

Water Quality Protection Policy and Action Plan

Albuquerque Bernalillo County Water Utility Authority
with
Bernalillo County
City of Albuquerque
Water Quality Protection Advisory Board

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Water Quality Protection Policy and Action Plan

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List of Acronyms

AMAFCA	Albuquerque Metropolitan Area Flood Control Authority
BMPs	best management practices
COA	City of Albuquerque
DBS&A	Daniel B. Stephens & Associates, Inc.
EPA	U.S. Environmental Protection Agency
GPAB	Ground-Water Protection Advisory Board (also know as GPAC)
GPAC	Ground-Water Protection Advisory Committee (also know as GPAB)
GPPAP	Ground-Water Protection Policy and Action Plan
ISC	New Mexico Interstate Stream Commission
JPA	joint powers agreement
KAFB	Kirtland Air Force Base
LUST	leaking underground storage tank
mg/L	milligram per liter
MOU	memorandum of understanding
MRCOG	Mid-Region Council of Governments
MRG-A	Middle Rio Grande-Albuquerque (Reach Watershed Group)
MS4	municipal separate storm sewer system
µg/L	micrograms per liter
µS/cm	microSiemens per centimeter
NAWQA	National Water-Quality Assessment Program
NMAC	New Mexico Administrative Code
NMDOT	New Mexico Department of Transportation
NMED	New Mexico Environment Department
NMSA	New Mexico Statutes Annotated
NMSC	New Mexico Supreme Court
NMWQCC	New Mexico Water Quality Control Commission
NPDES	National Pollutant Discharge Elimination System
PCC	Policy Coordinating Committee (also know as PIC)
PIC	Policy Implementation Committee (also know as PCC)

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SDWA	Safe Drinking Water Act
SPPAP	Surface Water Protection Policy and Action Plan
SWCD	Soil and Water Conservation District
SWQB	Surface Water Quality Bureau (NMED)
TMDL	total maximum daily load
TOC	Total organic carbon
UNM	University of New Mexico
USGS	U.S. Geological Survey
WA	Middle Rio Grande Water Assembly
WPS	Watershed Protection Section (NMED SWQB)
WQMP	Statewide Water Quality Management Plan
WQPAB	Water Quality Protection Advisory Board
WQPPAP	Water Quality Protection Policy and Action Plan
WRAS	Watershed Restoration Action Strategy
WRB	Water Resources Board (MRCOG)
WRMS	Water Resources Management Strategy
WTP	water treatment plant (for WUA San Juan-Chama Drinking Water Project)
WUA	Albuquerque Bernalillo County Water Utility Authority

Executive Summary

The Albuquerque/Bernalillo County Ground-Water Protection Policy and Action Plan (GPPAP) was adopted by the Board of County Commissioners in November 1993 and by the City Council in August 1994. At that time, groundwater was the sole source of drinking water in Bernalillo County. Currently, the Albuquerque Bernalillo County Water Utility Authority (WUA) is using a combination of groundwater and surface water as a drinking water supply. Beginning in late 2008, the WUA, through its San Juan-Chama Drinking Water Project, began diverting San Juan-Chama water from the Rio Grande for drinking water purposes; this water will ultimately be the primary source of drinking water for the customers of the WUA. To reflect the changing water supply source, the WUA contracted with Daniel B. Stephens & Associates, Inc. (DBS&A) to (1) develop a Surface Water Protection Policy and Action Plan (SPPAP), (2) update the GPPAP, and (3) integrate the SPPAP and GPPAP into one document, a Water Quality Protection Policy and Action Plan (WQPPAP).

The mission of the WQPPAP is to:

Ensure the quality of our surface water and groundwater resources so that public health, quality of life, and economic vitality of this and future generations are not diminished.

Although there are some similarities in the threats and protection measures for surface water and groundwater, there are many more differences between the two. For example, current surface water quality issues and their potential to negatively impact the drinking water supply are not nearly as severe as groundwater quality issues were at the time the GPPAP was being developed in the late 1980s and early 1990s, when there were many cases of known groundwater pollution in the Middle Rio Grande Valley. By contrast, the quality of surface water is generally excellent and meets almost all federal and state requirements. Accordingly, this WQPPAP comprises two distinct sets of policies tailored to the particular surface water and groundwater quality issues associated with the WUA water supply.

Surface Water Protection Policy and Action Plan

The primary purpose of this SPPAP is to protect the quality and prevent degradation of surface water resources, primarily the Rio Grande in the Albuquerque/Bernalillo County area. Also of importance is protection of the ecological and environmental health of the Rio Grande in the Albuquerque metropolitan area. Because the quality of surface water in that area is determined by the quality of water upstream from Albuquerque, the entire upstream watershed must be considered for purposes of surface water quality protection.

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The goals of the SPPAP are to

- Protect surface water resources in Bernalillo County.
- Define and improve the coordination and effectiveness of the multiple local jurisdictions with an interest in surface water protection.
- Advocate enforcement of federal and state regulations implemented to protect surface water from contamination.

Many existing programs are designed to protect surface water quality, including federal programs, state programs, programs regulated by a government agency within the Albuquerque/Bernalillo County area, and tribal programs.

- The National Pollutant Discharge Elimination System (NPDES) permit program, established by Section 402 of the Clean Water Act, was designed to protect surface water quality through regulation and control of point source discharges (i.e., discharges from "discrete conveyances such as pipes or manmade ditches") to surface water. Currently (October 2009), a total of 43 existing NPDES permits regulate discharges in or upstream of the Albuquerque/Bernalillo County area, and an application for one additional permit (for the Buckman Direct Diversion Project) is in progress.
- The New Mexico Water Quality Control Commission is the state water pollution control agency for all purposes of the federal Clean Water Act and for certain programs of the Safe Drinking Water Act. To provide the basis for many of the requirements of these acts, the Commission is charged with adoption of water quality standards designed to protect public health and welfare and enhance the quality of surface water and groundwater.
- Section 303(d) of the federal Clean Water Act requires states to identify stream reaches that are impaired or do not meet water quality standards of the associated designated use and to establish a total maximum daily load (TMDL) for each pollutant in the affected reaches to ensure that State and Tribal water quality standards can be met. Recent New Mexico Environment Department (NMED) monitoring data indicated that the Middle Rio Grande-Albuquerque reach was impaired for fecal coliform bacteria during stormwater runoff events; therefore, NMED developed and wrote a TMDL for fecal coliform.

In addition to state and federal agencies that oversee the above programs, several groups work on protection of surface water quality within the Albuquerque/Bernalillo County area, and many of them hold public meetings on a regular basis, often monthly. These groups include the Water

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Quality Protection Advisory Board, the Ciudad Soil and Water Conservation District, the Stormwater Team (comprised originally of partner agencies of the one municipal separate storm sewer system NPDES permit in Bernalillo County), the Middle Rio Grande-Albuquerque Reach Watershed Group, and the Middle Rio Grande Water Assembly.

Based on a general review of past monitoring and surface water quality protection efforts, the primary threats to surface water quality in the Albuquerque/Bernalillo County area are:

- Stormwater discharges in the Albuquerque/Bernalillo County area
- Treated wastewater effluent discharges in the Albuquerque/Bernalillo County area
- Discharges to source waters upstream from the Albuquerque/Bernalillo County area
- Nonpoint sources (including sediment input, surface flows from on-site wastewater treatment and disposal systems, and irrigation return flows)
- Other sources (including hazardous spills, agricultural return flows, etc.)

Based on these threats and other issues regarding the WUA's water supply, the following surface water protection policies shall be implemented:

- *Policy A:* The City, County, and WUA shall advocate and promote protection of surface water quality in the Rio Grande, its tributaries, and all other surface water resources in Bernalillo County.
- *Policy B:* The City, County, and WUA shall clearly define the roles and responsibilities of each agency working with surface water quality protection and shall promote coordination of all surface water quality protection activities.
- *Policy C:* The City, County, and WUA shall equitably share the funding, staffing and implementation of surface water quality protection efforts, including those policies recommended herein.
- *Policy D:* The City, County, and WUA shall undertake efforts to better understand the impact of urban development on surface water quality—including its effect on the quality of stormwater runoff—and balance the costs of implementing additional protection measures with the benefits of those measures.
- *Policy E:* The City, County, and WUA shall promote the establishment, implementation, and enforcement of federal, state, and local watershed protection programs to address

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upstream threats in a manner that will protect surface water quality throughout the Middle Rio Grande.

- *Policy F:* The City, County, and WUA shall implement a review process for NPDES permitting activities for all upstream discharges.
- *Policy G:* The City, County, and WUA shall participate in comprehensive water-resource management planning on a watershed scale to encourage watershed and water quality protection.

Groundwater Protection Policy and Action Plan

The primary purpose of this updated GPPAP is to protect the quality and prevent degradation of groundwater resources, particularly with respect to drinking water sources. Based on a review of the progress that has been made since the original GPPAP was adopted and identification of areas for revision and/or expansion, the goals, policies, and objectives of the 1995 GPPAP were modified to be consistent with new information.

The goals of the original GPPAP are still valid today and include:

- Protect the groundwater resource.
- Find and clean up contaminated groundwater.
- Promote the coordinated protection and prudent use of the groundwater resource throughout the region.

While the protection measures developed in the original GPPAP were largely effective at protecting the groundwater resource by finding and cleaning up contaminated groundwater and coordinating protection and prudent use of the resource, there are some protection measures that could be improved upon and some new concerns that have arisen. Significant successes include:

- Significant progress in controlling the releases of substances having the potential to degrade groundwater quality, particularly in limiting the quantity of septic tank discharges.
- Establishment of a citizen advisory board to recommend threat control regulations. This citizen advisory board (the Water Quality Protection Advisory Board) has met regularly since 1988 and currently meets on a monthly basis.

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- Cleanup of most known cases of groundwater pollution, including removal and/or remediation of 325 leaking underground storage tanks and identification and remediation of several Superfund Sites.
- Improved understanding of groundwater resources (through extensive monitoring), allowing for detection of contaminated sites and documentation of cleanup efforts.

Areas for improvement and new concerns include:

- Need for increased communication and coordination with local, state and federal regulators to enhance enforcement and compliance with local, state, and federal environmental regulations.
- New potential groundwater pollution sources.
- Need for planning on a regional and watershed level.
- Funding for contamination cleanup, extension of sewer service (to reduce septic tank use), and other activities.

Based on the GPPAP review, the following modified groundwater protection policies shall be implemented:

- *Policy A:* The City, County, and WUA shall prohibit or control the releases of substances having the potential to degrade groundwater quality.
- *Policy B:* The City, County, and WUA shall identify groundwater contamination and expedite corrective action.
- *Policy C:* The City, County, and WUA shall promote the vigorous enforcement of laws and regulations related to groundwater protection throughout the Upper Rio Grande drainage basin planning area.
- *Policy D:* The City, County, and WUA shall identify and recognize compliance by industry, business, government, and community organizations.
- *Policy E:* The City, County, and WUA shall participate in comprehensive water resource management planning on a watershed scale to encourage watershed and water quality protection.
- *Policy F:* The City, County, and WUA shall encourage, facilitate, and acknowledge public participation.

1. Introduction

The Albuquerque/Bernalillo County Ground-Water Protection Policy and Action Plan (GPPAP) was adopted by the Board of County Commissioners in November 1993 and by the City Council in August 1994. The GPPAP was the result of five years of planning and research that began in 1988, when the City Council and Board of County Commissioners passed resolutions calling for action to clean up and protect groundwater resources, which were rightly recognized as vital.

At that time, groundwater was the sole source of drinking water in Bernalillo County. Currently, the Albuquerque Bernalillo County Water Utility Authority (WUA) is using a combination of groundwater and surface water as a drinking water supply. Beginning in late 2008, the WUA, through its San Juan-Chama Drinking Water Project, began diverting San Juan-Chama water from the Rio Grande for drinking water purposes; this water will ultimately be the primary source of drinking water for the customers of the WUA.

To reflect the changing water supply source, the WUA contracted with Daniel B. Stephens & Associates, Inc. (DBS&A) to (1) develop a Surface Water Protection Policy and Action Plan (SPPAP), (2) update the GPPAP, and (3) integrate the SPPAP and GPPAP into one document, a Water Quality Protection Policy and Action Plan (WQPPAP). The WUA requested that the work be completed in three separate phases, allowing time for City, County, and WUA staff and their advisory board, the Water Quality Protection Advisory Board (WQPAB) (Section 2.2.3), to complete multiple reviews of interim documents. This document is the culmination of the third phase, to integrate the SPPAP and updated GPPAP into the WQPPAP.

1.1 Background

When the [GPPAP](#) was adopted in the early 1990s, many governmental entities were involved in developing and implementing it. Those most involved include:

- Albuquerque Public Works Department
- Albuquerque Environmental Health Department
- Albuquerque Planning Department
- Bernalillo County Environmental Health Department

These and the other entities involved in the development and adoption of the GPPAP worked together for the purpose of protecting a shared resource. Since the adoption of the GPPAP, the WUA was created; however, the multijurisdictional issues have remained in effect (that is, there are still many governmental entities involved in this process). Local jurisdictional authorities

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were able to work together for groundwater protection in the early 1990s and are encouraged to do so now (2009).

1.2 Mission and Goals

The 1994 GPPAP established the mission and goals for groundwater protection. For this WQPPAP, the mission of the GPPAP was adapted to fit both the SPPAP and GPPAP:

Ensure the quality of our surface water and groundwater resources so that public health, quality of life, and economic vitality of this and future generations are not diminished.

Although there are some similarities in the threats and protection measures for surface water and groundwater, there are many more differences between the two. For example, current surface water quality issues and their potential to negatively impact the drinking water supply are not nearly as severe as groundwater quality issues were at the time the GPPAP was being developed in the late 1980s and early 1990s, when there were many cases of known groundwater pollution in the Middle Rio Grande Valley (PCC and GPAC, 1995). By contrast, the quality of surface water is generally excellent and meets almost all federal and state requirements. Accordingly, while the mission of the GPPAP could be adapted for purposes of the WQPPAP, goals and specific policies associated with each goal are tailored to the particular surface water and groundwater quality issues associated with the WUA water supply, as detailed in the SPPAP and GPPAP (Sections 2 and 3, respectively). A comparison of the different policies for the two plans is provided in Table 1.

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Table 1. Comparison of Water Quality Protection Policies for Surface Water and Groundwater

Policy Statement	Policy ^a	
	SPPAP	GPPAP
The City, County, and the WUA shall advocate and promote protection of surface water quality in the Rio Grande, its tributaries and all other surface water resources in Bernalillo County.	A	—
The City, County and the WUA shall prohibit or control the releases of substances having the potential to degrade groundwater quality.	—	A
The City, County, and the WUA shall identify groundwater contamination and expedite corrective action.	—	B
The City, County, and the WUA shall clearly define the roles and responsibilities of each agency working with surface water quality protection, and promote coordination of all surface water quality protection activities.	B	—
The City, County, and WUA shall equitably share the funding, staffing and implementation of surface water quality protection efforts, including those policies recommended herein.	C	—
The City, County, and WUA shall undertake efforts to better understand the impact of urban development on surface water quality, including its effect on the quality of stormwater runoff, and balance the costs of implementing additional protection measures with the benefits of those measures.	D	—
The City, County, and the WUA shall promote the vigorous enforcement of laws and regulations related to groundwater protection throughout the Upper Rio Grande drainage basin planning area.	—	C
The City, County, and the WUA shall identify and recognize compliance by industry, business, government, and community organizations.	—	D
The City, County, and WUA shall promote the establishment, implementation, and enforcement of federal, state, and local watershed protection programs to address upstream threats in a manner that will protect surface water quality throughout the Middle Rio Grande.	E	—
The City, County, and WUA shall implement a review process for NPDES permitting activities for all upstream discharges.	F	—
The City, County, and WUA shall participate in comprehensive water-resource management planning on a watershed scale, to encourage watershed and water quality protection.	G	E
The City, County, and the WUA shall encourage, facilitate, and acknowledge public participation.	—	F

^a Letter designation of included policy
 (see pages 25-30 for SPPAP and 37-42 for GPPAP
 — = Not included

SPPAP = Surface Water Protection Policy and Action Plan
 GPPAP = Groundwater Protection Policy and Action Plan
 WUA = Albuquerque Bernalillo County Water Utility Authority

2. Surface Water Protection Policy and Action Plan

The primary purpose of this SPPAP is to protect the quality and prevent degradation of surface water resources. The WUA's primary focus within this broader goal is the protection of drinking water sources in the Albuquerque/Bernalillo County area. Also of importance is protection of the ecological and environmental health of the Rio Grande in the Albuquerque metropolitan area.

The primary surface waterbody of concern is the Rio Grande in the Albuquerque/Bernalillo County area (Figure 1). However, the quality of surface water in that area is determined by the quality of water from the entire Rio Grande watershed upstream from Albuquerque (Figure 1), by sources of water and contaminants within the Albuquerque metropolitan area, and by the water quality in the portion of the San Juan Basin upstream from the Azotea Tunnel. Therefore, although the jurisdiction of WQPAB partner agencies is limited to the Albuquerque/Bernalillo County area, the entire upstream watershed must be considered for purposes of surface water quality protection.

As discussed throughout this document, surface water quality concerns are addressed by many existing federal and state laws and regulations. The role of this document is to:

- Summarize existing regulations and protection measures.
- Determine where improvement in surface water quality protection measures may be needed and might be implemented through local government authorities or initiatives.
- Recommend adoption by local government of a set of policies, protection measures, and an action plan for implementation.

2.1 Goals of the SPPAP

The goals of the SPPAP are to

- Protect surface water resources in Bernalillo County.
- Define and improve the coordination and effectiveness of the multiple local jurisdictions with an interest in surface water protection.
- Advocate enforcement of federal and state regulations implemented to protect surface water from contamination.

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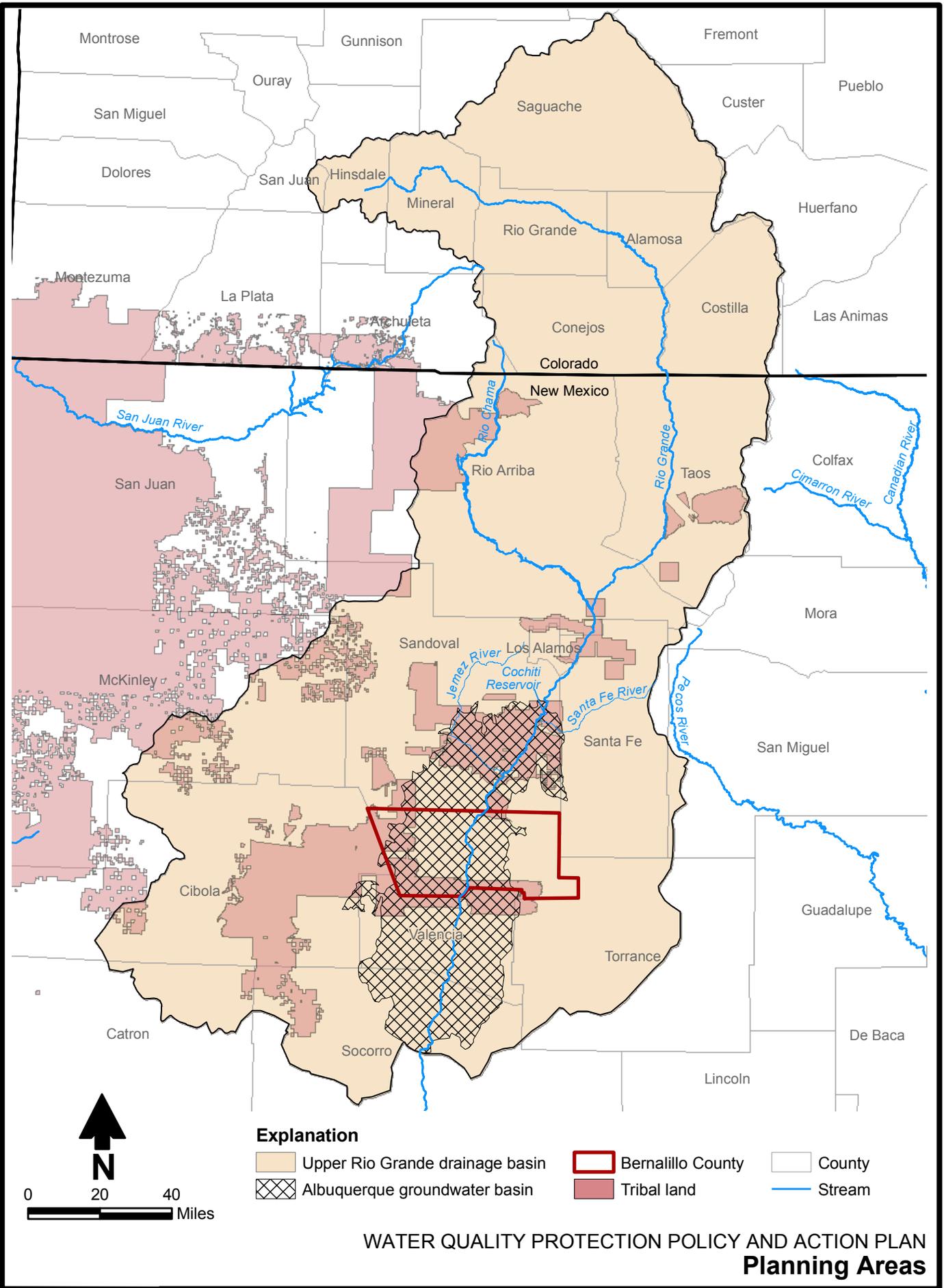


Figure 1

2.2 Existing Protection Programs

This section provides a brief overview of the many existing programs designed to protect surface water quality, including federal programs, state programs, programs regulated by a government agency within the Albuquerque/Bernalillo County area, and tribal programs.

2.2.1 Federal

The federal Clean Water Act (CWA) requires several important surface water quality protection programs, most of which are administered by the State of New Mexico and are discussed in Section 2.2.2. This section discusses the National Pollutant Discharge Elimination System (NPDES) permit program, which is the only one of these programs that is administered by a federal agency (the U.S. Environmental Protection Agency [EPA]). Although the State of New Mexico does not currently have primacy for the NPDES permit program, the State is pursuing authorization to assume permitting responsibilities for the program ([NMED, 2008b](#)), and the New Mexico Environment Department (NMED) currently provides “certification” input to the Region 6 office of the U.S. EPA on all NPDES permit applications.

The NPDES permit program was established by Section 402 of the CWA; it was designed to protect surface water quality through regulation and control of point source discharges to surface water. Point sources are defined as “discrete conveyances such as pipes or manmade ditches.” Although stormwater is generally considered a nonpoint source, it is subject to regulation by the NPDES program if it is discharged to a receiving waterbody through a pipe or a manmade ditch. In this way, the NPDES permit program also regulates and controls stormwater from urban areas.

NPDES permits are granted either individually (permits specifically tailored to an individual facility) or generally (for multiple facilities having the same type of discharge and located in a specific geographic area):

- Appendix A, Table A-1 summarizes information for individual NPDES permits in Bernalillo County and the portion of the Rio Grande Basin in New Mexico upstream of the Albuquerque/Bernalillo County area. An application for the Buckman Direct Diversion Project NPDES permit in Santa Fe County has been presented for public notice, but that permit has not been issued yet.
- There are several types of general NPDES permits for construction, industry, and storm sewers in the Rio Grande Basin upstream of the intake for the WUA Drinking Water Project water treatment plant (WTP). A brief description of each of these is provided in

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Appendix A, Table A-2. Some of these permits are past their expiration dates, but have been automatically administratively extended pending reissuance. Entities must submit a notice of intent to discharge to U.S. EPA Region 6 for the general NPDES permits.

2.2.2 State

The Statewide Water Quality Management Plan (WQMP) ([NMWQCC, 2003](#)) summarizes water quality management in the State of New Mexico. The WQMP meets the requirements of Section 208 (area-wide waste treatment management plans) and Section 74-6-4.B of the New Mexico Water Quality Act (which requires that the state maintain a comprehensive water quality management plan). The WQMP was updated in 2002; prior to that time, the document had not been updated since 1981.

The New Mexico Water Quality Control Commission (NMWQCC), established by the State Water Quality Act in 1967, is the state water pollution control agency for all purposes of the federal CWA and for certain programs of the Safe Drinking Water Act (SDWA). To provide the basis for many of the requirements of these acts, the NMWQCC is charged with adoption of water quality standards designed to protect public health and welfare and enhance the quality of surface water and groundwater. Those standards are described in [Section 20.6.4](#) of the New Mexico Administrative Code (NMAC); standards that are applicable to the Albuquerque metropolitan area are described in greater detail in Section 2.3.

Section 303(c) of the federal CWA requires that water quality standards be reviewed every three years in the Triennial Review process. The Surface Water Quality Bureau (SWQB) of the NMED is in the process of completing the 2008 Triennial Review; proposed changes were presented to the NMWQCC in July 2009. The NMWQCC also maintains a Continuing Planning Process, which meets requirements of Section 303 (continuing planning process) of the federal CWA.

Section 303(d) of the federal CWA requires states to identify stream reaches that are impaired or do not meet water quality standards of the associated designated use and to establish a total maximum daily load (TMDL) for each pollutant in the affected reaches. TMDLs are created by NMED staff and approved by the NMWQCC; they are defined as "a written plan and analysis established to ensure that a waterbody will attain and maintain water quality standards including consideration of existing pollutant loads and reasonably foreseeable increases in pollutant loads." TMDLs are designed to ensure that State and Tribal water quality standards can be met.

Activities related to Section 319(h) of the federal CWA are addressed by non-regulatory programs through the Watershed Protection Section (WPS) of the NMED SWQB. WPS staff

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work in watersheds with established TMDLs or with assessed data to implement best management practices (BMPs) to control pollution from nonpoint sources.

2.2.3 Albuquerque/Bernalillo County Area

Several groups work on protection of surface water quality within the Albuquerque/Bernalillo County area, and many of them hold public meetings on a regular basis, often monthly. These groups include:

- The WQPAB, a citizen advisory board formerly known as the Ground-Water Protection Advisory Committee (GPAC) and sometimes referred to as the Ground-Water Protection Advisory Board (GPAB), was established in 1988 by City Resolution R-143 and County Resolution R-49-88 and has met regularly since that time. The WQPAB is composed of nine members who are appointed by the City of Albuquerque (COA), Bernalillo County, and the Board of the WUA. WQPAB members currently meet monthly and provide advice to their appointing agencies regarding water quality protection.
- The Ciudad Soil and Water Conservation District (SWCD) is organized and operated under the State Soil and Water Conservation District Act of 1937; it was created in 1943 by a referendum vote of landowners. SWCDs were created to preserve and beneficially develop the soil, water, and other natural resources of the state ([NMSA 73-20-25 through 73-20-48](#)).
- The Stormwater Team was formed in 2004 to educate the public on how to reduce stormwater pollution. Original members of the Stormwater Team include the partner agencies of the one municipal separate storm sewer system (MS4) NPDES permit in the area (Section 2.6.1) and Bernalillo County. The MS4 partner agencies are the COA, the Albuquerque Metropolitan Area Flood Control Authority (AMAFCA), the University of New Mexico (UNM), and the New Mexico Department of Transportation (NMDOT). Since the Stormwater Team was established, the Ciudad SWCD and the Southern Sandoval County Arroyo Flood Control Authority) have also joined.
- The Middle Rio Grande-Albuquerque (MRG-A) Reach Watershed Group, a multiagency collaborative effort, was formed with the goals of establishing priorities for watershed restoration, identifying potential projects, and seeking funding to implement BMPs for pollution control in the watershed. This group recently completed a draft Watershed Restoration Action Strategy (WRAS) ([MRG-A Watershed Group, 2008](#)), which was supported by CWA Section 319 grant funding awarded to the Ciudad SWCD. The impetus for the WRAS was that the MRG-A reach, which extends from the boundary of Santa Ana Pueblo in the north to the Isleta Pueblo in the south, was listed as an

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impaired waterbody in the 2002-2004 State of New Mexico CWA 303(d) list, with fecal coliform as the pollutant of concern.

- The Middle Rio Grande Water Assembly (WA) is a "diverse, all-volunteer, non-profit grassroots organization devoted to open, inclusive, and participatory process" ([MRGWA, 2008](#)). The WA deals primarily with water quantity issues (as opposed to quality); they worked with the Mid-Region Council of Governments (MRCOG) and its Water Resources Board (WRB) to develop the Middle Rio Grande Regional Water Plan for Sandoval, Bernalillo, and Valencia Counties ([WA and MRCOG, 2004](#)).

2.2.4 Tribal

Each of the many Native American Tribes and Pueblos in the planning area (Figure 1) is responsible for protection of surface water quality within their lands, and the Pueblo of Sandia and the Pueblo of Isleta have authority from the U.S. EPA to establish their own water quality standards. Surface water quality standards developed for Tribal lands may affect other government entities that discharge to waters upstream from those lands. Sandia and Isleta have set lower allowable concentrations for particular metals and other parameters in their water quality standards than in the State water quality standards, and any NPDES permits upstream of these pueblos are required to comply with their stricter water quality standards, which may affect NPDES permits in Bernalillo County. For example, standards set by the Pueblo of Isleta may affect effluent discharge limits and, consequently, operation of the WUA Southside Water Reclamation Plant.

2.3 Applicable Water Quality Standards for the Rio Grande

The designated uses established by the NMWQCC for the Rio Grande in the Albuquerque/Bernalillo County area include irrigation, marginal warmwater aquatic life, livestock watering, wildlife habitat, and secondary contact recreation. These designated uses apply to the main stem of the Rio Grande from the Angostura diversion works (north of Albuquerque) to the Alameda Bridge in Albuquerque, and downstream to Elephant Butte reservoir.

Appendix B contains the [NMWQCC water quality standards](#) for these designated uses for surface water in New Mexico. Numeric criteria have been established for inorganic chemicals, radionuclides, bacterial quality, organic chemicals, and field parameters such as temperature. Additional, reach-specific criteria for the Rio Grande in the Albuquerque area have been established for dissolved oxygen (DO) (above Alameda Bridge only), pH, temperature, *E. coli* bacteria, total dissolved solids, sulfate, and chloride.

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Recent NMED monitoring data indicated that the MRG-A reach was impaired for fecal coliform bacteria during stormwater runoff events; therefore, NMED developed and wrote a TMDL for fecal coliform ([NMED, 2002](#)).

2.4 Existing Monitoring Programs

An important component of any water quality protection program is to monitor and evaluate ambient water quality. Many agencies and organizations have researched surface water quality in the Albuquerque/Bernalillo County area, including:

- U.S. Geological Survey (USGS)
- WUA
- COA
- Bernalillo County
- AMAFCA
- UNM
- U.S. Forest Service
- NMED SWQB
- U. S. Fish and Wildlife Service

Although it is beyond the scope of this report to provide details on every agency and every study that has been performed in the Albuquerque/Bernalillo County area, some of the most relevant of these programs are discussed in Sections 2.4.1 through 2.4.4.

2.4.1 *Municipal Stormwater Sampling Program*

The USGS conducts a municipal stormwater sampling program in collaboration with the partner agencies of the MS4 NPDES permit (Section 2.2.3). As part of this program, the USGS collects stormwater quality data to meet NPDES permit requirements. The program has been in operation since 1992 and is well documented in USGS reports (e.g., [Veenhuis, 2003](#); [Kelly and Romero, 2003](#)).

The USGS also collects water quality data from various sites along the Rio Grande and its tributaries through programs that are federally funded, such as the National Water-Quality Assessment Program (NAWQA), and through its Cooperative Program with cooperators such as the COA and the WUA (Section 2.4.2).

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2.4.2 Albuquerque Bernalillo County Water Utility Authority

In preparation for bringing the Drinking Water Project online, the WUA has collected many water quality samples from the Rio Grande upstream from the WTP intake as well as from the treated drinking water. Samples were collected during 2007 and 2008 and analyzed for parameters regulated under the SDWA as well as other indicators of water quality. Those results are discussed in Section 2.5.

The WUA has an ongoing collaborative program with the USGS to monitor water quality of the river upstream from the WTP intake. Water quality samples are collected from the Rio Grande at Alameda, at San Felipe, and above Cochiti Lake approximately three times per year to coincide with winter baseflows, summer rainstorms, and spring runoff. Two USGS reports have been published as a result of that cooperative program ([Langman and Anderholm, 2004](#); [Langman and Nolan, 2005](#)). A brief overview of these studies is presented in Section 2.5.

2.4.3 New Mexico Environment Department

NMED periodically conducts intensive sampling along selected reaches to (1) determine whether water quality standards of assigned designated uses are attained, and (2) collect sufficient data to establish TMDLs for a particular reach. Currently, the only applicable TMDL in the Albuquerque/Bernalillo County area is for fecal coliform in the MRG-A reach ([NMED, 2002](#)), as discussed in Section 2.2.2. This TMDL, specifically to address fecal coliform in stormwater, was developed based on results of a surface water quality survey of the Middle Rio Grande conducted by the NMED SWQB in 1999 ([NMED, 2002](#)).

2.4.4 U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service has conducted extensive water quality monitoring and investigations in the Albuquerque area as part of the endangered species protection program for the Rio Grande silvery minnow. Several of these investigations have been conducted in cooperation with federal and non-federal agencies and the Middle Rio Grande Endangered Species Collaborative Program. A summary of findings has been published ([Abeyta and Lusk, 2004](#)).

2.5 Ambient Water Quality of the Rio Grande in the Albuquerque/Bernalillo County Area

Many federal, state, and local agencies have collected water quality samples from the Rio Grande in the Albuquerque/Bernalillo County area; several of the largest of these monitoring programs are discussed in Section 2.4. Most of the data collected can provide useful

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information about the quality of water in the Rio Grande; however, the data should be interpreted carefully. The number, timing, and frequency of samples collected vary depending on the purpose and goal of the particular agency and the specific monitoring event. In addition to these factors, there are many other variables—such as the sampling method (grab sample from the bank, discharge weighted sample, composite samples), parameters analyzed for, analytical methods, and reporting limits—that can make it difficult to compare data collected by various agencies.

Some considerations for design of an effective monitoring program include:

- In order to adequately characterize the seasonal variation in the water quality of a particular reach of a river, samples must be collected in each season throughout the year.
- Because water quality conditions of a river may vary during wet conditions versus dry conditions, sufficient samples must be collected during various flow regimes.
- Stormwater discharge can have substantial effects on water quality of the Rio Grande; therefore, samples must be collected during stormwater runoff events.
- In order to evaluate temporal trends in water quality conditions, samples must be collected over a sufficiently long period of time.

Among the more useful of these programs in establishing ambient water quality conditions of the Rio Grande are several investigations conducted by the USGS. In particular, a basin-wide investigation of the Rio Grande above Albuquerque conducted from 1992 to 1995 as part of the USGS NAWQA involved sampling surface water at least monthly at multiple sites near the MRG-A reach of the Rio Grande; these data are useful to characterize ambient water quality during various streamflow regimes for multiple points in the watershed upstream from the intake to the WUA WTP. Data collected during the 1992-95 period were analyzed and presented by [Anderholm et al. \(1995\)](#), [Healy \(1997\)](#), [Levings et al. \(1998\)](#), and [Moore and Anderholm \(2002\)](#) and can be used to characterize ambient conditions during the 1992-95 time period.

A recently published USGS report summarizes seasonal and spatial trends in water quality and streamflow for the portion of the Rio Grande watershed upstream from the MRG-A reach from 1985 to 2002 ([Langman and Nolan, 2005](#)). In that report, the site closest to the WUA WTP intake is USGS Station Number 08330000, the Rio Grande at Albuquerque, which is located at the Central Avenue bridge. The period of study included both above-average rainfall conditions (1978 to 1992) and drought conditions (1999 to 2002); therefore, the data set represents a

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range of precipitation conditions. Throughout the 1985-2002 study period, water in the Rio Grande was consistently a calcium-bicarbonate water type, with the following general chemistry:

- Specific conductance ranged from 192 to 548 microSiemens per centimeter ($\mu\text{S}/\text{cm}$), with a median concentration of 370 $\mu\text{S}/\text{cm}$. Specific conductance varied seasonally and was inversely related to streamflow, with the highest concentrations observed during fall and winter low-flow conditions.
- Alkalinity concentrations were highest during the fall and winter seasons and varied from 71 to 150 milligram per liter (mg/L) as calcium carbonate.
- pH values varied from 6.8 to 8.7 with a median value of 7.9.
- Total organic carbon (TOC) varied seasonally from 2.2 to 9 mg/L, with a median concentration of 4 mg/L; the smallest TOC concentrations were observed during the fall and winter baseflow period.
- All nitrogen and phosphorus concentrations were less than 0.20 mg/L, with a median value of less than 0.1 mg/L.
- Median trace element and maximum radionuclide concentrations did not exceed drinking water standards.
- Anthropogenic compounds were infrequently detected and did not exceed drinking water standards.

Perhaps the most recent water quality data set was collected by the WUA in preparation for bringing the Drinking Water Project online. The WUA conducted extensive water quality monitoring of raw surface water collected at the intake to the WTP, prior to treatment to drinking water standards at the Pilot Treatment Plant (located in a mobile unit near the intake to the WTP and used to design and evaluate the WTP treatment process). Approximately 34 samples of raw (untreated) water were collected over the past two years (2007 to 2009). Based on these data, water at the WTP intake is of the following quality:

- Conductance less than 400 $\mu\text{S}/\text{cm}$ with an average of 344 $\mu\text{S}/\text{cm}$
- Average total dissolved solids concentration of 275 mg/L
- Average pH of 8.0
- Average nitrate concentration of 0.12 mg/L
- Arsenic concentrations less than 5 micrograms per liter ($\mu\text{g}/\text{L}$)

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Using the WUA data set, Dr. Kerry Howe conducted an independent review of key water quality and treatment issues associated with the WTP ([Howe, 2009](#)). While the investigation was designed primarily to address issues associated with the WTP, some aspects of the study provide insight into the quality of the source water (that is, the quality of raw, or untreated, surface water). Specifically, Dr. Howe reviewed the following issues, with the following results ([Howe, 2009](#)):

- *The impact of upstream wastewater discharges on source water quality:* Upstream municipal wastewater discharges have minimal impact on source water quality because the wastewater discharges are very small relative to typical discharge of the river, resulting in a large dilution effect.
- *The occurrence of radiological contaminants in source water:* Radionuclides have been found in the Rio Grande at very low levels, almost always below SDWA levels; radionuclides in untreated surface water exceeded SDWA standards only twice during the entire 20-year period of record.
- *The occurrence of perchlorate in source water:* Perchlorate is not regulated by the SDWA but may be in the future. Most samples analyzed for perchlorate were below the detection limit, and the remaining samples "were about 200 times below the interim health advisory level."

2.6 Threats to Surface Water Quality

Threats to surface water quality can be classified as either a point source discharge or a nonpoint source discharge. It is generally easier to identify and control the discharge quality from point sources than it is from nonpoint sources; therefore, point sources are often better characterized and regulated than nonpoint sources.

For the purposes of this document, threats to surface water quality are grouped into the following general categories (Table 2):

- Stormwater discharges in the Albuquerque/Bernalillo County area
- Treated wastewater effluent discharges in the Albuquerque/Bernalillo County area
- Discharges to source waters upstream from the Albuquerque/Bernalillo County area
- Nonpoint sources (including sediment input, surface flows from on-site wastewater treatment and disposal systems, and irrigation return flows)
- Other sources (including hazardous spills, agricultural return flows, etc.)

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Table 2. Potential Sources of Contaminants to Surface Water
Page 1 of 2

Sources of Contaminants	Potential Contaminants	Chronic or Acute Threat	Potential Degree of Hazard	Likelihood of Occurrence	Point or Nonpoint Source	Protection Measures
Urban stormwater runoff Illicit discharges to storm sewers Construction site runoff Sewer collapses and overflows Accumulated pollutants Poorly regulated runoff from industrial areas	Pathogens, organics, metals	Acute	Low to moderate	Irregular but high	Both	Wide range, from education to BMPs, some of which could cause considerable expense.
Treated wastewater effluent	Nutrients, emerging contaminants	Chronic	Low	Unknown	Point	Routine maintenance; federal and state regulation
On-site liquid waste disposal (septic systems)	Pathogens and nutrients	Chronic	Low except for local streams	Exists	Nonpoint	Same as GPPAP
Upstream point sources	Wide range, emerging contaminants	Either	Moderate	Exists	Point	State and federal control, local involvement in NPDES permit process for new and existing sources, education and collection program for PPCPs
LANL	Radionuclides, PCBs, toxins	Chronic	Low	Irregular but common	Both	More stringent requirements
Agricultural return flows	Pathogens, nutrients, toxins	Chronic	Unknown	Continuous	Nonpoint	BMPs Agriculture is not regulated by the Clean Water Act

BMPs = Best management practices
GPPAP = Ground-Water Protection Policy and Action Plan

NPDES = National Pollutant Discharge Elimination System
PPCP = Pharmaceuticals and personal care products

LANL = Los Alamos National Laboratory
PCBs = Polychlorinated biphenyls

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Table 2. Potential Sources of Contaminants to Surface Water
Page 2 of 2

Sources of Contaminants	Potential Contaminants	Chronic or Acute Threat	Potential Degree of Hazard	Likelihood of Occurrence	Point or Nonpoint Source	Protection Measures
Concentrated animal feeding operations	Pathogens, nutrients	Chronic	Could be high, but few in upstream watersheds	Medium	Point	State and federal control
Hazardous spills Accidents involving transportation Illicit discharges	Many, from gasoline, to other toxins, to septage	Acute	Could be very high	Relatively low	Point	Prevention is a federal and state responsibility. Local needs are to develop and implement a well coordinated alarm and response program. Local law enforcement must be involved

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These threats to surface water quality, listed as potential sources of contaminants in Table 2, were identified by discussion with the WQPAB and a general review of past surface water quality protection efforts in the Albuquerque/Bernalillo County area. A formal process to characterize threats—such as that conducted for the GPPAP by CH2MHill and Lee Wilson and Associates (1990), or that outlined as part of NMED's Source Water Assessment and Protection Program—was not conducted because of limited funding and time available for this effort.

2.6.1 Stormwater Discharges

The WQPAB identified stormwater discharge as one of the greatest threats to surface water quality in the Albuquerque/Bernalillo County area. Recently, the National Research Council released a report that stated: "Stormwater runoff from the built environment remains one of the great challenges of modern water pollution control, as this source of contamination is a principal contributor to water quality impairment of waterbodies nationwide" ([NRC, 2008](#)).

Most stormwater discharges from metropolitan areas are considered by the EPA to be a point source discharge regulated by the federal NPDES program (Section 2.2.1) ([NMED, 2008b](#)). The existing MS4 NPDES permit ([No. NMS000101](#)) in the MRG-A reach is for municipalities covered by Phase I regulations and covers the bulk of stormwater discharge in the Albuquerque/Bernalillo County area; five outfalls are allowed under that permit (Appendix A, Table A-2). The MS4 NPDES permit was accepted by the EPA in 2003 and expired November 30, 2008. Its requirements focused on monitoring, removal of floating material and suspended debris (plastics and trash) from stormwater, control of runoff from construction sites, and public education. The four MS4 partner agencies (COA, AMAFCA, UNM, and NMDOT) submitted a permit renewal application during the summer of 2008. Currently, the EPA is in consultation with the U.S. Fish and Wildlife on this permit; it will be published for public notice and review during the summer of 2009 (NMED, 2009).

The four partner agencies in the MS4 NPDES permit (Section 2.2.3) are required to report water quality results to the U.S. EPA on an annual basis, as are all NPDES permittees. Data are simply reported to the EPA but are not analyzed, generally because of lack of available funding. The EPA provides audit comments on annual reports submitted to them; the most recent comment received from the EPA was to work more closely with developers regarding industry BMPs and to focus on low-impact development methods to reduce the potential for water quality impairment of receiving waterbodies.

NPDES Phase II regulations require that all small MS4s within urbanized areas must obtain an NPDES permit ([U.S. EPA, 1999](#); [NMED, 2008b](#)). Bernalillo County falls in this category and submitted a draft NPDES permit to the EPA for review in October 2007 and are awaiting response from EPA. The County has had a stormwater sampling program in place since 2003.

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NMED personnel involved with NPDES permit review and certification indicate that none of the smaller MS4s and industrial stormwater dischargers in the Albuquerque metropolitan area are covered by a small system general permit.

2.6.2 Wastewater Discharges in the Middle Rio Grande

Treated wastewater effluent is discharged at three locations in the Albuquerque metropolitan area, including the Town of Bernalillo, the City of Rio Rancho, and the WUA Southside Reclamation Plant (Figures 2a and 2b [discharge points 18, 22, and 1, respectively], Appendix A, Table A-1). Each wastewater effluent discharge location is regulated under an NPDES permit, and annual reports of compliance monitoring are thus submitted to the U.S. EPA.

As discussed in Section 2.5, wastewater discharge generally comprises only a small component of total flow in the Rio Grande. However, a failure in the treatment process has the potential to result in an exceedance of applicable water quality standards; therefore, wastewater discharges are considered a low-level threat to surface water quality of the Rio Grande. Discharge of treated wastewater effluent upstream from the intake to the WUA WTP is not necessarily a threat to the quality of drinking water because the drinking water treatment process is designed to remove pollutants that might be in upstream wastewater discharges.

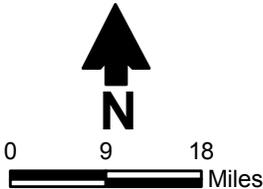
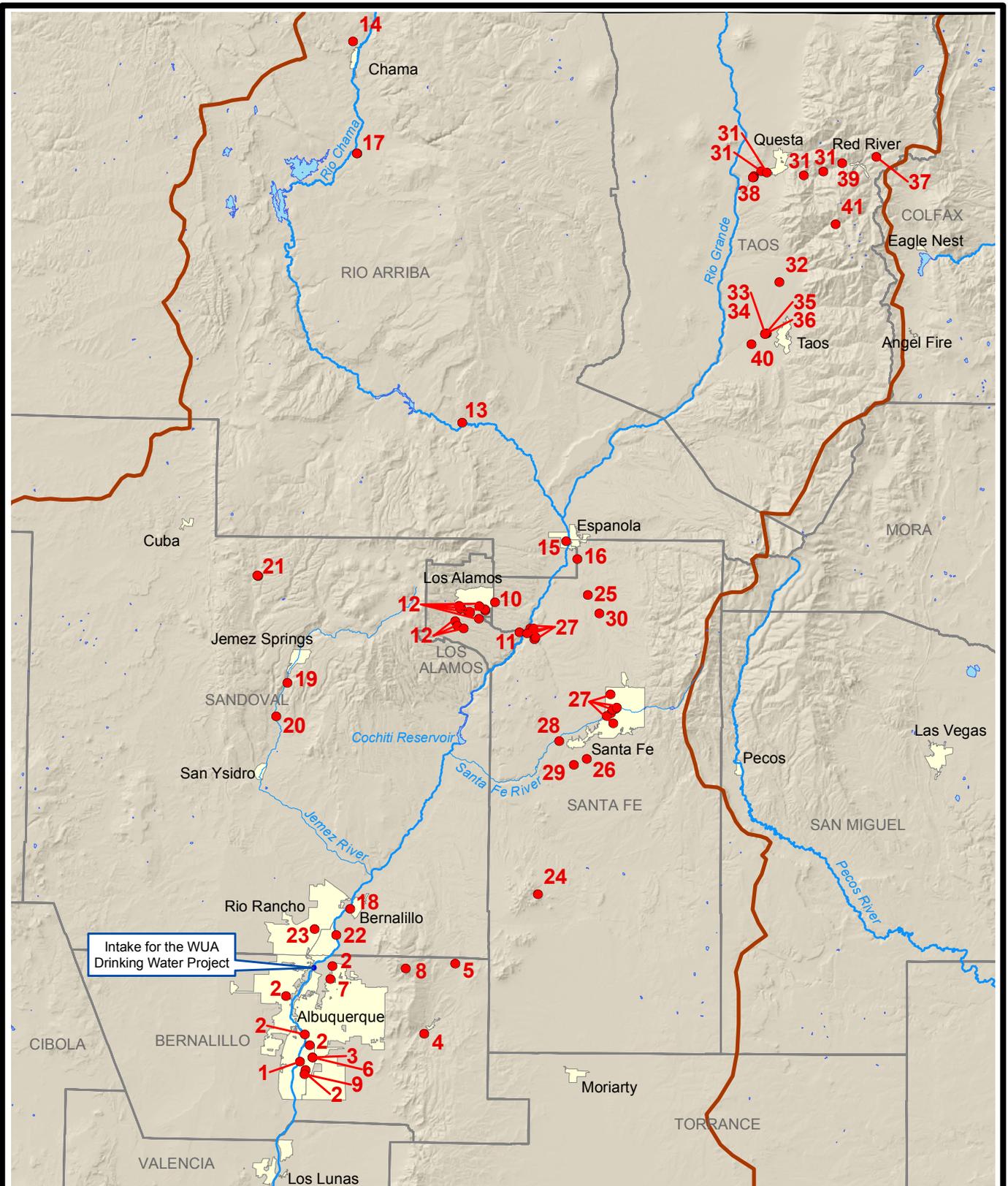
Violations of the CWA or the individual NPDES permit conditions are required to be reported to the EPA. Table 3 summarizes individual NPDES permits that have current alleged significant violations or have been the subject of enforcement action during the past five years. Enforcement actions have been issued to six of the permit holders for not meeting their compliance schedule. Three of the permit holders—the Rio Rancho, Taos, and Chama wastewater treatment plants—have been issued effluent violations of their monthly average limits. Additional information on these violations can be found on the [EPA website](#).

2.6.3 Upstream Discharges

In addition to discharges occurring within the Albuquerque metropolitan area, all discharges to the contributing watershed upstream can affect the quality of surface water in the Albuquerque/Bernalillo County area. Several important discharges to the Rio Grande and its tributaries occur upstream from the Albuquerque/Bernalillo County area:

- Municipal discharges, such as Alamosa, Colorado, and Española and Santa Fe, New Mexico

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- Explanation**
- NPDES discharge point
 - Stream
 - Lake
 - City or town
 - County
 - ▭ Upper Rio Grande drainage basin

WATER QUALITY PROTECTION POLICY AND ACTION PLAN
Upstream NPDES Discharge Points

Figure 2a

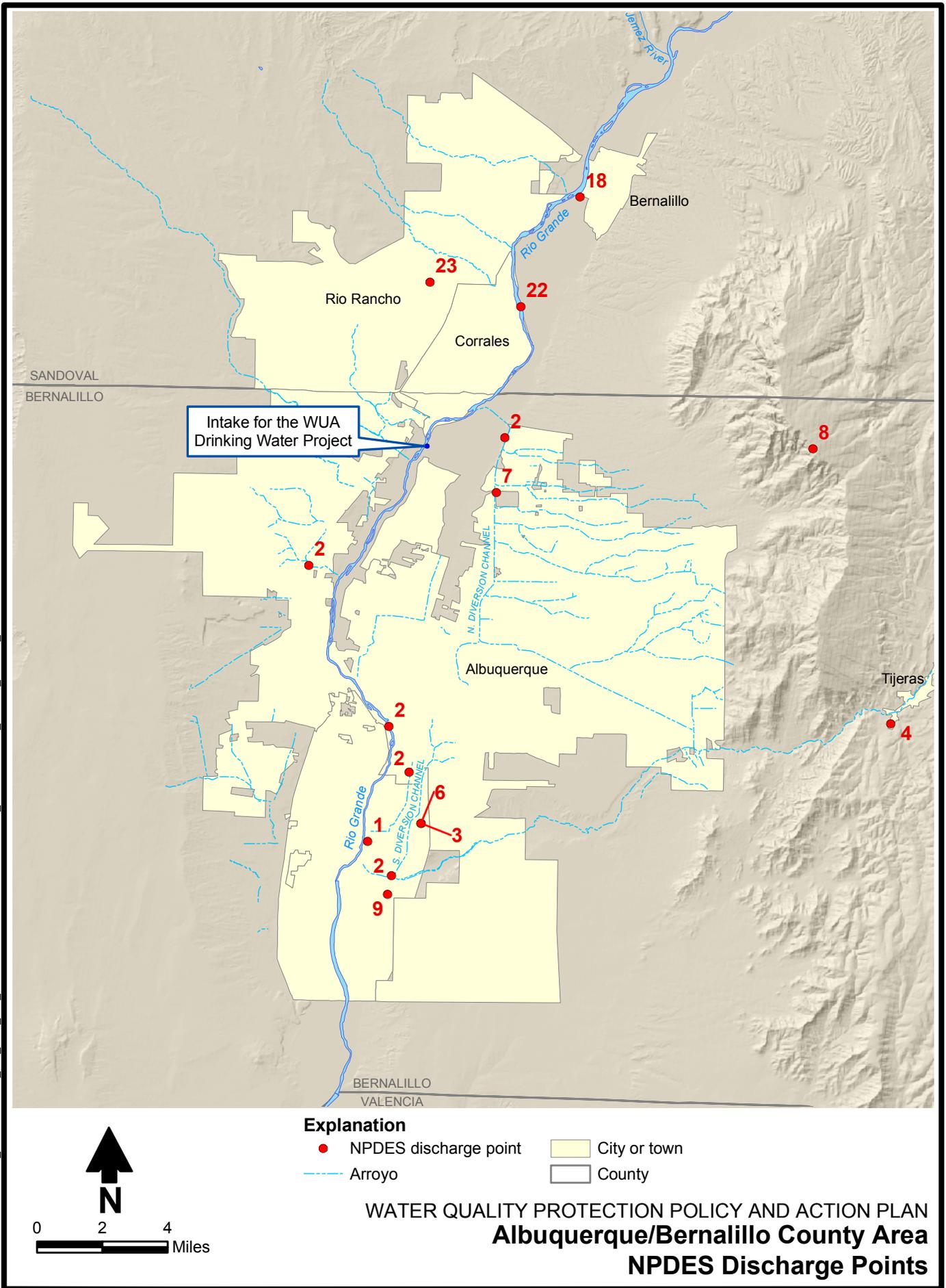


Figure 2b

Water Quality Protection Policy and Action Plan

Table 3. Individual NPDES Permit Enforcement and Compliance History
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NPDES Permit No.	Facility	Location	Inspections (past 5 years)	Alleged Current Significant Violations	Formal Enforcement Actions (past 5 years)	Required To Be Reported to U.S. EPA
NM0024830	Abiquiu MDWCA & MSWA	Santa Fe	2	No	i	No
NMS000101	Albuquerque, City of	Albuquerque	2	No	i	Yes
NM0022250	Albuquerque, City of	Albuquerque	9	No	i	Yes
NM0022306	Chevron Mining Inc.	Questa	4	No	2	Yes
NM0030376	Cobisa-Person Limited Partner-	Albuquerque	1	No	i	No
NM0029351	Espanola, City of	Espanola	4	No	5	Yes
NM0030791	Harrand #4	Taos	1	No	i	No
NM0028479	Jemez Valley Public Schools	Jemez Pueblo	1	S	i	No
NM0020133	Los Alamos County-White Rock P	White Rock	1	No	3	No
NM0030139	Los Ojos State Fish Hatchery	Los Ojos	2	No	i	No
NM0030619	J.C. Septic - Burlison	Red River	1	No	i	No
NM0028436	Pojoaque Terrace Mobile Home	Santa Fe		S	i	No
NM0030147	Red River State Trout Hatchery	Questa	2	No	i	No
NM0000116	Rio Grande Portland Cement	Tijeras	1	No	i	No
NM0027987	Rio Rancho, City of WWTP #2	Rio Rancho	4	E	1	Yes
NM0027863	Sandia Peak Ski Co	Albuquerque	1	No	i	No
NM0022292	Santa Fe WWTP	Santa Fe	13	No	2	Yes
NM0030112	Seven Springs State Trout Hatc	Sandoval County	1	No	i	No
NM0023485	Town of Bernalillo	Bernalillo	2	S	2	No
NM0024899	Town of Red River	Taos	5	No	2	Yes

S = Significant non-compliance: enforcement action has been issued, and the facility is not meeting its compliance schedule.

E = Significant non-compliance: effluent violations of monthly average limits (Technical Review Criteria and chronic).

i = The online database shows no formal EPA or state enforcement action. Note that all violations do not receive formal enforcement actions.

Violations that are minor (such as those related to reporting), short in duration, or quickly corrected by the facility may not warrant formal enforcement action.

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Table 3. Individual NPDES Permit Enforcement and Compliance History
Page 2 of 2

NPDES Permit No.	Facility	Location	Inspections (past 5 years)	Alleged Current Significant Violations	Formal Enforcement Actions (past 5 years)	Required To Be Reported to U.S. EPA
NM0024066	Town of Taos WWTP	Rancho de Taos	4	E	1	Yes
NM0028355	University of California	Los Alamos	4	No	i	Yes
NM0028614	Valle Vista WWTP	Santa Fe County	1	S	i	No
NM0022101	Village of Taos Ski Valley	Taos Ski Valley	2	No	i	Yes
NM0027731	Village of Chama	Chama	1	E	3	No
NM0028011	Village of Jemez Springs	Jemez Springs	2	S	2	No
NM0029602	Wastewater Treatment Plant #3	Rio Rancho	1	S	i	No

S = Significant non-compliance: enforcement action has been issued, and the facility is not meeting its compliance schedule.

E = Significant non-compliance: effluent violations of monthly average limits (Technical Review Criteria and chronic).

i = The online database shows no formal EPA or state enforcement action. Note that all violations do not receive formal enforcement actions.

Violations that are minor (such as those related to reporting), short in duration, or quickly corrected by the facility may not warrant formal enforcement action.

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- Runoff from Los Alamos National Laboratory, including sewer overflows and stormwater runoff
- Stormwater runoff

These discharges should have NPDES permits, either individual permits (Appendix A, Table A-1) or general permits (Appendix A, Table A-2).

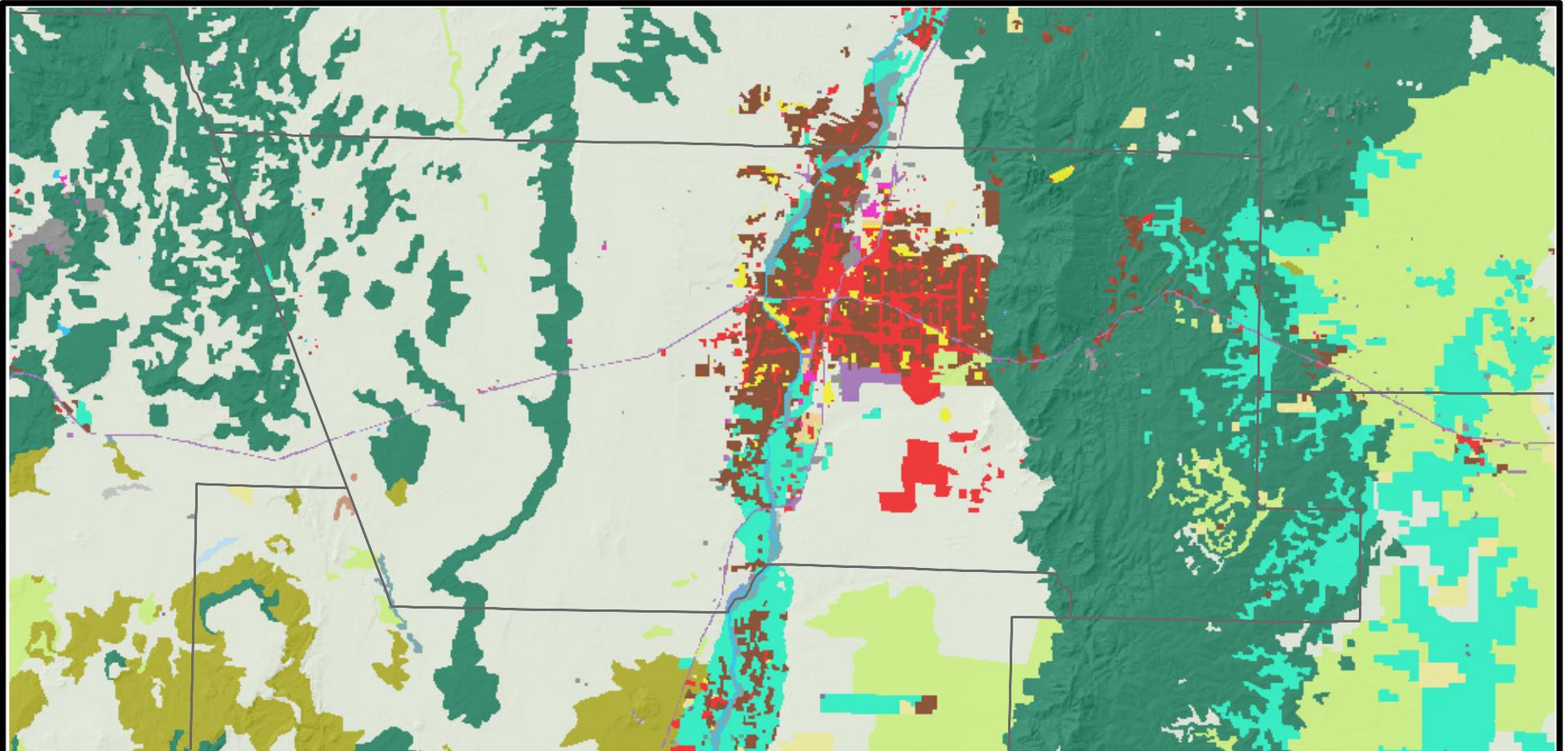
2.6.4 Nonpoint Sources

Nonpoint sources include diffuse sources that cannot necessarily be traced back to a single location. Nonpoint sources are often a function of land use category. Land use categories in Bernalillo County vary widely (Figure 3), and thus a wide variety of nonpoint sources may contribute contaminants to surface water in the Albuquerque/Bernalillo County area. The following are common sources of nonpoint discharges:

- Construction site runoff
- Concentrated animal feeding operations
- Illicit wastewater discharges
- On-site wastewater disposal facilities
- Substances that accumulate on impervious surfaces (oil, grease, fecal matter, liquid discharge from dumpsters, etc.)
- Substances that accumulate on pervious surfaces (such as fecal matter on rangeland)
- Stormwater runoff from non-urbanized areas that is not delivered to a receiving waterbody through a "discrete conveyance such as pipes or manmade ditches"

2.6.5 Other Sources

Other threats to surface water quality include hazardous spills, illicit discharges, accidental spills, sewer overflows, and agricultural return flows. Agricultural return flows in the Albuquerque/Bernalillo County area generally have good water quality, but many contain pesticides and nutrients ([Anderholm et al., 1995](#); [Healy, 1997](#); [Levings et al., 1998](#)). Past investigators point out that the presence of pesticides in surface water is "erratic and highly dependent on the amount applied and the timing, location, and method of application" ([Levings et al., 1998](#)). Agricultural return flows are unique because they are not regulated by either the CWA or the New Mexico Water Quality Act regulations; therefore, the quality of agricultural return flows is not monitored and is poorly characterized.

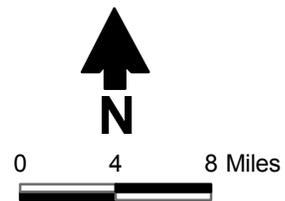


Source: USGS Land Use and Land Cover

Explanation

Land use and cover

- | | | |
|-----------------------------|---|--|
| Bare exposed rock | Industrial | Other urban or built-up land |
| Commercial and services | Mixed forest land | Residential |
| Confined feeding operations | Mixed rangeland | Shrub and brush rangeland |
| Cropland and pastures | Mixed urban or built-up land | Streams and canals |
| Deciduous forest land | Nonforested wetland | Strip mines, quarries, gravel pits |
| Evergreen forest land | Orchards, groves, vineyards, nurseries, and ornamental horticulture areas | Transitional areas |
| Forested wetland | Other agricultural land | Transportation, communication, utilities |
| Herbaceous rangeland | | |



WATER QUALITY PROTECTION POLICY AND ACTION PLAN
Land Use in Bernalillo County

Figure 3

2.7 Protection Measures

Specific policies associated with the SPPAP goals are presented here, along with the protection measures associated with each policy.

Policy A: The City, County, and WUA shall advocate and promote protection of surface water quality in the Rio Grande, its tributaries, and all other surface water resources in Bernalillo County.

Rationale: Protection of surface water quality is the first and foremost goal of the SPPAP. The City, County, and WUA must do everything within their powers to ensure that the water quality of the Rio Grande and its tributaries is protected.

To implement this policy, the City, County, and WUA shall take the following measures:

- Advocate for the policies recommended herein to be adopted and implemented by the appropriate agencies, including the Albuquerque City Council and the Bernalillo County Commission.
- Advocate for the enforcement of all local, state, and federal regulations pertaining to surface water quality protection.

Policy B: The City, County, and WUA shall clearly define the roles and responsibilities of each agency working with surface water quality protection and shall promote coordination of all surface water quality protection activities.

Rationale: Several jurisdictions in the Albuquerque/Bernalillo County area, including but not limited to the City, County and WUA, have an interest in water quality protection. Their roles are poorly defined and often overlapping because they were chartered by different pieces of legislation or cooperative agreements to address different water quality concerns. Collaboration and cooperation among the City, County, WUA, and other entities is necessary to ensure that surface water is protected. In order to pursue surface water protection in the most cost-effective manner, the roles of each organization should be more clearly defined and coordinated.

To implement this policy, the City, County, and WUA shall take the following measures:

- Identify and work with all existing local government activities within the watershed that have a surface water quality protection component or effect.
- Work collaboratively to identify principally responsible agencies for activities associated with protection of area water quality.

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- Select a lead entity and define supporting roles for each activity or threat.
- Formalize means of communication and cooperation, such as through the Policy Implementation Committee (PIC, sometimes referred to as the Policy Coordinating Committee [PCC]) or WQPAB.
- Examine the adequacy of existing surface water quality protection programs and recommend appropriate improvements.
- Review and formalize the roles of the WQPAB and the various citizen advisory stakeholder groups, including the Ciudad SWCD and the MRG-A Reach Watershed Group.
- Formalize the role of the Ciudad SWCD for addressing nonpoint sources in its geographic area.
- Define the protocol for and advocate for immediate notification of hazardous spills.

Policy C: The City, County, and WUA shall equitably share the funding, staffing and implementation of surface water quality protection efforts, including those policies recommended herein.

Rationale: The City, County, and WUA have a vested interest in protecting the quality of surface water. To assist in achieving this goal they have created the PIC and WQPAB. Collaboration and cooperation among all three entities is necessary to ensure that surface water quality is protected. Further, adequate staff and funding should be provided so that staff can effectively implement the WQPPAP. Funding levels should correlate to expected accomplishments of the PIC.

To implement this policy, the City, County, and WUA shall take the following measures:

- Hold routine meetings of the PIC to facilitate collaboration and coordination among City, County, and WUA staff.
- Direct City, County, and WUA staff to actively participate in PIC meetings.
- Work collaboratively to develop annual budgets for SPPAP projects and activities, and develop equitable means of funding those projects and activities.
- Provide staff with adequate time and funding to attend and prepare for PIC and WQPAB meetings as necessary.
- Prioritize SPPAP protection measures to be implemented, and create a timeline for their implementation.

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- Perform detailed cost-benefit analysis of major policies prior to implementation.
- Provide adequate funding for staff to implement the SPPAP.
- Periodically review the progress of SPPAP implementation, and revise program budgets as necessary to meet targets.
- Review and formalize the roles of the WQPAB and the various citizen advisory and stakeholder groups, including the Ciudad SWCD and the MRG-A Reach Watershed Group.

Policy D: The City, County, and WUA shall undertake efforts to better understand the impact of urban development on surface water quality—including its effect on the quality of stormwater runoff—and balance the costs of implementing additional protection measures with the benefits of those measures.

Rationale: Stormwater runoff from urban and unimproved areas influences the quality of surface water in the Albuquerque/Bernalillo County area. However, the effect of stormwater on overall surface water quality is poorly characterized due to the ephemeral nature of streamflow and the difficulty of measuring the impacts. Further, in order to evaluate and understand impacts of stormwater on the quality of receiving waters, the quality of the receiving water must first be understood. Many BMPs are available to improve stormwater quality, but the effectiveness and implementation costs of these BMPs vary widely and should therefore be evaluated to identify the most effective BMPs.

To implement this policy, the City, County, and WUA shall take the following measures:

- Promote enforcement of and compliance with existing regulations.
- Identify (or develop, if necessary) and adopt the most applicable BMPs and engineering controls to improve the quality of stormwater runoff.
- Identify and implement the best low-impact development methods for all new construction and development.
- Continue reviewing available data on the quality of stormwater discharges through established NPDES monitoring programs.
- Thoroughly review and evaluate all data collected as part of surface water quality monitoring programs (including, but not limited to, NPDES monitoring, USGS and other federal monitoring programs, and state and local monitoring programs).
- Encourage improved understanding of baseline water quality of receiving surface waterbodies during both wet weather and dry weather conditions.

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- Encourage improved understanding of the relationship between ambient water quality of the Rio Grande and contaminant loads due to stormwater runoff and other events.

Policy E: The City, County, and WUA shall promote the establishment, implementation, and enforcement of federal, state, and local watershed protection programs to address upstream threats in a manner that will protect surface water quality throughout the Middle Rio Grande.

Rationale: Although the City, County, and WUA do not have the authority to enforce state and federal regulations, it is in their best interest and within their power to stay informed regarding potential threats to surface water quality and to influence those that do have enforcement authority.

To implement this policy, the City, County, and WUA shall take the following measures:

- Coordinate with federal and state programs that limit point and nonpoint source contaminant discharges that have the potential to degrade surface water quality in the Albuquerque/Bernalillo County area.
- Participate in the NMWQCC Triennial Review process and the periodic evaluation of surface water quality.
- Advocate and participate in development of appropriate reach-specific criteria for the municipal water supply designation.
- Support WUA efforts to develop and implement a Source Water Protection Plan, as defined and supported by the NMED Drinking Water Bureau.
- Develop recommended programs, and coordinate the collection and safe disposal of hazardous chemicals, including those that may present a threat to human health and the environment but are not covered by current regulations.
- Advocate improved environmental management from industrial areas, agricultural lands, and national laboratories in the watershed.
- Evaluate the efficacy of existing controls to improve the quality of stormwater runoff.
- Initiate and maintain communication with the appropriate federal and state agencies through formal processes including Memorandums of Understanding (MOUs) and Joint Powers Agreements (JPAs).
- Participate in assessment programs to monitor the quality of surface water resources in the community, consistent with the roles and responsibilities of the City, County, and WUA.

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Policy F: The City, County, and WUA shall implement a review process for NPDES permitting activities for all upstream discharges.

Rationale: Stormwater warrants special attention because it is a unique and important factor affecting the quality of surface water. Surface water quality in the Albuquerque/Bernalillo County area is directly affected by upstream discharges, but the City, County, and WUA have no authority to regulate those discharges. Therefore, the City, County, and WUA should be aware of and involved in the federal and state regulatory and permitting processes, including the NPDES program.

To implement this policy, the City, County, and WUA shall take the following measures:

- Identify the lead entity to serve as a lead for NPDES review.
- Review upstream NPDES permit applications and renewals, and evaluate each for its impact on surface water quality.
- Actively participate in public review and comment of draft permits.
- Evaluate the efficacy of existing controls to improve the quality of stormwater.
- Track and respond to upstream permit violations.

Policy G: The City, County, and WUA shall participate in comprehensive water-resource management planning on a watershed scale to encourage watershed and water quality protection.

Rationale: The need for planning on a regional and watershed level is becoming increasingly apparent. Because watersheds do not adhere to political boundaries, regional coordination is necessary to ensure that planning efforts of the City, County, and WUA are not undermined by other entities in the region. Watershed protection cannot be accomplished through isolated efforts by separate agencies, but rather requires effective planning and coordination among agencies and recognition that the health of each individual sub-basin contributes to the health of the whole watershed.

To implement this policy, the City, County, and WUA shall take the following measures:

- Continue with implementation of the revised [Water Resources Management Strategy](#) (WRMS), which will guide the conservation, use, protection, acquisition, development, and management of the region's water resources within the Albuquerque groundwater basin; update the WRMS as necessary.

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- Adopt the [Watershed Restoration Action Strategy](#) (WRAS) produced by the MRG-A Reach Watershed Group.
- Continue or increase involvement in the New Mexico Interstate Stream Commission's (ISC's) regional water planning programs, especially the upstream/downstream project to integrate initiatives of the three adjacent, local water planning regions (Jemez y Sangre, Middle Rio Grande, and Socorro-Sierra).
- Promote coordinated management of water resources within the Albuquerque/Bernalillo County area and in the upstream watersheds.
- Integrate, evaluate, and interpret data from the many independent and uncoordinated monitoring programs to improve the management process.
- Establish methods of managing or controlling land use in areas that present special risks to surface water quality.

3. Groundwater Protection Policy and Action Plan

The primary purpose of this GPPAP is to protect the quality and prevent degradation of groundwater resources, particularly with respect to drinking water sources. This GPPAP is not a stand-alone document, but rather a review and update of the original GPPAP, which was adopted by the Bernalillo County Commission in November 1993 and by the Albuquerque City Council in August 1994. The primary purposes of this revision are to (1) review progress that has been made since the original GPPAP was adopted, (2) identify areas for revision and/or expansion, and (3) modify the goals, policies, and objectives of the original GPPAP so that they are consistent with new information.

3.1 Goals of the GPPAP

The goals of the GPPAP were developed with the advice and counsel of the GPAC (precursor to the WQPAB [Section 2.2.3]) and based on public comments obtained from focus groups and workshops (PCC and GPAC, 1994). Those goals, still valid today, are to:

- Protect the groundwater resource.
- Find and clean up contaminated groundwater.
- Promote the coordinated protection and prudent use of the groundwater resource throughout the region.

3.2 Review of the Original GPPAP

When the original [GPPAP](#) was written and adopted (in 1994), groundwater was the sole source of public drinking water available in the County. That is no longer the case: since the WUA brought the San Juan-Chama Drinking Water Project online (in 2008), both groundwater and surface water are now used for public drinking water supply. While groundwater is no longer the only source for municipal drinking water, it remains a valuable resource for the community and should be protected. Thus, although the GPPAP requires an update, the original plan remains an important tool to protect the region's groundwater resources.

When the original GPPAP was written, there were "vast areas [of groundwater] already contaminated" and it was determined that the exact magnitude of the problem was "unknown, but likely to worsen." The highest-priority sources of contamination were identified as (1) leaking underground storage tanks, (2) hazardous material and waste storage facilities, and (3) on-site liquid waste disposal systems (septic tanks). Because of the GPPAP, many contaminated sites have been identified and cleaned up. Extensive monitoring of water quality

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throughout the Middle Rio Grande Basin has improved understanding of the resource and allowed for detection of contaminated sites and documentation of cleanup efforts.

While the protection measures developed in the original GPPAP were largely effective at protecting the groundwater resource by finding and cleaning up contaminated groundwater and coordinating protection and prudent use of the resource, there are some protection measures that could be improved upon and some new concerns that have arisen. Section 3.2.1 presents policies and protection measures of the original GPPAP and reviews and discusses them in terms of those measures that have been successfully implemented and those that need additional efforts. Section 3.2.2 discusses new concerns that have arisen since adoption of the GPPAP.

3.2.1 Successes and Areas for Improvement

Policy A: The City and County shall prohibit or control the releases of substances having the potential to degrade the groundwater quality.

Policy A included nine protection measures that addressed a range of threats, including underground storage tanks, hazardous materials and waste storage facilities, on-site liquid waste disposal systems, landfills, household hazardous wastes, abandoned and poorly constructed wells, NPDES discharges, urban and agricultural runoff, sewer exfiltration, and pipelines. Policy A also mandated the establishment of a citizen advisory board to recommend threat control regulations, and the GPAC, (now the WQPAB) was established in 1988 by City Resolution R-143 and County Resolution R-49-88. This citizen advisory board has met regularly since that time and currently meets on a monthly basis. The WQPAB's responsibilities remain the same as assigned in the original GPPAP.

Since the adoption of the GPPAP in 1994, the City, County, and WUA have made significant progress in controlling the releases of substances having the potential to degrade groundwater quality. In particular, much progress has been made to limit the quantity of "other contaminant discharges" (i.e., discharge from septic tanks). Completed and ongoing extension of water and sewer services in the Middle Rio Grande Valley has greatly reduced the groundwater contamination potential from poorly installed and maintained septic systems. Since 1994, 4,328 sewer connections were completed in Bernalillo County through the Valley Utilities Project. Bernalillo County completed 2,089 of the 4,328 sewer connections and replaced 104 failing septic systems as part of their PIPE Program. From 1994 to 2008, a total of 6,136 new septic tank permits have been issued in Bernalillo County; some of these were for replacement or modification of existing tanks, but most were for new septic tanks, especially in the East Mountain area and North Albuquerque Acres. The installation of new septic tanks has been

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partially offset by the replacement of old and failing septic tanks with new ones built to higher standards, resulting in an overall reduction in threat to groundwater from septic tanks.

Other progress made since adoption of the GPPAP:

- Adoption and implementation of the Bernalillo County On-site Wastewater Disposal Ordinance addressed many of septic tank issues by applying higher standards to septic system siting, installation, and maintenance.
- Significant progress in the safe handling of hazardous materials has been obtained because the Fire Department has enforced Fire Code standards to properly store and dispose of hazardous materials through business inspection and permitting.
- While some progress has been made toward enhancing enforcement and compliance with local, state, and federal environmental regulations, there is room for improvement. The City, County, WUA, and WQPAB should increase communication and coordination with local, state, and federal regulators. When possible and as appropriate, they should seek to enter into written agreements (such as Intergovernmental Agreements) with local, state, and federal regulators to formalize and encourage communication. Further, there is a need to define responsibility within cooperating local government agencies and allocate appropriate staff and funding to monitor progress and continued implementation of GPPAP protection measures. For example, a member of the COA Planning Department should actively participate in PIC and WQPAB meetings.

The concept of prohibiting or restricting activity in *crucial areas*, defined in the original GPPAP as areas where potential contaminants can easily migrate to groundwater and/or areas where contaminants can enter a public drinking water supply, should be revisited and reevaluated to consider growth that has taken place since development of the original GPPAP and projections for future growth. Some of the crucial areas defined in the original GPPAP may no longer require the crucial area classification, while other areas may be added to the list of crucial areas. This is a particularly important issue because the concept of crucial areas has been upheld in legal applications, (e.g., the Atlixco Coalition Case [[The Atlixco Coalition, et al. v. County of Bernalillo, et al.](#) 1999] and the Albuquerque Commons Case [[Albuquerque Commons Partnership v. City Council of the City of Albuquerque](#) 144 N.M. 99; 2008 NMSC 25; 184 P.3d 411]).

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Policy B: The City and County shall identify ground-water contamination and expedite corrective action.

Policy B included four protection measures that addressed existing pollution, including

- Monitoring known and expected sources of groundwater contamination.
- Identifying responsible parties.
- Advocating the use of federal and state funds to clean up contaminated sites.
- Aggressively expanding wastewater collection and treatment facilities in areas of known or potential septic tank contamination.

Since the adoption of the GPPAP in 1994, there has been increased monitoring at landfills and an emphasis on regional water quality monitoring of groundwater resources through City, County, and WUA programs.

Most known cases of groundwater pollution have been identified and cleaned up, including the removal and/or remediation of 325 leaking underground storage tanks and the identification and remediation of several Superfund Sites.

As discussed under Policy A, the City, County, and WUA have aggressively pursued expansion of wastewater collection and treatment facilities in areas of known and potential septic tank contamination. Federal funding was expected to be available to support extension of water and sewer lines in the North and South Valley residential areas. Unfortunately, federal funding has not yet become available, significantly reducing the rate at which these services can be provided.

Additionally, the budget for the State Corrective Action Fund, which provides funding to remediate leaking underground storage tanks (LUSTs), was recently reduced by 50 percent. The result of this reduction will be to increase the amount of time required to clean up known contamination sites, reduce the number of LUST sites that are remediated, and decrease the rate at which they are remediated.

There is some concern regarding existing policies involving the use of monitored natural attenuation as a treatment method for LUSTs. This policy should be reviewed to ensure that this is a valid treatment method and sufficient monitoring is in place. Contaminated sites that have used the monitored natural attenuation strategy should continue to be monitored to determine whether contamination remains an issue.

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Policy C: The City and County shall promote the vigorous enforcement of laws and regulations related to ground-water protection throughout the Upper Rio Grande drainage basin planning area.

Policy C included three protection measures to promote enforcement of existing laws by fostering clear and open lines of communication between the various regulatory agencies. Establishing and maintaining a database is the first protection measure associated with Policy C. Despite difficulties inherent in data management and information sharing, a current database is vital to establish goals and priorities for future needs. The Ciudad SWCD sponsored the [Rio Grande-Albuquerque Watershed Exchange](#) webpage, which was recently launched and made possible by EPA 319(h) funds administered by NMED. The [Information Exchange](#) is a web-based electronic information exchange system, established with the purpose of sharing watershed health information among jurisdictions, entities, and stakeholders involved in the stewardship of the MRG-A reach watershed.

The second protection measure associated with Policy C was to establish a written agreement with federal agencies operating facilities within Bernalillo County to assure regulatory compliance. These agencies include, but are not limited to, Kirtland Air Force Base (KAFB), Sandia National Laboratories, the U.S. Forest Service, and the U.S. Army Corps of Engineers. Establishing written agreements remains a priority.

The final protection measure associated with Policy C was to augment state and federal regulations with local regulations, as needed to fill the gaps. Currently, the most obvious need is to enforce existing regulations at the local level.

Policy D: The City and County shall identify and recognize compliance by industry, business, government, and community organizations.

Policy D included two protection measures to issue proclamations of good citizenship and to acknowledge community organizations and governments who contribute to the improvement of groundwater quality and compliance with the GPPAP. The WUA regularly recognizes pollution prevention efforts through their Industrial Pretreatment Program.

Policy E: The City and County shall undertake comprehensive water resource management planning.

Policy E included seven protection measures to establish the GPAC (now the WQPAB), expand regional groundwater monitoring, allocate adequate funding and staff to support groundwater protection and water resources management, promote and implement water conservation and

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coordinated water resources management, and periodically review and update the GPPAP and Water Resources Management Plan.

As discussed in Section 2.3.3, the WQPAB continues to meet on a monthly basis. However, they have not yet formulated a 20-year protection and management strategy with public review, and little time has been devoted to developing and updating budget plans for implementation of the GPPAP.

Adequate funding remains a challenge for some aspects of the GPPAP; however, despite these challenges, significant progress has been made since the original GPPAP was adopted. If additional funding were dedicated to these goals, the rate of progress would likely be accelerated.

Water conservation efforts have been very successful, largely because of efforts by the WUA and Bernalillo County. The WUA has dedicated staff and funding toward the goal of water conservation, and despite increasing population, water use has decreased dramatically. Conservation has been achieved through many WUA programs, including an ongoing rebate program, a free water audit program, educational programs, and replacement of old steel pipes. Additionally, the County has contributed significant time and resources to revising and updating the County water conservation ordinance, recently establishing a Water Conservation Advisory Group and working closely with the WUA to revise the existing ordinance. These efforts have resulted in considerable progress toward water conservation.

The WUA has implemented their WRMS, which has allowed for significant conservation and protection of the aquifer. The WRMS included construction of three water reuse projects (of which two have been constructed) and the San Juan-Chama Drinking Water Project, which was the cornerstone of the WRMS and began operation in 2008. The Drinking Water Project will save approximately 30 billion gallons of water per year from being pumped from the aquifer. The WRMS was reviewed and updated in 2007; this update included opportunity for public comment and a Town Hall meeting. The WUA has spent more than \$10 million to improve understanding of the quality and quantity of the region's water resources.

Both the MRG Water Assembly and the Water Resources Board (the Mid-Region Council of Governments' designated policy-making board for water issues) participated in development of the Middle Rio Grande Regional Water Plan ([WA and MRCOG, 2004](#)), which covers Valencia, Bernalillo, and most of Sandoval Counties. The plan, part of the State of New Mexico's regional water planning efforts, was accepted by the Interstate Stream Commission in 2004.

Periodic reviews and updates of the GPPAP have occurred; however, the timing of those reviews depends largely on available staff and funding at the time. One area for improvement is

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to convert the GPPAP to a living and electronic document, with active links to references and databases.

Policy F: The City and County shall encourage, facilitate, and acknowledge public participation.

Policy F included two protection measures designed to involve the public in GPPAP efforts: (1) to keep the public informed of potential hazards and proposed solutions and (2) to establish a routine public involvement program.

3.2.2 New Concerns and Changes Since 1994

Several potential groundwater pollution sources and contaminants were not yet identified when the original GPPAP was formulated. For example, more sensitive analytical methods are able to detect microconstituents such as pharmacologically active compounds, which may enter groundwater through commercial and residential on-site wastewater disposal and other sources, at much lower concentrations. These may or may not be an issue, but those responsible for groundwater monitoring and pollution prevention programs should remain informed of analytical and regulatory developments.

The need for planning on a regional and watershed level is becoming increasingly apparent. Because watersheds do not adhere to political boundaries, regional coordination is necessary to ensure that planning efforts of the City, County, and WUA are not undermined by other entities in the region. While there has been significant planning at the regional level, there has been relatively little implementation of the regional plans and little coordination among the regions.

Other examples of new concerns that merit attention include (but are not limited to):

- The recent aviation fuel spill at KAFB
- Artificial recharge and aquifer storage and recovery
- Development of brackish water resources
- Population growth in counties other than Bernalillo County
- Mineral exploration (including, but not limited to, natural gas, oil, and gravel)

3.3 Protection Measures

As previously stated, this WQPPAP is not meant to be a stand-alone product, but should be used in conjunction with the original [GPPAP](#). Although much progress has been made since

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1994, groundwater remains a vulnerable resource that should be protected. Revisions to the protection measures of the GPPAP to reflect changing concerns and conditions are outlined below.

Policy A: The City, County, and WUA shall prohibit or control the releases of substances having the potential to degrade groundwater quality.

Rationale: Groundwater must be protected to assure its quality for human consumption and economic uses. Pollution prevention costs much less than pollution remediation, and in many cases, the latter may be technically or economically infeasible. Groundwater protection must have a high priority and be supported with adequate funding so that existing regulations are enforced. Educating the public and business community will facilitate efforts for groundwater protection and enforcement.

To implement this policy, the City, County, and WUA shall take the following measures:

- Direct the WQPAB to recommend threat control regulations and other appropriate pollution prevention measures.
- Prohibit or restrict certain activity in crucial areas to minimize the potential for contamination of groundwater (the generalized crucial areas map is included as Attachment F of the original [GPPAP](#)).
- Review and reevaluate crucial areas.
- Establish protected zones for potential artificial recharge areas.
- Prohibit the release of hazardous materials and hazardous waste to groundwater by requiring BMPs and engineering controls at hazardous materials and waste storage facilities.
- Promote recycling, source reduction, waste minimization, and product substitution throughout the production, handling, and management of hazardous materials and wastes.
- To maintain groundwater quality above drinking-water standards, limit the quantity of other contaminant discharges.
- Enhance enforcement of and compliance with local, state, and federal environmental regulations.
- Provide education and technical assistance to the public and regulated entities to make them aware of the groundwater protection policy and to help them meet groundwater protection goals.

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- Promote the management of household hazardous waste.
- Establish wellhead protection areas, within which additional restrictions apply, surrounding the immediate vicinity of public water supply wells.

Policy B: The City, County, and WUA shall identify groundwater contamination and expedite corrective action.

Rationale: Early identification of groundwater contamination allows for less costly remediation efforts. Because of the large expenditures required to clean up groundwater contamination and the scarcity of funds to do so, the use of federal and state funds should be pursued. Where high densities of existing septic tank systems have threatened or caused groundwater contamination, the City, County, and WUA should continue to pursue rapid expansion of wastewater collection solutions.

To implement this policy, the City, County, and WUA shall take the following measures:

- Monitor or ensure monitoring of groundwater quality associated with known or suspected sources of groundwater contamination.
- Share information regarding water quality and monitoring results with the public.
- Identify and assess groundwater contamination and seek expeditious remedies.
- Advocate the use of federal or state funds to clean up sites that pose immediate threats to public health, safety, or welfare and the recovery of cleanup costs from responsible parties.
- Prioritize areas of known or potential septic tank contamination, and aggressively pursue expansion of wastewater collection and treatment facilities.

Policy C: The City, County, and WUA shall promote the vigorous enforcement of laws and regulations related to groundwater protection throughout the Upper Rio Grande drainage basin planning area.

Rationale: The federal government operates several facilities in Bernalillo County that have the potential to impact groundwater quality, and the City, County, and WUA should work closely with these agencies to ensure that the resource is protected. While data collection and management constitute a challenging part of pollution control, an important component of cooperation and coordination is to share available information in order to prevent pollution and facilitate remediation. Where federal and state regulations are ineffective, the City, County, and WUA should augment them with local regulation as needed.

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To implement this policy, the City, County, and WUA shall take the following measures:

- Establish appropriate written agreements with federal facilities located within the County to assure regulatory compliance and foster intergovernmental cooperation.
- As part of intergovernmental coordination and cooperation, encourage participation in and maintenance of an interdepartmental, interagency regional database catalog, such as the Ciudad SWCD [Rio Grande-Albuquerque Watershed Exchange](#), that documents the locations, types, amounts, pollution-prevention controls, and related information for hazardous materials and wastes and other substances, allowing the involved agencies to actively share data generated by their efforts.
- If enforcement of existing laws and regulations proves ineffective, augment them with local regulation.

Policy D: The City, County, and WUA shall identify and recognize compliance by industry, business, government, and community organizations.

Rationale: Businesses that readily comply with and go beyond the requirements set forth in this WQPPAP should be publicly recognized for their efforts. Community organizations who promote water quality protection and educational efforts should be publicly recognized for their efforts.

To implement this policy, the City, County, and WUA shall take the following measures:

- Issue City Council and Bernalillo County Commission proclamations of good citizenship to private and public sector organizations and industrial and business concerns who demonstrate exemplary support of the GPPAP.
- Acknowledge community organizations and governments who contribute to improvement of the groundwater resource and compliance with the GPPAP.

Policy E: The City, County, and WUA shall participate in comprehensive water resource management planning on a watershed scale, to encourage watershed and water quality protection.

Rationale: The need for planning on a regional and watershed level is becoming increasingly apparent. Because watersheds do not adhere to political boundaries, regional coordination is necessary to ensure that planning efforts of the City, County, and WUA are not undermined by other entities in the region. Watershed protection cannot be accomplished through isolated

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efforts by separate agencies. Rather, it requires effective planning and coordination among agencies and recognition that the health of each individual sub-basin contributes to the health of the whole watershed.

To implement this policy, the City, County, and WUA shall take the following measures:

- Continue implementing and update as necessary the revised [Water Resources Management Strategy](#) (WRMS), which will guide the conservation, use, protection, acquisition, development, and management of the region's water resources within the Albuquerque groundwater basin.
- Continue and expand regional groundwater monitoring.
- Develop procedures to assure that adequate resources (funding and staff) are available to support groundwater protection and water resources management.
- Implement water conservation.
- Promote coordinated water resources management on a comprehensive and regional level, with the assistance of the Ciudad SWCD under their statutory interagency coordination mandate.
- Review and reevaluate the potential for artificial recharge and aquifer storage and recovery activities as a means to improve conjunctive management of multiple water sources and increase flexibility for water managers.
- Encourage dialog on groundwater quality issues among the City, County, WUA, and urban land planners.
- Periodically review and update the WQPPAP, the WRMS, and technical tools developed for them.

Policy F: The City, County, and WUA shall encourage, facilitate, and acknowledge public participation.

Rationale: An informed public can contribute to solving environmental problems. Recognition of public participation by individuals will encourage others to get involved. Clean, safe water is everyone's responsibility.

To implement this policy, the City, County, and WUA shall take the following measures:

- Inform the public of (1) existing and potential groundwater problems, (2) hazardous materials and waste releases, (3) progress made in protecting groundwater, and (4) lessons learned in the implementation of the GPPAP.

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- Establish a public involvement program to encourage public participation in the continuing development, updating, and implementation of groundwater protection policies.
- Promote and participate in City, County, and WUA public outreach activities, and encourage staff participation in these events.

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Appendix A

National Pollutant Discharge Elimination System Permits

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**Table A-1. Individual Permit Summary, Rio Grande Basin above Albuquerque
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NPDES No.	Permittee	Municipal or Industrial	Status	County	Effective Date	Expiration Date	Latitude	Longitude	Outfall Number	Receiving Waters	Design Flow (mgd)	pH	Description
NM0022250	Southside Water Reclamation Plant (Albuquerque)	Municipal	Major	Bernalillo	05/01/2005	04/30/2010	35° 01' 04" N	106° 40' 13" W	Outfall 001	Rio Grande	76	6.6-9	Treated municipal wastewater
NMS000101	Albuquerque MS4 (includes COA, UNM, AMAFCA, NMDOT)	Industrial	Major	Bernalillo	10/31/2003	11/30/2008	35° 11' 53" N	106° 35' 59" W	Outfall 001	North floodway channel	—	—	Discharges from municipal separate storm sewer system (MS4)
							35° 00' 10" N	106° 39' 26" W	Outfall 002	South diversion channel	—	—	Discharges from municipal separate storm sewer system (MS4)
							35° 02' 56" N	106° 38' 55" W	Outfall 003	San Jose Drain	—	—	Discharges from municipal separate storm sewer system (MS4)
							USGS station no. 08330075		Outfall 004	COA lift station #32 (Barelas)	—	—	Discharges from municipal separate storm sewer system (MS4)
							35° 08' 24" N	106° 42' 17" W	Outfall 005	Mariposa Diversion of San Antonio Arroyo	—	—	Discharges from municipal separate storm sewer system (MS4)
NM0030376	Delta Person	Industrial	Minor	Bernalillo	08/01/2005	07/31/2009	35° 01' 34" N	106° 38' 30" W	Outfall 001	Unlined dry arroyo	0.032	6.6-9	Cooler blowdown and non-regulated storm water
NM0000116	GCC Rio Grande, Inc.	Industrial	Minor	Bernalillo	05/01/2006	09/30/2010	35° 04' 25" N	106° 23' 20" W	Outfall 001	Corral Canyon	Intermittent	6-9	Once through cooling water, cooling tower blowdown, and storm water from the adjacent areas
NM0030724	PaaKo Communities Sewer Association	Industrial	Minor	Bernalillo	Issued 3/2/2007		35° 12' 21" N	106° 19' 13" W	Outfall 001	San Pedro Creek	0.10	6.6-8.8	Treated wastewater
NM0030384	Public Service Co. of New Mexico, Person	Industrial	Minor	Bernalillo	11/01/2004	07/31/2009	3501341° N	10638301° W	Outfall 001	Ephemeral drainage and unnamed tributary	—	6-9	Treated groundwater
NM0000124	Public Service Co. of New Mexico, Reeves Station	Industrial	Minor	Bernalillo	09/01/2004	06/30/2009	35.173639° N	106.603916° W	Outfall 001	Ephemeral storm water ditch	—	6-9	Combined waste stream during an emergency circumstance or circumstances prohibit conveyance of waste stream to COA sewer system
NM0027863	Sandia Peak Ski Company	Industrial	Minor	Bernalillo	03/01/2005	02/28/2010	35° 11' 43" N	106° 25' 59" W	Outfall 001	Unnamed dry creek bed	0.0075	6-9	Not listed - assume treated wastewater
NM0030597	Valero Logistics Operations (aka: Albuquerque Refined Products)	Industrial	Minor	Bernalillo	11/01/2005	07/31/2009	34.994472° N	106.659194° W	Outfall 001	Unnamed arroyo	Intermittent and variable	6.6-9	Contaminated storm water from the truck unloading area
NM0020141	Los Alamos Co. - Bayo Canyon	Municipal	Major	Los Alamos	07/01/2006	06/30/2011	35° 52' 58.44" N	106° 14' 22.27" W	Outfall 001	Pueblo Canyon	1.37	6-9	Treated municipal wastewater
							New outfall, location not determined		Outfall 002	Pueblo Canyon	—	6-9	Treated municipal wastewater
NM0020133	Los Alamos Co. - White Rock	Municipal	Minor	Los Alamos	03/01/2006	02/28/2011	35° 49' 38.5" N	106° 10' 58.8" W	Outfall 001	Canada del Buey	0.82	6-9	Treated municipal wastewater

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**Table A-1. Individual Permit Summary, Rio Grande Basin above Albuquerque
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NPDES No.	Permittee	Municipal or Industrial	Status	County	Effective Date	Expiration Date	Latitude	Longitude	Outfall Number	Receiving Waters	Design Flow (mgd)	pH	Description
NM0028355	Los Alamos National Laboratories	Industrial	Major	Los Alamos	08/01/2007	07/31/2012	35° 52' 26" N	106° 19' 09" W	Outfall 001	Sandia Canyon	Continuous	6.6-8.8	Power plant wastewater from cooling towers, boiler blowdown drains, demineralizer backwash, RO reject, floor and sink drains, and treated sanitary re-use
							35° 51' 08" N	106° 16' 33" W	Outfall 13S	Sandia Canyon or Canada del Buey	Continuous	6-9	Treated sanitary wastewater
							35° 51' 54" N	106° 17' 52" W	Outfall 051	Mortandad Canyon	Intermittent	6-9	Treated radioactive liquid waste
							35° 50' 49" N	106° 19' 51" W	Outfall 05A055	Tributary to Canon de Valle	Intermittent	6-9	Treated wastewater from the high explosives wastewater treatment facility
							35° 52' 14" N	106° 19' 11" W	Outfall 03A021	Mortandad Canyon	Intermittent	6-9	Cooling tower blowdown and other wastewater
							35° 52' 14" N	106° 19' 01" W	Outfall 03A022	Mortandad Canyon	Intermittent	6-9	Cooling tower blowdown and other wastewater
							35° 51' 50.8" N	106° 18' 05" W	Outfall 03A181	Mortandad Canyon	Intermittent	6-9	Cooling tower blowdown and other wastewater
							35° 52' 26" N	106° 19' 08" W	Outfall 03A027	Sandia Canyon	Intermittent	6.6-8.8	Cooling tower blowdown and other wastewater
							35° 52' 03" N	106° 15' 43" W	Outfall 03A113	Sandia Canyon	Intermittent	6.6-8.8	Cooling tower blowdown and other wastewater
							35° 52' 33" N	106° 19' 19" W	Outfall 03A199	Sandia Canyon	Intermittent	6.6-8.8	Cooling tower blowdown and other wastewater
							35° 50' 19" N	106° 19' 33" W	Outfall 03A130	Water Canyon	Intermittent	6-9	Cooling tower blowdown and other wastewater
							35° 50' 00" N	106° 18' 40" W	Outfall 03A185	Water Canyon	Intermittent	6-9	Cooling tower blowdown and other wastewater
							35° 52' 11" N	106° 15' 45" W	Outfall 03A048	Los Alamos Canyon	Intermittent	6-9	Cooling tower blowdown and other wastewater
							35° 51' 47" N	106° 17' 49" W	Outfall 03A160	Ten Site Canyon	Intermittent	6-9	Cooling tower blowdown and other wastewater
						35° 52' 32" N	106° 16' 31" W	Outfall 02A129	Los Alamos Canyon	Intermittent	6-9	Boiler blowdown, water softener wastewater, and once through cooling water	
NM0024830	Abiquiu	Municipal	Minor	Rio Arriba	01/01/2006	12/30/2011	36° 13' 06" N	106° 19' 14" W	Outfall 001	Rio Chama	0.04	6-9	Treated municipal wastewater
NM0027731	Chama	Municipal	Minor	Rio Arriba	07/01/2007	09/30/2010	36° 55' 44" N	106° 35' 13" W	Outfall 001	Rio Chamita	0.3	6.6-8.8	Treated municipal wastewater
NM0029351	Espanola	Municipal	Major	Rio Arriba	01/01/2006	12/30/2011	35° 59' 55" N	106° 04' 38" W	Outfall 001	Rio Grande	1.6	6.6-8.8	Treated wastewater

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NPDES No.	Permittee	Municipal or Industrial	Status	County	Effective Date	Expiration Date	Latitude	Longitude	Outfall Number	Receiving Waters	Design Flow (mgd)	pH	Description
NM0030694	Four Corners Water Reclamation (Santa Clara Development Corp)	Industrial	Minor	Rio Arriba	06/30/2005	07/31/2010	3557561° N	10603051° W	Outfall 001	Arroyo Seco	0.08	—	Treated municipal wastewater
NM0030139	NMDG&F Los Ojos Fish Hatchery	Industrial	Minor	Rio Arriba	09/01/2006	08/31/2011	36° 43' 10" N	106° 34' 25" W	Outfall 001	Unnamed irrigation ditch	3.32	6.6-8.8	Treated wastewater
							36° 43' 09" N	106° 34' 26" W	Outfall 002	Unnamed irrigation ditch	—	6.6-8.8	Treated wastewater
NM0023485	Bernalillo	Municipal	Minor	Sandoval	02/01/2004	01/31/2009	35° 18' 20" N	106° 33' 40" W	Outfall 001	Rio Grande	0.8	6-9	Treated wastewater
NM0028011	Jemez Springs	Municipal	Minor	Sandoval	Reissued 12/14/2006		35° 43' 36" N	106° 42' 48" W	Outfall 001	Jemez River	0.075	6-9	Treated wastewater
NM0028479	Jemez Springs Schools	Industrial	Minor	Sandoval	Reissued 9/22/2006		35° 39' 49" N	106° 44' 16" W	Outfall 001	Jemez River	0.03	6-9	Jemez Valley Public School Wastewater Treatment Plant effluent
NM0030112	NMDG&F Seven Springs Fish Hatchery	Industrial	Minor	Sandoval	11/01/2007	10/31/2012	35° 55' 31.84" N	106° 47' 5.93" W	Outfall 001	Rio Cebolla	0.913	6.6-8.8	Hatchery wastewater from the "Kids' Pond"
							35° 55' 35.5" N	106° 47' 13.0" W	Outfall 002	Rio Cebolla	—	6.6-8.8	Hatchery wastewater from the "Settling Pond"
NM0027987	Rio Rancho # 2	Municipal	Major	Sandoval	02/01/2004	01/31/2009	35° 15' 23" N	106° 35' 32" W	Outfall 001	Rio Grande	5.5	6-9	Treated municipal wastewater
							—	—	Outfall 002	Outfall 001	0.9	—	Seasonal (winter months) discharges from WWTP No. 1, added to WWTP No. 2 prior to Outfall 001
NM0029602	Rio Rancho # 3	Municipal	Minor	Sandoval	02/01/2004	01/31/2009	35° 16' 00" N	106° 38' 30" W	Outfall 001	Rio Grande	0.85	6-9	WWTP No. 3 effluent
NM0030848	Buckman Direct Diversion Project	—	Minor	Santa Fe	Has not been issued yet		—	—	—	Rio Grande	—	—	Water supply
NM0028711	LAC Minerals	Industrial	Minor	Santa Fe	06/01/2006	12/31/2010	35° 20' 15" N	106° 07' 59" W	Outfall 001	Cunningham Gulch	Intermittent	6-9	Mine drainage and storm water from open pit
NM0030813	Oshara Village Water Reclamation	—	Minor	Santa Fe	9/1/2006	8/31/2010	—	—	—	Arroyo Hondo	—	—	Treated wastewater
NM0028436	Pojoaque Terraces Mobile Home Park	Industrial	Minor	Santa Fe	Reissued 9/26/2006		35° 53' 55" N	106° 01' 35" W	Outfall 001	Pojoaque Creek	0.018	6.6-8.8	Treated wastewater
NM0030368	Ranchland Utilities	Industrial	Minor	Santa Fe	07/01/2007	06/30/2012	35° 35' 30" N	106° 01' 30" W	Outfall 001	Canada del Rancho	0.375	6.6-9	Treated sanitary wastewater
NM0030465	Sangre de Cristo - Monte Sereno Generator	Industrial	Minor	Santa Fe	Inactivated 8/22/2006 ^a		3550051° N	10609281° W	Outfall 001	Unnamed tributary	—	—	Well purge water
							3549461° N	10609201° W	Outfall 002	Unnamed tributary	—	—	Well purge water
							—	—	Outfall 003	Unnamed tributary	—	—	Well purge water
		Industrial	Minor	Santa Fe	Inactivated 8/22/2006		3549131° N	10608531° W	Outfall 004	Unnamed tributary	—	—	Well purge water
		Industrial	Minor	Santa Fe	Inactivated 8/22/2006		3548541° N	10608531° W	Outfall 005	Unnamed tributary	—	—	Well purge water

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MS4 = Municipal separate storm sewer system

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**Table A-1. Individual Permit Summary, Rio Grande Basin above Albuquerque
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NPDES No.	Permittee	Municipal or Industrial	Status	County	Effective Date	Expiration Date	Latitude	Longitude	Outfall Number	Receiving Waters	Design Flow (mgd)	pH	Description
NM0030465 (cont.)	Sangre de Cristo - Monte Sereno Generator (cont.)	Industrial	Minor	Santa Fe	Inactivated 8/22/2006		3549081° N	10608441° W	Outfall 006	Unnamed tributary	—	—	Well purge water
							3550061° N	10609031° W	Outfall 007	unnamed tributary	—	—	Well purge water
							3549331° N	10609551° W	Outfall 008	Unnamed tributary	—	—	Well purge water
							3539321° N	10557541° W	Outfall 009	Unnamed tributary	Inactive	—	Well purge water
							3541091° N	10557371° W	Outfall 010	Unnamed tributary	—	—	Well purge water
							3540411° N	10558151° W	Outfall 011	Unnamed tributary	Inactive	—	Well purge water
							3540211° N	10558481° W	Outfall 012	Unnamed tributary	—	—	Well purge water
							3541041° N	10558001° W	Outfall 013	Unnamed tributary	—	—	Well purge water
							3541181° N	10557251° W	Outfall 014	Unnamed tributary	—	—	Well purge water
							3542481° N	10558191° W	Outfall 015	Unnamed tributary	—	—	Well purge water
NM0022292	Santa Fe	Municipal	Major	Santa Fe	09/01/2006	08/31/2011	35° 37' 30" N	106° 05' 19" W	Outfall 001	Santa Fe River	13	6.6-8.8	Treated wastewater
NM0028614	Santa Fe County - Valle Vista	Municipal	Minor	Santa Fe	08/01/2006	08/31/2009	35° 34' 50" N	106° 03' 17" W	Outfall 001	Cienega Creek	0.088	6.6-9	Treated wastewater
NM0030601	Towa Resort WWTP	Municipal	Minor	Santa Fe	Reissued 7/21/2006		3551511° N	10559571° W	Outfall 001	Arroyo Cuyamunger	0.2	—	Treated municipal wastewater
NM0022306	Chevron Mining, Inc.	Industrial	Major	Taos	10/01/2006 09/30/2011		36° 41' 40.15" N	105° 38' 3.37" W	Outfall 001	Red River	Intermittent	6.6-8.8	Process water from milling operations and tailings disposal, including mine de-watering and interceptor wells
							36° 41' 31.36" N	105° 37' 16.58" W	Outfall 002	Red River	Continuous	6.6-8.8	Seepage from the tailings impoundment
							36° 41' 13.76" N	105° 32' 6.54" W	Outfall 004	Red River	Intermittent	6.6-8.8	Periodic mine drainage consisting only of mine contacted surface storm water runoff
							36° 41' 42" N	105° 29' 22" W	Outfall 005	Red River	Intermittent	6.6-8.8	Periodic mine drainage consisting only of mine contacted surface storm water runoff
NM0030791	Harrand #4	Municipal	Minor	Taos	Inactivated 5/15/2007 ^a		Taos Ski Valley Road		Outfall 001	Six Mile Creek	500	—	Treated wastewater
NM0030881	J.C. Septic - Blackstone Ranch	Industrial	Minor	Taos	07/01/2007	06/30/2012	36° 23.453' N	105° 37.350' W	Outfall 001	Unnamed ditch	0.002	6.6-9	Treated sanitary wastewater
NM0030911	J.C. Septic - Blackstone Ranch Condo East	Industrial	Minor	Taos	07/01/2007	06/30/2012	36° 23.493' N	105° 37.139' W	Outfall 001	Unnamed ditch	0.002	6.6-9	Treated sanitary wastewater

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Water Quality Protection Policy and Action Plan

**Table A-1. Individual Permit Summary, Rio Grande Basin above Albuquerque
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NPDES No.	Permittee	Municipal or Industrial	Status	County	Effective Date	Expiration Date	Latitude	Longitude	Outfall Number	Receiving Waters	Design Flow (mgd)	pH	Description
NM0030899	J.C. Septic - Blackstone Ranch Guest House	Industrial	Minor	Taos	07/01/2007	06/30/2012	36° 23.479' N	105° 37.285' W	Outfall 001	Unnamed ditch	0.002	6.6-9	Treated sanitary wastewater
NM0030937	J.C. Septic - Blackstone Ranch Laundromat	Industrial	Minor	Taos	07/01/2007	06/30/2012	36° 23.415' N	105° 37.343' W	Outfall 001	Unnamed ditch	0.002	6.6-9	Treated sanitary wastewater
NM0030619	J.C. Septic - Burlison	Industrial	Minor	Taos	08/01/2006	07/31/2011	36° 43.349' N	105° 21.989' W	Outfall 001	Bitter Creek	0.0005	6.6-8.8	Treated sanitary wastewater
NM0030147	NMDG&F Red River Fish Hatchery	Industrial	Minor	Taos	09/01/2006	08/31/2011	36° 41' 07" N	105° 39' 05" W	Outfall 001	Red River	9.8	6.6-8.8	Treated wastewater
							36° 41' 00" N	105° 39' 08" W	Outfall 002	Red River	—	6.6-8.8	Treated wastewater
							36° 40' 58" N	105° 39' 13" W	Outfall 003	Red River	—	6.6-8.8	Treated wastewater
NM0024899	Red River	Municipal	Major	Taos	10/01/2006	08/31/2010	36° 42' 39" N	105° 26' 46" W	Outfall 001	Red River	Continuous	6.6-8.8	Treated sanitary wastewater
NM0024066	Taos	Municipal	Major	Taos	08/01/2006	07/31/2011	36° 22' 15" N	105° 39' 15" W	Outfall 001	Unnamed arroyo	Continuous	6.6-8.8	Treated municipal wastewater
NM0022101	Taos Ski Valley	Municipal	Major	Taos	04/01/2006	03/31/2011	36° 35' 46" N	105° 27' 38" W	Outfall 001	Rio Hondo	Continuous	6-9	Treated sanitary wastewater

mgd = Million gallons per day
MS4 = Municipal separate storm sewer system

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WWTP = Wastewater treatment plant

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Table A-2. General NPDES Permits
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NPDES No.	Permit	Effective Date	Expiration Date	Notice of Intent	Receiving Waters	Description
NMG010000	Concentrated animal feeding operations	03/10/1993	03/10/1998	Required	Waters of the U.S.	Allows the discharge of process waste pollutants in the overflow whenever rainfall events cause an overflow of process waste water from a facility designed, constructed, and operated to contain all process-generated wastewaters plus the runoff from a 25-year, 24-hour rainfall event for the location of the point source.
NMG800000	Egg production operations	08/17/2002	08/17/2007	Required	Surface waters of the U.S. and/or groundwater that has direct hydrologic connection to surface water	Regulates discharges of process wastewater, rainfall, or snowmelt runoff from animal confinement or storage and handling areas, and runoff of manure and process wastewater from land application areas.
NMR040000	Small MS4s (outside of Pueblo land)	07/01/2007	06/30/2012	Required	Waters of the U.S.	Authorizes the discharge of storm water from small MS4s.
NMR040001	Small MS4s (inside Pueblo land)	07/01/2007	06/30/2012	Required	Waters of the U.S.	Authorizes the discharge of storm water from small MS4s; individual permit required for discharges on Sandia Pueblo land.
NMR050000	Storm water multi-sector general permit for industrial activities (outside of Pueblo land)	10/30/2000	10/30/2005	Required	Waters of the U.S.	Authorizes discharges associated with industrial activity from locations that are specifically identified by outfall or discharge locations in the SWPPP; administered by U.S. EPA Region 8.
NMR050001	Storm water multi-sector general permit for industrial activities (inside of Pueblo land)	10/30/2000	10/30/2005	Required	Waters of the U.S.	Authorizes discharges associated with industrial activity from locations that are specifically identified by outfall or discharge locations in the SWPPP; administered by EPA Region 8.

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**Table A-2. General NPDES Permits
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NPDES No.	Permit	Effective Date	Expiration Date	Notice of Intent	Receiving Waters	Description
NMR150000	Large and small construction activities (outside of Pueblo land)	07/01/2003	07/01/2008	Required	Surface waters of the U.S. or MS4	Authorizes storm water discharges from construction activities that result in a total land disturbance of equal to or greater than 1 acre.
NMR150001	Large and small construction activities (inside of Pueblo land)	07/01/2003	07/01/2008	Required	Surface waters of the U.S. or MS4	Authorizes storm water discharges from construction activities that result in a total land disturbance of equal to or greater than 1 acre.

Sources: NMED, 2008; U.S. EPA, 2008

MS4 = Municipal separate storm sewer system
SWPPP = Storm water pollution prevention plan

Appendix B

NMWQCC Surface Water Quality Standards

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Surface Water Quality Standards by Designated Use Applicable to the Rio Grande in the Albuquerque Area Page 1 of 9

Constituent	Concentration Not to Exceed (µg/L ^a)						
	Irrigation	Livestock Watering	Wildlife Habitat	Aquatic Life Acute	Aquatic Life Chronic	Human Health	Rio Grande Basin Reach Specific Criteria
<i>Inorganic Chemicals</i>							
Aluminum, dissolved	5,000	—	—	750	87	—	—
Ammonia, total	—	—	—	calculated ^b	calculated ^b	—	—
Antimony, dissolved	—	—	—	—	—	640	—
Arsenic, dissolved	100	200	—	340	150	9.0	—
Asbestos	—	—	—	—	—	—	—
Barium, dissolved	—	—	—	—	—	—	—
Beryllium, dissolved	—	—	—	—	—	—	—
Boron, dissolved	750	5,000	—	—	—	—	—
Cadmium, dissolved	10	50	—	—	—	—	—
Chlorine residual	—	—	11	19	11	—	—
Chromium, dissolved	100	1,000	—	hardness-based ^c	hardness-based ^c	—	—
Cobalt, dissolved	50	1,000	—	—	—	—	—
Copper, dissolved	200	500	—	hardness-based ^c	hardness-based ^c	—	—
Cyanide, dissolved	—	—	—	—	—	—	—
Cyanide, weak acid dissociable	—	—	5.2	22.0	5.2	220,000	—
<i>Inorganic Chemicals (cont.)</i>							
Lead, dissolved	5,000	100	—	hardness-based ^c	hardness-based ^c	—	—
Mercury, total	—	10	0.77	—	—	—	—

Note: Unless otherwise noted, standards are from NMWQCC, 2005

^a Unless otherwise noted

^b Aquatic life acute and chronic standards calculated based on pH and temperature, as defined by 20.6.4.900.K through M NMAC

^c Dissolved metals standards are hardness based as defined by 20.6.4.900.I NMAC

µg/L = Micrograms per liter

— = No standard set

Water Quality Protection Policy and Action Plan

Surface Water Quality Standards by Designated Use Applicable to the Rio Grande in the Albuquerque Area Page 2 of 9

Constituent	Concentration Not to Exceed (µg/L ^a)						
	Irrigation	Livestock Watering	Wildlife Habitat	Aquatic Life Acute	Aquatic Life Chronic	Human Health	Rio Grande Basin Reach Specific Criteria
Mercury, dissolved	—	—	—	1.4	0.77	—	—
Methyl mercury	—	—	—	—	—	0.3 mg/kg in fish tissue	—
Molybdenum, dissolved	1,000	—	—	—	—	—	—
Nickel, dissolved	—	—	—	hardness-based ^c	hardness-based ^c	4,600	—
Nitrate (as N)	—	—	—	—	—	—	—
Nitrate + Nitrite	—	132 mg/L	—	—	—	—	—
Selenium, dissolved	0.13 mg/L ^d	50	—	—	—	4,200	—
Selenium, total recoverable	—	—	5.0	20.0	5.0	—	—
Silver, dissolved	—	—	—	hardness-based ^c	—	—	—
Thallium, dissolved	—	—	—	—	—	6.3	—
Uranium, dissolved	—	—	—	—	—	—	—
Vanadium, dissolved	100	100	—	—	—	—	—
Zinc, dissolved	2,000	25,000	—	hardness-based ^c	hardness-based ^c	26,000	—
<i>Radiochemistry</i>							

Note: Unless otherwise noted, standards are from NMWQCC, 2005

^a Unless otherwise noted

^b Aquatic life acute and chronic standards calculated based on pH and temperature, as defined by 20.6.4.900.K through M NMAC

^c Dissolved metals standards are hardness based as defined by 20.6.4.900.I NMAC

^d 0.25 mg/L in the presence of >500 mg/L sulfate, as defined by 20.6.4.900.C NMAC

^e Marginal warmwater fisheries

^f May exceed on case by case basis

^g 20.6.4.106

^h 20.6.4.105 and 106

µg/L = Micrograms per liter

— = No standard set

mg/kg = Milligrams per kilogram

mg/L = Milligrams per liter

pCi/L = Picocuries per liter

°C = Degrees Celsius

cfs = Cubic feet per second

cfu/100 mL = Colony forming units per 100 milliliters

Water Quality Protection Policy and Action Plan

Surface Water Quality Standards by Designated Use Applicable to the Rio Grande in the Albuquerque Area Page 3 of 9

Constituent	Concentration Not to Exceed (µg/L ^a)						
	Irrigation	Livestock Watering	Wildlife Habitat	Aquatic Life Acute	Aquatic Life Chronic	Human Health	Rio Grande Basin Reach Specific Criteria
Adjusted gross alpha	—	15 pCi/L	—	—	—	—	—
Radium (²²⁶ Ra+ ²²⁸ Ra)	—	30.0 pCi/L	—	—	—	—	—
Strontium (⁹⁰ Sr)	—	—	—	—	—	—	—
Tritium	—	20,000 pCi/L	—	—	—	—	—
<i>VOCs, SVOCs, Pesticides</i>							
Acenaphthene	—	—	—	—	—	990	—
Acrolein	—	—	—	—	—	290	—
Acrylonitrile	—	—	—	—	—	2.5	—
Aldrin	—	—	—	3.0	—	0.00050	—
Anthracene	—	—	—	—	—	40,000	—
Benzene	—	—	—	—	—	510	—
Benzidine	—	—	—	—	—	0.0020	—
Benzo(a)anthracene	—	—	—	—	—	0.18	—
Benzo(a)pyrene	—	—	—	—	—	0.18	—
Benzo(b)fluoranthene	—	—	—	—	—	0.18	—

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^f May exceed on case by case basis

^g 20.6.4.106

^h 20.6.4.105 and 106

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Surface Water Quality Standards by Designated Use Applicable to the Rio Grande in the Albuquerque Area Page 4 of 9

Constituent	Concentration Not to Exceed ($\mu\text{g/L}^a$)						
	Irrigation	Livestock Watering	Wildlife Habitat	Aquatic Life Acute	Aquatic Life Chronic	Human Health	Rio Grande Basin Reach Specific Criteria
Benzo(k)fluoranthene	—	—	—	—	—	0.18	—
alpha-BHC	—	—	—	—	—	0.049	—
beta-BHC	—	—	—	—	—	0.17	—
gamma-BHC (Lindane)	—	—	—	0.95	—	0.63	—
Bis(2-chloroethyl)ether	—	—	—	—	—	5.3	—
Bis(2-chloroisopropyl)ether	—	—	—	—	—	65,000	—
Bis(2-ethylhexyl)phthalate	—	—	—	—	—	22	—
Bromoform	—	—	—	—	—	1,400	—
Butylbenzyl phthalate	—	—	—	—	—	1,900	—
Carbon tetrachloride	—	—	—	—	—	16	—
Chlordane	—	—	—	2.4	—	0.0081	—
Chlorobenzene	—	—	—	—	—	21,000	—
Chlorodibromomethane	—	—	—	—	—	130	—
Chloroform	—	—	—	—	—	4,700	—
2-Chloronaphthalene	—	—	—	—	—	1,600	—

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Surface Water Quality Standards by Designated Use Applicable to the Rio Grande in the Albuquerque Area Page 5 of 9

Constituent	Concentration Not to Exceed (µg/L ^a)						
	Irrigation	Livestock Watering	Wildlife Habitat	Aquatic Life Acute	Aquatic Life Chronic	Human Health	Rio Grande Basin Reach Specific Criteria
2-Chlorophenol	—	—	—	—	—	150	—
Chrysene	—	—	—	—	—	0.18	—
4,4'-DDT and derivatives	—	—	0.001	1.1	0.001	0.0022	—
Dibenzo(a,h)anthracene	—	—	—	—	—	0.18	—
Dibutyl phthalate	—	—	—	—	—	4,500	—
1,2-Dichlorobenzene	—	—	—	—	—	17,000	—
1,3-Dichlorobenzene	—	—	—	—	—	960	—
1,4-Dichlorobenzene	—	—	—	—	—	2,600	—
3,3'-Dichlorobenzidine	—	—	—	—	—	0.28	—
Dichlorobromomethane	—	—	—	—	—	170	—
1,2-Dichloroethane	—	—	—	—	—	370	—
1,1-Dichloroethylene	—	—	—	—	—	32	—
2,4-Dichlorophenol	—	—	—	—	—	290	—
1,2-Dichloropropane	—	—	—	—	—	150	—
1,3-Dichloropropene	—	—	—	—	—	1,700	—

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Constituent	Concentration Not to Exceed (µg/L ^a)						
	Irrigation	Livestock Watering	Wildlife Habitat	Aquatic Life Acute	Aquatic Life Chronic	Human Health	Rio Grande Basin Reach Specific Criteria
Dieldrin	—	—	—	0.24	0.056	0.00054	—
Diethyl phthalate	—	—	—	—	—	44,000	—
Dimethyl phthalate	—	—	—	—	—	1,100,000	—
2,4-Dimethylphenol	—	—	—	—	—	850	—
2,4-Dinitrophenol	—	—	—	—	—	5,300	—
2,4-Dinitrotoluene	—	—	—	—	—	34	—
2,3,7,8-TCDD Dioxin	—	—	—	—	—	5.1 x 10 ⁻⁸	—
1,2-Diphenylhydrazine	—	—	—	—	—	2.0	—
alpha-Endosulfan	—	—	—	0.22	0.056	89	—
beta-Endosulfan	—	—	—	0.22	0.056	89	—
Endosulfan sulfate	—	—	—	—	—	89	—
Endrin	—	—	—	0.086	0.036	0.81	—
Endrin aldehyde	—	—	—	—	—	0.30	—
Ethylbenzene	—	—	—	—	—	29,000	—
Fluoranthene	—	—	—	—	—	140	—

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Constituent	Concentration Not to Exceed (µg/L ^a)						
	Irrigation	Livestock Watering	Wildlife Habitat	Aquatic Life Acute	Aquatic Life Chronic	Human Health	Rio Grande Basin Reach Specific Criteria
Fluorene	—	—	—	—	—	5,300	—
Heptachlor	—	—	—	0.52	0.0038	0.00079	—
Heptachlor epoxide	—	—	—	0.52	0.0038	0.00039	—
Hexachlorobenzene	—	—	—	—	—	0.0029	—
Hexachlorobutadiene	—	—	—	—	—	180	—
Hexachlorocyclopentadiene	—	—	—	—	—	17,000	—
Hexachloroethane	—	—	—	—	—	33	—
Ideno(1,2,3-cd)pyrene	—	—	—	—	—	0.18	—
Isophorone	—	—	—	—	—	9,600	—
Methyl bromide	—	—	—	—	—	1,500	—
2-Methyl-4,6-dinitrophenol	—	—	—	—	—	280	—
Methylene chloride	—	—	—	—	—	5,900	—
Nitrobenzene	—	—	—	—	—	690	—
N-Nitrosodimethylamine	—	—	—	—	—	30	—
N-Nitrosodi-n-propylamine	—	—	—	—	—	5.1	—

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Constituent	Concentration Not to Exceed (µg/L ^a)						
	Irrigation	Livestock Watering	Wildlife Habitat	Aquatic Life Acute	Aquatic Life Chronic	Human Health	Rio Grande Basin Reach Specific Criteria
N-Nitrosodiphenylamine	—	—	—	—	—	60	—
PCBs	—	—	0.014	—	0.014	0.00064	—
Pentachlorophenol	—	—	—	19	15	30	—
Phenol	—	—	—	—	—	1,700,000	—
Pyrene	—	—	—	—	—	4,000	—
1,1,2,2-Tetrachloroethane	—	—	—	—	—	40	—
Tetrachloroethylene	—	—	—	—	—	33	—
Toluene	—	—	—	—	—	200,000	—
Toxaphene	—	—	—	0.73	0.0002	0.0028	—
1,2-Trans-dichloroethylene	—	—	—	—	—	140,000	—
1,2,4-Trichlorobenzene	—	—	—	—	—	940	—
1,1,2-Trichloroethane	—	—	—	—	—	160	—
Trichloroethylene	—	—	—	—	—	300	—
2,4,6-Trichlorophenol	—	—	—	—	—	24	—
Vinyl chloride	—	—	—	—	—	5,300	—

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	Irrigation	Livestock Watering	Wildlife Habitat	Aquatic Life Acute	Aquatic Life Chronic	Human Health	
<i>Field Parameters</i>							
Dissolved oxygen	—	—	—	$\geq 5.0 \text{ mg/L}^e$		—	$\geq 5.0 \text{ mg/L}^g$
Temperature	—	—	—	$\leq 32.2^\circ\text{C}^{e, f}$		—	$\leq 32.2^\circ\text{C}^h$
<i>Field Parameters (cont.)</i>							
pH (standard units)	—	—	—	$6.6\text{-}9.0^e$		—	$6.6 - 9.0^h$
Total dissolved solids (monthly average for mean flows >100 cfs)	—	—	—	—	—	—	$\leq 1,500 \text{ mg/L}^h$
Sulfate (monthly average for mean flows >100 cfs)	—	—	—	—	—	—	$\leq 500 \text{ mg/L}^h$
Chloride (monthly average for mean flows >100 cfs)	—	—	—	—	—	—	$\leq 250 \text{ mg/L}^h$
E. coli bacteria (monthly geometric mean)	—	—	—	—	—	—	$\leq 126 \text{ cfu}/100 \text{ mL}^h$
E. coli bacteria (single sample)	—	—	—	—	—	—	$\leq 410 \text{ cfu}/100 \text{ mL}^h$

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