

## 12.7. WATER QUALITY

### 12.7.1. Introduction

Regional water planning in its simplest terms is to determine how to balance future demands given today's supply. Water quality is not an obvious factor in the equation. However, quantity and quality are intertwined. The Interstate Stream Commission's *Regional Water Planning Handbook* calls for water quality issues to be included in the regional plans, including an assessment of the quality of water sources and an identification of sources of contamination.<sup>1</sup> The State Water Plan calls for an inventory of the quantity and quality of the state's water resources, population projections and other water resource demands under a range of conditions (Section C-3).

Policy Statements - The State of New Mexico shall coordinate and expand on existing efforts by its various agencies and institutions to collect, integrate, and disseminate data regarding current and future water supply, water uses, and water quality to facilitate informed and responsible decision-making. (2003 State Water Plan, adopted by the New Mexico Interstate Stream Commission on December 17, 2003)

Water quality refers to the physical, chemical, and biological characteristics of water. Attributes that describe the quality of water include levels of sediment, nutrients, heavy metals, toxic chemicals, pesticides, radioactivity, temperature, dissolved oxygen, and disease-causing organisms. Different uses have different requirements with regard to these attributes. What is an acceptable level of water quality for irrigation may not be an acceptable level of quality for drinking water, and what is an acceptable level of quality for livestock watering may not be an acceptable level of quality for a coldwater fishery. Specific standards for each use are set by the federal government, state, and tribes. For each use, the quality of the water that is available directly affects the supply that is effectively available. ("Water Resource Assessment, Part B - Water Quality", Region 6 Water Plan, [epcog.org/nw/pdf/region6water/quality.pdf](http://epcog.org/nw/pdf/region6water/quality.pdf) (accessed March 23, 2004))

Assurance of availability to meet future water demands requires both a sufficient quantity of water and water that is of sufficient quality for the intended use. Contaminants impacting surface water or groundwater quality may impair the use of available water resources. ... Water quality issues place constraints on the water

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<sup>1</sup> The *Handbook* goes on to call for an assessment of the feasibility of water quality management plans (improving water and land-use practices, water treatment alternatives, and wastewater treatment). Source and quality of future water supply including i.) cost effectiveness, technical feasibility, and social and political issues of using the identified future water source, and ii.) potential for water supply contamination are to be evaluated. Finally, legal Issues --such as Federal, State, Municipal, Tribal or pueblo water quality standards-- are to be reviewed. Phase III will hopefully alleviate those deficiencies currently existing in this report.

available to the MRG planning region in two ways: (1) contaminant impacts on water supplies and (2) naturally occurring water quality constraints. Contaminant impacts clearly render a portion of the region's water unsuitable for use and require extensive remediation efforts. ("Assessment of Regional Water Quality Issues and Impacts to the Water Supply," Middle Rio Grande Plan, [http://www.waterassembly.org/pdfs2/WtrQualRpt\\_206.pdf](http://www.waterassembly.org/pdfs2/WtrQualRpt_206.pdf) (accessed March 23, 2004))

Water quality issues are moving to the forefront in both federal and state forums as a new constraint on all water supplies. A stream's water *quality* often is affected by the *quantity* of water in the stream, and new regulations may require that water remain in a stream in order to meet a water quality standard. Both federal and state water quality regulations, therefore, could easily affect the quantity of water available for use. ("Section 6.3 – Water Quality Legal Issues," San Juan Basin Regional Water Plan, October 4, 2003, <http://www.seo.state.nm.us/water-info/NMWaterPlanning/regions/SanJuan/10-04-03Section06LegalIssue.pdf> , (accessed March 23, 2004))

Water quality is a significant consideration in the region's water supply. The available groundwater may be compromised by contamination, either human caused or natural. The available water should be protected from potential contamination from the impacts of human activities or natural events. ... The NMED has expressed concern that non-point sources of pollution in New Mexico may constitute one of the more serious water quality problems facing the state (NMWQCC, 2000b). Non-point pollution is diffuse in origin, the result of rain or snowmelt carrying pollutants from the land into streams, lake, and rivers. The principal contaminants contributed from this type of pollutant source are nutrients, sediments, toxic substances, organic matter, salts, metals, and petroleum and its byproducts. The NMED estimates that about 92 percent of known river water quality impairment in the state is due to non-point sources (NMWQCC, 2000b). The occurrence of significant agriculture activity and urbanization within the Jemez y Sangre planning region makes it likely that some surface water quality degradation is attributed to this type of source. Jemez y Sangre Regional Water Plan, March 2003, [www.seo.state.nm.us/water-info/NMWaterPlanning/regions/jemezysangre/jys\\_apndxa.pdf](http://www.seo.state.nm.us/water-info/NMWaterPlanning/regions/jemezysangre/jys_apndxa.pdf) (accessed March 23, 2004))

Set out in this section is general information about the Clean Water Act and Total Maximum Daily Loads (TMDLs), and specific available information with respect to the two watersheds. More information can be found in the appendices.

Water quality monitoring and protection is the primary responsibility of the United States Environment Protection Agency (EPA) and the New Mexico Environment Department (NMED). The New Mexico Environment Department (NMED) maintains a number of sources of water quality data for both ground and surface water. EPA and the U.S. Geological Survey (USGS) also maintain long-term databases of water quality measurements.

Water quality information for the subregion was assessed through existing documents and databases, all last accessed on March 23, 2004. Specific reference was made to:

- \* "Assessment of Regional Water Quality Issues and Impacts to the Water Supply," ([http://www.waterassembly.org/pdfs2/WtrQualRpt\\_206.pdf](http://www.waterassembly.org/pdfs2/WtrQualRpt_206.pdf)), being the study prepared for the Middle Río Grande Regional Water Plan by D.B. Stephens & Associates in February 2003;
- \* Jemez Watershed TMDLs report prepared by NMED Surface Water Quality Bureau in 2002, [http://www.nmenv.state.nm.us/swqb/Jemez\\_Watershed\\_TMDLs/Index.html](http://www.nmenv.state.nm.us/swqb/Jemez_Watershed_TMDLs/Index.html);
- \* Water Quality and Water Pollution Control in New Mexico - 2000 prepared by the N.M. Water Quality Control Commission, which is required to submit this biennial report to U.S. Congress pursuant to section 305.b of the federal Clean Water Act [http://www.nmenv.state.nm.us/swqb/305b\\_2000.html](http://www.nmenv.state.nm.us/swqb/305b_2000.html);
- \* "State Of New Mexico Water Quality Standards For Interstate And Intrastate Surface Waters - 20.6.4 NMAC As amended through October 11, 2002," [http://www.nmenv.state.nm.us/NMED\\_regs/swqb/20\\_6\\_4\\_nmac.html](http://www.nmenv.state.nm.us/NMED_regs/swqb/20_6_4_nmac.html); and
- \* 2002-2004 State of New Mexico 303(d) List, published by the Surface Water Quality Bureau, New Mexico Environment Department, (June 2003), [www.nmenv.state.nm.us/swqb/2000-2002\\_New\\_Mexico\\_303d\\_List.pdf](http://www.nmenv.state.nm.us/swqb/2000-2002_New_Mexico_303d_List.pdf).
- \* Water Resources Data - New Mexico, Water Year 2002, Water-Data Report NM-02-1, U.S. Department of the Interior, U.S. Geological Survey, Prepared in cooperation with the State of New Mexico and with other agencies <http://nm.water.usgs.gov/nm2002wrreport.pdf>

Further information regarding groundwater quality and information on specific sites and facilities that may have the potential to impact surface water or groundwater quality was obtained from various NMED databases.

### **12.7.2. General Information**

The 1972 Water Pollution Control Act (33 U.S.C. §§ 1251 et seq.), commonly called the Clean Water Act (CWA), is the primary federal law responsible for limiting pollution in U.S. waters. The law includes provisions for standards and financial assistance to address water pollution of all types with the objective of improving water quality in impaired areas.

A good synopsis of the Clean Water Act and Total Maximum Daily Loads can be found in a technical report published by New Mexico State University, "The Clean Water Act and Total Maximum Daily Loads in New Mexico: Frequently Asked Questions," Technical Report 39, June 2002. Relevant sections are set out below, omitting citations, with the fuller report included in the Appendix:

The 1972 Water Pollution Control Act (33 U.S.C. §§ 1251 et seq.), commonly called the Clean Water Act (CWA), is the primary federal law responsible for limiting pollution in U.S. waters. The law includes provisions for standards and financial

assistance to address water pollution of all types with the objective of improving water quality in impaired areas.

A permit system is the principal mechanism used by the Clean Water Act to reach its objective of reducing and eventually eliminating water pollution. Anyone engaged in point-source polluting activities is required to obtain a permit from the USEPA. The permit contains detailed limitations on the amount and type of pollutants that may be discharged. It also details the manner in which those pollutants will be discharged. This permitting system is called the National Pollutant Discharge Elimination System (NPDES).<sup>2</sup>

The Clean Water Act also required states to establish total maximum daily loads (TMDLs) for pollutants in their waters. States were directed to develop best available technology standards for each industry. In addition, the act required an upgrade of municipal wastewater facilities from primary to secondary treatment, created a national pretreatment program and authorized grants for municipal wastewater treatment infrastructure.

TMDLs set the maximum amount of pollution from all sources that a water body can receive without violating water quality standards. In practice, a TMDL is a planning document that establishes a budget for types of water contaminants by source. A TMDL also develops water quality management strategies.

Point-source pollution occurs at identifiable discharge points, such as at a factory. Nonpoint-source pollution is pollution that cannot be traced to the end of an outlet, such as runoff from forest logging, sheet flows from pastures or movement of soil and fertilizer from cropped lands into waterways. Nonpoint-source pollution is much more difficult to deal with than point-source pollution for several reasons. The exact source is impossible to establish.

The §303(d) list is named for the Clean Water Act section that requires each state to identify surface waters within its boundaries that are not meeting or not expected to meet water quality standards (NMED, 2000). TMDL development and implementation has been underway in New Mexico since 1998. A list of water quality limited segments having or needing TMDLs is available online. Completed TMDLs in the state also are available online, as are TMDL delistings for the state.

The NMWQC issues New Mexico interstate and intrastate water quality standards. These standards specify designated uses for the waters, which include warm-water

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<sup>2</sup> Under section 402 of the federal Clean Water Act (33 U.S.C. § 1342 (2003)), any discharges by point sources, except in compliance with the limitations imposed in a National Pollutant Discharge Elimination System ("NPDES") permit, are declared unlawful. In New Mexico, the NPDES permit program is the primary mechanism for controlling point source discharges to surface waters. EPA Region 6 in Dallas issues permits that specify the amount and concentrations of contaminants that a permittee can discharge into a surface water. EPA also enforces permit effluent limitations. In addition, pursuant to section 401 of the Clean Water Act and section 74-6-5(E) of the New Mexico Water Quality Act, the New Mexico. "Legal Issues," Region 6 Water Plan, [epcog.org/nw/pdf/region6water/quality.pdf](http://epcog.org/nw/pdf/region6water/quality.pdf) (accessed March 23, 2004))

and cold-water fisheries, livestock watering, wildlife habitat, fish culture, irrigation water storage, irrigation, primary and secondary contact, domestic water supply, and municipal and industrial water supply. Primary contact includes recreational uses, such as swimming and water skiing, in which a human has prolonged and intimate contact with water. Secondary contact refers to recreational uses, such as fishing, wading, and boating. A water body is considered impaired or polluted if the existing water quality is not sufficiently high to support the designated use. In designating uses for a water body, states and tribes examine the suitability of a water body for the uses based on its physical, chemical and biological characteristics. Other factors that must be taken into account include a water body's geographic setting, scenic qualities, as well as the socioeconomic and cultural characteristics of the surrounding area.

Water quality standards in New Mexico include general standards, use designation for specific water bodies and the subsequent standards related to use. Contaminants affecting designated uses in New Mexico include stream bottom deposits, temperature, turbidity, fecal coliform, phosphorus, ammonia and aluminum. New Mexico interstate and intrastate standards for these and other contaminants are available from the NMWQCC and the Internet.

Based on extensive monitoring and sampling, TMDLs were established by the New Mexico Environment Department's Surface Water Quality Bureau. These are the amounts of pollutants that may be discharged into the affected streams without exceeding water quality standards.

Plans to implement these TMDLs focus on a combination of best management practices to control sediment. Best management practices listed in the TMDL document may include riparian restoration. Good range management is encouraged along the river reaches. Culvert repair and maintenance, erosion control, stream bank stabilization, and improved road maintenance might be listed in the final TMDL document as practices that will be promoted by the Surface Water Quality Bureau. Federal funding is made available through provisions of the Clean Water Act.

Table 12.7-1 sets out the drinking water standards determined by both New Mexico and EPA for surface water. Table 12.7-2 lists the drinking water standards set by both the State of New Mexico and the EPA for groundwater. The state criteria consist of drinking water standards published by the NMED Ground Water Quality Bureau. As with surface water standards, EPA's standards comprise Maximum Contaminant Levels (MCLs), Secondary Drinking Water Regulations (SDWRs), and Action Levels (ALs). There is a proposal to amend these standards. (see [www.nmenv.state.nm.us/swqb/Standards/Rev\\_Statemnt\\_of\\_Basis\\_10\\_1\\_03.pdf](http://www.nmenv.state.nm.us/swqb/Standards/Rev_Statemnt_of_Basis_10_1_03.pdf)).

**Table 12.7-1 New Mexico Drinking Water Standards for Surface Water and EPA Drinking Water Standards**

Constituent	New Mexico Surface Water Standard	EPA Drinking Water Standard
pH	6-9	6.5-8.5 <sup>a</sup>
Total Dissolved Solids (TDS)	---	500 mg/L <sup>b</sup>
Aluminum (Al)	---	0.05 mg/L <sup>a</sup>
Arsenic (As)	0.05 mg/L	0.05 mg/L <sup>b</sup> , 0.01 mg/L <sup>c</sup>
Barium (Ba)	2.0 mg/L	2 mg/L <sup>b</sup>
Chloride (Cl)	---	250 <sup>a</sup>
Cyanide (CN)	0.2 mg/L	0.2 mg/L <sup>b</sup>
Fluoride (F)	---	2 <sup>a</sup>
Iron (Fe)	1.0 mg/L	0.3 mg/L <sup>a</sup>
Lead (Pb)	0.05 mg/L	0.015 mg/L <sup>d</sup>
Manganese (Mn)	---	--- 0.05 <sup>a</sup>
Nickel (Ni)	0.1 mg/L	---
Nitrate as Nitrogen (NO <sub>3</sub> as N)	---	10 mg/L <sup>b</sup>
Selenium (Se)	0.05 mg/L	0.05 mg/L <sup>b</sup>
Silver (Ag)	---	0.1 <sup>a</sup>
Strontium (Sr)	8 pCi/L	---
Sulfate (SO <sub>4</sub> )	---	250 mg/L <sup>a</sup>
Tritium (H <sub>3</sub> )	20,000 pCi/L	---
Uranium (U)	5 mg/L	0.02 mg/L <sup>c</sup>

Source: Table 4-1, Duke Engineering & Services. *Water supply study, Jemez y Sangre Water Planning Region, New Mexico*. Prepared for the Jemez y Sangre Water Planning Council. January 2001, cited in Jemez y Sangre Regional Water Plan, *March 2003* as Table 17 on page 90

### **Groundwater** *From Jemez y Sangre Regional Water Plan*

Ground water typically originates as precipitation that infiltrates through soil and rock into the ground water system. As water flows from recharge areas into the aquifer its chemistry is changed. In general, water quality decreases with time and distance as ground water flows from recharge areas to discharge areas. These changes in quality are a function of the solubility of mineral matter along the flow path and the length of time the ground water is in contact with soluble minerals.

Water may also mix with water of inferior quality. As ground water is withdrawn from bedrock aquifers at rates greater than the rate of recharge, older water or water of inferior quality migrates toward the areas of withdrawal. In most cases, the greater the withdrawal, the more rapid the migration of poor quality ground water towards the pumping centers and the greater the deterioration of the resource. Therefore, the volume of potable ground water in bedrock aquifers is limited, and nonrenewable when withdrawal exceeds recharge.

**Table 12.7-2 New Mexico Drinking Water Standards for Groundwater and EPA Drinking Water Standards**

Constituent	New Mexico Surface Water Standard	EPA Drinking Water Standard
pH	6-9	6.5-8.5 <sup>a</sup>
Total Dissolved Solids (TDS)	1,000 mg/L	500 mg/L <sup>b</sup>
Aluminum (Al)	5 mg/L	0.05-0.2 mg/L <sup>a</sup>
Arsenic (As)	0.1 mg/L	0.05 mg/L <sup>b</sup> , 0.01 mg/L <sup>c</sup>
Barium (Ba)	1.0 mg/L	2 mg/L <sup>b</sup>
Boron (B)	0.75 mg/L	---
Chloride (Cl)	250 mg/L	250 mg/L <sup>a</sup>
Cyanide (CN)	0.2 mg/L	0.2 mg/L <sup>b</sup>
Fluoride (F)	1.6 mg/L	2 mg/L <sup>a</sup>
Iron (Fe)	1.0 mg/L	0.3 mg/L <sup>a</sup>
Lead (Pb)	0.05 mg/L	0.015 mg/L <sup>d</sup>
Manganese (Mn)	0.2 mg/L	0.05 mg/L <sup>a</sup>
Nickel (Ni)	0.2 mg/L	---
Nitrate as Nitrogen (NO <sub>3</sub> as N)	10 mg/L	10 mg/L <sup>b</sup>
Selenium (Se)	0.05 mg/L	0.05 mg/L <sup>b</sup>
Silver (Ag)	0.05 mg/L	0.1 mg/L <sup>b</sup>
Strontium (Sr)	8 pCi/L	---
Sulfate (SO <sub>4</sub> )	600 mg/L	250 mg/L <sup>a</sup>
Tritium (H <sub>3</sub> )	20,000 pCi/L	---
Uranium (U)	5 mg/L	0.02 mg/L <sup>c</sup>

Source: Table 6-1, Duke Engineering & Services. *Water supply study, Jemez y Sangre Water Planning Region, New Mexico*. Prepared for the Jemez y Sangre Water Planning Council. January 2001, cited in Jemez y Sangre Regional Water Plan, *March 2003* as Table 19 on page 98

a EPA Secondary Drinking Water Regulation (SDWR) – a non-enforceable health goal which is set at a level at which no known or anticipated adverse effect on the health of persons occur and which allows an adequate margin of safety.

b EPA Maximum Contaminant Level (MCL) – the highest level of a contaminant that is allowed in drinking water. MCLs are enforceable.

c Proposed MCL.

d EPA Action Level (AL) – the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow. For lead it is the level which, if exceeded in over 10% of the homes tested, triggers treatment.

EPA = U.S. Environmental Protection Agency

mg/L = Milligrams per liter

pCi/L = Picocuries per liter

--- = Not applicable

In addition, groundwater may be degraded through migration of contaminants from human activities. Potential sources of contamination are generally concentrated in urban, agricultural, and mining areas, and include industrial wastewater, municipal sewage, oil-field brines, drainage from farms, mining effluent, petroleum-handling facilities, leakage from underground storage tanks, and accidental spills.

The effects of human activity may not be immediately apparent, but as large withdrawals

from an aquifer cause water to migrate toward the pumping center, substances from chemical leaks or spills may eventually reach wells.

Seepage from septic tanks, which can affect groundwater and surface water, is also of increasing concern as the population of the region expands. In the state of New Mexico, over half of all cases of ground water contamination have been shown to be caused by nonpoint sources, particularly household septic tanks and cesspools (NMWCC, 1994).

Groundwater basins in this plan are classified based on the State Engineer's system of administrative basins. Although the authority of the State Engineer does not extend to tribes and Pueblos, information on tribal and Pueblo water quality is included with the discussion of administrative basins.

### 12.7.3. Issues Specific To The Subregional Planning Region

Efforts are underway in both watersheds of the subregion to address water quality. In the Río Jemez, a Total Maximum Daily Load Report has been prepared, listing nine individual reaches which need to address seven separate TMDL issues. These TMDLs are also set forth in the 2002-2004 State of New Mexico 303(d) List, as are those for the Río Puerco. While extensive testing was done in the Río Jemez in 1998, which led to the TMDL Report, the Río Puerco information has yet to be updated. In early 2004, NMED initiated an effort to assist Río Jemez residents with creating management plans to address the TMDLs mentioned in the report. Concurrently, NMED is also initiating an effort to update the information in the Río Puerco as a prelude to establishing management plans. The Río Puerco has developed a Watershed Restoration Action Strategy (WRAS), which reads in part as follows:

#### SECTION 3 - DEFINING SPECIFIC WATER QUALITY PROBLEMS

The Río Puerco Watershed, defined under the United States Geological Survey Hydrologic Unit Codes 130204-130207, is divided into two primary stream segments by the current version of the New Mexico Water Quality Control Commission's (WQCC's) "*State of New Mexico Standards for Interstate and Intrastate Streams*" (October 2000). Segment #2-107, the perennial reach and tributaries to the Upper Main Stem (UMS) of the Río Puerco gather headwaters from the western edge of the Nacimiento Mountains (see attached maps). Segment #2-107 also includes the Río San Jose, on the western side of the watershed, with tributaries emanating from the San Mateo and Zuni Mountains. In addition, the state-listed area includes segment #2-105, the intermittent or ephemeral flow (generally the central and southern areas of the watershed) below the perennial reaches of the Río Puerco, which enters the main stem of the Río Grande.

Several reaches of the Río Puerco and its tributaries are listed as impaired, that is, they fail to fully meet the stream's designated uses. These are defined in *Water Quality and Water Pollution Control in New Mexico*, Appendix B - the State's 305(b) Report (2000), and in the 2000-2002 *State of New Mexico CWA Section 303-D List for Assessed Stream and River Reaches*. These documents list non-attained uses for individual perennial to intermittent reaches including the Río Puerco, Nacimiento Creek, Río San Jose, La Jara Creek, San Pablo Creek, Rito Leche, Rito de Los Pinos, Bluewater Creek, Río Paguete, and Río Moquino. Current designated uses for coldwater fishery, and a select reach designated as a high quality



coldwater fishery, are listed under categories ranging from "impacts observed" to "partially supporting" to "nonsupport." The Río San Jose's listed reach has a drinking water source (DWS) designation, and tributaries to the Río Puerco UMS are known to provide water for irrigation purposes. The monitored or evaluated impairments of concern include temperature exceedances, stream bottom deposits, plant nutrients, metals, turbidity, dissolved oxygen, and pH. These effects are largely due to a lack of vegetative density and diversity in a region of high erosion potential and impacts resulting from habitat alteration, agriculture, rangeland impacts, resource extraction, reduction of riparian vegetation, streambank destabilization, and road maintenance activities. The total effected stream reach is listed at 223.1 miles (359 kilometers) in state documents, but the UWA prioritization listing is currently focused on a total of 110 stream miles (191.5 km).

The region has historically been used for agriculture, grazing, logging, mining, and a wide range of recreational purposes, and though relatively sparsely populated, the encroachment of urban development is increasing. Presently, agriculture is the dominant watershed-wide activity. The specific causes of watershed decline result from the combination of these land uses and their impact on a relatively vulnerable landscape. The listed causes are reflected in the RPMC's stated watershed restoration priorities, and they essentially define the general targets for improvement that this WRAS is pursuing. Specific sites for project implementation (within certain prioritized subwatersheds, as described below) are still being identified. (RPMC WRAS, May 31, 2001)

Stream standards have been incorporated into the New Mexico Administrative Code as State Of New Mexico Standards For Interstate And Intrastate Surface Waters. They are found at 20.6.4 NMAC, as amended through October 11, 2002. The relevant standards are set out below, with further information contained in the appendices.

20.6.4.105 RIO GRANDE BASIN - The main stem of the Rio Grande from the headwaters of Elephant Butte reservoir upstream to Alameda bridge (Corrales bridge), the Jemez river from the Jemez pueblo boundary upstream to the Río Guadalupe, and intermittent flow below the perennial reaches of the Río Puerco and Río Jemez which enters the main stem of the Rio Grande.

A. Designated Uses: irrigation, limited warmwater fishery, livestock watering, wildlife habitat, and secondary contact.

B. Standards:

- (1) In any single sample: pH shall be within the range of 6.6 to 9.0, and temperature shall not exceed 32.2°C (90°F). The use-specific numeric standards set forth in 20.6.4.900 NMAC are applicable to the designated uses listed above in Subsection A of this section.
- (2) The monthly geometric mean of fecal coliform bacteria shall not exceed 1,000/100 mL; no single sample shall exceed 2,000/100 mL (see Subsection B of 20.6.4.13 NMAC).
- (3) At mean monthly flows above 100 cfs, the monthly average concentration for: TDS shall not exceed 1,500 mg/L, sulfate shall not exceed 500 mg/L, and chloride shall not exceed 250 mg/L.

[20.6.4.105 NMAC – Rp 20 NMAC 6.1.2105, 10-12-00]

20.6.4.107 RIO GRANDE BASIN - The Jemez river from its confluence with the Rio Guadalupe upstream to state highway 4 near the town of Jemez Springs and perennial reaches of Vallecito creek.

A. Designated Uses: coldwater fishery, primary contact, irrigation, livestock watering, and wildlife habitat.

B. Standards:

- (1) In any single sample: temperature shall not exceed 25°C (77°F), pH shall be within the range of 6.6 to 8.8, and turbidity shall not exceed 25 NTU. The use-specific numeric standards set forth in 20.6.4.900 NMAC are applicable to the designated uses listed above in Subsection A of this section.

(2) The monthly geometric mean of fecal coliform bacteria shall not exceed 200/100 mL; no single sample shall exceed 400/100 mL (see Subsection B of 20.6.4.13 NMAC).  
[20.6.4.107 NMAC – Rp 20 NMAC 6.1.2105.5, 10-12-00]

20.6.4.108 RIO GRANDE BASIN - The Jemez river and all its tributaries above state highway 4 near the town of Jemez Springs, and the Guadalupe river and all its tributaries.

A. Designated Uses: domestic water supply, fish culture, high quality coldwater fishery, irrigation, livestock watering, wildlife habitat, and secondary contact.

B. Standards:

(1) In any single sample: conductivity shall not exceed 400  $\mu$ mhos, pH shall be within the range of 6.6 to 8.8, temperature shall not exceed 20°C (68°F), and turbidity shall not exceed 25 NTU. The use-specific numeric standards set forth in 20.6.4.900 NMAC are applicable to the designated uses listed above in Subsection A of this section.

(2) The monthly geometric mean of fecal coliform bacteria shall not exceed 100/100 mL; no single sample shall exceed 200/100 mL (see Subsection B of 20.6.4.13 NMAC).  
[20.6.4.108 NMAC – Rp 20 NMAC 6.1.2106, 10-12-00]

20.6.4.109 RIO GRANDE BASIN - Perennial reaches of Bluewater creek, Rio Moquino, Seboyeta creek, Rio Paguete, the Rio Puerco within the Santa Fe national forest, and all other perennial reaches of tributaries to the Rio Puerco including the Rio San Jose in Cibola county from the USGS gaging station at Correo upstream to Horace springs.

A. Designated Uses: coldwater fishery, domestic water supply, fish culture, irrigation, livestock watering, wildlife habitat, and primary contact.

B. Standards:

(1) In any single sample: pH shall be within the range of 6.6 to 8.8, temperature shall not exceed 20°C (68°F), total phosphorus (as P) shall not exceed 0.1 mg/L, and turbidity shall not exceed 25 NTU. The use-specific numeric standards set forth in 20.6.4.900 NMAC are applicable to the designated uses listed above in Subsection A of this section.

(2) The monthly geometric mean of fecal coliform bacteria shall not exceed 100/100 mL; no single sample shall exceed 200/100 mL (see Subsection B of 20.6.4.13 NMAC).  
[20.6.4.109 NMAC – Rp 20 NMAC 6.1.2107, 10-12-00]

According to the Jemez Watershed TMDLs report, <[www.nmenv.state.nm.us/swqb/Jemez\\_Watershed\\_TMDLs/Index.html](http://www.nmenv.state.nm.us/swqb/Jemez_Watershed_TMDLs/Index.html)> (accessed March 23, 2004), the following reaches require water management plans to address the mentioned water quality issues::

- Clear Creek: Turbidity & Total Organic Carbon;
- East Fork of the Jemez River: Turbidity;
- Jemez River: Metals (Chronic aluminum);
- Lower Río Cebolla: Stream Bottom Deposits;
- Redondo Creek: Temperature & Turbidity;
- Río de las Vacas: Temperature & Total Organic Carbon;
- Río Guadalupe: Metals (Chronic aluminum);
- Rito Peñas Negras: Stream Bottom Deposits, Temperature & Total Organic Carbon;
- San Antonio Creek: Temperature & Turbidity;
- Sulphur Creek: pH & Conductivity; and
- Upper Río Cebolla: Stream Bottom Deposits & Temperature;

The report further sets out the particular pollutants examined (such as turbidity, stream bottom deposits, temperature, and pH) for each reach and the current TMDL status.

The *Approved 2002-2004 State Of New Mexico §303(D) List For Assessed River/Stream Reaches Requiring Total Maximum Daily Loads (TMDLs)*, published by the New Mexico Environment Department, Surface Water Quality Bureau (June 2003), [www.nmenv.state.nm.us/swqb/2000-2002\\_New\\_Mexico\\_303d\\_List.pdf](http://www.nmenv.state.nm.us/swqb/2000-2002_New_Mexico_303d_List.pdf) (accessed March 2004), includes the TMDLs for the Río Jemez and Río Puerco. The following are summaries of the affected stream reaches derived from this report.

**12.7.3.1. Río Jemez**

1. Calaveras Creek (Río Cebolla to headwaters)
2. Clear Creek (Río de las Vacas to San Gregorio Lake)
3. Fenton Lake
4. Jemez River (East fork)
5. Jemez River (HWY 4 near Jemez Springs to East Fork)
6. Jemez River (Río Guadalupe to HWY4 nr Jemez Springs)
7. Redondo Creek (Sulpher Creek to headwaters)
8. Río Cebolla (Fenton Lake to headwaters)
9. Río Cebolla (Río de las Vacas to Fenton Lake)
10. Río de las Vacas (Río Cebolla to Rito de las Palomas)
11. Río Guadalupe (Jemez River to confl with Río Cebolla)
12. Rito Peñas Negras (Río de las Vacas to headwaters)
13. San Antonio Creek (East Fork Jemez R to headwaters)
14. Sulphur Creek (Redondo Creek to headwaters)

**1. Calaveras Creek (Río Cebolla to headwaters) Jemez**

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2106.A_53	9.2	20.6.4.108	4	31-Dec-02 Proposed	No

**Impaired Designated Use (s):**  
high quality coldwater fishery

**Attainment status:**  
Not supporting

**Assessment information:**

**Probable Causes of Impairment:**  
Stream Bottom Deposits

**Magnitude:**  
Moderate

**Probable Sources of Impairment:**  
Highway Maintenance and Runoff

**Individual Active NPDES Permits:**  
**TMDL (s) Completed:**

**2. Clear Creek (Río de las Vacas to San Gregorio Lake) Jemez**

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2106.A_54	8.92	20.6.4.108	4	31-Dec-02 Proposed	No

**Impaired Designated Use (s):**  
high quality coldwater fishery

**Attainment status:**  
Not supporting

**Assessment information:**

**Probable Causes of Impairment:**

**Magnitude:**

Turbidity

Moderate

**Probable Sources of Impairment:**

- Source Unknown
- Natural Sources
- Habitat Modification (other than Hydromodification)
- Bank or Shoreline Modification/Destabilization

**Individual Active NPDES Permits:**

**TMDL (s) Completed:** TMDL for turbidity and TOC

**3. Fenton Lake**

Jemez

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2106.B_00	23.81	20.6.4.108	8	31-Dec-17	No

**Impaired Designated Use (s):**

high quality coldwater fishery

**Attainment status:**

Not supporting

**Assessment information:**

**Probable Causes of Impairment:**

- Plant Nutrients
- Bottom Deposits

**Magnitude:**

- Moderate
- Moderate

**Probable Sources of Impairment:**

- Removal of Riparian Vegetation
- Recreation and Tourism Activities (other than Boating - see 7900)
- Range grazing - Riparian and/or Upland
- Onsite Wastewater Systems (Septic Tanks)
- Land Disposal
- Highway Maintenance and Runoff
- Habitat Modification (other than Hydromodification)
- Grazing related Sources
- Agriculture

**Individual Active NPDES Permits:**

**TMDL (s) Completed:**

**4. Jemez River (East fork)**

Jemez

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2106.A_10	19.03	20.6.4.108	4	31-Dec-02	No

**Impaired Designated Use (s):**

high quality coldwater fishery

**Attainment status:**

Partially supporting

**Assessment information:**

**Probable Causes of Impairment:**

- Turbidity

**Magnitude:**

- Moderate

**Probable Sources of Impairment:**

- Silviculture
- Recreation and Tourism Activities (other than Boating - see 7900)
- Range grazing - Riparian and/or Upland
- Harvesting, Restoration, Residue Management

Habitat Modification (other than Hydromodification)  
 Grazing related Sources  
 Bank or Shoreline Modification/Destabilization  
 Agriculture

**Individual Active NPDES Permits:**

**TMDL (s) Completed:** TMDL for turbidity

**5. Jemez River (HWY 4 near Jemez Springs to East Fork)**

Jemez

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2106.A_00	3.4	20.6.4.108	1	31-Dec-02	No

**Impaired Designated Use (s):**

livestock watering  
 high quality coldwater fishery  
 fish culture

**Attainment status:**

Partially supporting  
 Partially supporting  
 Partially supporting

**Assessment information:**

**Probable Causes of Impairment:**

Turbidity  
 Stream Bottom Deposits  
 Aluminum - acute

**Magnitude:**

Moderate  
 Moderate  
 Moderate

**Probable Sources of Impairment:**

Removal of Riparian Vegetation  
 Recreation and Tourism Activities (other than Boating - see 7900)  
 Range grazing - Riparian and/or Upland  
 Natural Sources  
 Land Development  
 Highway Maintenance and Runoff  
 Habitat Modification (other than Hydromodification)  
 Grazing related Sources  
 Construction  
 Bank or Shoreline Modification/Destabilization  
 Agriculture

**Individual Active NPDES Permits:**

**TMDL (s) Completed:** TMDL for Al acute, turbidity, and SBD; de-list letter for plant nutrients

**6. Jemez River (Río Guadalupe to HWY4 nr Jemez Springs)**

Jemez

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2105.5_10	9.67	20.6.4.107	1	31-Dec-02	No

**Impaired Designated Use (s):**

livestock watering  
 coldwater fishery

**Attainment status:**

Partially supporting  
 Partially supporting

**Assessment information:**

**Probable Causes of Impairment:**

Turbidity  
 Stream Bottom Deposits  
 Aluminum - acute

**Magnitude:**

Moderate  
 Moderate  
 Moderate

**Probable Sources of Impairment:**

- Source Unknown
- Removal of Riparian Vegetation
- Recreation and Tourism Activities (other than Boating - see 7900)
- Range grazing - Riparian and/or Upland
- Natural Sources
- Land Development
- Highway Maintenance and Runoff
- Habitat Modification (other than Hydromodification)
- Grazing related Sources
- Construction
- Bank or Shoreline Modification/Destabilization
- Agriculture

**Individual Active NPDES Permits:**

**Permit No:**

**Permit Facility Name:**

NM0028011 Jemez Springs, Village of/WWTP

**TMDL (s) Completed:**

TMDL for AI acute, turbidity, and SBD; de-list letter for plant nutrients

**7. Redondo Creek (Sulpher Creek to headwaters)**

Jemez

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2106.A_21	6.2	20.6.4.108	4	31-Dec-02	No

**Impaired Designated Use (s):**

high quality coldwater fishery

**Attainment status:**

Not supporting

**Assessment information:**

**Probable Causes of Impairment:**

- Turbidity
- Temperature

**Magnitude:**

- Moderate
- Moderate

**Probable Sources of Impairment:**

- Road Maintenance and Runoff
- Removal of Riparian Vegetation
- Range grazing - Riparian and/or Upland
- Habitat Modification (other than Hydromodification)
- Grazing related Sources
- Agriculture

**Individual Active NPDES Permits:**

**TMDL (s) Completed:** TMDL for turbidity, total phosphorus, and temperature; de-list letter for total phosphorus

**8. Río Cebolla (Fenton Lake to headwaters)**

Jemez

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2106.A_52	14.63	20.6.4.108	2	31-Dec-02	No

**Attainment status:**

high quality coldwater fishery

**Impaired Designated Use (s):**

Not supporting

**Assessment information:**

**Probable Causes of Impairment:**

- Temperature
- Stream Bottom Deposits

**Magnitude:**

- Moderate
- Moderate

**Probable Sources of Impairment:**

Removal of Riparian Vegetation  
 Recreation and Tourism Activities (other than Boating - see 7900)  
 Range grazing - Riparian and/or Upland  
 Intensive Animal Feeding Operations  
 Highway Maintenance and Runoff  
 Habitat Modification (other than Hydromodification)  
 Grazing related Sources  
 Aquaculture  
 Agriculture

**Individual Active NPDES Permits:**

**TMDL (s) Completed:** TMDL for temperature and SBD

**9. Río Cebolla (Río de las Vacas to Fenton Lake)**

Jemez

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2106.A_50	6.07	20.6.4.108	4	31-Dec-02	No

**Impaired Designated Use (s):**

high quality coldwater fishery

**Attainment status:**

Not supporting

**Assessment information:**

**Probable Causes of Impairment:**

Stream Bottom Deposits

**Magnitude:**

Moderate

**Probable Sources of Impairment:**

Recreation and Tourism Activities (other than Boating - see 7900)  
 Range grazing - Riparian and/or Upland  
 Highway Maintenance and Runoff  
 Grazing related Sources  
 Agriculture

**Individual Active NPDES Permits:**

**Permit No:**

NM0030112

**Permit Facility Name:**

NMG&FD/Seven Springs Fish Hatchery

**TMDL (s) Completed:**

TMDL for SBD

**10. Río de las Vacas (Río Cebolla to Rito de las Palomas)**

Jemez

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2106.A_40	13.42	20.6.4.108	3	31-Dec-02	No

**Impaired Designated Use (s):**

high quality coldwater fishery

**Attainment status:**

Not supporting

**Assessment information:**

**Probable Causes of Impairment:**

Temperature

**Magnitude:**

Moderate

**Probable Sources of Impairment:**

Removal of Riparian Vegetation  
 Range grazing - Riparian and/or Upland  
 Habitat Modification (other than Hydromodification)  
 Grazing related Sources

Bank or Shoreline Modification/Destabilization  
Agriculture

**Individual Active NPDES Permits:**

**TMDL (s) Completed:** TMDL for temperature and TOC

**11. Río Guadalupe (Jemez River to confluence with Río Cebolla) Jemez**

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2106.A_30	12.65	20.6.4.108	3	31-Dec-02	No

**Impaired Designated Use (s):**  
high quality coldwater fishery

**Attainment status:**  
Partially supporting

**Assessment information:**

**Probable Causes of Impairment:**

Turbidity  
Aluminum - chronic

**Magnitude:**

Moderate  
Moderate

**Probable Sources of Impairment:**

Removal of Riparian Vegetation  
Recreation and Tourism Activities (other than Boating - see 7900)  
Range grazing - Riparian and/or Upland  
Natural Sources  
Habitat Modification (other than Hydromodification)  
Grazing related Sources  
Bank or Shoreline Modification/Destabilization  
Agriculture

**Individual Active NPDES Permits:**

**TMDL (s) Completed:** TMDL for Al chronic, turbidity, and SBD; de-list letter for total phosphorus

**12. Rito Peñas Negras (Río de las Vacas to headwaters) Jemez**

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2106.A_42	11.78	20.6.4.108	4	31-Dec-02	No

**Impaired Designated Use (s):**  
high quality coldwater fishery

**Attainment status:**  
Partially supporting

**Assessment information:**

**Probable Causes of Impairment:**

Temperature  
Stream Bottom Deposits

**Magnitude:**

Moderate  
Moderate

**Probable Sources of Impairment:**

Removal of Riparian Vegetation  
Range grazing - Riparian and/or Upland  
Highway Maintenance and Runoff  
Habitat Modification (other than Hydromodification)  
Grazing related Sources  
Bank or Shoreline Modification/Destabilization  
Agriculture

**Individual Active NPDES Permits:**



**TMDL (s) Completed:** TMDL for temperature, TOC, and SBD

**13. San Antonio Creek (East Fork Jemez R to headwaters)** Jemez

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2106.A_20	24.75	20.6.4.108	4	31-Dec-02	No

**Impaired Designated Use (s):**  
high quality coldwater fishery

**Attainment status:**  
Partially supporting

**Assessment information:**

**Probable Causes of Impairment:**

**Magnitude:**

Turbidity  
Temperature

Moderate  
Moderate

**Probable Sources of Impairment:**

Silviculture  
Removal of Riparian Vegetation  
Recreation and Tourism Activities (other than Boating - see 7900)  
Range grazing - Riparian and/or Upland  
Natural Sources  
Logging Road Construction/Maintenance  
Land Development  
Habitat Modification (other than Hydromodification)  
Grazing related Sources  
Construction  
Bank or Shoreline Modification/Destabilization  
Agriculture

**Individual Active NPDES Permits:**

**TMDL (s) Completed:** TMDL for turbidity and temperature

**14. Sulphur Creek (Redondo Creek to headwaters)** Jemez

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2106.A_22	6.1	20.6.4.108	4	31-Dec-02	No

**Impaired Designated Use (s):**  
high quality coldwater fishery

**Attainment status:**  
Not supporting

**Assessment information:**

**Probable Causes of Impairment:**

**Magnitude:**

pH Moderate  
Conductivity Moderate

**Probable Sources of Impairment:**

Source Unknown  
Range grazing - Riparian and/or Upland  
Natural Sources  
Grazing related Sources  
Agriculture

**Individual Active NPDES Permits:**

**TMDL (s) Completed:** TMDL for pH and conductivity

12.7.3.2. Río Puerco

Nacimiento Creek (USFS bnd to San Gregorio Reservoir)

1. Río Puerco (Rito Olguin to headwaters)
2. Rito Leche (Perennial reaches above Río Puerco)
3. San Pablo Canyon (Río Puerco to headwaters)

**1. Nacimiento Creek (USFS bnd to San Gregorio Reservoir)**

Río Puerco

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2107.A_42	4.6	20.6.4.109	4	31-Dec-17	No

**Impaired Designated Use (s):**  
coldwater fishery

**Attainment status:**  
Partially supporting

**Assessment information:**

**Probable Causes of Impairment:**  
Stream Bottom Deposits  
Plant Nutrients

**Magnitude:**  
Moderate  
Moderate

**Probable Sources of Impairment:**  
Removal of Riparian Vegetation  
Range grazing - Riparian and/or Upland  
Habitat Modification (other than Hydromodification)  
Grazing related Sources  
Bank or Shoreline Modification/Destabilization  
Agriculture

**Individual Active NPDES Permits:**

**TMDL (s) Completed:**

**2. Río Puerco (Rito Olguin to headwaters)**

Río Puerco

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2107.A_40	39.6	20.6.4.109	4	31-Dec-06	No

**Impaired Designated Use (s):**  
coldwater fishery

**Attainment status:**  
Partially supporting

**Assessment information:**

**Probable Causes of Impairment:**  
Temperature  
Stream Bottom Deposits

**Magnitude:**  
Moderate  
Moderate

**Probable Sources of Impairment:**  
Removal of Riparian Vegetation  
Range grazing - Riparian and/or Upland  
Highway Maintenance and Runoff  
Habitat Modification (other than Hydromodification)  
Grazing related Sources  
Bank or Shoreline Modification/Destabilization  
Agriculture

**Individual Active NPDES Permits:**

Permit No:

Permit Facility Name:

NM0024848

Cuba, Village of/WWTP

**TMDL (s) Completed:**

**3. Rito Leche (Perennial reaches above Río Puerco)**

Río Puerco

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2107.A_43	2.9	20.6.4.109	4	31-Dec-17	No

**Impaired Designated Use (s):**  
coldwater fishery

**Attainment status:**  
Partially supporting

**Assessment information:**

**Probable Causes of Impairment:**  
Stream Bottom Deposits

**Magnitude:**  
Moderate

**Probable Sources of Impairment:**

- Removal of Riparian Vegetation
- Range grazing - Riparian and/or Upland
- Habitat Modification (other than Hydromodification)
- Grazing related Sources
- Bank or Shoreline Modification/Destabilization
- Agriculture

**Individual Active NPDES Permits:**

**TMDL (s) Completed:**

**4. San Pablo Canyon (Río Puerco to headwaters)**

Río Puerco

Assessment ID:	Size (mi or ac):	WQS reference:	Priority:	TMDL due:	Federal aquatic T/E species
NM-2107.A_41	11.5	20.6.4.109	4	31-Dec-06	No

**Impaired Designated Use (s):**  
coldwater fishery

**Attainment status:**  
Partially supporting

**Assessment information:**

**Probable Causes of Impairment:**  
Stream Bottom Deposits  
Plant Nutrients

**Magnitude:**  
Moderate  
Moderate

**Probable Sources of Impairment:**

- Surface Mining
- Resource Extraction
- Removal of Riparian Vegetation
- Range grazing - Riparian and/or Upland
- Habitat Modification (other than Hydromodification)
- Grazing related Sources
- Bank or Shoreline Modification/Destabilization
- Agriculture

**Individual Active NPDES Permits:**

**TMDL (s) Completed:**

Table 12.7-3 provides a summary of the TMDL issues for the affected stream reaches.

**Table 12.7-3 Assessed Stream Reaches either Fully Supporting w/ Impacts Observed, Partially Supporting or Not Supporting their Designated Uses**

WATER BODY NAME (Basin, segment) EVALUATED OR MONITORED (E/M), SUPPORT STATUS	TOTAL SIZE AFFECTED (MILES WITHIN STATE OF NM JURISDICTION)	PROBABLE SOURCE(S) OF POLLUTANT/THREAT (see Table 17b)	NUMBER OF NPDES PERMITS ON THE REACH	USES NOT FULLY SUPPORTED/ THREATENED <sup>a</sup> (see Table 17a)	SPECIFIC POLLUTANT OR THREAT	TOXICS AT ACUTE LEVELS <sup>b</sup>	TOXICS AT CHRONIC LEVELS <sup>b</sup>	AQUATIC T or E SPECIES ON THE REACH
Sulphur Creek above Redondo Creek to the headwaters (Rio Grande, 2106), M Not Supported	6.8	Natural (8600), Unknown (9000)	0	HQCWF	pH <sup>c</sup> , Conductivity <sup>c</sup> , Turbidity <sup>c</sup>			NO
Redondo Creek from the mouth on Sulphur Creek to the headwaters (Rio Grande, 2106), M Not Supported	5.2	Agriculture (1500)	0	HQCWF	Fecal coliform <sup>c</sup> , Turbidity <sup>c</sup> , Temperature <sup>c</sup>			NO
San Antonio Creek from the confluence with the East Fork of the Jemez River to the headwaters (Rio Grande, 2106), M Not Supported	23.6	Agriculture (1500), Silviculture (2300), Land development (3200), Removal of riparian vegetation (7600), Streambank modification/ destabilization (7700), Natural (8600), Recreation (8700, 8702)	0	HQCWF	Temperature, Total organic carbon <sup>c</sup> , Turbidity <sup>c</sup>			NO
East Fork of the Jemez River from the confluence with San Antonio Creek to the headwaters (Rio Grande, 2106), M Not Supported	16.3	Agriculture (1500), Siviculture (2100), Streambank modification/ destabilization (7700), Recreation (8700)	0	HQCWF	Turbidity <sup>c</sup> , Total organic carbon <sup>c</sup>			NO

WATER BODY NAME (Basin, segment) EVALUATED OR MONITORED (E/M), SUPPORT STATUS	TOTAL SIZE AFFECTED (MILES WITHIN STATE OF NM JURISDICTION)	PROBABLE SOURCE(S) OF POLLUTANT/THREAT (see Table 17b)	NUMBER OF NPDES PERMITS ON THE REACH	USES NOT FULLY SUPPORTED/ THREATENED <sup>a</sup> (see Table 17a)	SPECIFIC POLLUTANT OR THREAT	TOXICS AT ACUTE LEVELS <sup>b</sup>	TOXICS AT CHRONIC LEVELS <sup>b</sup>	AQUATIC T or E SPECIES ON THE REACH
Jemez River from Río Guadalupe to the confluence of the East Fork of the Jemez River and San Antonio Creek (Río Grande, 2106), M Not Supported	13.4	Municipal Pnt. Src.s (0200), Domestic Pnt. Src.s (0201), Agriculture (1201, 1500), Removal of riparian vegetation (7600), Streambank modification/ destabilization (7700), Road maintenance/runoff (8300) Natural (8600), Recreation (8700, 8701)	2: Jemez Springs WWTP; Jemez Springs Municipal Schools	HQCWF, CWF, LW	Turbidity <sup>c g</sup> , Stream bottom deposits <sup>f g</sup> , Metals Al			NO
Jemez River from mouth on Río Grande to Río Guadalupe (Río Grande, 2106), M Fully Supporting, Impacts Observed	26.9	Agriculture (1500), Removal of riparian vegetation (7600), Natural (8600), Unknown (9000)	0	LWWF, LW	Fecal coliform			
Río Cebolla from confluence with the Ro de las Vacas to Fenton Lake	9.1	Agriculture (1500), Removal of riparian vegetation (7600), Road maintenance/runoff (8300)	0	HQCWF	Stream bottom deposits <sup>f</sup>			NO
Río Cebolla from inflow to Fenton Lake to the headwaters (Río Grande, 2106), M Not Supported	7	Agriculture (1500, 1700), Land disposal (6500), Removal of riparian vegetation (7600), Road maintenance/runoff (8300)	1: Seven Springs Fish Hatchery	HQCWF	Temperature, Stream bottom deposits <sup>c f</sup>			NO
Río de las Vacas from the confluence with Río Cebolla to Rito de las Palomas (Río Grande, 2106), M Not Supported	14	Agriculture (1500), Removal of riparian vegetation (7600), Streambank modification/ destabilization (7700), Road maintenance/runoff (8300)	0	HQCWF	Temperature <sup>c</sup> , Total organic carbon <sup>c</sup>			NO

WATER BODY NAME (Basin, segment) EVALUATED OR MONITORED (E/M), SUPPORT STATUS	TOTAL SIZE AFFECTED (MILES WITHIN STATE OF NM JURISDICTION)	PROBABLE SOURCE(S) OF POLLUTANT/THREAT (see Table 17b)	NUMBER OF NPDES PERMITS ON THE REACH	USES NOT FULLY SUPPORTED/ THREATENED <sup>a</sup> (see Table 17a)	SPECIFIC POLLUTANT OR THREAT	TOXICS AT ACUTE LEVELS <sup>b</sup>	TOXICS AT CHRONIC LEVELS <sup>b</sup>	AQUATIC T or E SPECIES ON THE REACH
Rito Peñas Negras from the mouth on the Río de las Vacas to the headwaters (Río Grande, 2106), M Partially Supported	11.6	Agriculture (1500), Removal of riparian vegetation (7600), Streambank modification/destabilization (7700), Road maintenance/runoff -(8300)	0	HQCWF	Temperature, Stream bottom deposits <sup>f</sup> , Total organic carbon			NO
Río Guadalupe from the mouth on the Jemez River to the confluence of the Río de las Vacas and Río Cebolla (Río Grande, 2106), M Not Supported	12.4	Agriculture (1500), Removal of riparian vegetation (7600), Streambank modification/destabilization (7700), Road maintenance/runoff (8300), Natural sources (8600), Recreation (8700)	0	HQCWF	Conductivity <sup>e</sup> , Fecal coliform <sup>e</sup> , Turbidity <sup>c g</sup> , Stream bottom deposits <sup>f g</sup> , Metals		AI	NO
Río Vallecitos from the headwaters to Paliz Campground (Río Grande, 2106), M, Not Supported	12.6	Removal of riparian vegetation (7600)	0	HQCWF	Temperature <sup>c</sup>			NO
Clear Creek from the confluence with the Río de las Vacas to the headwaters (Río Grande, 2106), M, Not Supported	6.8	Natural (8600) Unknown (9000)	0	HQCWF	Total organic carbon <sup>c</sup> , Turbidity <sup>c</sup>			NO

WATER BODY NAME (Basin, segment) EVALUATED OR MONITORED (E/M), SUPPORT STATUS	TOTAL SIZE AFFECTED (MILES WITHIN STATE OF NM JURISDICTION)	PROBABLE SOURCE(S) OF POLLUTANT/THREAT (see Table 17b)	NUMBER OF NPDES PERMITS ON THE REACH	USES NOT FULLY SUPPORTED/ THREATENED <sup>a</sup> (see Table 17a)	SPECIFIC POLLUTANT OR THREAT	TOXICS AT ACUTE LEVELS <sup>b</sup>	TOXICS AT CHRONIC LEVELS <sup>b</sup>	AQUATIC T or E SPECIES ON THE REACH
Calaveras Creek from the confluence with the Río Cebolla to the headwaters (Río Grande, 2106), M Not Supported	2	Flow regulation/ modification (7400), Road runoff (8701)	0	HQCWF	Stream bottom deposits <sup>c f</sup>			NO
American Creek from the mouth on the Rito de las Palomas to the headwaters (Río Grande, 2106), E Partially Supported	3.8	Agriculture (1500), Removal of riparian vegetation (7600), Streambank modification/ destabilization (7700)	0	HQCWF	Temperature, Turbidity, Stream bottom deposits <sup>f</sup>			NO
Vallecito Creek from the eastern Jemez Pueblo boundary to the Village of Ponderosa (Río Grande, 2105.5), E Not Supported	5.7	Agriculture (1500), Hydromodification (7100, 7400), Removal of riparian vegetation (7600), Unknown (9000)	0	CWF, SC	Temperature, Total ammonia <sup>e</sup> , pH <sup>c</sup> , Fecal coliform <sup>e</sup> , Stream bottom deposits <sup>f</sup>			NO
Río Puerco from Rito Olguin to the headwaters (Río Grande, 2107), E Partially Supported	39.6	Agriculture (1500), Removal of riparian vegetation(7600), streambank modification/ destabilization (7700), Road maintenance/runoff (8300)	0	CWF	Temperature, Stream bottom deposits <sup>f</sup>			NO

WATER BODY NAME (Basin, segment) EVALUATED OR MONITORED (E/M), SUPPORT STATUS	TOTAL SIZE AFFECTED (MILES WITHIN STATE OF NM JURISDICTION)	PROBABLE SOURCE(S) OF POLLUTANT/THREAT (see Table 17b)	NUMBER OF NPDES PERMITS ON THE REACH	USES NOT FULLY SUPPORTED/ THREATENED <sup>a</sup> (see Table 17a)	SPECIFIC POLLUTANT OR THREAT	TOXICS AT ACUTE LEVELS <sup>b</sup>	TOXICS AT CHRONIC LEVELS <sup>b</sup>	AQUATIC T or E SPECIES ON THE REACH
San Pablo Creek from the mouth on the Río Puerco to the headwaters (Río Grande, 2107), E Partially Supported	10.8	Agriculture (1500), Resource extraction (5100), Removal of riparian vegetation (7600), Streambank modification / destabilization (7700)	0	HQCWF	Turbidity <sup>c</sup> , Plant Nutrients, Stream bottom deposits <sup>f</sup>			NO
La Jara Creek, tributary to the Río Puerco, perennial portions (Río Grande, 2107), M Fully Supporting, Impacts Observed	7	Agriculture (1500), Removal of riparian vegetation (7600), Streambank modification/ destabilization (7700)	0	CWF	Stream bottom deposits <sup>e f</sup>			NO
Rito de los Piños, tributary to the Río Puerco, perennial portions (Río Grande, 2107), M Fully Supporting, Impacts Observed	2.3	Agriculture (1500), Removal of riparian vegetation (7600), Streambank modification/ destabilization (7700)	0	CWF	Stream bottom deposits <sup>e f</sup>			NO
Rito Leche, perennial portions (Río Grande, 2107), E Partially Supported	2.9	Agriculture (1500), Removal of riparian vegetation (7600),	0	CWF	Stream bottom deposits <sup>f</sup>			NO



WATER BODY NAME (Basin, segment) EVALUATED OR MONITORED (E/M), SUPPORT STATUS	TOTAL SIZE AFFECTED (MILES WITHIN STATE OF NM JURISDICTION)	PROBABLE SOURCE(S) OF POLLUTANT/THREAT (see Table 17b)	NUMBER OF NPDES PERMITS ON THE REACH	USES NOT FULLY SUPPORTED/ THREATENED <sup>a</sup> (see Table 17a)	SPECIFIC POLLUTANT OR THREAT	TOXICS AT ACUTE LEVELS <sup>b</sup>	TOXICS AT CHRONIC LEVELS <sup>b</sup>	AQUATIC T or E SPECIES ON THE REACH
Nacimiento Creek from USFS boundary to San Gregorio Reservoir (Río Grande, 2107), E Partially Supported	4.6	Streambank modification/ destabilization (7700) Agriculture (1500), Removal of riparian vegetation (7600), streambank modification/ destabilization (7700)	0	CWF	Plant nutrients, Stream bottom deposits <sup>f</sup>			NO

a = Conclusions concerning attainment of fishery uses are largely based on water quality analysis; where available, biological data was used to verify these results.

b = All toxics for which USEPA has prepared a federal Clean Water Act § 304(a) guidance document were reviewed as required by USEPA.

c = Pollutants present in concentrations or combinations such that designated or attainable uses are not supported.

d = This reach includes areas wholly or in-part on Tribal Lands which are removed and separate from State of New Mexico jurisdictional authority.

e = Fully supported; impacts observed.

f = NMED/SWQB has no physical data to support "stream bottom deposits" listings. {SWQB is in the process of developing stream bottom deposit protocols for the expressed purpose of measuring the impacts of stream bottom deposits.}

g = A Total Maximum Daily Load for this pollutant has been approved by the WQCC on this stream reach.

Source - Table 15, "Water Quality And Water Pollution Control In New Mexico ~ 2000; A State Report Required By The U.S. Congress Under §305(b) of the Clean Water Act," New Mexico Environment Department, Water Quality Control Commission, NMED/SWQ-00/1, [http://www.nmenv.state.nm.us/swqb/305b\\_2000.html](http://www.nmenv.state.nm.us/swqb/305b_2000.html) (accessed March 24, 2004)

**Table 12.7-4 Web Discharge Permit List 1-23-04**

<http://www.nmenv.state.nm.us/swqb/psrlist.html>

NMED ID	Facility name	Discharge Permit #	Permit Name	Municipality	County	Facility Type	Waste Type	Activity Description	Permit Activity #	Activity Status	Activity Status Date
1114	Mid-America Pipeline - San Ysidro	DP-836	Mid-America Pipeline Company	San Ysidro	Sandoval	DIST-Bulk Fuel Storage	Industrial	Discharge Permit (Pre-Idea)	PRD20020001	Terminated	1/6/1999
2604	Native American Prep Sch	DP-357	Native American Prep Sch	South San Ysidro	No corresponding county	Lodging	Domestic	Discharge Permit (Pre-Idea)	PRD20020001	Issued	10/19/2001
3111	Canyon Lumber and Hardware	DP-1104	Ever Ready Canyon Lumber & Hardware	Canon	Sandoval	Hydrocarbon Remediation of Ground Water	Industrial	Discharge Permit (Pre-Idea)	PRD20020001	Terminated	11/12/2001
2987	Leaching Technology Nacimiento Copper Project	DP-296	Leaching Technology Nacimiento Copper Project	Cuba	Sandoval	Mining	Mining	Discharge Permit (Pre-Idea)	PRD20020001	Issued	8/18/1989
1118	Agronics Mine	DP-1247	Agronics Clod Buster Mine	Cuba	Sandoval	MINING-Mill Facility	Mining	Discharge Permit (Pre-Idea)	PRD20020001	Issued	5/12/2000
2559	Cuba (Village of) - WWTP	DP-483	Cuba (Village of) - WWTP	Cuba	Sandoval	UNINCORP-Wastewater	Domestic	DP-Ren/Mod	PRD20020002	Issued	3/17/2003
2559	Cuba (Village of) - WWTP	DP-483	Cuba (Village of) - WWTP	Cuba	Sandoval	UNINCORP-Wastewater	Domestic	DP-Ren/Mod	PRD20020002	Issued	3/17/2003
3022	Ojo Encino Sewage Lagoons	DP-982	Ojo Encino Sewage Lagoons	Cuba	Sandoval	UNINCORP-Wastewater	Domestic	Discharge Permit (Pre-Idea)	PRD20020001	Terminated	11/30/1995

**Table 12.7-5 Storage Tank Active Facilities**

<http://www.nmenv.state.nm.us/ust/actfac.html>

FACILITY_NAME	ADDRESS	CITY	COUNTY	ST	ZIP	TANK_COUNT	OWN_ID	FAC_ID	CONTACT_PERSON
CUBA SCHOOLS MAINTENANCE YARD	HIGH SCHOOL RD HWY 126	CUBA	SANDOVAL	NM	87013	1	4991	27584	CUBA INDEPENDENT SCHOOLS
DENNYS CHEVRON	N HWY 44	CUBA	SANDOVAL	NM	87013	4	15265	27676	DDH INC
ESCRITO TRADING POST	RTE 4 HWY 44;HCR 17 BOX 1000	CUBA	SANDOVAL	NM	87013	1	14904	5601	CHAPMAN AL
GIANT 48	415 S MAIN ST	CUBA	SANDOVAL	NM	87013	3	354	28316	GIANT INDUSTRIES ARIZONA INC
GIANT STOP AND GO	6331 HWY 44	CUBA	SANDOVAL	NM	87013	1	16856	28325	JACQUEZ ARSENIO
GUNDERSON OIL CO BULK PLANT	6339 MAIN, PO BOX 669	CUBA	SANDOVAL	NM	87013	4	46022	51758	HERRERA BRUNO
LYBROOK MERCANTILE	10335 HWY 550	CUBA	SANDOVAL	NM	87013	1	14904	6973	CHAPMAN AL
NMSHD CUBA PATROL YARD	HWY 44 1 MILE E	CUBA	SANDOVAL	NM	87013	1	8623	29650	NEW MEXICO (STATE OF) - HWY AND TRANSPORTATION
RED MESA EXPRESS 518	HWY 44	CUBA	SANDOVAL	NM	87013	2	26482	31837	RED MESA TRADING CO INC
THRIFTWAY 200	6475 MAIN ST HWY 44	CUBA	SANDOVAL	NM	87013	3	354	1875	GIANT INDUSTRIES ARIZONA INC
UNITED PARCEL SERVICE CUBA	6359 S MAIN	CUBA	SANDOVAL	NM	87013	4	14342	3681	UNITED PARCEL SERVICE NM TECH SERVICE DISTRICT
WINNERS SHELL - NO170	6401 HWY 550	CUBA	SANDOVAL	NM	87013	2	14274	53613	CONWAY OIL COMPANY
MARCON CONSTRUCTION	STATE RD 4	JEMEZ SPRINGS	SANDOVAL	NM	87025	1	16269	53170	SUPREME LLC DBA ROY HONSTEIN OIL CO
CIRCLE K 1319	HWY 44, PO BOX 2	SAN YSIDRO	SANDOVAL	NM	87053	3	353	1060	CIRCLE K STORES INC
COPAR PUMICE	ONE MILE S OF SAN YSIDRO	SAN YSIDRO	SANDOVAL	NM	87053	1	314	52301	BREWER OIL CO
SAN YSIDRO PATROL YARD	INTERSECTION OF NM 44 AND NM 4	SAN YSIDRO	SANDOVAL	NM	87053	1	8623	30419	NEW MEXICO (STATE OF) - HWY AND TRANSPORTATION
THRIFTWAY 232	E SIDE HWY 44	SAN YSIDRO	SANDOVAL	NM	87053	3	354	1890	GIANT INDUSTRIES ARIZONA INC

As Tables 12.7-4 and 12.7-5 indicate, there are databases with information such as discharge permittees and storage tank permit holders. Additionally, there is a Superfund data base, which contains two entries in the subregion, one in each watershed, shown in Table 12.7-6.

**Table 12.7-6 Superfund Information Systems - CERCLIS Database**

<http://cfpub.epa.gov/supercpad/cursites/srchsites.cfm>

**JEMEZ WATER TANKS**

<b>Site Name:</b>	Jemez Water Tanks
<b>Street:</b>	BOX 100
<b>City / State / ZIP:</b>	Jemez Pueblo, NM 87024
<b>NPL Status:</b>	Not on the NPL
<b>Non-NPL Status:</b>	SI Start Needed
<b>EPA ID:</b>	NMD986684017
<b>EPA Region:</b>	6
<b>County:</b>	Sandoval
<b>Federal Facility Flag:</b>	Not a Federal Facility

**NACIMIENTO MINE/MILL**

<b>Site Name:</b>	Nacimiento Mine/Mill
<b>Street:</b>	5.7MI.East Of Intersection With NM44
<b>City / State / ZIP:</b>	Cuba, NM 87013
<b>NPL Status:</b>	Not on the NPL
<b>Non-NPL Status:</b>	ESI Ongoing
<b>EPA ID:</b>	NMD981600471
<b>EPA Region:</b>	6
<b>County:</b>	Sandoval
<b>Federal Facility Flag:</b>	Not a Federal Facility
	Mines/Tailings

The wealth of information continues. Ground-Water Quality Data by Area can be found at <[www.nmenv.state.nm.us/gwb/GWQ%20Atlas/data.html](http://www.nmenv.state.nm.us/gwb/GWQ%20Atlas/data.html)>. EPA has a list of systems in the Safe Drinking Water Information System (SDWIS). These include details on (a) Community Water Systems (Water Systems that serve the same people year-round (e.g. in homes or businesses)), (b) Non-Transient Non-Community Water Systems (Water Systems that serve the same people, but not year-round (e.g. schools that have their own water system)), and (c) Transient Non-Community Water Systems (Water Systems that do not consistently serve the same people (e.g. rest stops, campgrounds, gas stations)).

Not a great deal of water quality information is available below the upstream boundary of the Jemez Pueblo. Jemez and Zia Pueblos are deeply engaged in watershed planning.<sup>3</sup> See Section 8 for information on Navajo water planning.

#### 12.7.4. Recommendations

Río Jemez is now poised to prepare water quality plans --such as §319 ones-- to address their TMDL issues. Still lacking is data for various reaches as to why a given stretch has the problems seen in the testing. While a Watershed Restoration Action Strategy (WRAS) has been prepared for the Río Puerco (see appendices), and projects are underway to address the issues, an update of the TMDLs is also needed in the Río Puerco. In both watersheds, better data and benchmarks would aid in understanding the relationship of watershed management with water quality. Data could also help with the creation of localized water budgets (supply, demand, future demand) which can, in turn, be analyzed in accord with watershed capabilities.

With an increase in septic tanks, additional monitoring may well be needed. Where non-point sources of pollution, such as suspended sediment from the upper watershed, exists, management plans are needed.

One inorganic constituent that occurs naturally in groundwater - arsenic- currently is subject to an MCL of 0.05 mg/L. In January 2006, this MCL will be reduced to 10 micrograms per liter ( $\mu\text{g/L}$ ) (0.010 mg/L), a level that is commonly exceeded in regional groundwater under natural conditions. If water quality in the subregions does not meet new federal standards for arsenic, action will have to be taken, so plans need to be prepared. Additional testing may be required to fully evaluate the extent of arsenic within the planning region.

12.7. WATER QUALITY .....	1
12.7.1. Introduction.....	1
12.7.2. General Information.....	3
12.7.3. Issues Specific To The Subregional Planning Region.....	8
12.7.3.1. Río Jemez.....	11
12.7.3.2. Río Puerco .....	18
12.7.4. Recommendations.....	29

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<sup>3</sup> Analytical Quality Associates, Inc. <[www.aqainc.net/pueblo\\_scope.html](http://www.aqainc.net/pueblo_scope.html)> has prepared information for the Pueblo of Jemez, Department of Resource Protection, which included water quality analysis, as well as a soil assessment (watershed and agricultural) and preparing a vegetation monitoring program plan. Region 2's plan mentions that the Navajo Nation's Clean Water Act 305(b) notes that major threats to water quality in the portions of the Navajo Reservation that are in the Río Puerco Basin include livestock grazing and construction, especially of highways, roads, and bridges (EMI, 1997).