



New Mexico Environment Department

Upper Pecos River Basin Total Maximum Daily Loads

Meredith Zeigler, Assessment Coordinator

September 3, 2026





Agenda

- Introductions
- Monitoring and Assessment Overview
- Total Maximum Daily Load (TMDL) Overview
- Upper Pecos River Basin TMDLs
- Question and Answer plus Discussion



Introductions

- Meredith Zeigler, Assessment Coordinator
- Heidi Henderson, TMDL and Assessment Team Supervisor
- Avery Simpson, TMDL Writer
- Miguel Montoya, Monitoring Team Supervisor
- Jason Martinez, Permits & Certifications Team Supervisor
- Dan Guevara, Nonpoint Source Effectiveness Monitoring
- Other NMED-SWQB staff
- Stakeholders

A woman with blonde hair, wearing a camouflage cap, sunglasses, and waders, stands in a shallow stream. She is smiling and holding a small, dark object in her hands. The stream is surrounded by dry grass and rocks. A white measuring tape is visible on the ground in the foreground.

MONITORING & ASSESSMENT OVERVIEW



Federal Clean Water Act (CWA)

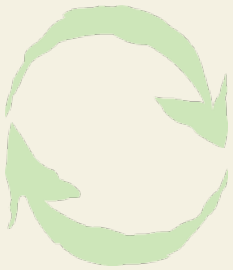
- The purpose of the CWA is to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters” in order to reach a level of water quality that “provides for the protection and propagation of fish, shellfish, and wildlife, and provides for recreation in and on the water.” 33 U.S.C. § 1251(a).
- Section 303(d) of the CWA requires states to develop TMDLs. *See also* NMSA 1978, § 74-6-4(B).





Framework for Restoring Polluted Waters

Problem Identification



Problem Solving

Develop Water Quality Standards

Monitor and Assess Waterbodies

List Impaired Waters (303d list)

Develop TMDL

**Issue/Revise
Point Source Permits**

National Pollutant Discharge
Elimination System (NPDES)

**Minimize
Non-Point Sources**

Best Management Practices (BMPs)



Monitoring Surface Water Quality



Biological

- *Escherichia coli* (*E. coli*)
- Fish Assemblages
- Insect Assemblages

Chemical

- pH, DO, SC
- Ions, metals, organics
- Nutrients

Physical

- Channel morphology, substrate
- Flow measurements
- Temperature



Assessment of Water Quality Data

- How SWQB use monitoring data:
 - The Comprehensive Assessment and Listing Methodology (CALM) details the process used to determine if designated uses are being met
 - The CALM is reviewed and revised as needed every odd-numbered year
 - All submitted data that meet SWQB QA/QC quality requirements are assessed
- Information about data submittal:
www.env.nm.gov/surface-water-quality/data-submittals/



CWA 303(d)/305(b) Reporting

When a water body meets water quality standards:

- It is listed as Fully Supporting on 303(d)/305(b) List
- It is delisted, if previously listed as impaired

When a water body does not meet water quality standards:

The impairment is added or remains on the 303(d)/305(b) List, and SWQB:

- Collects additional data as needed to confirm
- Prioritizes TMDL (or Advance Restoration Plan) development
- Reviews and revises water quality standards if warranted



TMDL Overview



Total Maximum Daily Loads (TMDL)

- A **TMDL** is the maximum amount of a pollutant that can enter a stream without causing an impairment (exceedance of the water quality standard).



- **TMDL** = WQS x Critical Flow x CF
 - **WQS** = Water Quality Standard
 - **Critical Flow** = Low-flow critical condition for receiving-water flow
 - **CF** = conversion factor to a daily load



Total Maximum Daily Loads (TMDL)

A TMDL document is a water quality plan that establishes specific goals to meet water quality standards and includes*:

- Pollution reduction estimates; and
- Information and suggestions leading to the development of Watershed Based Plans which discuss control measures to protect the chemical, physical, and biological integrity of the waterbody.

*Per 40 CFR Part 30 and EPA Guidelines for Reviewing TMDLs Under Existing Regulations Issued in 1992



TMDL Allocations

$$\text{TMDL} = \text{LA} + \text{WLA} + \text{MOS}$$

(MOS is a margin of safety to account for uncertainty)

Load Allocation (LA) is pollution from any non-discrete source and is addressed through BMPs.



Waste Load Allocation (WLA) is pollution from a known, confined source and is controlled through NPDES permits.





Draft TMDL Review Process

- Reviewed by SWQB and EPA Region 6 staff prior to release of the public comment draft
- Released for a 30-day public comment period
- Stakeholders are notified of the draft TMDL and public meeting via GovDelivery (email list)
- SWQB hosts a public meeting
- Stakeholders can submit written comments
- SWQB responds to written comments in the Response to Comments appendix of the Final Draft TMDL





Final TMDL Approval Process

- Final Draft TMDL be presented to the New Mexico Water Quality Control Commission (WQCC)
- The WQCC-approved TMDL is incorporated into the NM Water Quality Management Plan and submitted to EPA Region 6 for final approval
- The EPA-approved TMDL is then posted to the SWQB TMDL website at: www.env.nm.gov/surface-water-quality/tmdl/



UPPER PECOS RIVER TMDLS



2026 Upper Pecos River TMDLs

Total Recoverable Aluminum Impairments

Pecos River (Tecolote Creek to Villanueva State Park)

E. Coli Impairments

Gallinas River (Aguilar Creek to USGS Gage 08382000)

Pecos River (Sumner Reservoir to Santa Rosa Reservoir)

Tecolote Creek (I-25 to Blue Creek)

Pecos River (Santa Rosa Reservoir to Cow Creek)



2026 Upper Pecos River TMDLs

Plant Nutrient Impairments

El Porvenir Creek (SFNF bnd to Hollinger Canyon)

Gallinas River (Pecos Arroyo to Las Vegas Diversion)

Gallinas River (USGS Gage 08382000 to Pecos Arroyo)

Gallinas River (Aguilar Creek to USGS Gage 08382000)

Glorieta Ck (Perennial prt Pecos R to Glorieta Camps WWTP)

Pecos River (Canon de Manzanita to Alamitos Canyon)

Pecos River (Santa Rosa Reservoir to Tecolote Creek)

Pecos River (Sumner Reservoir to Santa Rosa Reservoir)

Sedimentation Impairments

Willow Creek subwatershed



2026 Upper Pecos River TMDLs

Specific Conductance Impairments

Indian Creek Subwatershed

Temperature Impairments

El Porvenir Creek (SFNF bnd to Hollinger Canyon)

Gallinas River (Aguilar Creek to USGS Gage 08382000)

Pecos River (Alamitos Canyon to Jack's Creek)

Turbidity Impairments

Pecos River (Tecolote Creek to Cow Creek)

Gallinas River (Aguilar Creek to USGS Gage 08382000)



Why is Aluminum a Concern?

Aluminum is:

- Naturally occurring and widely distributed in the earth's crust
- Occurs in environments contaminated by human activities, such as releases from coal-fired power plants



Elevated aluminum concentrations in water bodies may:

- Act as a toxic agent on gill-breathing animals such as fish
- Disturb root growth & function of plants in acidic soils



Aluminum Probable Sources

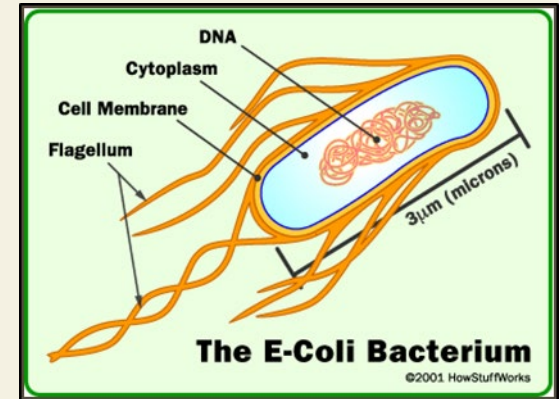
Assessment Unit	Probable Sources
Pecos River (Tecolote Creek to Villanueva State Park)	Crop production; Dams/diversion; Forest fire (Tecolote, 2010 and Hermit's Peak–Calf Canyon, 2022); Loss of riparian habitat; Other recreational pollution sources; Rangeland grazing; Roads/bridges; Rural residential area



What is *E. coli*?

***E. Coli* is:**

- Coliform bacteria are a group of organisms that are common in the environment
- Fecal coliform bacteria live in the intestines of humans and other warm-blooded animals, and may aid in the digestion of food
- The species *Escherichia coli* (*E. coli*) is used as an indicator of the presence of fecal coliforms



Why *E. Coli* is a concern:

- Fecal coliform indicates that the water has been contaminated with fecal material
- The water may be contaminated by disease-producing bacteria, viruses, or protozoans, which also exist in fecal material
- Some waterborne pathogenic diseases are typhoid fever, viral and bacterial gastroenteritis, and hepatitis A



E. Coli Probable Sources

Assessment Unit	Probable Sources
Gallinas River (Aguilar Creek to USGS Gage 08382000)	Dams/diversion; Drought; Grazing in riparian zone; Loss of riparian habitat; Low water crossing; On-site treatment systems; Rangeland grazing; Roads/bridges; Streambank modifications/destabilization
Pecos River (Santa Rosa Reservoir to Cow Creek)	Crop production; Dams/diversion; Grazing in riparian zone; Loss of riparian habitat; On-site treatment systems; Other recreational pollution sources; Rangeland grazing; Roads/bridges; Rural residential area
Pecos River (Sumner Reservoir to Santa Rosa Reservoir)	Crop production; Dams/diversion; Loss of riparian habitat; On-site treatment systems; Other recreational pollution sources; Rangeland grazing; Roads/bridges; Rural residential area; Urban high-density area
Tecolote Creek (I-25 to Blue Creek)	Channelization; Forest fire (Tecolote, 2010); Low water crossing; Rangeland grazing; Roads/bridges; Streambank modifications/destabilization; Wildlife other than waterfowl



What are Plant Nutrients?

Plant nutrients are:

- The nutrients that limit plant growth are usually nitrogen (N) and phosphorus (P)
- Dissolved oxygen (DO) is correlated with nutrient levels



Excess nutrients can cause:

- Low dissolved oxygen, light limitation, changes in species composition, and mobility obstruction
- Nuisance odors and an unsightly appearance
- Can lead to algal blooms, which can produce toxins



Nutrient Probable Sources

Assessment Unit	Probable Sources
El Porvenir Creek (SFNF bnd to Hollinger Canyon)	Roads/bridges; On-site treatment systems; Rangeland grazing; Wildlife other than waterfowl
Gallinas River (Pecos Arroyo to Las Vegas Diversion)	Dams/diversion; Inappropriate waste disposal; Other recreational pollution sources; Roads/bridges; Rural residential area; Streambank modifications/destabilization; Urban high-density area; Urban runoff/storm sewers
Gallinas River (USGS Gage 08382000 to Pecos Arroyo)	Dams/diversion; Grazing in riparian zone; Loss of riparian habitat; Municipal point source; Rangeland grazing; Roads/bridges
Gallinas River (Aguilar Creek to USGS Gage 08382000)	Dams/diversion; Grazing in riparian zone; Inappropriate waste disposal (junkyards); Loss of riparian habitat; Low water crossing; On-site treatment systems; Rangeland grazing; Roads/bridges; Streambank modifications/destabilization



Nutrient Probable Sources

Assessment Unit	Probable Sources
Glorieta Ck (Perennial prt Pecos R to Glorieta Camps WWTP)	Industrial point source discharge; Inappropriate waste disposal (junkyard); Loss of riparian habitat; Low water crossing; On-site treatment systems; Roads/bridges; Rural residential area; Wildlife other than waterfowl
Pecos River (Canon de Manzanita to Alamitos Canyon)	Forest fire (Tres Lagunas, 2013); Municipal point source; On-site treatment systems
Pecos River (Santa Rosa Reservoir to Tecolote Creek)	Dams/diversion; Forest fire (Tres Lagunas, 2013); Grazing in riparian zone; Inappropriate waste disposal; Loss of riparian habitat; On-site treatment systems; Rangeland grazing; Roads/bridges; Rural residential area; Streambank modification
Pecos River (Sumner Reservoir to Santa Rosa Reservoir)	Crop production; Dams/diversion; Loss of riparian habitat; Municipal point source; On-site treatment systems; Other recreational pollution sources; Rangeland grazing; Roads/bridges; Rural residential area; Urban high-density area



What is Sedimentation?

Sedimentation is:

- Fine sediment filling the spaces between rocks on the stream bottom

Excess sedimentation can:

- Lead to accelerated channel widening and streambank erosion
- Reduce or eliminate habitat for fish, macroinvertebrates, and algae
- Reduce habitat diversity (pools, riffles, etc.)





Sedimentation Probable Sources

Assessment Unit	Probable Sources
Willow Creek subwatershed	Mine Tailings; Off-road Vehicles; Wildlife Other Than Waterfowl



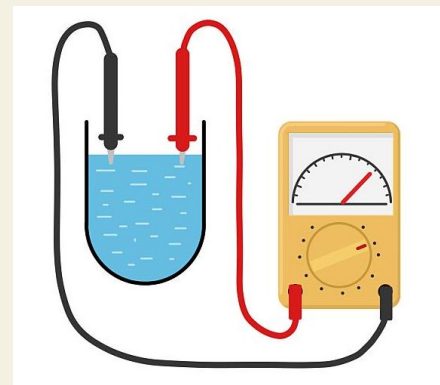
What is Specific Conductance?

Specific Conductance is:

- a measure of water's ability to carry an electrical current, standardized to a temperature of 25°C

High Specific Conductance can:

- The electrical conductivity of water is directly related to the concentration of dissolved solids.
- Streams supporting good mixed fisheries have a range between 150 and 500 $\mu\text{S}/\text{cm}$.
- Conductivity outside this range could indicate that the water is not suitable for certain species of fish or macroinvertebrates.





Specific Conductance Probable Sources

Assessment Unit	Probable Sources
Indian Creek subwatershed	Forest Fire (Tres Lagunas, 2013); Highway/Road/Bridge Runoff; Subsurface Mining; Wildlife Other than Waterfowl

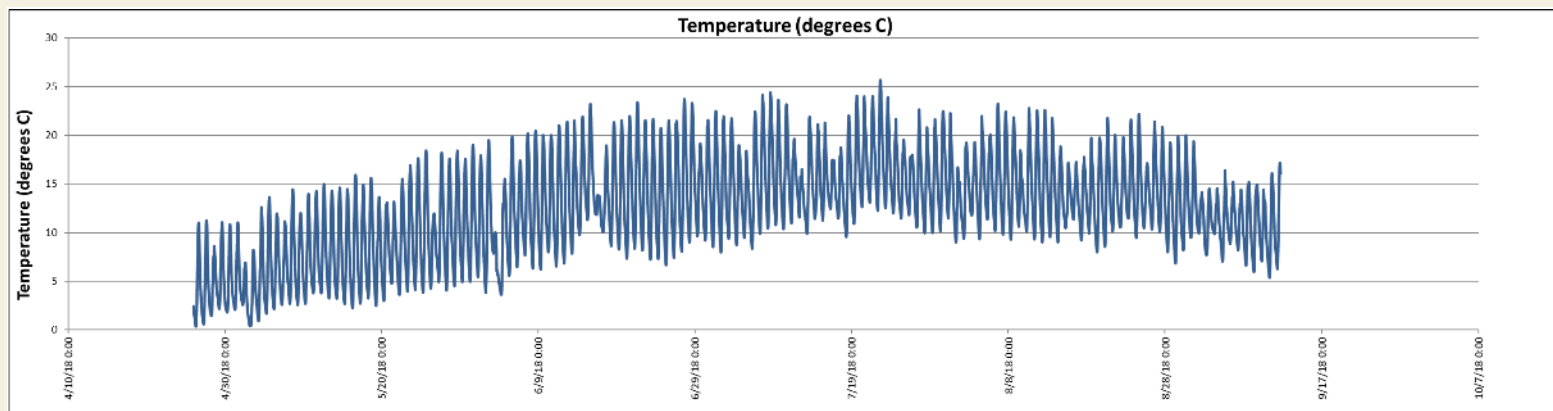


Why is Temperature a Concern?

Water temperature varies seasonally and throughout the day.

Temperature affects aquatic life by influencing:

- The amount of oxygen that can be dissolved in water
- The rate of photosynthesis of aquatic plants
- The rate of growth, reproduction and decomposition of aquatic life
- The sensitivity of organisms to toxic wastes, parasites and diseases





Temperature Probable Sources

Assessment Unit	Probable Sources
El Porvenir Creek (SFNF bnd to Hollinger Canyon)	Drought; Highway/Road/Bridge Runoff; Rangeland Grazing; Wildlife Other than Waterfowl
Gallinas River (Aguilar Creek to USGS Gage 08382000)	Dam or Impoundment; Drought; Grazing in Riparian Zone; Highway/Road/Bridge Runoff; Loss of Riparian Habitat; Low Water Crossing; Rangeland Grazing; Streambank Modifications/Destabilization
Pecos River (Alamitos Canyon to Jack's Creek)	Forest Fire (Jaroso, 2013; Tres Lagunas, 2013); Forest Roads; Highway/Road/Bridge Runoff; Off-road Vehicles; Other recreation (angling, camping); Rural Residential Area; Wildlife other than Waterfowl



What is Turbidity?

Turbidity is:

- A measurement of water clarity; the cloudiness or haziness of a liquid
- Caused by phytoplankton overgrowth or excess suspended solids

Excess turbidity can:

- Reduce the amount of light reaching lower depths in waterbodies
- Increase water temperature
- Inhibit growth of aquatic plants
- Harm fish and larvae





Turbidity Probable Sources

Assessment Unit	Probable Sources
Gallinas River (Aguilar Creek to USGS Gage 08382000)	Dam or Impoundment; Grazing in Riparian Zone; Highway/Road/Bridge Runoff; Inappropriate Waste Disposal (junkyards); Loss of Riparian Habitat; Low Water Crossing; Rangeland Grazing; Streambank Modifications/Destabilization
Pecos River (Tecolote Creek to Cow Creek)	Crop Production; Dam or Impoundment; Highway/Road/Bridge Runoff; Other Recreation (campground); Rural Residential Area; Water Diversion



TMDL Implementation

A TMDL is not a regulatory document, however, the loading calculations are used for the following:



1. Regulatory programs, such as the National Pollutant Discharge Elimination System (NPDES) permitting program administered for NM by EPA Region 6
2. Non-regulatory programs, such as Watershed Protection Programs (WPS) and Water Quality Improvement Projects (WQIP) using CWA §319(h) and 104(b)(3) grants and Clean Water State Revolving Fund loans



TMDL Implementation

Revise NPDES permits to meet TMDL loading requirements

Develop a Watershed Based Plan:



- Outline appropriate steps to achieve the loading defined in the TMDL, including potential solutions, such as Best Management Practices
- Focus on nonpoint sources of pollution and provide an opportunity for stakeholders to participate in community-based solutions towards improved water quality
- Implement on-the-ground projects to restore water quality



Current TMDL Public Comment Period

- The TMDL is available online at:
<https://www.env.nm.gov/surface-water-quality/tmdl/>
- The comment period for the Draft TMDL closes: September 14, 2026
- Written comments can be submitted via the NMED public comment portal:
<https://nmed.commentinput.com/comment/search>
or alternately:

<u>E-mail:</u>	<u>Mail:</u>	<u>Call:</u>
Meredith.Zeigler@env.nm.gov	NMED-SWQB 1190 South St. Francis Drive P.O. Box 5469 Santa Fe, New Mexico 87502	505-490-5866



Next Steps

- SWQB will respond to written comments in the Final Draft TMDL
- SWQB plans to present the Final Draft TMDL to the WQCC (planned for the October 13, 2026 meeting).
- SWQB will send the Final Draft TMDL to all commenters, as well as post it to the SWQB web site, at least 10 days prior to the WQCC meeting.



QUESTIONS?

