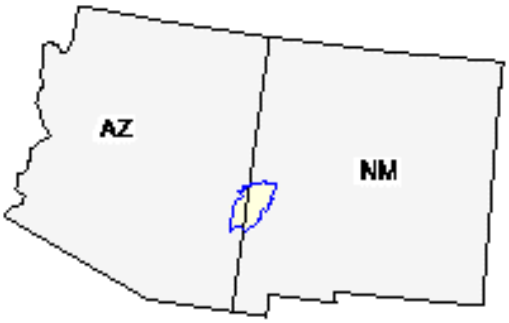
TOTAL MAXIMUM DAILY LOAD FOR TURBIDITY IN WHITEWATER CREEK



Summary Table

New Mexico Standards Segment	San Francisco River, 20.6.4.603 (formerly 2603)
Water body Identifier	Whitewater creek from the mouth on the San Francisco River to Whitewater Campground, 5.6 mi.
Parameters of Concern	Turbidity
Uses Affected	Domestic water supply, fish culture, high quality coldwater fishery, irrigation, livestock watering, wildlife habitat and secondary contact
Geographic Location	San Francisco River Basin (SFR4-20100)
Scope/size of Watershed	TMDL area: 52 mi^2
Land Type	Ecoregions: New Mexico/Arizona Mountains
Land Use/Cover	Forest (70 %), Rangeland (27%), Agriculture (3%), Water (1 %), Built-up (<1%)
Identified Sources	Hydromodification, Road maintenance/runoff, Removal of Riparian Vegetation, Streambank Modification/Destabilization, Industrial Point Source
Watershed Ownership	Forest Service (97 %), Private (3 %)
Priority Ranking	3
Threatened and Endangered Species Critical Habitat	No Loach Minnow
TMDL for: Turbidity (as TSS)	 WLA (334.0) + LA (198.1) + MOS (93.9)= **626.0 lbs/day**

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List of Abbreviations

BMP	Best Management Practice
BLM	United States Department of Interior Bureau of Land Management
CCCG	Catron County Citizens Group
CFS	Cubic Feet per Second
CWA	Clean Water Act
CWAP	Clean Water Action Plan
CWF	Coldwater Fishery
EPA	United States Environmental Protection Agency
FS	United States Department of Agriculture Forest Service
GM	Gila Monster
GNF	Gila National Forest
HQCWF	High Quality Coldwater Fishery
ISI	Interstitial Space Index
LA	Load Allocation
MGD	Million Gallons per Day
mg/L	Milligrams per Liter
MOS	Margin of Safety
MOU	Memorandum of Understanding
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMSGF	New Mexico State Game and Fish
NMSHD	New Mexico State Highway and Transportation Department
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source
NTU	Nephelometric Turbidity Units
SWQB	Surface Water Quality Bureau
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
USGS	United States Geological Survey
UWA	Unified Watershed Assessment
WLA	Waste Load Allocation
WPS	Watershed Protection Section
WQLS	Water Quality Limited Segment
WQCC	New Mexico Water Quality Control Commission
WQS	Water Quality Standards

EXECUTIVE SUMMARY

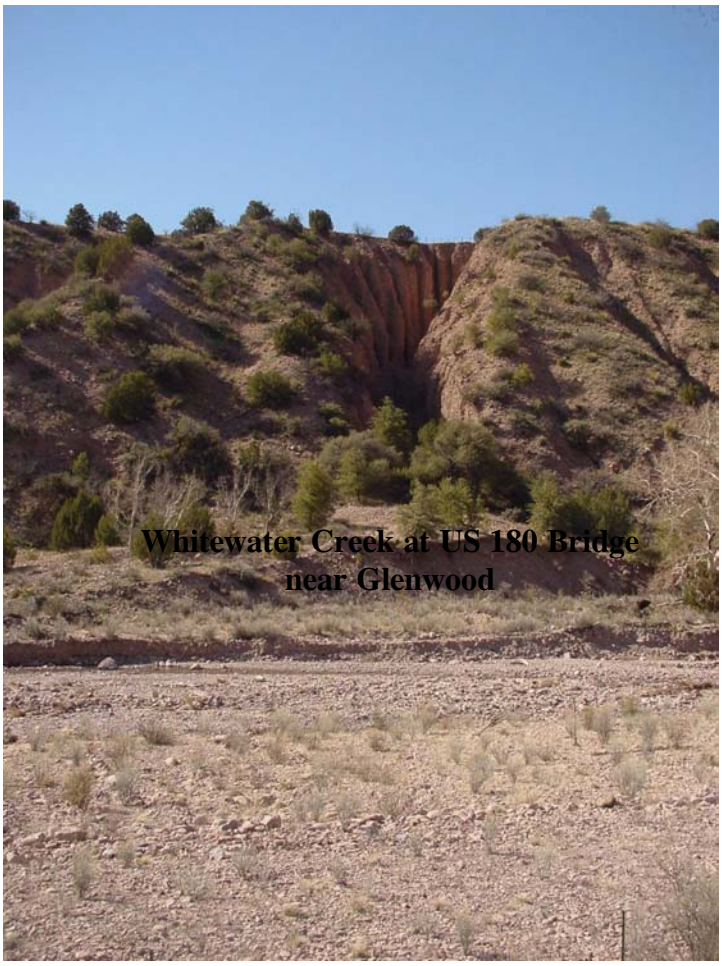
Section 303(d) of the Federal Clean Water Act requires states to develop Total Maximum Daily Load (TMDL) management plans for waterbodies determined to be water quality limited. A TMDL documents the amount of a pollutant a waterbody can assimilate without violating a state's water quality standards. It also allocates that load capacity to known point sources and nonpoint sources at a given flow. TMDLs are defined in 40 CFR Part 130 as the sum of the individual Waste Load Allocations (WLA) for point sources and Load Allocations (LA) for nonpoint sources, including a margin of safety (MOS), and natural background conditions.

Whitewater Creek low water crossing

The Whitewater Creek watershed is a sub-basin of the San Francisco River Basin, located in southwestern New Mexico. Two stations were located on the creek to evaluate the impact of the watershed. As a result of this monitoring effort, several exceedances of New Mexico water quality standards for turbidity were documented on Whitewater Creek. This TMDL document addresses turbidity for Whitewater Creek. When formally adopted by the New Mexico Water Quality Control Commission (WQCC), the TMDL will be incorporated into the State's Water Quality Management Plan by reference.

A general implementation plan for activities to be established in the watershed is referred to in this document. The Surface Water Quality Bureau (SWQB) Watershed Protection Section (WPS) will further develop the details of this plan. Implementation of recommendations in this document will be done with full participation of all interested and affected parties. During implementation, additional water quality data will be collected. As a result targets will be re-examined and potentially revised; this document is considered to be an evolving management plan. In the event that new data indicate that the targets used in this analysis are not appropriate or if new standards are adopted, the load capacity will be adjusted accordingly. When water quality standards have been achieved, the reach will be removed from the TMDL list.

Background Information



Gila conglomerate along the banks of lower Whitewater Creek

The Whitewater Creek watershed is approximately 52 mi^2 and is located in southwestern New Mexico. The Whitewater Creek watershed is dominated by forest and rangeland, with some agriculture, water, and built-up areas (Figure 1). Whitewater Creek flows through the town of Glenwood and into the San Francisco River. The watershed is almost entirely Forest Service managed lands, with very little privately held lands (Figure 2).

Surface water quality monitoring stations were used to characterize the water quality of the stream reaches. Stations were located to evaluate the impact on the stream. Several sample results exceed New Mexico water quality standards for turbidity and were documented at the town of Glenwood below the Hwy 180 bridge.

Endpoint Identification

Target Loading Capacity

Overall, the target value for the turbidity TMDL will be determined based on 1) the presence of numeric criteria, 2) the degree of experience in applying the indicator and 3) the ability to easily monitor and produce quantifiable and reproducible results. For this TMDL document target values for turbidity are based on numeric criteria.

Turbidity

According to New Mexico standards (20.6.4.12 NMAC) turbidity is;

> Turbidity attributable to other than natural causes shall not reduce light transmission to the point that the normal growth, function, or reproduction of aquatic life is impaired or that will cause substantial visible contrast with the natural appearance of the water.

The State's standard leading to an assessment of use impairment is the numeric criteria stating that "turbidity shall not exceed 10 NTU" for the appropriate designated use of a high quality coldwater fishery (HQCWF). Whitewater Creek falls into standard segment 20.6.4.603 (formerly 2603), which reads:

> San Francisco River Basin- All perennial reaches of tributaries to the San Francisco river at or above the town of Glenwood.

Flow

Turbidity, or sediment, movement in a stream varies as a function of flow. As flow increases the concentration of sediment increases. TMDLs are calculated for each reach at a specific flow; in this case the target flow was high flow.

When available, USGS gages are used to estimate flow. Where gages are absent or poorly located along a reach, either actual flow (measured as water quality samples are taken) is used as target flows or geomorphologic sectional information is taken to model the flows. Because there was no USGS gage station on Whitewater Creek, the flow used for this TMDL was the greatest flow taken during the field-sampling season (taken June 8,1998) on this reach. It is important to remember that the TMDL is a planning tool to be used to achieve water quality standards. Since flows vary throughout the year in these systems at water quality standards the target load will vary based on the changing flow. Management of the load should set a goal attainment, not meeting the calculated target load.

Calculations

A target load for turbidity is calculated based on a flow, the current water quality standards, and a unit-less conversion factor, 8.34 that is used to convert mg/L units to lbs/day (see Appendix A for Conversion Factor Derivation). The target loads (TMDLs) predicted to attain standards were calculated using Equation 1 and are shown in Table 1.

Equation 1. *critical flow (mgd) x standard (mg/L) x 8.34 (conversion factor) = target loading capacity*

Table 1: Calculation of Target Loads

Location	Flow+ (mgd)	Standard* TSS (mg/L)	Conversion Factor	Target Load Capacity (lbs/day)
Whitewater Creek	13.9	5.4	8.34	626.0

+Because there is no USGS station on this reach, the flow is the greatest flow taken during the field-sampling season (taken June 8,1998) on this reach (this includes a 4 mgd design flow from the Glenwood State Fish Hatchery).
*This value is calculated using the relationship established between turbidity and TSS - ($y=0.5227x + 0.1759$) $R^2=0.421$. The turbidity standard is 10 NTU so the corresponding TSS value is 5.4 mg/L.

Figure 1

HUC 5 NAME		
Whitewater/San Francisco		
HUC	ACRES	MI^2
4040060	34,092	53.27
4040070	21,451	33.52
		86.79

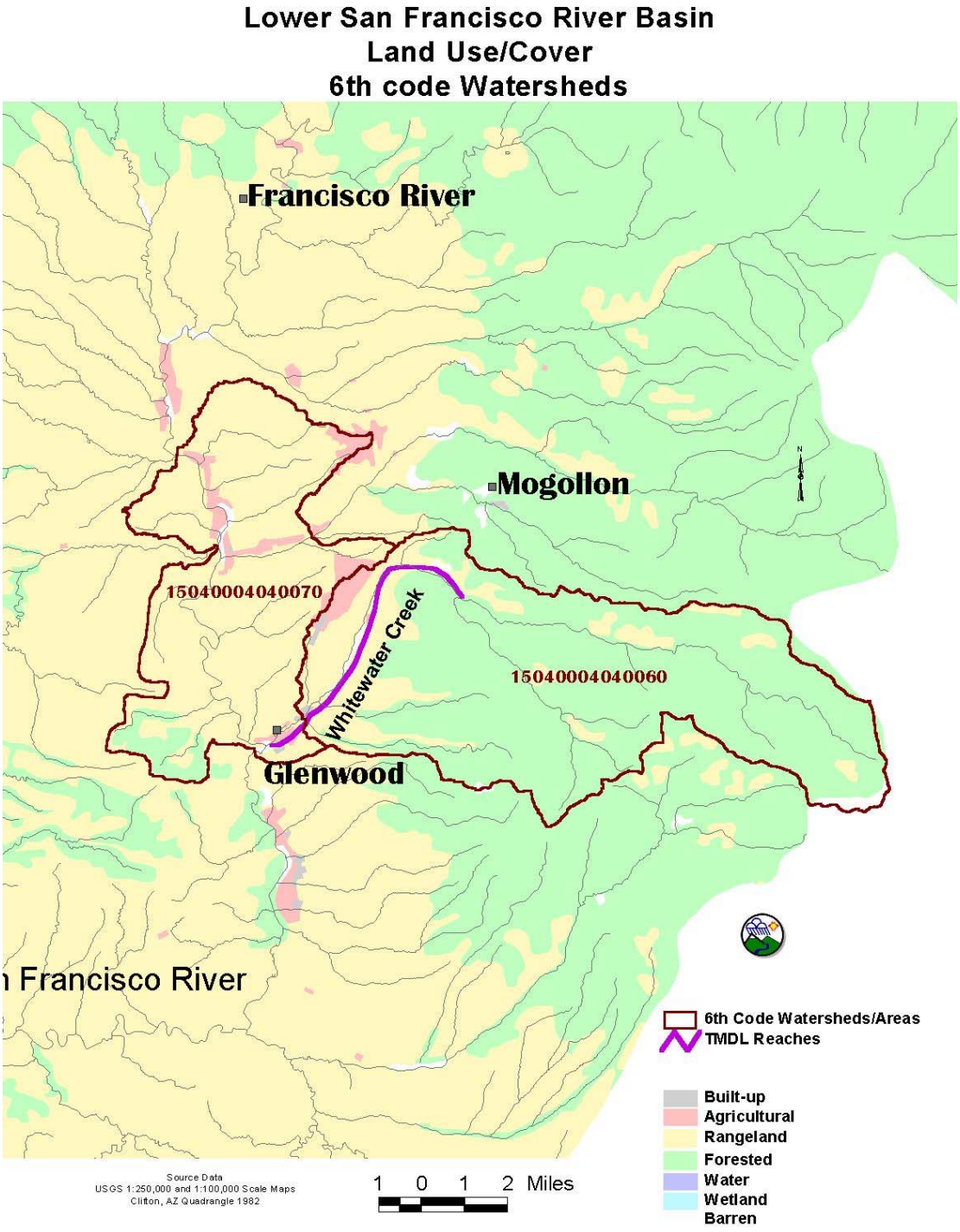
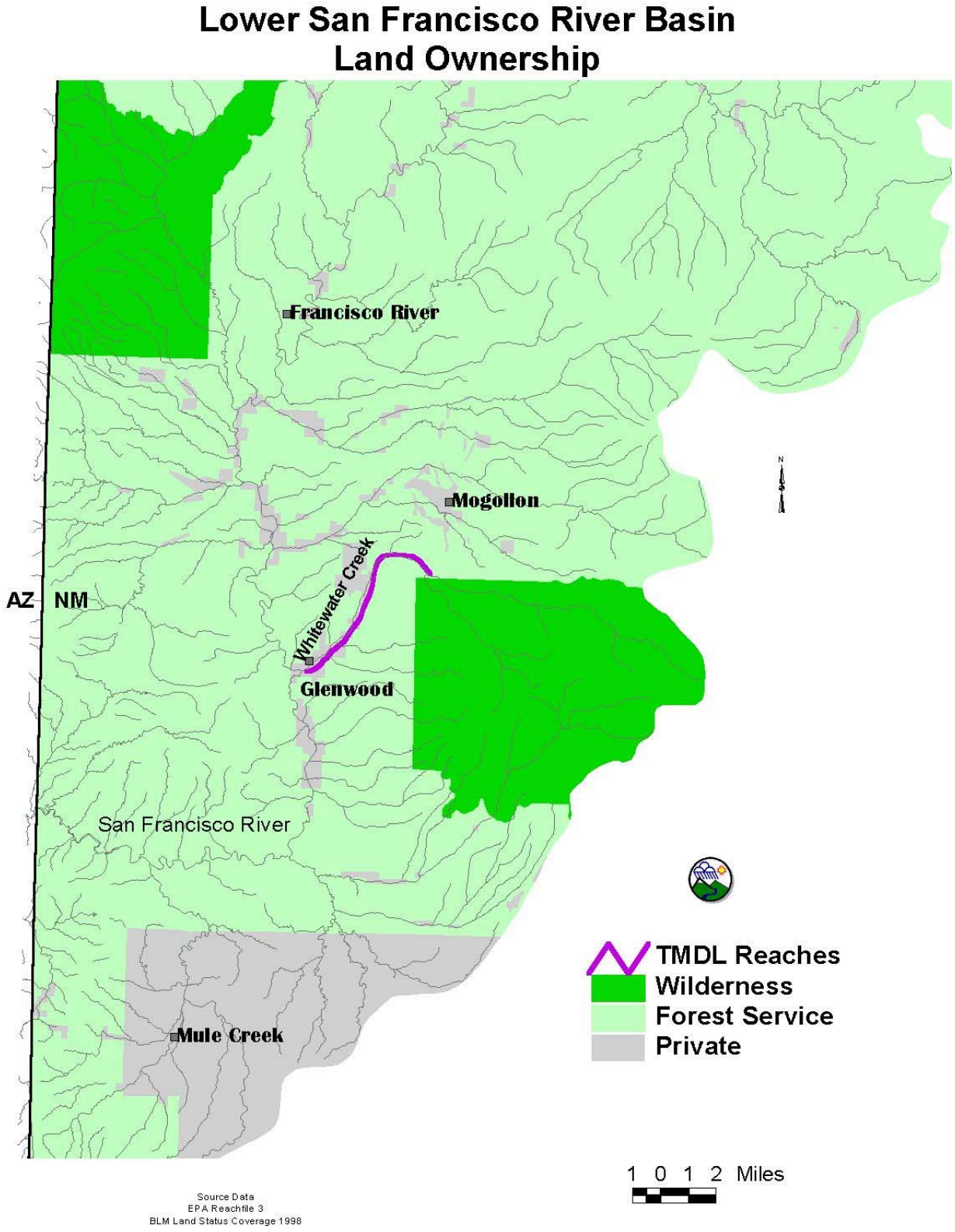


Figure 2


Lower San Francisco River Basin
Land Ownership
Francisco River
Mogollon
Whitewater Creek
AZ
NM
Glenwood
San Francisco River
Mule Creek
TMDL Reaches
Wilderness
Forest Service
Private
1 0 1 2 Miles
Source Data
EPA Reachfile 3
BLM Land Status Coverage 1998

The currently measured loads were calculated using Equation 1. The flows used were taken from field measurements. The geometric mean of the data that exceeded the standards from the data collected at each site for TSS was substituted for the standard in Equation 1. The same conversion factor of 8.34 was used. Results are presented in Table 2.

Table 2: Calculation of Measured Loads

Location	Flow+ (mgd)	Field Measurements* (mg/L)	Conversion Factor	Measured Load (lbs/day)
Whitewater Creek	13.9	14	8.34	1623

+Because there is no USGS station on this reach, the flow is the greatest flow taken during the field sampling season (taken June 8,1998) on this reach (this includes a 4 mgd design flow from the Glenwood State Fish Hatchery).
*This is the geometric mean of turbidity values that exceeded the numeric standard expressed as TSS using the relationship established for table 1. (Data used to calculate field measurements are in Appendix C)

Background loads were not possible to calculate in this watershed. A reference reach, having similar stream channel morphology and flow, was not found. It is assumed that a portion of the load allocation is made up of natural background loads. In future water quality surveys, finding a suitable reference reach will be a priority.

Waste Load Allocations and Load Allocations

Waste Load Allocation

There is one point source contributor associated with this TMDL. The waste load allocation is 334 lbs/day. The Glenwood State Fish Hatchery (permit #NM0030163) has a permit to discharge 334 lbs/day total suspended solids (TSS) to Whitewater Creek.

Load Allocation

In order to calculate the load allocation (LA) the waste load allocation (WLA), and margin of safety (MOS) were subtracted from the target capacity (TMDL) following Equation 2.

$$\textit{Equation 2.} \quad WLA + LA + MOS = TMDL$$

Results are presented in Table 3 (Calculation of TMDLs for Turbidity).

Table 3: Calculation of TMDL for Turbidity

Location	WLA (lbs/day)	LA (lbs/day)	MOS (lbs/day)	TMDL (lbs/day)
Whitewater Creek	334.0	198.1	93.9	626.0

The load reductions that would be necessary to meet the target loads were calculated to be the difference between the target load (Table 1) and the measured load (Table 2), and are shown in Table 4 (Calculation of Load Reductions). For example, for Whitewater Creek, achieving the target load of 626.3 lbs/day would require a load reduction of 996.7 lbs/day. Achieving the target load for turbidity on Whitewater Creek would require a load reduction of approximately 61%.

Table 4: Calculation of Load Reductions (in lbs/day)

Location	Target Load	Measured Load	Load Reduction
Whitewater Creek	626.0	1623	997

Identification and Description of Pollutant Source(s)

Table 5: Pollutant Source Summary

Pollutant Sources (% from each)	**Magnitude** (WLA + LA + MOS)	**Location**	**Potential Sources**
Point (53%): •Turbidity (as TSS in lbs/day)	334.0	Whitewater Creek	Industrial Point Source (Glenwood State Fish Hatchery)
Nonpoint (47%): •Turbidity (as TSS in lbs/day)	198.1	Whitewater Creek	Hydromodification, Road maintenance/runoff, Removal of Riparian Vegetation, Streambank Modification/Destabilization

Linkage of Water Quality and Pollutant Sources

Where available data are incomplete or where the level of uncertainty in the characterization of sources is large, the recommended approach to TMDLs requires the development of allocations based on estimates utilizing the best available information. Data that were collected and used for the calculation of the existing condition for both creeks, with respect to turbidity and TSS, are included in Appendix C.

SWQB fieldwork includes an assessment of the potential sources of impairment (SWQB/NMED revised 10/2/00). The Pollutant Source(s) Documentation Protocol, shown as Appendix D, provides an approach for a visual analysis of a pollutant source along an impaired reach. Although this procedure is subjective, SWQB feels that it provides the best available information for the identification of potential sources of impairment in this watershed.

Table 5 (Pollutant Source Summary) identifies and quantifies potential sources of impairment along each reach as determined by field reconnaissance and assessment. A further explanation of the sources follows.

Whitewater Creek

The primary sources of impairment along this reach are nonpoint sources including hydromodification, road maintenance/runoff, removal of riparian vegetation, and streambank modification/destabilization. The stream has been hydromodified (channelized and levied) in an effort to protect the main road along the creek. Landowners have also built up banks in the area in an attempt to prevent floodwaters from flooding their properties. Roads running along the creek provide direct conduits for sediment erosion and deposition into Whitewater Creek.

Whitewater Creek Downstream from the Catwalk

The Glenwood State Fish Hatchery discharges to Whitewater Creek and has the potential to contribute to the impairment. The fish hatchery discharges into two ponds prior to the water entering Whitewater Creek according to the National Pollutant Discharge Elimination System (NPDES) permit (#NM0030163). These ponds may act as settling basins and limit any actual sediment contribution to Whitewater Creek.

There are subdivisions, houses, ranches/farms, bridges, roads, and low water crossings within the segment. Parts of this segment of Whitewater Creek are not perennial. The land surrounding this creek is almost entirely Forest Service managed lands with very little privately owned.

Margin of Safety (MOS)

TMDLs should reflect a margin of safety based on the uncertainty or variability in the data, the point and nonpoint source load estimates, and the modeling analysis. For this TMDL, there will be no margin of safety for point sources, since there are none. However, for the nonpoint sources the margin of safety is estimated to be an addition of **15%** for Whitewater Creek for turbidity to the TMDL, excluding the background. This margin of safety incorporates several factors:

- *Errors in calculating NPS loads*

  A level of uncertainty exists in sampling nonpoint sources of pollution. Accordingly, a conservative margin of safety for turbidity increases the TMDL by 10%.

•*Errors in calculating flow*

Flow estimates were based on actual flows measured in the field at the time of sampling. To be conservative, an addition of 5% MOS to account for accuracy of flow measures will be included.

Consideration of Seasonal Variation

Data used in the calculation of this TMDL were collected during spring, summer, and fall in order to ensure coverage of any potential seasonal variation in the system. Critical condition is set to the highest flows for turbidity. Data where exceedances were seen (only during higher flows) were used in the calculation of the measured loads.

Future Growth

Future growth and growth estimates are of interest to Western New Mexico University (WNMU), who in cooperation with other groups and agencies, has produced documentation pertaining to Socio-Economic studies of the southwestern counties in an attempt to better understand trends. Estimations of future growth are not anticipated to lead to a significant increase for turbidity that cannot be controlled with best management practice implementation in this watershed. Whitewater Creek runs through almost entirely Forest Service managed lands with very little privately held lands.

Monitoring Plan

Pursuant to Section 106(e)(1) of the Federal Clean Water Act, the SWQB has established appropriate monitoring methods, systems and procedures in order to compile and analyze data on the quality of the surface waters of New Mexico. In accordance with the New Mexico Water Quality Act, the SWQB has developed and implemented a comprehensive water quality monitoring strategy for the surface waters of the State. The monitoring strategy establishes the methods of identifying and prioritizing water quality data needs, specifies procedures for acquiring and managing water quality data, and describes how these data are used to progress toward three basic monitoring objectives: to develop water quality-based controls, to evaluate the effectiveness of such controls and to conduct water quality assessments.

The SWQB utilizes a rotating basin system approach to water quality monitoring. In this system, a select number of watersheds are intensively monitored each year with an established return frequency of every five to seven years.

The SWQB maintains current quality assurance and quality control plans to cover all monitoring activities. This document, "Quality Assurance Project Plan for Water Quality Management Programs" (QAPP) is updated annually (SWQB/NMED 2001). Current priorities for monitoring in the SWQB are driven by the 303(d) list of streams requiring TMDLs.

Short-term efforts will be directed toward those waters which are on the EPA TMDL consent decree (Forest Guardians and Southwest Environmental Center v. Carol Browner, Administrator, US EPA, Civil Action 96-0826 LH/LFG, 1997) list and which are due within the first two years of the monitoring schedule. Once assessment monitoring is completed those reaches showing impacts and requiring a TMDL will be targeted for more intensive monitoring. The methods of data acquisition include fixed-station monitoring, intensive surveys of priority water bodies, including biological assessments, and compliance monitoring of industrial, federal and municipal dischargers, and are specified in the SWQB Assessment Protocol (SWQB/NMED revised 10-2-00).

Long term monitoring for assessments will be accomplished through the establishment of sampling sites that are representative of the waterbody and which can be revisited every five to seven years. This gives an unbiased assessment of the waterbody and establishes a long term monitoring record for simple trend analyses. This information will provide time relevant information for use in 305(b) assessments and to support the need for developing TMDLs.

The approach provides:

- a systematic, detailed review of water quality data, allowing for a more efficient use of valuable monitoring resources.
- information at a scale where implementation of corrective activities is feasible.
- an established order of rotation and predictable sampling in each basin which allows for enhanced coordinated efforts with other programs.
- program efficiency and improvements in the basis for management decisions.

It should be noted that a basin would not be ignored during its sampling hiatus. The rotating basin program will be supplemented with other data collection efforts. Data will be analyzed, field studies will be conducted, to further characterize acknowledged problems, and TMDLs will be developed and implemented. Both long term and field studies can contribute to the 305(b) report and 303(d) listing processes.

The following schedule is a draft for the sampling seasons through 2004 and will be followed in a consistent manner to support the New Mexico Unified Watershed Assessment (UWA) and the Nonpoint Source Management Program. This sampling regime allows characterization of seasonal variation and through sampling in spring, summer, and fall for each of the watersheds.

- 1998 Jemez Watershed, Upper Chama Watershed (above El Vado), Cimarron Watershed, Santa Fe River, San Francisco Watershed
- 1999 Lower Chama Watershed, Red River Watershed, Middle Rio Grande, Gila River Watershed (summer and fall), Santa Fe River
- 2000 Gila River Watershed (spring), Dry Cimarron Watershed, Upper Rio Grande 1 (Pilar north to the NM/CO border), Shumway Arroyo
- 2001 Upper Rio Grande 2 (Pilar south to Cochiti Reservoir), Upper Pecos Watershed (Ft Sumner north to the headwaters)
- 2002 Canadian River Watershed, San Juan River Watershed, Mimbres Watershed

- 2003 Lower Pecos Watershed (Ft. Sumner south to the NM/TX border including Ruidoso), Lower Rio Grande (southern border of Isleta Pueblo south to the NM/TX border)
- 2004 Rio Puerco Watershed, Closed Basins, Zuni Watershed

Implementation Plan

Management Measures

Management measures are "economically achievable measures for the control of the addition of pollutants from existing and new categories and classes of nonpoint sources of pollution, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, citing criteria, operating methods, or other alternatives"(USEPA, 1993). A combination of best management practices (BMPs) will be used to implement this TMDL.

Introduction

Turbidity is a measurement of the reduction of the penetration of light through natural waters and is caused by the presence of suspended particles. Turbidity is a qualitative measure of water clarity or opacity and is reported in Nephelometric turbidity units (NTU).

The turbidity standard addresses excessive sedimentation, which can lead to the formation of bottom deposits that can impact the aquatic ecosystem. Suspended solids such as clay, silt, ash, plankton, and organic materials generally cause turbidity. Some level of turbidity is a function of a stream's natural process of moving water and sediment.
Examples of sources that can cause excessive turbidity include:

- Runoff from exposed soil (such as construction sites),
- Improperly maintained roads,
- Eroded streambanks,
- Activities that occur within a stream channel (such as some forms of mining,
- Removal of riparian vegetation, and
- In some cases, naturally occurring situations such as runoff events.

Actions to be Taken

For this watershed the primary focus will be on the control of turbidity.

During the TMDL process in this watershed, point sources have been reviewed and will be addressed through the permit process. The nonpoint source contributions will need to address turbidity exceedances through BMP implementation.

There are a number of BMPs that can be utilized to address turbidity, depending on the source of the sediment. Such BMPs include:

1. Protection and/or development of healthy riparian buffer strips to serve as filters for soils that are transported during surface runoff. This runoff could be the result of activities in the watershed that disturbed soils or caused a loss of vegetative ground cover. The riparian vegetation also helps to stabilize riverbanks with root structure, which prevents excessive bank erosion and helps maintain the stability and natural morphology of the stream system. (Stream Corridor Restoration – Principles, Processes, and Practices, 1998, The Federal Interagency Stream Restoration Working Group);

2. Placement of silt fences between roads and watercourses to prevent soils that are disturbed during road and other construction activities from being carried into watercourses. Silt fences trap sediment that is carried during runoff events similar to a filter. When maintained properly, these silt fences are an effective erosion control measure that can be used throughout the State. (Erosion and Sediment Control Manual, 1993, Environment Department, Surface Water Quality Bureau);

3. Placement of straw mulch on soils that have lost cover from vegetative groundcover during severe forest fires. The straw mulch helps prevent erosion during rainstorms and snowmelt by holding the bare topsoil and ash in place. The mulch can also aid in the infiltration of water and replace ground litter. This method works well on gentle slopes where there is no wind. (Cerro Grande Fire Burned Area Emergency Rehabilitation (BAER) Plan, 2000, Interagency Baer Team.

Additional sources of information for possible BMPs to address turbidity are listed below. Some of these documents are available for viewing at the New Mexico Environment Department, Surface Water Quality Bureau, Watershed Protection Section Library, 1190 St Francis Drive, Santa Fe New Mexico.

Agriculture

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  http://www.nm.nrcs.usda.gov/

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Forestry

- New Mexico Natural Resources Department, 1983, Water Quality Protection Guidelines for Forestry Operations in New Mexico.
- New Mexico Department of Natural Resources, 1980, New Mexico Forest Practice Guidelines. Forestry Division, Timber Management Section

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Riparian and Streambank Stabilization

- Colorado Department of Natural Resources, Streambank Protection Alternatives. State Soil Conservation Board.

- Meyer, Mary Elizabeth, 1989, A Low Cost Brush Deflection System for Bank Stabilization and Revegetation.
- Missouri Department of Conservation, Restoring Stream Banks With Willows, (pamphlet).

- New Mexico State University, Revegetating Southwest Riparian Areas, College of Agriculture and Home Economics, Cooperative Extension Service, (pamphlet).

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- State of Tennessee, 1995, Riparian Restoration and Streamside Erosion Control Handbook. Nonpoint Source Water Pollution Management Program.

Roads

- Becker, Burton C. and Thomas Mills, 1972, Guidelines for Erosion and Sediment Control Planning and Implementation, Maryland Department of Water Resources, # R2-72-015.

- Bennett, Francis William, and Roy Donahue, 1975, Methods of Quickly Vegetating Soils of Low Productivity, Construction Activities, US EPA, Office of Water Planning and Standards Report # 440/9-75-006.

- Hopkins, Homer T. and others, Processes, Procedures, and Methods to control Pollution Resulting from all Construction Activity,.US EPA Office of Air and Water Programs, EPA Report 430/9-73-007.
- New Mexico Natural Resources Department, 1983, Reducing Erosion from Unpaved Rural Roads in New Mexico, A Guide to Road construction and Maintenance Practices. Soil and Water Conservation Division

- New Mexico State Highway and Transportation Department and USDA-Soil Conservation Service, Roadside Vegetation Management Handbook.

- New Mexico Environment Department, 1993, Erosion and Sediment Control Manual. Surface Water Quality Bureau.

- USDA Forest Service Southwestern Region, 1996, Managing Roads for Wet Meadow Ecosystem Recovery. FHWA-FLP-96-016.
  Section V. New Construction and Reconstruction
  Section VI. Remedial Treatments
  Section VII. Maintenance

- USEPA, 1992, Rural Roads: Pollution Prevention and Control Measures (handout).

Storm Water

- Delaware Department of Natural Resources and Environmental Control, 1997, Conservation Design for Storm Water Management: A Design Approach to Reduce Stormwater Impacts From Land Development and Achieve Multiple Objectives Related to Land Use. Sediment and Stormwater Program and The Environment Management Center, Brandywine Conservancy.

- State of Kentucky, 1994, Kentucky Best Management Practices for Construction Activity. Division of Conservation and Division of Water.

- USEPA, 1992, Storm Water Management for Construction Activities – Developing Pollution Prevention Plans and Best Management Practices, Summary Guidance, EPA 833-R-92-001, pgs. 7- 9.

Miscellaneous

- Interagency Baer Team, 2000, Cerro Grande Fire Burned Area Emergency Rehabilitation (BAER) Plan, Section F. Specifications.

- New Mexico Environment Department, 2000, A Guide to Successful Watershed Health. Surface Water Quality Bureau.
- Roley, William Jr., Watershed Management and Sediment Control for Ecological Restoration.

- Rosgen, David, 1996, Applied River Morphology, Chapter 8. Applications (Grazing, Fish Habitat).

- Rosgen, David, 1997, A Geomorphological Approach to Restoration of Incised Rivers.

- The Federal Interagency Stream Restoration Working Group, 1998, Stream Corridor Restoration. Principles, Processes, and Practices.
  Chapter 8 – Restoration Design
  Chapter 9 – Restoration implementation, Monitoring, and Management

- USDA Forest Service Southwestern Region, Soil and Water Conservation Practices Handbook.
  Section 22, Range Management
  Section 23, Recreation Management
  Section 24, Timber Management
  Section 25, Watershed Management
  Section 26, Wildlife and Fisheries Management
  Section 41, Access and Transportation Systems and Facilities

- Unknown, Selecting BMPs and other Pollution Control Measures.

- Unknown, Environmental Management. Best Management Practices.
  Construction Sites
  Developed Areas
  Sand and Gravel Pits
  Farms, Golf Courses, and Lawns

Other BMP Activities in the Watershed

The following are activities in this watershed that have occurred, are occurring, or are in the planning stages to address turbidity sources or other nonpoint source issues in the Whitewater Creek watershed.

The Gila National Forest has been and continues to be involved in management activities on lands in the upper reaches of the Whitewater Creek watershed. Many of these management activities are undertaken to address issues with sediment, turbidity, and water temperature. Mining, grazing and logging were all historic uses made of the land. Currently, the Whitewater Creek watershed is managed with an emphasis focused on recreation, wildlife, fisheries, and

grazing. Recreational developments consist of the Catwalk, Glenwood Fish Hatchery and local development. There are many established trails above and below this segment.

Coordination

In this watershed public awareness and involvement will be crucial to the successful implementation of this plan and improved water quality.

Staff from the SWQB is available to work with stakeholders to provide the guidance in developing the Watershed Restoration Action Strategy (WRAS). The WRAS is a written plan intended to provide a long-range vision for various activities and management of resources in a watershed. It includes opportunities for private landowners and public agencies to reduce and prevent impacts to water quality.

This long-range strategy will become instrumental in coordinating and achieving a reduction of turbidity and will be used to prevent water quality impacts in the watershed. SWQB staff is available to provide any technical assistance such as selection and application of BMPs needed to meet WRAS goals.

The SWQB cooperates with stakeholders in this watershed and encourages the implementation of BMPs. Certain reaches in the Whitewater Creek watershed may be suitable habitat for beaver that face extirpation in other locations. Beaver activities can bring about a rapid growth of riparian vegetation, change an ephemeral stream into a perennial stream, capture sediment, raise the water table, and reduce flood velocities. SWQB encourages efficient management of livestock and wildlife. Lastly, the SWQB will encourage all landowners in the watershed to consider road issues that may cause impairment of the streams ability to function.

Stakeholders in this process will include SWQB, and other members of the Watershed Restoration Action Strategy such as the Catron County Citizens Group (CCCG), the Gila Monster (GM) group, Gila National Forest (GNF), State Game and Fish (NMSGF), the Town of Glenwood, the Glenwood Fish Hatchery, the New Mexico State Highway Department (NMSHD), the Catron County Road Department and other private landowners. Stakeholder public outreach and involvement in the implementation of this TMDL will be ongoing.

Time Line

The New Mexico Nonpoint Source Management Program December 1999, published by the New Mexico Environment Department, describes the dynamics of our attempts to reduce nonpoint source pollution. The following is an anticipated timeline for TMDL implementation in this watershed.

Implementation Actions	Year 1	Year 2	Year 3	Year 4	Year 5
Public Outreach and Involvement	X	X	X	X	X
Establish Milestones	X				
Secure Funding	X		X		
Implement Management Measures (BMPs)		X	X		
Monitor BMPs		X	X	X	
Determine BMP Effectiveness				X	X
Re-evaluate Milestones				X	X

Section 319(h) Funding Options

The Watershed Protection Section of the SWQB provides USEPA 319(h) funding to assist in implementation of BMPs to address water quality problems on reaches listed on the 303(d) list or which are located within Category I Watersheds as identified under the Unified Watershed Assessment of the Clean Water Action Plan. These monies are available to all private, for profit, and nonprofit organizations that are authenticated legal entities, or governmental jurisdictions including: cities, counties, tribal entities, Federal agencies, or agencies of the State. Proposals are submitted by applicants through a request for proposals (RFP) process and require a non-federal match of 40% of the total project cost consisting of funds and/or in-kind services. Further information on funding from the Clean Water Act, Section 319(h) can be found at the New Mexico Environment Department website: http://www.nmenv.state.nm.us.

Assurances

New Mexico's Water Quality Act (Act) does authorize the Water Quality Control Commission to "promulgate and publish regulations to prevent or abate water pollution in the state" and to require permits. The Act authorizes a constituent agency to take enforcement action against any person who violates a water quality standard. Several statutory provisions on nuisance law could also be applied to nonpoint source water pollution. The Water Quality Act (20 NMAC 6.2) (NMWQCC 1995a) also states in §74-6-12(a):

> ***The Water Quality Act (this article) does not grant to the commission or to any other entity the power to take away or modify the property rights in water, nor is it the intention of the Water Quality Act to take away or modify such rights.***

In addition, the State of New Mexico Surface Water Quality Standards (see Section 1100E and Section 1105C) (NMWQCC 1995b) states:

> ***These water quality standards do not grant the Commission or any other entity the power to create, take away or modify property rights in water.***

New Mexico policies are in accordance with the federal Clean Water Act §101(g):

> *It is the policy of Congress that the authority of each State to allocate quantities of water within its jurisdiction shall not be superseded, abrogated or otherwise impaired by this Act. It is the further policy of Congress that nothing in this Act shall be construed to supersede or abrogate rights to quantities of water which have been established by any State.*
>
> ***Federal agencies shall co-operate with State and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in concert with programs for managing water resources.***

New Mexico's Clean Water Action Plan has been developed in a coordinated manner with the State's 303(d) process. All Category I watersheds identified in New Mexico's Unified Watershed Assessment process are totally coincident with the impaired waters lists for 1996 and 1998 as approved by EPA. The State has given a high priority for funding, assessment, and restoration activities to these watersheds.

The description of legal authorities for regulatory controls/management measures in New Mexico's Water Quality Act does not contain enforceable prohibitions directly applicable to nonpoint sources of pollution. The Act does authorize the Water Quality Control Commission to "promulgate and publish regulations to prevent or abate water pollution in the state" and to require permits. Several statutory provisions on nuisance law could also be applied to nonpoint source water pollution. NMED nonpoint source water quality management utilizes a voluntary approach. The State provides technical support and grant monies for implementation of BMPs and other NPS prevention mechanisms through §319 of the Clean Water Act. Since portions of this TMDL will be implemented through NPS control mechanisms, the New Mexico Watershed Protection Program will target efforts to this and other watersheds with TMDLs. The Watershed Protection Program coordinates with the Nonpoint Source Taskforce. The Nonpoint Source Taskforce is the New Mexico statewide focus group representing Federal and State agencies, local governments, tribes and pueblos, soil and water conservation districts, environmental organizations, industry, and the public. This group meets on a quarterly basis to provide input on the §319 program process, to disseminate information to other stakeholders and the public regarding nonpoint source issues, to identify complementary programs and sources of funding, and to help review and rank §319 proposals.

In order to obtain reasonable assurances for implementation in watersheds with multiple landowners, including Federal, State and private land, NMED has established Memoranda of Understanding (MOUs) with various Federal agencies, in particular the Forest Service and the Bureau of Land Management. MOUs have also been developed with other State agencies, such as the New Mexico State Highway and Transportation Department. These MOUs provide for coordination and consistency in dealing with nonpoint source issues.

Milestones

Milestones will be used to determine if control actions are being implemented and standards attained. For this TMDL, several milestones will be established which will vary and will be determined by the BMPs implemented. Examples of milestones for turbidity include a decrease in measured turbidity values, a decrease in erosion from streambanks, an increase in established riparian vegetation, or an increase in the miles of properly maintained roads.

Milestones will be coordinated by SWQB staff and will be re-evaluated periodically, depending on which BMPs were implemented. Further implementation of this TMDL will be revised based on this reevaluation. As additional information becomes available during the implementation of the TMDL, the targets, load capacity, and allocations may need to be changed. In the event that new data or information shows that changes are warranted, TMDL revisions will be made with assistance of watershed stakeholders. The re-examination process will involve: monitoring pollutant loading, tracking implementation and effectiveness of controls, assessing water quality trends in the waterbody, and re-evaluating the TMDL for attainment of water quality standards. Although specific targets and allocations are identified in the TMDL, the ultimate success of the TMDL is not whether these targets and allocations are met, but whether beneficial uses and water quality standards are achieved.

Public Participation

Public participation was solicited in development of these TMDLs. See Appendix E for flow chart of the public participation process. The draft TMDLs were made available for a 30-day comment period starting **August 14, 2001**. Response to comments is attached as Appendix F of this document. The draft document notice of availability was extensively advertised via newsletters, email distribution lists, webpage postings (http://www.nmenv.state.nm.us/) and press releases to area newspapers.

References Cited

Forest Guardians and Southwest Environmental Center v. Carol Browner, Administrator, US EPA, Civil Action 96-0826 LH/LFG, 1997.

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SWQB/NMED. 1999. Pollutant Source(s) Documentation Protocol. July.

USEPA. 1993. Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters. EPA-840-B-92-002. Washington, D.C.

USGS. 1994. Water Resources Data New Mexico Water Year 1993. Data Report NM-93-1. Albuquerque, NM.

Appendices

Appendix A: Conversion Factor Derivation

Appendix B: Relationship Between Turbidity and Total Suspended Solids

Appendix C: Data used for TMDL Field Measurement Calculations in Table 2

Appendix D: Pollutant Source(s) Documentation Protocol

Appendix E: Public Participation Process Flowchart

Appendix F: Response to Comments

Appendix A: Conversion Factor Derivation

8.34 Conversion Factor Derivation

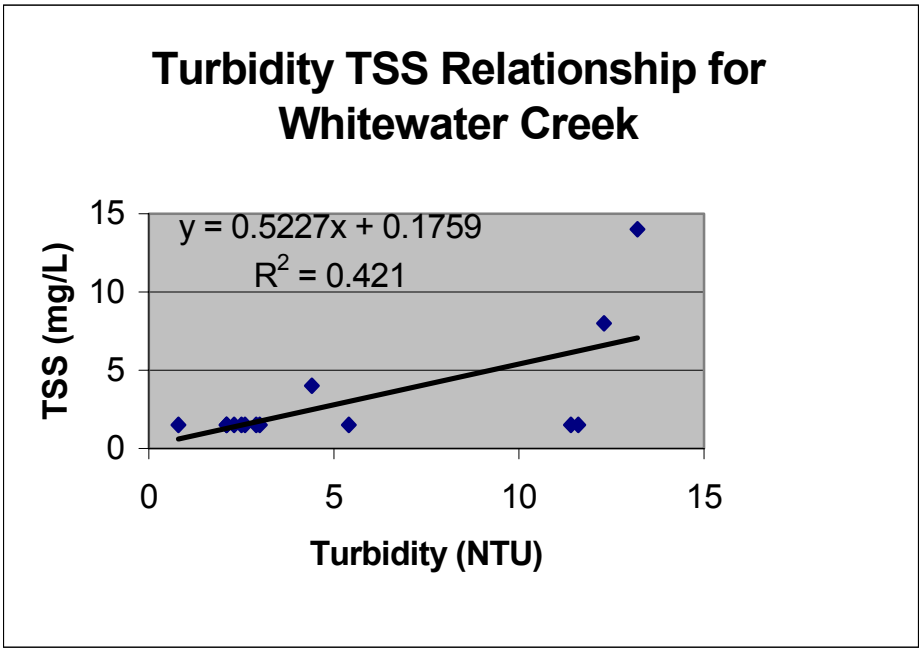
Million gallons/day **x** Milligrams/liter **x** 8.34 = pounds/day

10^6~~gallons~~/day **x** 3.7854 liters/~~1 gallon~~ **x** 10^{-3}gram/liter **x** 1 pound/454 ~~grams~~ = pounds/day

10^6 (10^{-3}) (3.7854)/454 = 3785.4/454

= 8.3379
= **8.34**

Appendix B: Relationship Between Turbidity Total Suspended Solids for Whitewater Creek.



Appendix C: Data used for TMDL Field Measurement Calculations in Table 2

Site	Date (yymmdd)	Flow (cfs)	Turbidity (NTU)	TSS (mg/L)
Glenwood	980608	21.5	11.6	1.5*
Glenwood	980609	13.3	11.4	1.5*
Glenwood	980610	15.6	12.3	8
Glenwood	980611	16.4	13.2	14
Catwalk	980608	19.2	2.6	1.5*
Catwalk	980609	10.9	2.3	1.5*
Catwalk	980610	11.5	2.5	1.5*
Catwalk	980611	12.7	3	1.5*
Glenwood	980810	6.5	4.4	4
Glenwood	980811	6.8	5.4	1.5*
Catwalk	980810	7.2	2.9	1.5*
Catwalk	980811	5.8	2.1	1.5*
Glenwood	981021	2.2	2.1	1.5*
Catwalk	981021	2.4	0.8	1.5*

*This value was reported as less than 3 mg/L from the laboratory so a value of 1.5 mg/L is used for calculations and analysis.

Appendix D: Pollutant Source(s) Documentation Protocol

POLLUTANT SOURCE(S) DOCUMENTATION PROTOCOL

New Mexico Environment Department
Surface Water Quality Bureau

July 1999

This protocol was designed to support federal regulations and guidance requiring states to document and include probable source(s) of pollutant(s) in their §303(d) Lists as well as the States §305(b) Report to Congress.

The following procedure should be used when sampling crews are in the field conducting water quality surveys or at any other time field staff are collecting data.

Pollutant Source Documentation Steps:

1). Obtain a copy of the most current §303(d) List.

2). Obtain copies of the **Field Sheet for Assessing Designated Uses and Nonpoint Sources of Pollution**.

3). Obtain digital camera that has time/date photo stamp on it from the Watershed Protection Section.

4). Obtain GPS unit and instructions from Neal Schaeffer.

5). Identify the reach(s) and probable source(s) of pollutant in the §303(d) List associated with the project that you will be working on.

6). Verify if current source(s) listed in the §303(d) List are accurate.

7). Check the appropriate box(s) on the field sheet for source(s) of nonsupport and estimate percent contribution of each source.

8). Photodocument probable source(s) of pollutant.

9). GPS the probable source site.

10). Give digital camera to Gary King for him to download and create a working photo file of the sites that were documented.

11). Give GPS unit to Neal Schaeffer for downloading and correction factors.

12). Enter the data off of the **Field Sheet for Assessing Designated Uses and Nonpoint Sources of Pollution** into the database.

13). Create a folder for the administrative files, insert field sheet and photodocumentation into the file.

This information will be used to update §303(d) Lists and the States §305(b) Report to Congress.

FIELD SHEET FOR ASSESSING DESIGNATED USES AND NONPOINT SOURCES OF POLLUTION

CODES FOR USES NOT FULLY SUPPORTED

☐	HQCWF	=	HIGH QUALITY COLDWATER FISHERY	☐	DWS	=	DOMESTIC WATER SUPPLY
☐	CWF	=	COLDWATER FISHERY	☐	PC	=	PRIMARY CONTACT
☐	MCWF	=	MARGINAL COLDWATER FISHERY	☐	IRR	=	IRRIGATION
☐	WWF	=	WARMWATER FISHERY	☐	LW	=	LIVESTOCK WATERING
☐	LWWF	=	LIMITED WARMWATER FISHERY	☐	WH	=	WILDLIFE HABITAT

Fish culture, secondary contact and municipal and industrial water supply and storage are also designated in particular stream reaches where these uses are actually being realized. However, no numeric standards apply uniquely to these uses.

REACH NAME:

SEGMENT NUMBER:

BASIN:

PARAMETER:

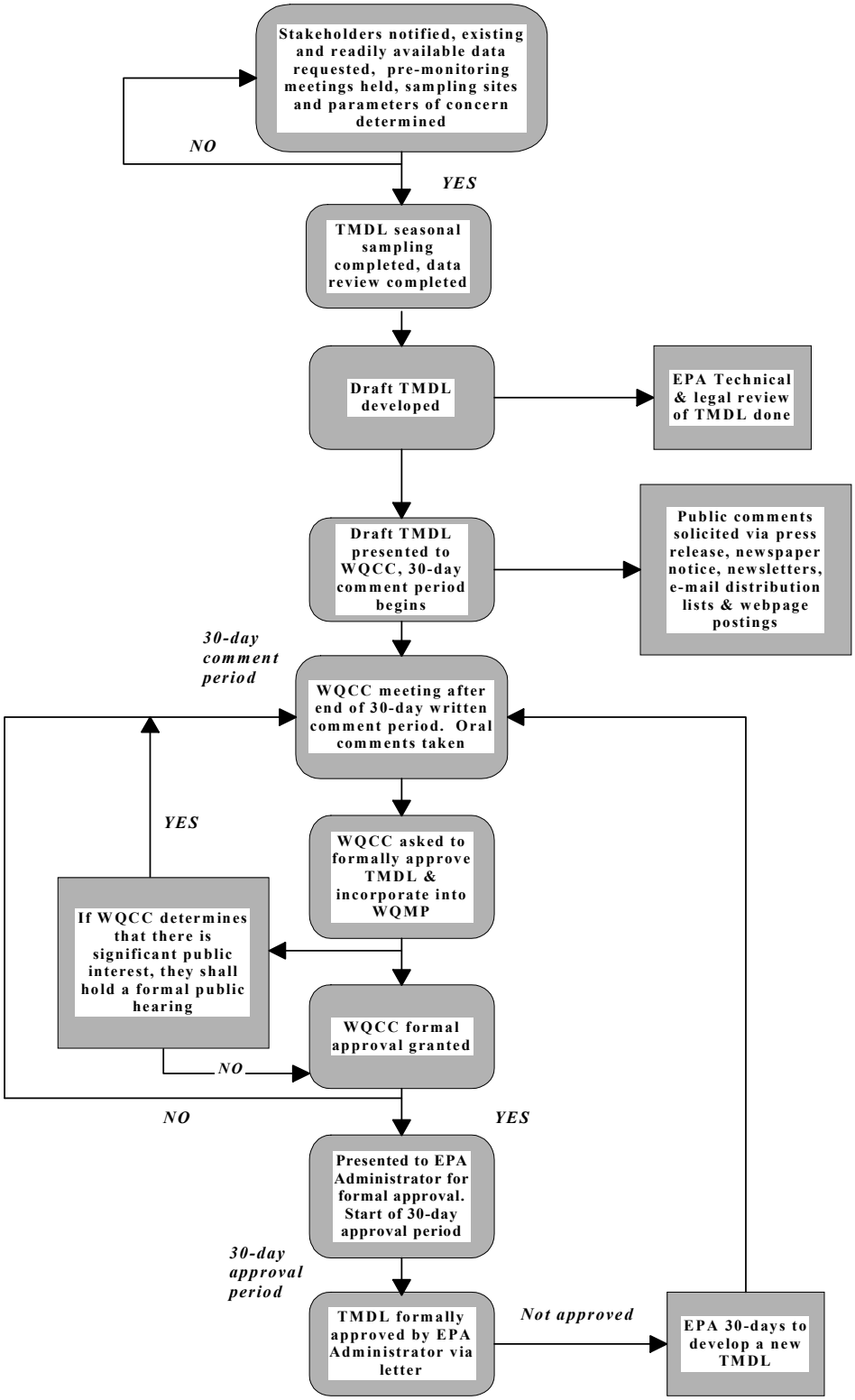
STAFF MAKING ASSESSMENT:

DATE:

CODES FOR SOURCES OF NONSUPPORT (CHECK ALL THAT APPLY)

☐	0100	INDUSTRIAL POINT SOURCES	☐	4000	URBAN RUNOFF/STORM SEWERS	☐	7400	FLOW REGULATION/MODIFICATION
						☐	7500	BRIDGE CONSTRUCTION
☐	0200	MUNICIPAL POINT SOURCES	☐	5000	RESOURCES EXTRACTION	☐	7600	REMOVAL OF RIPARIAN VEGETATION
☐	0201	DOMESTIC POINT SOURCES	☐	5100	SURFACE MINING	☐	7700	STREAMBANK MODIFICATION OR DESTABILIZATION
			☐	5200	SUBSURFACE MINING	☐	7800	DRAINING/FILLING OF WETLANDS
☐	0400	COMBINED SEWER OVERFLOWS	☐	5300	PLACER MINING			
			☐	5400	DREDGE MINING	☐	8000	OTHER
☐	1000	AGRICULTURE	☐	5500	PETROLEUM ACTIVITIES	☐	8010	VECTOR CONTROL ACTIVITIES
☐	1100	NONIRRIGATED CROP PRODUCTION	☐	5501	PIPELINES	☐	8100	ATMOSPHERIC DEPOSITION
☐	1200	IRRIGATED CROP PRODUCTION	☐	5600	MILL TAILINGS	☐	8200	WASTE STORAGE/STORAGE TANK LEAKS
☐	1201	IRRIGATED RETURN FLOWS	☐	5700	MINE TAILINGS	☐	8300	ROAD MAINTENANCE or RUNOFF
☐	1300	SPECIALTY CROP PRODUCTION	☐	5800	ROAD CONSTRUCTION/MAINTENANCE 8400	☐	8400	SPILLS
		(e.g., truck farming and orchards)	☐	5900	SPILLS	☐	8500	IN-PLACE CONTAMINANTS
☐	1400	PASTURELAND				☐	8600	NATURAL
☐	1500	RANGELAND	☐	6000	LAND DISPOSAL	☐	8700	RECREATIONAL ACTIVITIES
☐	1600	FEEDLOTS - ALL TYPES	☐	6100	SLUDGE	☐	8701	ROAD/PARKING LOT RUNOFF
☐	1700	AQUACULTURE	☐	6200	WASTEWATER	☐	8702	OFF-ROAD VEHICLES
☐	1800	ANIMAL HOLDING/MANAGEMENT AREAS	☐	6300	LANDFILLS	☐	8703	REFUSE DISPOSAL
☐	1900	MANURE LAGOONS	☐	6400	INDUSTRIAL LAND TREATMENT	☐	8704	WILDLIFE IMPACTS
			☐	6500	ONSITE WASTEWATER SYSTEMS	☐	8705	SKI SLOPE RUNOFF
☐	2000	SILVICULTURE			(septic tanks, etc.)	☐	8800	UPSTREAM IMPOUNDMENT
☐	2100	HARVESTING, RESTORATION, RESIDUE	☐	6600	HAZARDOUS WASTE	☐	8900	SALT STORAGE SITES
		MANAGEMENT	☐	6700	SEPTAGE DISPOSAL			
☐	2200	FOREST MANAGEMENT	☐	6800	UST LEAKS	☐	9000	SOURCE UNKNOWN
☐	2300	ROAD CONSTRUCTION or MAINTENANCE						
			☐	7000	HYDROMODIFICATION			
☐	3000	CONSTRUCTION	☐	7100	CHANNELIZATION			
☐	3100	HIGHWAY/ROAD/BRIDGE	☐	7200	DREDGING			
☐	3200	LAND DEVELOPMENT	☐	7300	DAM CONSTRUCTION/REPAIR			
☐	3201	RESORT DEVELOPMENT						
☐	3300	HYDROELECTRIC						

Appendix E: Public Participation Flow Chart



Appendix F: Response to Comments

September 18, 2001

Sent via facsimile, 505-827-0160, hard copy to follow

Mr. David Hogge
New Mexico Environment Department
Surface Water Quality Bureau
P.O. Box 26110
Santa Fe, NM 87502

RE: Southwestern New Mexico TMDLs

Dear Mr. Hogge:

The following comments on southwestern New Mexico draft TMDLs and proposed de-listing of several streams and waters from the 303(d) list is submitted on behalf of the nearly 6,000 members of the Center for Biological Diversity. The Center for Biological Diversity (CBD), formed in 1989, protects endangered species and wild places of western North America and the Pacific through science, policy, education, and environmental law.

Please include the Center on the mailing list as an interested party for all future actions by the Bureau involving the Clean Water Act 303(d) list and development of TMDL's. Our comments here will be unfortunately brief because we did not receive notice of the Bureau's proposed action until well into the comment period.

NMED Response

The Center for Biological Diversity has been added to our mailing list. Current information on the TMDL program can also be found on our web page (www.nmenv.state.nm.us/swqb/swqb.html).

CBD believes the proposed de-listings are neither adequately justified or explained. The Bureau's reliance on qualitative narrative standards rather than quantitative numerical standards is especially problematic. Additionally, many of the streams are proposed for de-listing despite the fact that their biological assessment numbers are quite low and some appear to be more impaired than the last time an assessment was conducted. For example, Whitewater Creek is proposed for de-listing despite the fact that is scored only 59% on its biological assessment and its percent fines increased from 5% to 13%.

NMED Response

The Protocol for the Assessment of Stream Bottom Deposits is used to determine the level of use attainment using benthic macroinvertebrate and percent fines data collected in the reach being assessed. According to this USEPA-approved protocol, the benthic

macroinvertebrate community combined with the percent fines at this site indicate a rating of full support, impacts observed (FSIO).
Clarifying text was added to the de-list letter. SWQB plans to refine benthic macroinvertebrate sampling protocols and interpretation methods in the near future.

With respect to the draft TMDL's, the draft documents are very general, and do not provide enough details (i.e. which polluters will be required to act) to provide specific comments. However, CBD is concerned that the Bureau presently appears to be relying solely on Best Management Practices (BMPs) to implement the program. BMP's are mitigation measures, often ineffectual, not measures for actually cleaning up impaired watersheds.

NMED Response

Presently, there is no requirement under the federal Clean Water Act for reasonable assurances for implementation of nonpoint source pollution. As stated in existing guidance (Guidance for Water Quality-Based Decisions: The TMDL Process, EPA 440/4-91-001, April 1991) implementation of nonpoint source BMPs is through voluntary programs such as section 319 of the Clean Water Act. Site-specific or watershed-specific voluntary actions are mechanisms that may provide reasonable assurances for nonpoint sources. The SWQB believes that the Watershed Protection Program in New Mexico is a strong program that will provide for the implementation of nonpoint source BMPs.

In this watershed, public awareness and involvement will be crucial to the successful implementation of BMPs and improved water quality. Staff from the SWQB will work with stakeholders to provide the guidance in developing the Watershed Restoration Action Strategy (WRAS). The WRAS is a written plan intended to provide a long-range vision for various activities and management of resources in a watershed. It includes opportunities for private landowners and public agencies to reduce and prevent impacts to water quality. This long-range strategy will become instrumental in coordination, reducing, and preventing further water quality impacts in the watershed. SWQB staff assists with technical assistance such as the selection and application of BMPs needed to meet WRAS goals. The watershed management plans would include any specific BMPs for activities that may be contributing to the water quality impairment. It is not the intention of the SWQB to provide an all inclusive watershed management plan without watershed participation.

Thank you for this opportunity to comment. Please ensure we are provided copies of future 303(d) and TMDL comments. Notice of the availability of these documents may also be sent to my email address listed in the letterhead.

Sincerely,

Brian Segee

September 12,2001

David Hogge
TMDL Coordinator
NM Environment Department
Surface Water Quality Bureau
1190 St. Francis Drive
Santa Fe, NM 87502

Re: Comments on draft TMDLs for the Gila and San Francisco Watersheds

Dear Mr. Hogge:

The New Mexico Municipal Environmental Quality Association has reviewed the following draft TMDLs. Opened for public comment on August 14, 2001:

- Black Canyon Creek: Temperature
- Centerfire Creek: Conductivity
- East Fork of the Gila River and Taylor Creek: Metals (Chronic aluminum)
- Mogollon Creek: Metals (Chronic aluminum)
- Negrito Creek: Temperature
- San Francisco River: Temperature
- Taylor Creek: Temperature
- Tularosa River: Conductivity
- Whitewater Creek: Turbidity

Association comments are attached, arranged alphabetically by stream segment.

Please contact me or Legislative Liaison Regina Romero at 982-5573 with questions or comments.

Best Regards,

William F. Fulginiti
Executive Director

New Mexico Municipal Environmental Quality Association
Comments Regarding Draft TMDLs for the
Gila River Watershed

September 12, 2001
Whitewater Creek: Turbidity

- On page 2 in Table 1, and in Appendix B, the correlation coefficient ($R^2=0.421$) for a linear regression of the relationship between turbidity and TSS is rather poor, suggesting that another regression approach (eg. second-order polynomial) might model the correlation more accurately.

NMED Response

The availability of data limited the approach taken on developing the regression relationship for this TMDL. The approach used is consistent with previously developed TMDLs. As more data is available new approaches will be taken to address this relationship.

- On page 5, in Table 2, the calculated TSS from only one of four observed exceedances of the turbidity standard in Whitewater Creek was used to calculate the measured load. A more appropriate approach might be to include all four observed turbidity exceedances, and to compute a corresponding TSS for each one from the regression curve produced above.

NMED Response

The footnote on Table 2 has been clarified to address your comment. The Field Measurement value was calculated using the geometric mean of the turbidity values then "converted" into TSS using the turbidity/TSS relationship from Table 1. The geometric mean of the TSS values was not used.

- On page 22, in Appendix C, flows should be expressed as MGD for comparison with flow units used in the discussion.

NMED Response

In order to simplify the table provided in Appendix C, flows were expressed only in cfs. No changes were made in the text to address this comment.

- On page 22, in Appendix C, the minimum quantification limit for TSS at the laboratory should be noted. If the numerous reported TSS values of 1.5 mg/L are at or below the laboratory MQL, the reliability of any correlation between turbidity and TSS is drawn into question.

NMED Response

Table 2 in Appendix C was updated to include an asterik next to each value that was reported as < 3 mg/L (i.e., below the detection limit) from the laboratory. It is an accepted practice to multiply values reported as "below the detection limit" by ½ in order to compile general statistics on the data. No value of 1.5 mg/L was every reported from the laboratory.

- On page 22, in Appendix C, it should be noted that the two sampling locations (Glenwood and Catwalk) exhibit noticeably different relationships between flow and turbidity, and between turbidity and TSS, suggesting possible differences between the sources or nature of turbidity at the two locations.

NMED Response

The highest flow was chosen for the critical condition as it is more conservative for estimating target sediment loads in New Mexico streams. The data in Appendix C are for two different sampling stations, Catwalk and Glenwood. The impairments due to turbidity on Whitewater Creek occurred at the Glenwood station. The Catwalk site is in overall much better condition and high flows did not seem to impact the water quality. There were no water quality standards violations at the Catwalk site (even with high flows) so the data were not used in the calculation of the TMDL, but were used to help develop the turbidity/TSS relationship. No changes to the text were made to reflect your comment.

New Mexico Environment Department
Surface Water Quality Bureau
PO Box 26110
Santa Fe, NM 87502

September 13, 2001

RE: Comments on Proposed TMDL for Turbidity for Whitewater Creek

Via facsimile (505) 827-0160 and mail

To Whom It May Concern;

The following constitute Forest Guardians' comments on the above-named TMDL. We welcome the opportunity to participate in the public decision-making process for an issue as important and crucial to water quality as TMDL development. We hope that our comments are taken into serious consideration as the TMDL moves toward final approval, and we encourage you to continue to keep us informed so that we may continue to be involved in this process.

I. Voluntary Best Management Practices (BMPs)

We contend that voluntary BMP's in the draft implementation plan comply with neither the letter nor the spirit of the Clean Water Act, and will not result in the eventual re-attainment of water quality standards as envisioned by the TMDL process. We therefore urge you to include mandatory BMPs in the final TMDLs in order to assure that water quality standards have a real chance to be attained. We base this comment on the following narrative.

A TMDL consists of a pollutant specific standard and a plan to meet that standard. The standard, or "target load" is the maximum amount of pollution that a river can take from all sources without violating water quality standards. Once this "target load" is established, the TMDL then mandates pollution reductions to the various sources of pollution in a watershed to meet that standard. Pollution reductions are achieved through "load allocations" which set the maximum amount of pollution each source can contribute. These load allocations are referred to as "wasteload allocations" or "WLAs" when applied to point sources and "load allocations" or "LAs" when applied to nonpoint sources. A TMDL, therefore, represents the "sum of the individual WLAs for point sources and LAs for nonpoint sources and natural background." 40 C.F.R. § 130.2(i).

At a minimum, each plan of implementation must include "reasonable assurances" that the WLAs or LAs will, in fact, be implemented and achieved. With respect to WLAs for point sources, such assurances are easily provided by demonstrating how the load allocations will be incorporated into the permit. 40 C.F.R. §130.7(a). In each permit, effluent limitations can be adjusted to ensure that the pollution reductions succeed. With respect to nonpoint sources, providing these assurances is more difficult because there are generally no permits to adjust. Rather, the TMDLs are implemented via BMPs which are incorporated into a state's water

quality management plan as outlined in section 303(e) of the CWA. 33 U.S.C. § 1313(e); 40 C.F.R. § 130.7(a).

Once the "target load" and "load allocations" are established, the TMDL process gets underway. The next step is to transform the calculations in the TMDL into real, on-the-ground results--to implement the TMDL. As a last resort measure, Congress mandated that TMDLs succeed in improving water quality. TMDLs "shall be established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge." 33 U.S.C. § 1313(d)(1)(C). EPA agrees, stating that "TMDLs shall be established at levels necessary to attain and maintain . . . water quality standards." 40 C.F.R. § 130.7(c)(1). Whether or not a TMDL will improve water quality is therefore the standard for State TMDLs. 33 U.S.C. § 1313(d)(2).

“Reasonable assurances" are a required element of a TMDL and/or plan to implement a TMDL. Congress' intent to require reasonable assurances that TMDLs will be implemented to improve water quality is clearly reflected in the plain language of section 303 of the CWA, the legislative history of section 303 of the CWA, and the very purpose of the CWA. This is a reasonable conclusion because it ensures that the goals of the CWA are met.

In drafting the language of section 303 of the CWA, Congress consciously used the word "shall." States "shall" prepare TMDLs, "shall" establish such TMDLs at level necessary to implement water quality standards, "shall" disapprove TMDLs that fail to implement water quality standards, and "shall" have a management plan which includes TMDLs and a provision for "adequate implementation." 33 U.S.C. §§ 1313(d)(1)(C), 1313(e)(1), 1313(e)(3)(C), (F).

However the burden will fall primarily on the polluters to ensure that the BMPs are actually implemented. In NMED's own words from other TMDLs, cooperation from the polluters "will be pivotal in implementation of this TMDL." See Cordova Creek TMDL, 1999. The key word in NMED's plan is "cooperation." The polluters in that TMDL, like here, have the option of doing nothing. They can choose not to get involved-not to undertake the expensive and time consuming burden of implementing the BMPs. There are absolutely no obligations or mandates in the plan requiring polluters to implement the necessary BMPs.

By allowing section 319's voluntary program to be the sole basis for implementing the TMDL, the State is ignoring the "reasonable assurance" requirement. Unlike section 319's voluntary, consensus based approach under the CWA, TMDLs must "implement applicable water quality standards." 33 U.S.C. § 1313(d)(1)(C). Thus, unlike section 319 plans, TMDLs must provide assurances that pollution reductions will occur and that water quality will be improved. See 33 U.S.C. § 1313(d)(1)(C). The "purely voluntary" plan to implement the TMDL plainly fails to provide such assurances. As such, there clearly are no assurances that this TMDL will be implemented to improve water quality.

The evidence suggesting that "purely voluntary" plans generally do not work is overwhelming. The failure of sections 208 and 319 of the CWA, two voluntary programs to control nonpoint source pollution, provides a good illustration. Unlike the CWA's point source program, which

includes mandatory effluent limitations outlined in federally issued permits, the nonpoint source programs of section 208 and 319 of the CWA are void of any meaningful federal mandates. Both programs are "purely voluntary." They rely on voluntary state planning and implementation, technical assistance, and ineffective financial incentives, rather than mandatory controls, to abate nonpoint source pollution. See 33 U.S.C. §§ 1288(b)(2)(F),1288(j),1329(h). The result is predictable.

Today, while point source pollution is at a twenty year low, nonpoint source pollution is out of control. In EPA's own words, nonpoint source pollution remains the Nation's largest source of water quality problems. It's the main reason that approximately 40 percent of surveyed rivers, lakes, and estuaries are not clean enough to meet basic uses such as fishing or swimming. The current nonpoint source pollution problem can be attributed to one factor: State reliance on voluntary compliance.

Under the voluntary schemes of sections 208 and 319 of the CWA, states are opting not to implement nonpoint source controls. States are reluctant to require controls because, as one observer noted, "the expense to states, both in terms of money and the political costs of imposing burdensome regulations on powerful agricultural interests, is potentially significant." See Houck, supra footnote 10 at 527. Without a "meaningful federal mandate, the states, with a few . . . exceptions have not implemented polluted runoff programs of their own." Id.

Even though EPA is well-aware of this fact, the "protection" Agency is allowing states to use the voluntary, incentive-based program under section 319 of the CWA, without any upgrades, to implement TMDLs. Once again, the results are predictable. A 1998 study of 55 TMDLs approved by EPA, many with voluntary implementation plans, showed a "near-total avoidance of implementation measures." Oliver A. Houck TMDLs IV: The Final Frontier, 29 ELR 10469, 10481 (August, 1999). Today, EPA is aware of hundreds of "purely voluntary" TMDLs that are not being implemented.

Indeed, it was the "purely voluntary" nature of the 1965 Water Qaulity Act that led to the 1972 amendments and the birth of the TMDL program. See H.R. 11896 at 68, 69, 106, 107, 92nd Cong. (1972); S. Rep. No. 92-414, at 3675 (1972). Similar congressional concerns over the futility of voluntary measures prompted the 1935 amendments to the Federal Power Act, 16 U.S.C. §§ 797-817, the 1977 and 1990 amendments to the Clean Air Act ("CAA"), 42 U.S.C. §§ 7401-7671q, and the 1990 amendments to the Coastal Zone Management Act, 16 U.S.C. §§ 1451 to 1465 ("CZMA").

As one court noted, the 1935 amendment to the Federal Power Act, "made licensing a mandatory requirement" for all new projects. Cooley v. F.E.R.C., 843 F.2d 1464 (D.C. Cir. 1988) (citing S. Rep. No. 621, 74th Cong., 1st Sess. (1935) and First Iowa Hydro- Electric Coop. v. FPC, 328 U.S. 152 (1946)). The earlier, purely voluntary scheme "had proven inadequate for the development of a comprehensive system of water power regulation." Id.

In the 1977 amendments to the CAA, Congress again recognized the ineffectiveness of voluntary compliance. As the Sixth Circuit noted, "although some voluntary compliance and cooperation was achieved under the former version of the [CAA], Congress clearly found the

earlier provisions an inadequate answer to the problem of interstate air pollution. Air Pollution Control Dist. of Jefferson County, Ky. v. U.S.E.P.A., 739 F.2d 1071,1091 (6th Cir.1984) (citing H. R. Rep. No. 294, 95th Cong., 1st Sess. 329). The new mandatory CAA provisions, "were intended to establish an effective mechanism for prevention, control, and abatement of interstate air pollution." Id. at 1091. In 1990, Congress amended the CAA once again, this time replacing a failing "discretionary" state permitting program with a mandatory federally enforceable permitting scheme. See 42 U.S.C. §§ 7661-7661d.

In addition, in 1990 Congress passed the "Coastal Zone Reauthorization Amendments of 1990" (CZARA), amending the 1972 CZMA, because the earlier program of providing federal grant money for "voluntary" state programs to was failing to protect coastal resources from nonpoint source pollution. Under the new approach, participating states are now required to prepare and submit to EPA for approval, a program to protect coastal waters from nonpoint source pollution. 16 U.S.C. § 1455b(a)(1). Before any federal money is dispersed, each state program must, at a minimum, include "enforceable policies and mechanisms to implement" the program. 16 U.S.C. § 1455(d)(16). CZMA defines "enforceable policy" to mean "State policies which are legally binding through constitutional provisions, laws, regulations, land use plans, ordinances, or judicial or administrative decisions, by which a State exerts control over private and public land and water uses and natural resources."16 U.S.C. § 1453(6a). The existence of an "enforceable policy" provides the requisite assurance that plans will, in fact, be implemented and pollution reductions achieved.

In amending all of these environmental statutes Congress repeatedly and consistently has recognized the futility of "purely voluntary" programs in achieving Congressional goals. Today, a number of states are following Congress' lead by recognizing the need for enforceable policies and abandoning the voluntary approach towards controlling nonpoint source pollution. In Idaho, for instance, the state's water pollution control law imposes an affirmative duty on nonpoint source polluters to implement BMPs in order to meet and implement water quality standards for all waters with TMDLs. See Idaho Code § 39-3618. Failure to implement BMPs in such waters, may result in a civil action from the state agency. See Idaho Code § 39-3622. The enforceable program is working. The TMDLs for Idaho's South Fork of the Salmon River provide a good illustration. These TMDLs, which include mandatory BMPs to minimize sediment inputs from forestry operations (e.g., slope stabilization projects, grass seeding) are succeeding in returning a highly valued Chinook salmon and steelhead population to the once polluted River.

In Maryland, the State's Department of the Environment has the authority to require enforceable permits for certain nonpoint source discharges. See Md. Code. Ann., Envir. § 9- 323(b). In addition, all soil and sediment pollution is prohibited, except for agricultural activities conducted in accordance with soil conservation and water quality plans. See Md. Code. Ann., Envir. § 9-322. A violation of these provisions may result in corrective action orders, injunctions, civil penalties, and even criminal prosecution. See Md. Code. Ann., Envir. §§ 9-334, 9-335, 9- 338, 9-342, 9-343. Other states such as California, Oregon, Georgia, Vermont, and Wisconsin have adopted similar, enforceable approaches towards remedying nonpoint source pollution problems.

As described above, there is an overwhelming amount of evidence suggesting that "purely voluntary" measures are generally ineffective and unreliable. As such, a purely voluntary plan of implementation clearly does not belong in the TMDL. As a last resort measure there must be "reasonable assurances" that all TMDLs will be implemented to improve water quality and, voluntary plans, by themselves, fail to provide such assurances. In fact, NMED even concedes in other TMDLs that even with implementation of numerous BMPs, the waterway at issue may not be able to meet water quality standards.

Therefore, this purely voluntary approach does not belong in this TMDL because, unlike other clean up programs under the CWA, a TMDL comes with a mandate–there must be "reasonable assurances" that the TMDL will be implemented and will improve water quality. We urge the State to adopt measures similar to the ones outlined above and adopted by other States that are effective. We also urge NMED to pressure the Water Quality Control Commission to "promulgate and publish regulations to prevent or abate water pollution in the state" as authorized by New Mexico's Water Quality Act. This authority is listed as an "Assurance" in the TMDL, and we feel is much more likely to reasonably assure that the TMDL actually leads to the attainment of WQS.

II. Impacts of Grazing

Very little, if any, of the discussion in the permit concerning sources of non-attainment includes a reference to grazing activities on the watershed and their devastating impact on water quality. To the contrary, grazing is primarily mentioned in the section entitled "Other BMP Activities in the Watershed". This section refers to "…the Forest Service and private landowners *actively* manage grazing activities…" (emphasis added). The proposed TMDL is written in reliance on this statement- that the entities involved with grazing are actively managing their activities. Our experience with monitoring grazing allotments on Forest Service lands leads to the complete opposite conclusion: that the entities involved with grazing on Forest service lands are not actively managing their allotments, and are in fact not complying with their management plans, if they have a current one. This is not merely a theory of ours either, as we have filed several lawsuits on the recent past concerning this exact issue in an attempt to force the Forest Service and the allotment holders to comply with their management plans and protect natural resources, including riparian areas and their waterways.

By not addressing impacts of grazing in the TMDL and at the very least developing BMPs to account for the potentially devastating effects of grazing on water quality, we believe the proposed TMDL is deficient and will not effectively reach it's goals. Unless *all* sources of non-point source pollution are addressed in a TMDL, the waterway will continue to be impaired and in need of scarce monetary and physical resources in order to restore it to it's proper condition, and the Clean Water Act's goals will never be realized.

III. Impacts of Water Diversions and Their Maintenance

Again, there is very little to no mention of the impacts of water diversions on this waterway and how they may adversely impact water quality. Thus, there are no strategies which address this source of pollution and no mitigative measures; therefore we seriously doubt that if

this water is actually impacted by diversions, it will be able to improve and re-attain water quality standards as required by the Clean Water act.

IV. Impacts of Roads and Road Maintenance Activities

There is similarly very little discussion of roads and their potential or real impacts on the waterway and those effects are not addressed in the BMPs. Again, we question how NMED can seriously attempt to bring this water back into attainment of standards if *all* of the pollution sources are not properly accounted for.

V. Conclusion

We feel that this TMDL, as written, will not lead to a re-attainment of water quality standards in a timely and efficient manner, if at all. Our biggest concern is with the implementation of voluntary BMPs, which we fear will result in non-implementation. History shows that voluntary BMPs and similar measures rarely result in on the ground implementation, and that mandatory measures are the correct steps to take if the State is serious about cleaning up New Mexico's imperiled waters. We also find that the lack of thorough analysis and resultant paucity of corrective measures to address the adverse impacts of water diversions, grazing, and roads on this water is not in line with the Clean Water Act's goals and objectives.

We hope that when the final TMDL is written, you will reconsider this draft and remedy the problems that we have outlined above. Nothing less than the future of New Mexico's imperiled waters is at stake, and this resource is too important to not re-evaluate this potentially high impact document. Thank you for your consideration, and please contact us if you have any questions or concerns with our comments.

Sincerely,

Scott C. Cameron
Clean Water Coordinator
Forest Guardians

NMED Response

Several comments were received from the Forest Guardians. The following are responses by the SWQB to the Forest Guardians comments on the draft TMDL.

The SWQB would like to thank the Forest Guardians for their comments on this TMDL document. Presently, there is no requirement under the federal Clean Water Act for reasonable assurances for implementation of nonpoint source TMDLs. As stated in existing guidance (Guidance for Water Quality-Based Decisions: The TMDL Process, EPA 440/4-91-001, April 1991) implementation of nonpoint source TMDLs is through voluntary programs, such as section 319 of the Clean Water Act. According to the proposed regulations for TMDLs (40CFR part 130.2[p]), site-specific or watershed-specific voluntary

actions are mechanisms which may provide reasonable assurances for nonpoint sources. The SWQB has implemented TMDLs statewide through a strong Watershed Protection Program. This program will continue to provide for the implementation of nonpoint source TMDLs.

Pursuant to Section (e)1 of the Clean Water Act (CWA), the Surface Water Quality Bureau (SWQB) has established appropriate monitoring methods to evaluate the effectiveness of controls or Best Management (BMP) activities. In order to optimize the efficiency of this monitoring effort, the SWQB has adopted a rotating basin monitoring strategy. This strategy is based on a 5-7 year return interval, and provides improved coordination and monitoring of BMP effectiveness.

Implementation plans are included in every TMDL in New Mexico. As stated in the TMDL document, this is a general implementation plan for activities to be established in the watershed. The SWQB will further develop the details of the plan with the help and cooperation of the stakeholders and other interested parties in the watershed.

Detailed watershed management plans that include specific best management practices (BMPs) should be developed by and for watershed stakeholders. In this watershed, public awareness and involvement will be crucial to the successful implementation of this plan and improved water quality. Staff from the SWQB will work with stakeholders to provide the guidance in developing the Watershed Restoration Action Strategy (WRAS). The WRAS is a written plan intended to provide a long-range vision for various activities and management of resources in a watershed. It includes opportunities for private landowners and public agencies to reduce and prevent impacts to water quality. This long-range strategy will become instrumental in coordination, reducing, and preventing further water quality impacts in the watershed. SWQB staff assists with technical assistance such as the selection and application of BMPs needed to meet WRAS goals.

The watershed management plans would include any specific BMPs for activities, such as grazing or road runoff and maintenance, that are identified as contributing to the water quality impairment. It is not the intention of the SWQB to provide an all inclusive watershed management plan in the TMDL documents. In order to obtain reasonable assurances for implementation in watersheds with multiple landowners including Federal, State, and private land, the SWQB has established Memoranda of Understanding (MOUs) with various Federal and State agencies. These MOUs provide for co-ordination and consistency in dealing with Nonpoint source issues.

Milestones are also used in the implementation plans in the TMDL documents to determine if BMPs are implemented and standards attained.

The SWQB does not regulate water quantity issues for the State of New Mexico. All inquiries related to water rights should be directed to the Office of the New Mexico State Engineer. The SWQB programs include a focus on upland source controls, not instream flow, in the form of BMPs to protect and improve water quality statewide.

COMMENTS SUBMITTED BY LANL

General Comments on all TMDLs

- In each of these documents, TMDLs are established based on knowledge of watershed-specific conditions, including monitoring data. However, in several cases the sections entitled "Linkage of Water Quality and Pollutant Sources" did not include a discussion of how the identified pollutant sources cause the water quality problems. For example, in the TMDL for conductivity in Centerfire Creek the section entitled "Linkage of Water Quality and Pollutant Sources" is a description of riparian Best Management Practices that have been implemented. It does not explain how the pollutant source (listed as "rangeland") causes the increase in conductivity. In addition, the sections entitled "Implementation Plan" were written at a level of generality that made it difficult to track suggested best management practices (BMPs) back to the specific watershed.

NMED Response

During the regularly scheduled watershed sampling, as well as any other water quality sampling, the NMED works to examine and document potential sources of water quality impairment along 303(d) listed waters. Unlike point sources, nonpoint source pollution in not always easily identified and tracked in a watershed. The SWQB follows a Source Documentation Protocol (found in the appendix section of the documents). The completed field sheets that are used following the Protocol were not included for the draft TMDLs. In the final version of the TMDL documents the completed field assessment sheets are provided. The SWQB makes no attempt to identify individual landowners as causing any water quality impairments. Categories of land ownership and land use are used to characterize potential sources of impairment. It is the intention of the SWQB to work together with all landowners in the watershed to implement activities such as best management practices in response to this TMDL document.

Presently, there is no requirement under the federal Clean Water Act for reasonable assurances for implementation of nonpoint source TMDLs. As stated in existing guidance (Guidance for Water Quality-Based Decisions: The TMDL Process, EPA 440/4-91-001, April 1991) implementation of nonpoint source TMDLs is through voluntary programs, such as section 319 of the Clean Water Act. According to the proposed regulations for TMDLs (40CFR part 130.2[p]), site-specific or watershed-specific voluntary actions are mechanisms that may provide reasonable assurances for nonpoint sources. The SWQB has implemented TMDLs statewide through a strong Watershed Protection Program. This program will continue to provide for the implementation of nonpoint source TMDLs.

Pursuant to Section (e)1 of the Clean Water Act (CWA), the Surface Water Quality Bureau (SWQB) has established appropriate monitoring methods to evaluate the effectiveness of controls or Best Management (BMP) activities. In order to optimize the efficiency of this monitoring effort, the SWQB has adopted a rotating basin monitoring strategy. This

strategy is based on a 5-7 year return interval, and provides improved coordination and monitoring of BMP effectiveness.

Implementation plans are included in every TMDL in New Mexico. As stated in the TMDL document, this is a general implementation plan for activities to be established in the watershed. The SWQB will further develop the details of the plan with the help and cooperation of the stakeholders and other interested parties in the watershed. Detailed watershed management plans that include specific best management practices (BMPs) should be developed by and for watershed stakeholders. In this watershed, public awareness and involvement will be crucial to the successful implementation of this plan and improved water quality. Staff from the SWQB will work with stakeholders to provide the guidance in developing the Watershed Restoration Action Strategy (WRAS). The WRAS is a written plan intended to provide a long-range vision for various activities and management of resources in a watershed. It includes opportunities for private landowners and public agencies to reduce and prevent impacts to water quality. This long-range strategy will become instrumental in coordination, reducing, and preventing further water quality impacts in the watershed. SWQB staff assists with technical assistance such as the selection and application of BMPs needed to meet WRAS goals. The watershed management plans would include any specific BMPs for activities, such as grazing or road runoff and maintenance that are identified as contributing to the water quality impairment. It is not the intention of the SWQB to provide an all inclusive watershed management plan in the TMDL documents. In order to obtain reasonable assurances for implementation in watersheds with multiple landowners including Federal, State, and private land, the SWQB has established Memoranda of Understanding (MOUs) with various Federal and State agencies. These MOUs provide for co-ordination and consistency in dealing with nonpoint source issues.

- The selection of a margin of safety (MOS) has a significant impact on the calculation of load allocations. Though each of these documents includes qualitative discussion of uncertainties in the data used to derive the TMDLs, the overall result seems to be quite arbitrary, in that each MOS is either 10% or 15%. The recently released National Academy of Sciences report on the TMDL program recognizes that this is a nationwide issue, and recommends that "EPA should end the practice of arbitrary selection of the MOS and instead require uncertainty analysis as the basis for MOS determination."

NMED Response

SWQB has been consistent in its application of MOS throughout the development of TMDLs. Much of the consideration for developing MOS values is based on information available in the New Mexico Quality Assurance Project Plan (QAPP) for Water Quality Management Programs (2001). The QAPP is approved by EPA annually and provides the framework for water quality monitoring and data collection for the SWQB. This includes the use of precision and accuracy information as an explicit MOS value. Implicit MOS use conservative assumptions and critical conditions, which are consistent with nationally available MOS information.

NMED is in the process of developing a MOS Protocol that will further explore the science and rationale behind the development of specific MOS values for the TMDL documents. This document is expected to be completed in 2002 and will be available on the SWQB website.

Technical Comments on Draft TMDLs

Turbidity TMDL (Whitewater Creek)

- Whitewater Creek TMDL p.5 – In Table 2, the field measurement of 14 mg/L is described as "the geometric mean of TSS values that exceeded the numeric standard." The text should explain why:
    1) only values that exceed the standard are used in the calculation;
    2) the geometric mean is chosen as the statistic of interest;
    3) the geometric mean of 14 is calculated from the two TSS values in Appendix C that exceed the standard (8 and 14 mg/L); and,
    4) the designation of the highest flow as the critical flow since the two high TSS values in Appendix C are not associated with the highest flow values.

NMED Response

SWQB uses the geometric mean of water quality data that violate water quality standards in calculation of the measured load. Using all the data, including those values below the standard, could weight the geometric mean to a value below the standard. This is consistent to the state standards which are, in general, not based on averages but can be based on an exceedance violation. The SWQB expresses field measurements across TMDL documents in a consistent manner is important for stakeholder understanding of the documents.

The measured load discussion in the document is not a required element of a TMDL. The purpose of this section is to express the current condition of the watershed to the stakeholders and is useful in the design and implementation of BMPs. This section does not affect the TMDL calculation.

The footnote on Table 2 has been clarified to address your comment. The Field Measurement value was calculated using the geometric mean of the turbidity values then "converted" into TSS using the turbidity/TSS relationship from Table 1. The geometric mean of the TSS values directly was not used.

The highest flow was chosen for the critical condition as it is more conservative for estimating target sediment loads in New Mexico streams. The data in Appendix C are for two different sampling stations, Catwalk and Glenwood. The impairments due to turbidity on Whitewater Creek occurred at the Glenwood station. The Catwalk site is in overall much better condition and high flows did not seem to impact the water quality. There were no water quality standards violations at the Catwalk site (even with high flows) so the data

were not used in the calculation of the TMDL, but were used to help develop the turbidity/TSS relationship.

p.5 – This page includes the statement, "Background loads were not possible to calculate in this watershed." However, the Executive Summary states, "Two stations were located on the creek to…establish background conditions." The Laboratory recommends that this discrepancy be resolved.

NMED Response

The reference to establishing background conditions in the Executive Summary has been removed.

<u>Whitewater Creek Turbidity TMDL</u>

p.1 – The reference to "both turbidity TMDLs" should be corrected since this document addresses only one TMDL.

NMED Response

The reference to "both turbidity TMDLs" was corrected in the TMDL.

December 11, 2001

VIA FACSIMILE AND U.S. MAIL

Mr. David Hogge
New Mexico Environment Department
Surface Water Quality Bureau
P.O. Box 26110
Santa Fe, New Mexico 87502

Dear Mr. Hogge:

Re: ***Phelps Dodge Tyrone, Inc. Comments on Draft TMDLs and De-Listing Letters for Waterbodies in the Gila and San Francisco Watersheds***

Phelps Dodge Tyrone, Inc. ("PDTI") strongly supports NMED's draft TMDL and de-listing letters for waterbodies in the Gila and San Francisco watersheds. PDTI reviewed the draft documents and believes that they are technically and legally valid.

PDTI appreciates the opportunity to review the draft documents and encourages NMED to finalize the decisions represented by the documents. If we may be of any further assistance, please contact Mr. Ty Bays at (505) 538-7157.

Very truly yours,

Robert I. Pennington

cc: T. L. Shelley
T. R. Bays

Certified Mail 7000 0600 0025 0867 3819
Return Receipt Requested

Mr. David Hogge
NMED SWQB
PO Box 26110
Santa Fe, NM 87502

September 28, 2001

Dear Mr. Hogge;

The New Mexico Association of Conservation Districts would like to submit the following comments for the proposed TMDL for the San Francisco and Gila Watersheds. The soil and water conservation districts applaud the efforts of the New Mexico Environment Department to de-list water bodies based on credible scientific data.

The soil and water conservation districts are authorized under NMSA 1978 73-20-25 thru 73-20-49 to work with landowners to conserve and develop the natural resources in New Mexico. All of our programs are voluntary, incentive-based and definitely should be utilized to work with land owners to meet specific, water quality goals in a particular watershed.

We look forward to continuing our "on the ground" conservation work to gather "credible scientific data" and to assist landowners with best management practices that will meet water quality goals.

Please contact NMACD or the local district if we can assist with this effort.

Sincerely,

Debbie Hughes