Holy



Ghost Creek, Soldier Creek, upper Cow Creek, and the Pecos River below its confluence with Holy Ghost Creek. Based on this information, restoration projects and other on-the-ground projects designed to improve water quality will be developed and prioritized for the watershed.

For a complete list of current and recent Section 319 and River Stewardship projects, with links to detailed information for each, please visit:

www.env.nm.gov/swqb/wps/documents/NMED_319_and_RSP_Project_List.pdf

Watershed-based planning is the main approach for identifying solutions to nonpoint source pollution problems in New Mexico. To learn more about watershed-based planning, visit:

www.env.nm.gov/swqb/wps/WBP

Project Spotlight

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

By: **Karen Menetrey**, Environmental Scientist/
Specialist - Watershed Protection Section
New Mexico Environment Department

The goals of this project were to survey, restore, and protect 94 acres of degraded slope wetlands in the Grassy and Springwagon sub-watersheds of the **Comanche Creek Watershed**, Carson National Forest (CNF) in Taos County, New Mexico. The restoration was designed to test innovative techniques for protecting and restoring slope wetlands in New Mexico and to share the results with other potential users.



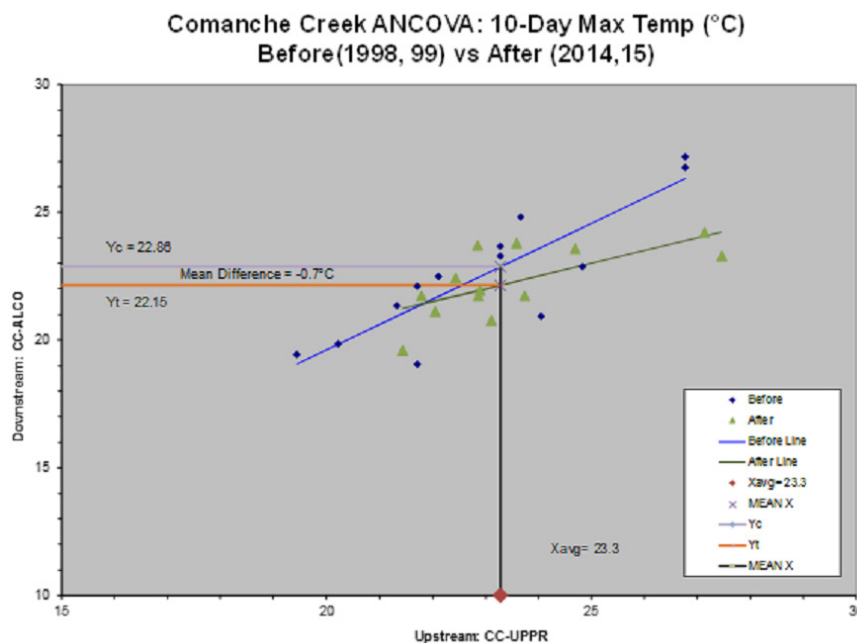
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What are Slope Wetlands?

Slope wetlands are found throughout the mountainous regions of New Mexico, typically on sloping land where there is a discharge of ground water to the land surface. Elevation gradients may range from steep hillsides to slight slopes. Surface water flow occurs as sheet flow rather than in developed stream channels. In headwaters slope wetlands, water is captured and stored in the soil where it remains cold and is slowly released downslope as stream base flow. The vegetation in slope wetlands dissipates water energy and helps reduce downstream erosion.

The Comanche Creek Watershed is highly valued for its majestic views and recreational opportunities, such as hiking, camping, fishing, and hunting. Comanche Creek and its tributaries are designated as Outstanding National Resource Waters. Comanche Creek is a host to native Rio Grande Cutthroat Trout, but the water temperature is not optimal for these fish to thrive. Comanche Creek is listed as impaired for temperature on the Clean Water Act (CWA) Section §303(d) list of impaired waters. See the story below for information on temperature trends.

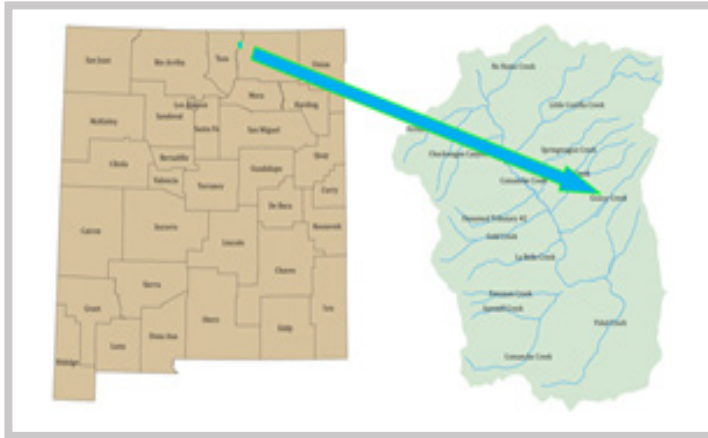
Comanche Creek gained recognition in 2013 as a water quality success story, for improvements in sedimentation and channel morphology (See the Summer 2013 issue of Clearing the Waters: www.env.nm.gov/swqb/documents/swqbdocs/WPS/CTW/ClearingTheWaters-Summer2013.pdf). Additionally, past projects reduced temperatures in Comanche Creek. An analysis of covariance (ANCOVA) compares the relationship of stations upstream and downstream of the project reach, before and after the work was conducted, in order to isolate the effects of restoration. The projects reduced stream temperature by an average of 0.7 °C in the middle reach from Holman Creek to Little Costilla Creek, with greater effect in the higher temperature range. Although temperature has decreased, Comanche Creek does not yet meet the standard for the high quality cold water aquatic life use, which has an upper limit of 23 °C. SWQB will continue to monitor temperature on Comanche Creek to account for the lag time of vegetation growth and to capture the effect of recent and future stream and wetland restoration projects.



ANCOVA results show that restoration projects on Comanche Creek have decreased stream temperature.

Provided by: Daniel Guevara, Environmental Scientist, NMED

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Comanche Creek project area in the Valle Vidal Unit of the Carson National Forest in Northern New Mexico.

The Comanche Creek Watershed is typical of many areas that have experienced intensive historical use of the landscape, including clear-cut timber harvesting, heavy livestock grazing, and mineral extraction. These activities resulted in the creation of numerous inadequately constructed and maintained roads, overgrazed grasslands, depleted vegetation in riparian zones, eroding stream banks and headcuts throughout the watershed. The results of these land use practices led to an increased erosive tendency of the land. Many of the slope wetlands had become channelized with small gullies that lowered the water table and desiccated the wetlands.

The NMED Wetlands Program worked with the Quivira Coalition and several subcontractors to characterize and restore slope wetlands. Five slope wetland areas in Northern New Mexico were surveyed. Data collected included relevant data to characterize slope wetlands hydrology, topography, soils, vegetation, and geomorphology. Common stressors that cause slope wetland decline were documented. From this characterization, novel restoration and design techniques were devised and tested in Grassy Creek. Similar companion restoration work was done in nearby Springwagon Creek to provide grant match using state restoration funds and volunteer labor. Restoration structures were made from natural materials available in the area: rocks, logs, branches, sod dug on-site, and soil excavated by hand shovel or heavy machinery.



Grassy Creek (left) and Springwagon Creek (right). Volunteers building log step fall structures to arrest erosion in headcuts, preventing the slope wetlands upstream from drying. The crew boss of each crew is wearing an orange vest.

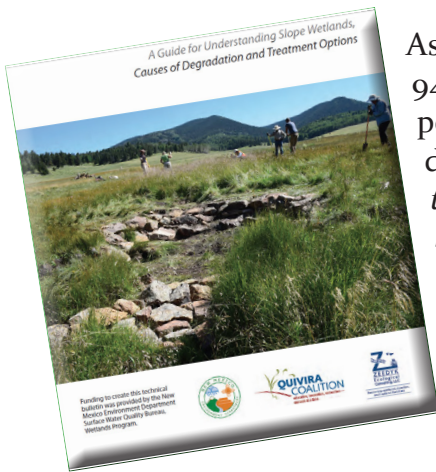
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The characterization, restoration techniques and monitoring results were shared through annual meetings of the Comanche Creek Working Group and a one-day wetland Quivira Coalition (2014) conference workshop dedicated to wetlands restoration and monitoring. A *Wetland Action Plan - Comanche Creek Watershed* was developed that maps existing wetlands for the entire watershed, describes stressors, describes shared restoration/protection efforts, prioritizes restoration sites, and lists potential funding sources (https://www.env.nm.gov/swqb/Wetlands/WAP/WAP_Comanche_Creek.pdf).



Grassy Creek. Log-rock rundown structure (left), and log step fall structure (right) in 2016, two years after installation.



As a result of this project, five wetlands in the watershed were characterized, 94 acres of slope wetland were restored in Grassy and Springwagon creeks, 187 people attended the *Collaborative Wetland Restoration in the Southwest* one-day workshop, and 600 copies of a technical bulletin entitled *Characterization and Restoration of Slope Wetlands in New Mexico: A Guide for Understanding Slope Wetlands, Causes of Degradation and Treatment Options* were distributed (<https://www.env.nm.gov/swqb/Wetlands/TechnicalGuides/02/SlopeWetlandTechnicalGuide02.pdf>). Conceptual designs for treatment are included in this publication.

Over four years, 147 people volunteered for weekend workshops, resulting in the installation of hundreds of small restoration structures in Grassy and

Springwagon Creeks. These structures have a variety of interesting names and functions: worm ditches, plug and pond structures, flow splitter structures (media lunas and log flow splitters) and burrito dams to spread surface water out over the valleys; one rock dams, log mats and tree mats to raise the bed of incised channels; sod plugs and rock channel liners to restore sheet flow; and Zuni bowls, log step falls, and rundowns (made of either rock, logs, or both) to halt the progression of headcuts. In many cases a combination of structures was constructed in series for the most effective treatment.

Photo on right: Volunteers digging sod for sod plugs and for chinking in stepfall structures and Zuni bowls.



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As the land manager of the Valle Vidal, the US Forest Service has been a critical partner in the success of the project. Carson National Forest managers and staff were very involved and supportive of the restoration work, from completing necessary permitting requirements, to purchasing and staging materials, to constructing the treatments along with the subcontractors and volunteers. Another key factor to project success has been the support of the Valle Vidal Grazing Association, which recognizes the restoration work as beneficial because it increases forage capacity. The grazing association participated in the volunteer workshops, built fencing to exclude cattle from sensitive wetland areas, and is managing cattle grazing in a manner that protects the project.



Springwagon Creek. A large headcut that was treated with a log stepfall structure. The photos were taken before and immediately after construction in 2016.

The ecological value of this project lies not only in the 94 acres of slope wetlands that were restored, but also in the replicability of this type of work at other locations. There are many slope wetlands in New Mexico that can be restored with the same techniques.

Acknowledgements

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EVENTS & ANNOUNCEMENTS

January

Now - January 5th - Various locations statewide. Join Audubon for the NM Christmas Bird Count. Groups of bird-watchers will be counting every bird they see or hear! As participants in the Audubon Christmas Bird Count, they will be a part of the more than 70,000 counters at more than 2,300 locations stretching from the Arctic Circle to the tip of South America. Since 1900, the Christmas Bird Count (CBC) has provided scientists with critical data about bird populations in the Americas. Visit the Audubon website for more information and to view the schedule. <http://nm.audubon.org/nm-christmas-bird-count>

January 12th - Albuquerque. New Mexico Water Dialogue invites you to The Dialogue's 23rd Annual Statewide Meeting - Toward a More Relevant State Water Plan. 8:00 AM - 4:30 PM (Mountain Time). Indian Pueblo Cultural Center, 2401 12th St NW, Albuquerque, New Mexico. To register and more details please visit: <https://www.regonline.com/builder/site/?eventid=1877604>

January 21st - Bear Canyon at Sabino Canyon Recreation Area, (Tucson) Arizona. Join Sky Island Alliance for Beat Back Buffelgrass Day 2017. 9:00 am - 3:00 pm. This project is rated as moderately strenuous; we will be digging out invasive grasses along the creek along beautiful Bear Canyon. The work will include bending and walking on uneven surfaces, and potentially walking through water. See the Sky Island Alliance website for more details: <http://www.skyislandalliance.org/calendar/>

January 31st - Proposal Deadline. National Fish and Wildlife Foundation Five Star and Urban Waters Restoration Program seeks to develop nation-wide-community stewardship of local natural resources, preserving these resources for future generations and enhancing habitat for local wildlife. Projects seek to address water quality issues in priority watersheds, such as erosion due to unstable streambanks, pollution from stormwater runoff, and degraded shorelines caused by development. For more information please visit: <http://www.nfwf.org/fivestar/Pages/home.aspx>

February

February 23rd & 24th - Albuquerque. Land & Water Summit 2017 - Growing Community Relationships: Just Add Water! Xeriscape Council of New Mexico. For further details and agenda visit: <http://www.xeriscapenm.com/>. Additionally there will be a Pre-Summit Arid Low Impact Development and Green Infrastructure Tour on Wednesday February 22nd. The tour will start in Bernalillo and Santa Ana Pueblo and head south through Rio Rancho into the North Valley of Albuquerque. Visit: <http://www.xeriscapenm.com/low-impact-development/>

If you have a related event that you would like distributed, please send an email to susan.ossim@state.nm.us