

CLEARING THE WATERS

A quarterly newsletter by the Surface Water Quality Bureau

Volume 20, No. 4

Winter 2015

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This newsletter is published quarterly by the New Mexico Environment Department's Surface Water Quality Bureau. Funding is provided by a Clean Water Act (CWA) §319(h) grant from the EPA.

Project Spotlight

Restoring Playas in the Southern High Plains of New Mexico

By Maryann McGraw, SWQB Wetlands Program Coordinator



An important goal of the Surface Water Quality Bureau's Wetlands Program is to target vulnerable isolated wetlands for restoration and protection. Playas of the Southern High Plains are unique freshwater wetlands situated in the Llano Estacado in eastern New Mexico. Each playa exists within its own unique watershed with the playa situated at the lowest (receiving) point. Playas are the principal form of surface water in the area, and also serve as the only significant source of recharge to the Ogallala Aquifer.

Playas are integral for many animal species, and are important resting, feeding and nesting habitat for migratory birds along the Central Flyway as well as resident birds.

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NMED Surface Water Quality Bureau
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These waters provide oasis-like wintering habitat for the Northern Pintail (*Anas acuta*), which is considered a highest priority waterfowl species according to the North American Waterfowl Management Plan and for 15 priority species of shorebirds listed in the US Shorebird Conservation Plan for Central Plains/ Playa Lakes. The Southern High Plains Playas are included in the areas of greatest continental significance to North American ducks, geese and swans. The playas also provide habitat, forage and cover for terrestrial vertebrates and invertebrates adapted to their seasonal and variable wetland conditions.

Playas in the Southern High Plains of New Mexico are imperiled from a variety of stressors, including excessive nutrient loading and sedimentation from cultivation and overgrazing, invasion of exotic species and noxious weeds, hydrologic alteration from various sources and various contaminants that filter into the Ogallala Aquifer below. Poorly placed and planned roads are a common and significant threat to playas. Rural and urban playas face different threats and impairments. Development, hydrologic alteration and excessive stormwater runoff and contaminants threaten playas in urban areas.

Road placement and design, and stormwater planning and management are identified as areas for improvement that can provide significant benefits to playas and protect them from further degradation. Because of their unique setting, playas protection, restoration and management must acknowledge the effects of land management practices within the entire playa watershed. For example, playas with cropland watersheds are characterized by considerably more sedimentation than those with grassland watersheds.

As a demonstration of playa restoration methods, NMED Wetlands Program and their contractors developed a project at a large playa in Curry County in cooperation with the private landowner. The Woods Playa is a 124.4-acre playa that was impacted by an unpaved county road leading to a low water crossing adjacent to the playa. The watershed draw that entered the playa began on an adjacent property, crossed at the low water crossing, and ended in the playa bottom. Concentrated runoff from the county road caused increased erosion and sedimentation to the playa at the low water crossing. This erosional feature was also channelized creating a straightened ditch that held the surface runoff and deposited sediment in an alluvial fan in the playa.



Road runoff and sediment entered the playa through a ditch running from a low water crossing straight to the playa.

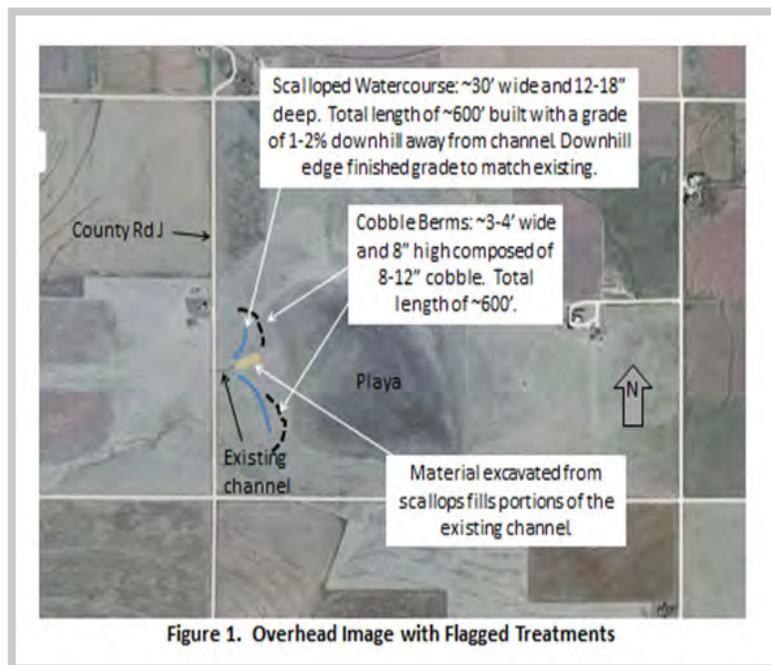
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The ditch and sediment plume restricted the flow of water to the playa bottom and held surface water in the ditch for an increased period of time. Reineke Construction, in partnership with Zeedyk Ecological Consulting, were contracted to develop a demonstration restoration design and implement an innovative technique to address the excess sediment in the playa and the restriction of surface water input to the playa, minimizing the amount of surface water held in the ditch while not impacting the County Road low water crossing.

The demonstration design and treatment for the road impact included measures to disperse flow from the low water crossing restoring an alluvial fan. A spreading, scalloped watercourse and cobble berm (media luna structure) were constructed in order to provide an appropriate sediment dispersion function, thus protecting the playa from further sediment deposition. The purpose of the scalloped watercourse is to direct the flow of water towards areas that can collect and retain sediment deposition over time, before the sediment reaches the playa. The purpose of the cobble berm is to catch and slow runoff before it reaches the playa, allowing sediments to settle out. The cobble berm structure serves as a porous, stable, non-erodible medium that will encourage plant growth while enhancing filtration, sediment deposition, and retention. Sediment retention will be enhanced by increased plant growth resulting from increased soil moisture across the affected area.

Total watercourse length was approximately 600 linear feet with approximately 400 linear feet angling south of the existing channel and 200 linear feet angling north of the existing channel. Due to the gradual southward slope of the terrain, the southern fan is larger, more extensive, and has greater capacity to hold sediment load. The scalloped watercourses were installed at a 1 - 2% gradient toward the playa. Near the end, the gradient of the watercourses tapers onto the existing flood plain. The downhill edge of the scalloped watercourse was finished flush with existing grade to promote flow dispersal along the watercourse. Material excavated from the watercourse was used to backfill the existing channel to a depth of 1 - 2 feet above surrounding grade, thus further preventing flow directly to the playa.



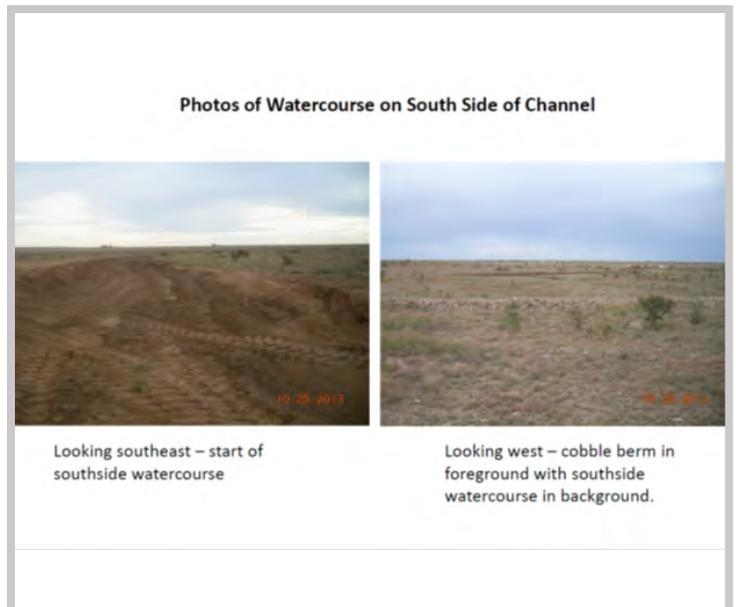
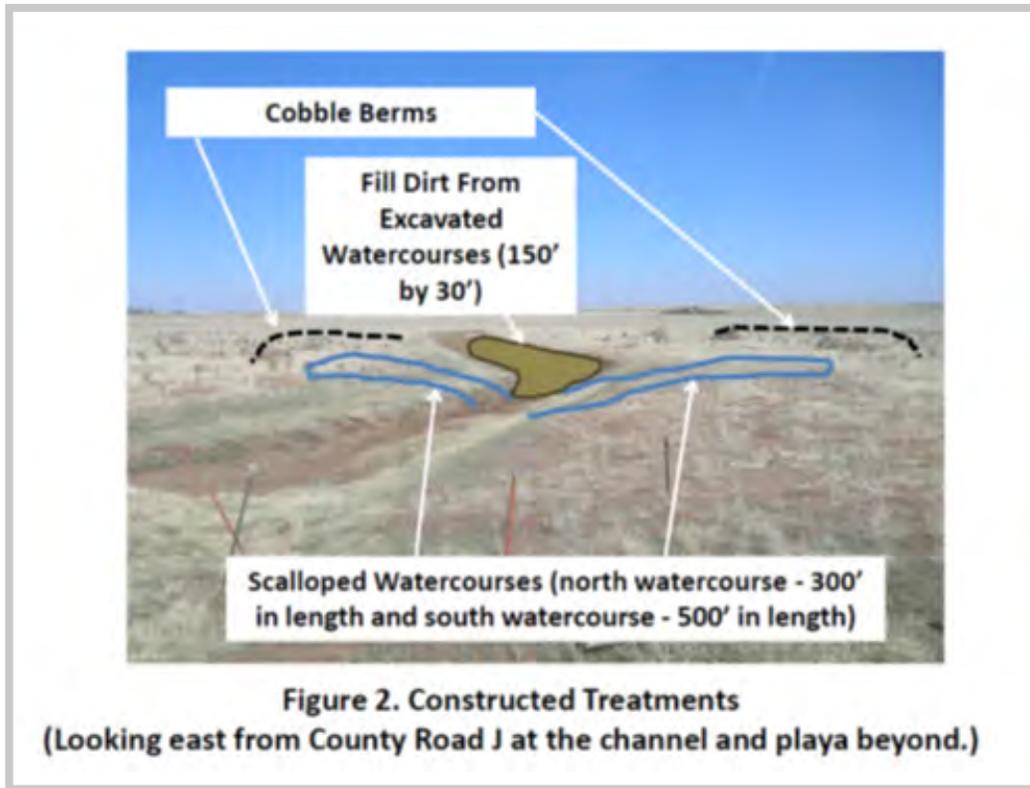
The design also utilized the excess sediment in the playa as fill for the channelized ditch, leveling the ground surface of the buffer around the playa, allowing the water to flow over the buffer zone and enter the playa bottom as it would in an unaltered watershed. The cobble berm is approximately 3 - 4 feet wide by 8 inches high (1 layer composed of 8 - 12 inch cobble), and 600 - 800 feet long running along a contour line generally even with the end of the existing channel. The self-healing, propagating nature of the rock mulch structure via moisture retention and plant growth provides enhanced protection of the playa.

Design/Construction Figures are from Reineke Construction and Zeedyk Ecological Consulting

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Restoring Playas *continued from page 3*

Ground surface levels and photos of the area were taken before, during, and after restoration implementation by the contractor. Permanent surface level and photo point monitoring points were installed for future monitoring of the project area. Design and post-construction photos follow.



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An effective protective buffer around a playa is at minimum, 50 ft. of natural native grassland. Additional measures to protect the Woods Playa included an upland livestock watering facility with solar panels and well pump. The entire pasture around the playa was fenced to exclude livestock from the playa and playa buffer during appropriate times. The pasture was deferred from grazing and placed into a 10-year Natural Resources Conservation Service Conservation Plan focusing on playa protection.

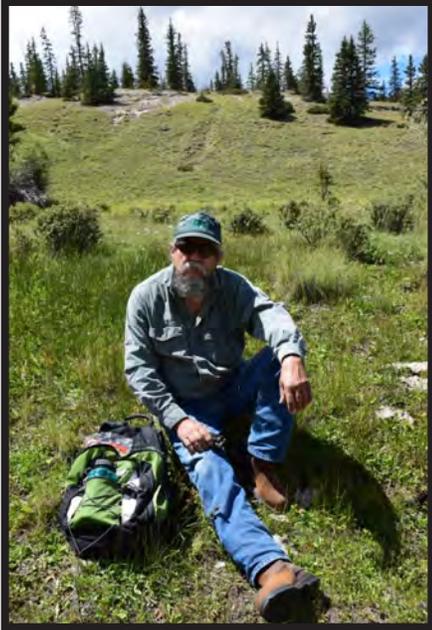
Examination of aerial images shows an extensive area of accelerated erosion in the upper Woods Playa watershed in adjacent lands. Full and long term restoration of the playa would include treatment actions upstream (west) of County Road J to improve erosion control and minimize sediment contributions.

Because of surrounding land use and human activities, active playa management is essential for maintaining and improving natural playa functions, critical wetland habitat, and recharge to the Ogallala aquifer. Most impacts cross landowner property boundaries. So fixing impairment problems on one property may not address the problem at its source. Landowners, counties, conservationists, agencies and others must work together as a watershed group for the benefit of all within the playa watershed. Improved management will create habitat, food and cover for dabbling ducks, migrant shorebirds and water-dependent land birds. The protection and restoration of the playa watershed will help landowners sustainably use playa resources and at the same time protect their natural functions and ecological integrity, thus supporting populations of many wildlife species and maintaining natural playa plant communities.

Contact: Maryann McGraw, SWQB Wetlands Program Coordinator (Maryann.McGraw@state.nm.us) for more information. Also check out the Wetlands Action Plan for Playas in Curry County, New Mexico at <https://www.env.nm.gov/swqb/Wetlands/WAP/CurryCounty/CurryCountyWAP2014.pdf>

Watershed Protection Section Staff Changes - Santa Fe

- 2015 - WPS said goodbye to **Delbert Trujillo**



In July, we bid fond farewell to Delbert Trujillo who retired after a considerable tenure with NMED. Delbert was born and raised in northern New Mexico near Chimayo. His career in public service started with the U.S. Forest Service. He subsequently landed a position with the NM Department of Transportation as a reclamation specialist responsible for maintaining and operating a mulcher and other equipment used to remediate DOT construction sites. In the early 90's, Delbert transitioned to the newly established New Mexico Environment Department WPS. He worked primarily on highway construction surface reclamation, transitioning more to rangeland improvement projects. He was still maintaining the mulcher and offering training on it until around 2008. Prior to his retirement, Delbert was managing watershed based planning projects on the Rio San Antonio and Rio Nutrias, and on the ground restoration projects in the Jemez mountains.

Delbert enhanced the work of the Surface Water Quality Bureau with his insight into local natural resource issues, his humor, and his tremendous knowledge of northern New Mexico geography and culture. We all learned a lot from Delbert, and we wish him the very best in what will surely be a very active retirement.

- 2015 - WPS welcomed **Meghan Hennessey**

Meghan arrived from Earlham College in Richmond, Indiana where she received a B.S. in Biology in 2014, and was managing the college's private forest which is used for recreation, teaching, and research purposes. Meghan gained water resource experience working internationally at positions in Whanganui, New Zealand and Tiputini Biodiversity Station in Eastern Ecuador. More recently, she completed construction of a "tiny house" which she located on an agricultural cooperative near Santa Cruz, NM. We look forward to Meghan's fresh outlook on resource management and environmental stewardship. Welcome Meghan!



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Watershed Protection Section Staff Changes - Santa Fe

- 2015 - WPS said goodbye to **Shelly Barnes**

Michele (Shelly) Barnes departed the Wetlands Program in April to take a position as a Regulatory Project Manager at the U.S. Department of the Army Corps of Engineers (ACOE), Albuquerque District. Shelly was the Wetlands Project Officer for the Wetlands Program for three and a half years, and worked on such projects as “Mapping and Classification for Wetlands Protection, NE New Mexico Highlands and Plains,” “Curry County Playas Restoration and Protection,” and “Innovative Design and Restoration of Slope Wetlands in the Comanche Watershed, New Mexico.” She also worked on Best Management Practices for Outstanding National Resource Waters and the Wetlands Action Plan for the Upper Pecos Watershed.

We look forward to working with Shelly in her new capacity at the ACOE.



- 2015 - WPS welcomed **Emile Sawyer**



Emile comes to us from the Interstate Stream Commission’s Pecos Bureau where he worked for the last nine years as the Bureau’s Environmental Lead overseeing National Environmental Policy Act and Endangered Species Act projects. Projects included managing the Fort Sumner Vaughan Conservation Pipeline, Pecos River fisheries population study, CWA 404/401 permit mitigations, U.S. Fish and Wildlife Service Bitter Lake National Wildlife Refuge and the Bureau of Land Management Overflow Wetlands river restoration project teams and Black River conservation efforts.

Emile’s prior work history includes construction, forestry data collection, stream gaging, and water budget assessments using geochemistry. Emile was recently selected to be on the Santa Fe River Commission and is on the board of two non-profit entities. He loves to hike, camp, travel, dance, strum, and sing. Welcome Emile!

Watershed Planning

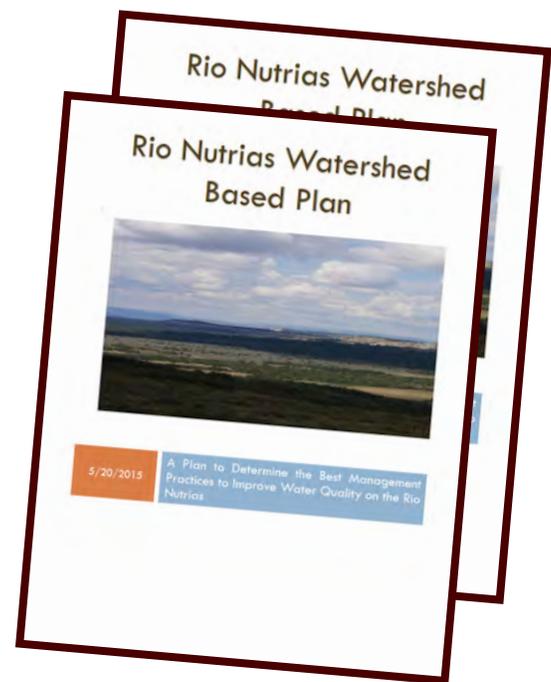
EPA Accepts Watershed-Based Plan for Rio Nutrias

By Greg Kaufman, Implementation and Restoration Team Leader

NMED and EPA have accepted a Watershed Based Plan (WBP) developed for the Rio Nutrias by Aguas Norteñas. The plan has been in development since 2013 and was completed this past June. The plan can be viewed here: <https://www.env.nm.gov/swqb/wps/WBP/Accepted/RioNutrias/index.html>.

The Rio Nutrias is located in Rio Arriba County with headwaters located southeast of Tierra Amarilla. The Nutrias flows west and is a tributary to the Rio Chama just south of El Vado reservoir. The Nutrias watershed is 106 miles in area with the impaired reach encompassing 34.63 stream miles. Most of the land in the watershed is privately owned rangeland with portions of Carson National Forest and BLM land comprising the remainder. At the headwaters, the Rio Nutrias is a high alpine stream, meandering through Ponderosa forest at approximately 10,000 feet in elevation. As it wends itself west, it drops in elevation into a sage flats ecosystem at approximately 6,500 feet. This region is marked by highly erodible soils, arroyos, and man-made impacts. The high erosion potential coupled with grazing pressure (both cattle and elk), low water crossings, and a lack of grass due to brush encroachment have contributed to the turbidity impairment that the WBP seeks to reverse.

The plan was developed with the assistance of the Cebolla/Nutrias Watershed Improvement Group. “Many of the stakeholders in the region were frustrated by a lack of communication and cooperative effort between Federal land management agencies, private land owners, and grazing permit holders,” reported Jessica Johnston, Executive Director of Aguas Norteñas and author of the WBP. Through implementation of the plan, the Improvement Group seeks to implement a variety of Best Management Practices aimed at reducing the flow of sediment into the Nutrias. These include removal of large areas of brush adjacent to the Nutrias and replanting with native grasses to stabilize soil. A number of low water road crossings will be blocked or improved to cut down on erosion. In-stream modifications to the channel to slow incising are also proposed.



The sediment loading calculations in the WBP were made using a model developed by the Pacific Southwest Inter-Agency Committee (PSIAC). PSIAC is a field tool that estimates the total amount of sediment that can be mobilized in a given area. Aguas Norteñas used PSIAC to evaluate areas within the greater Rio Nutrias watershed and will employ PSIAC again to determine the reduction in sediment loading as Best Management Practices are implemented.

To access a copy of this document please visit:

<https://www.env.nm.gov/swqb/wps/WBP/Accepted/RioNutrias/index.html>

EVENTS & ANNOUNCEMENTS

January

January 7th - NM Water Dialogue 22nd Annual Statewide Meeting. Planning: How Can It Make a Difference? 8:30 AM - 4:30 PM (Mountain). Albuquerque, Indian Pueblo Cultural Center. For more information please see: <https://www.regonline.com/builder/site/Default.aspx?EventID=1777064>

January 13th - Interstate Stream Commission Southwest Regional Water Planning Meeting. Location: Silver City. City Hall Annex, 1203 N. Hudson St., Upstairs Training Room, Silver City NM. 1-4 pm.

January 14th - Free webinar, the Springs Stewardship Institute (SSI). 10:00 - 11:00 AM MST. Springs-Dependent Species in the Southern Rockies Landscape Conservation Cooperative . This webinar will provide an update about the SSI efforts to identify and map the distribution of springs dependent species throughout the upper Colorado River basin. For more information: <https://attendee.gotowebinar.com/register/2521623636533588482>

January 27th - ASWM Member webinar. 3:30 p.m. Eastern. The Association of State Wetland Managers (ASWM) Wetlands and Nutrient Uptake will hold this webinar for its members. If you are not a member, you are invited to join. This webinar will look at the potential of wetlands for agricultural nutrient runoff in rural landscapes. <http://www.aswm.org/aswm/aswm-webinarscalls/2958-members-webinar-series>

February

February 23rd-24th - Albuquerque, NM. National Ground Water Association (NGWA) Conference on Hydrology and Water Quality in the Southwest. Explore the water resource challenges — and the potential solutions — that states in the American Southwest are facing during this two-day conference. <http://www.ngwa.org/Events-Education/conferences/Pages/5034feb16.aspx>

March



Wildland Urban Interface Summit
Re-energize
Community Fire Response
March 31 - April 2, 2016
Western New Mexico University
Silver City, New Mexico

Save the Date
March 31st – April 2nd
2016 Wildland Urban Interface
Summit
Western New Mexico University
Silver City, NM
Scholarships are available!
For more information and to register visit:
<https://www.regonline.com/2016wuisummit>

Save the DATE

May 18th - 19th - Early Bird Rate ends March 1st, The Springs Stewardship Institute (SSI). Upcoming Workshop at the Museum of Northern Arizona in Flagstaff, AZ. SSI hosts multi-day workshops to share research and instruction on the inventory and assessment protocols of springs stewardship. For more details please go to: <http://springstewardshipinstitute.org/workshops>

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