II. Background

Section 305(b) of the Clean Water Act (CWA) requires States to assess and report on the quality of all waters of the State. This report, Status of Water Quality in Colorado 2002, fulfills this requirement for the two-year period of 2000 and 2001.

This section discusses:

- Overview of the CWA Section 305(b)
- Colorado State Atlas
- Water Quality Control Programs
- Watershed Overviews and Water Quality Partnerships
- Cost / Benefit Assessment of Water Quality Programs
- Special Concerns
- Ecoregions

A. Overview of the Clean Water Act Section 305(b)

The CWA Section 305(b)(1) requires that each state submit a biennial report to the United States Congress through the United States Environmental Protection Agency (EPA). The 305(b) Report will report on the following:

- an assessment of water quality of the State,
- an analysis of the extent to which the waters of the State provide protection for the propagation of aquatic life and recreation in and on the water,
- a report of the water pollution control programs;
- a description of the nonpoint source pollution control programs, ground water and drinking water programs.

This report is intended to comprehensively characterize the waters of the State through the assessment of data of known quality. Through the assessments, the causes and stressors of the impaired waters are identified to determine water quality protection needs.

B. Colorado Atlas

Colorado is comprised of over 100,000 miles of river. Many of Colorado's rivers originate in the pristine high alpine environment of the Rocky Mountains and flow downstream through the high desert or high plains environment. Several major rivers have their headwaters in Colorado and flow downstream through multiple states. There are seven major river basins in Colorado consisting of the Arkansas, Rio Grande, San Juan, Colorado, Green, Platte and Republican. The largest of these is the Colorado River Basin which has its headwaters in Rocky Mountain National Park, flows from Colorado to Utah at the west side of the state, flows through the Grand Canyon in Arizona and ultimately completes its' river system in the Gulf of Mexico. The following table summarizes statistics on Colorado's waters.

Table 1: Colorado Atlas

State Population: 4,301,261[1]
State Surface Area: 104,132 Square Miles
Number of Water Basins: 7

River Basin	Surface Area (sq. mi.)	Stream Length (mi.)
Arkansas	28,286	25,592
Rio Grande	7,582	6,875
San Juan	6,667	7,103
Colorado	21,353	24,708
Green	10,516	14,600
Platte	20,943	22,907
Republican	8,785	5,618

Total Number of River Miles: 107,403[2]
Estimated Number of Lakes/Reservoirs/Ponds: 1,533[3]
Estimated Acreage of Lakes/Reservoirs/Ponds: 164,029[3]
Acreage of Freshwater Wetlands: unknown

Notes:
[1] US Census Bureau, 2000
[2] Estimated from Reachfile 3, 1:100,000 GIS coverage
[3] Estimated from lakes and reservoirs greater than ten acres (from Reachfile 3)

Summary of Classified Uses

The State of Colorado defines waterbodies with four different categories of classified uses: aquatic life, water supply, recreation and agriculture. Table 2: Summary of Classified Uses breaks down the number of stream miles and lake acres in the state that have been assigned these classified uses.

Table 2: Summary of Classified Uses *(estimates of river miles and lake acres)*		
Classified Use	**River Miles**	**Lake Acres**
Aquatic Life Cold 1	38,330	49,380
Aquatic Life Warm 1	1,405	48,330
Aquatic Life Cold 2	8,150	885
Aquatic Life Warm 2	53,850	2,330
Water Supply	39,655	70,125
Recreation – Primary Contact	50,050	84,740
Recreation – Secondary Contact	53,080	16,195
Agriculture	102,307	100,930

Surface Water Quality Summary for Degree of Use Support

Colorado's water quality is assessed periodically for the triennial review of water quality standards, development of discharge permits, development of 303 (d) Lists, development of Total Maximum Daily Loads (TMDLs) and special studies. The following table summarizes the number of assessed stream miles and lake acres that fully support all their assigned classified uses; and the number that don't support all their classified uses.

Table 3: Surface Water Quality Summary for Degree of Use Support		
Degree of Support	***Assessed River Miles***	***Assessed Lake Acres***
Fully supporting all uses	65,922	57,899
Not supporting at least one use	4,964	9,148
No aquatic life use	0	0
Total assessed	70,899	67,047
Note: Total assessed miles and acres include assessments conducted in the last six years.		

Summary of Waterbodies Meeting EPA Fishable/Swimmable Criteria

The CWA at Section 101(a)(2) requires that all waters be suitable for the protection and propagation of fish, shellfish and wildlife; and for recreation in and on the water unless it is demonstrated that the use is not attainable. This provision of the CWA is often referred to as EPA's "fishable/swimmable" goal. The following table summarizes the number of assessed stream miles and lake acres that support their aquatic life and recreation classified uses; the

number that don't support those uses; and the number demonstrated to be unattainable for those uses.

Table 4: Summary of Assessed Water Bodies in Attainment of the Fishable/Swimmable Criteria		
River Miles	**Fishable**	**Swimmable**
Miles assessed and attaining	68,806	29,352
Miles assessed and not attaining	4,827	212
Miles assessed and not attainable	1,387	0
Lake Acres	**Fishable**	**Swimmable**
Acres assessed and attaining	47,290	64,583
Acres assessed and not attaining	7,322	0
Acres assessed and not attainable	0	0

Summary of Causes and Sources Affecting Water Bodies that are not Supporting Classified Uses

When the result of a water body assessment is non-support of a classified use, the next step is a determination of the cause of the non-attainment. In Colorado, when a narrative or numeric standard is exceeded, the associated use is determined to not be supported. If a classified use is assessed to not be supported due to a standard being exceeded, then the specific standard parameter may indicate the cause. For example, if the aquatic life standard for zinc is exceeded for a stream, then the aquatic life use would be determined to not be supported and the cause would be zinc. If a use is determined to not be supported without a specific standard being exceeded then further investigation may be needed to determine the cause.

After a cause has been identified, the source of the cause should be determined. Source identification can be a difficult undertaking; or in some cases, it may be more obvious. Take our zinc example from above. If there is a lack of aquatic life in a stream with zinc levels that exceed the aquatic life standard and that stream is located in a historic mining district, then the source may be resource extraction. If further investigation identifies a large loading of zinc emanating from a draining adit then the source may clearly be resource extraction. Source identification is usually a resource intensive process; therefore, many sources of causes remain unknown at this time. These sources will be addressed as time and resources permit.

The following table summarizes the causes and sources contributing to non-attainment of uses for Colorado's assessed waters. Those causes and sources yet to be determined are identified as "unknown."

Table 5: Summary of Causes and Sources Affecting Water Bodies Not Fully Supporting Classified Uses

Colorado Rivers		***Colorado Lakes***	
Cause Category	**Miles Affected**	**Cause Category**	**Acres Affected**
Metals and pH	1,404	Metals and pH	6,762
Ammonia and organic enrichment	72	Pesticides	156
Pathogens	212	Ammonia	8
Nitrate and sulfate	212	Pathogens	8
Siltation	44	Unknown	2,214
Unknown	4,056		
Colorado Rivers		***Colorado Lakes***	
Source Category	**Miles Affected**	**Source Category**	**Acres Affected**
Point sources	96	Point sources	164
Agriculture / silviculture	123 / 11	Agriculture and silviculture	134
Urban and road run-off	52	Resource extraction	142
Resource extraction	599	Unknown	8,708
Unknown	5,227		

Notes:

"Source" means the activities, facilities, or conditions that contribute pollutants or stressors.

"Cause" means the pollutants and other stressors that contribute to the non-attainment of classified uses in a water body.

Sum of the acres or miles affected does not equal the total non-attained acres or miles since non-attainment may have more than one cause.

C. Water Quality Control Programs

The Water Quality Control Division (WQCD or the Division) is the agency responsible for maintaining, restoring, and improving the quality of Colorado's waters and ensuring that safe drinking water is provided for the public from public water systems. The WQCD is organized into two sections: the Watershed Section and the Water Quality Protection Section. The Watershed Section consists of three units: Monitoring, Assessment, and Outreach and Assistance. The Water Quality Protection Section is also divided into three units: Drinking Water, Wastewater Technical Services, and Compliance Monitoring and Data Management. In addition, the Administrative Unit operates under the WQCD's Director's Office. The responsibilities of

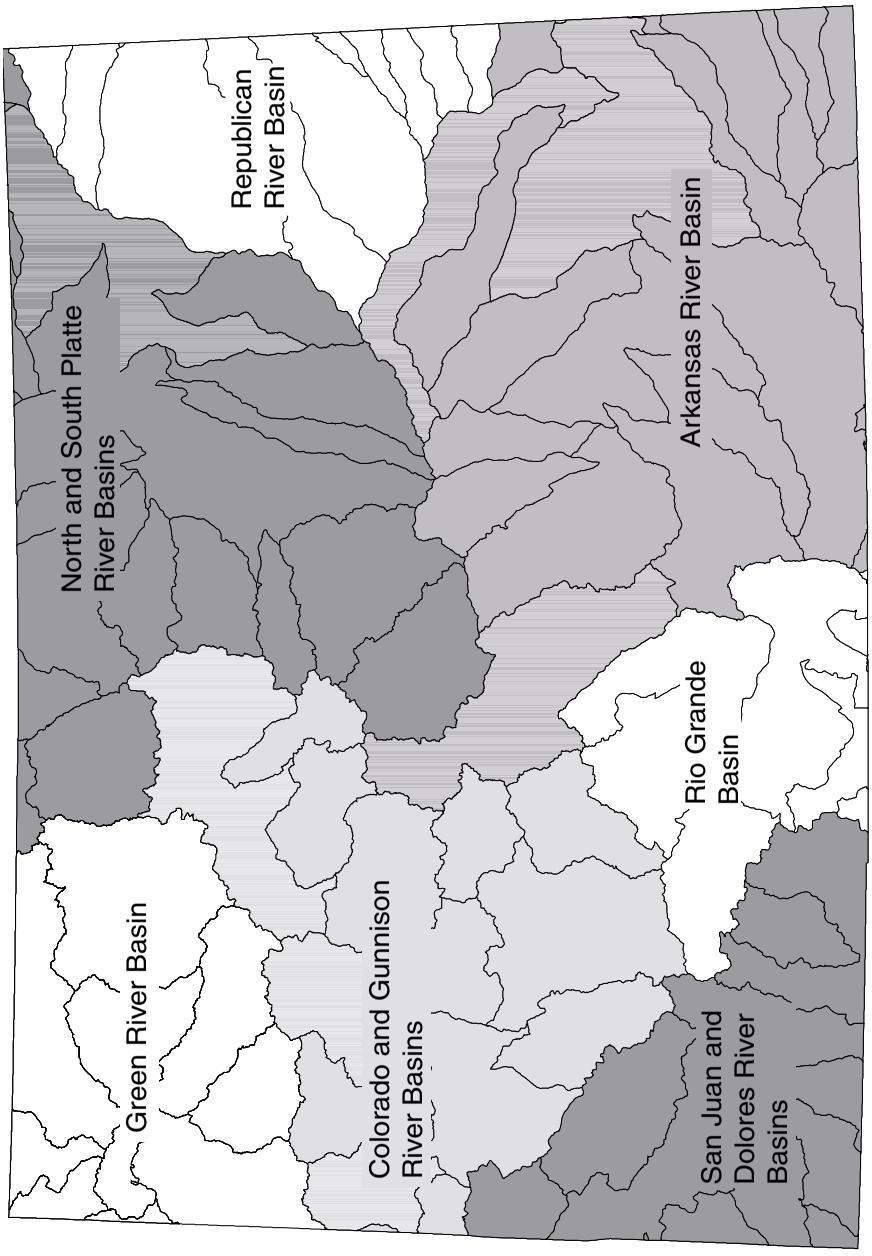
each unit are described in Table 6: Functional Elements of WQCD Units.

Table 6: Functional Elements of WQCD Units		
Watershed Section	**Monitoring Unit**	Ambient water quality monitoring (chemical, physical, and biological sampling and field investigations; laboratory-based toxicity bioassays); compliance sampling in conjunction with watershed-scale investigations and targeted facility inspections; lake and reservoir monitoring and assessment and bioassessments
	Assessment Unit	Surface and ground water standards development; TMDL development, data analysis, interpretation, and reporting; water quality modeling; antidegradation reviews; §401 certifications; support to permits group; support to the Water Quality Control Commission (WQCC); and assessment of agricultural chemicals in ground water
	Outreach and Assistance Unit	Community-based water quality management planning and financial assistance (watershed partnerships, non-point source cooperative projects, drinking water and pollution control facility grants and loans)
Water Quality Protection Section	**Permits Unit**	NPDES program management (industrial and domestic discharge permits, storm water permits, biosolids authorizations, pretreatment control mechanisms and groundwater discharge permits)
	Drinking Water and Waste Water Technical Services Unit	Compliance assurance and technical assistance for drinking water and waste water (DW/WW) facilities (including area-wide WW facility planning and DW capacity development; facility siting approval; engineering plan review; facility construction inspection; compliance sampling and inspection; compliance assistance and comprehensive performance evaluation; spill response, and enforcement case support)
	Compliance Monitoring and Data Management Unit	Evaluation of self-reported DW/WW facility monitoring data, facility data management, enforcement of monitoring requirements and self-reported violations
Division-Wide Administration Unit		Budgetary, personnel, purchasing, fleet management and general clerical support; general administrative support both internal and external to the WQCD

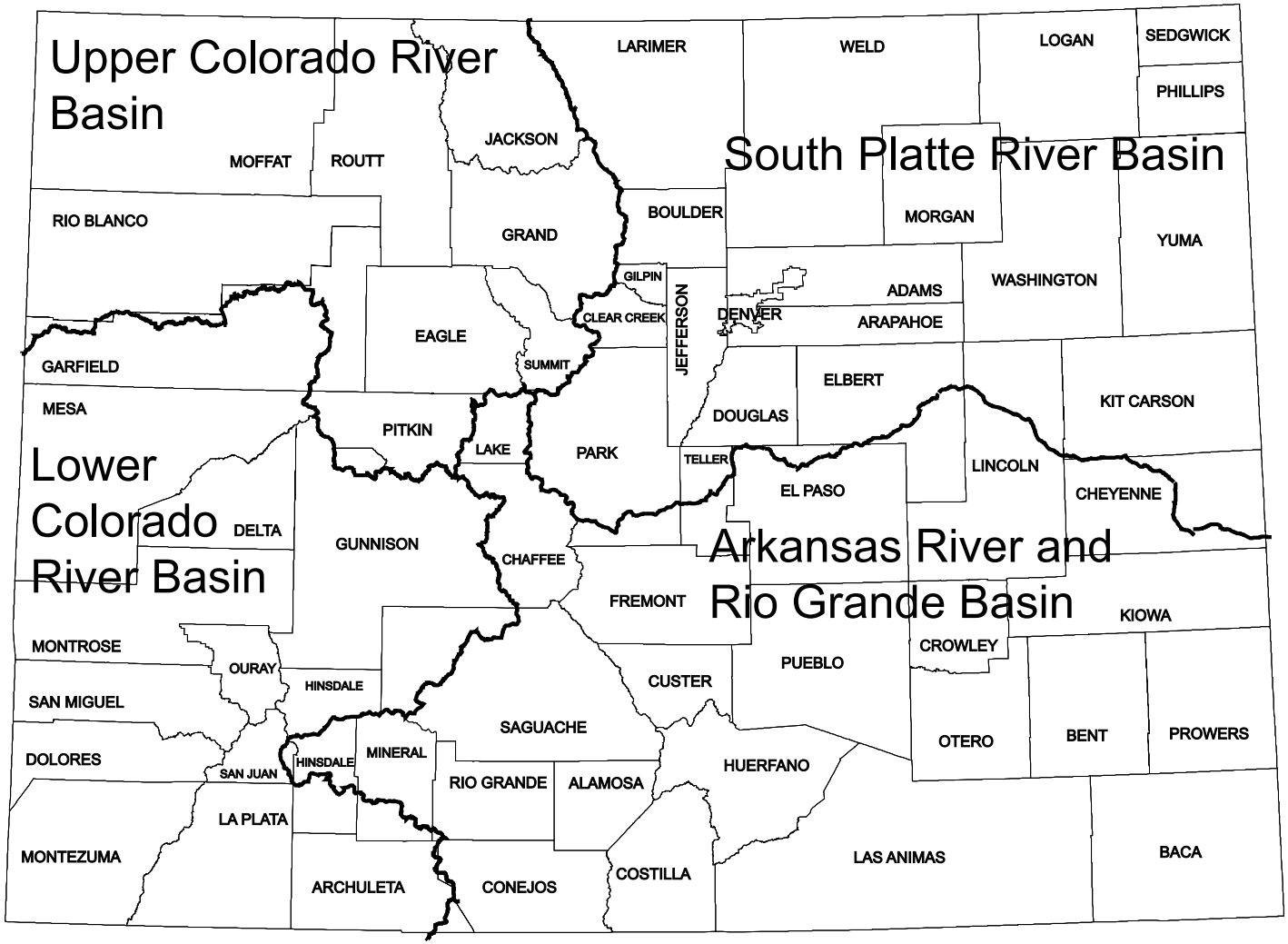
The state of Colorado is hydrologically divided into seven major river basins: Arkansas, Rio Grande, San Juan, Colorado, Green, Platte, and Republican Rivers. But administratively, a key element of the WQCD's structure is the creation of "watershed teams" for each of the major watersheds in the State, drawing on staff from each of the functional units listed above. Colorado's seven major river basins have been divided into four major administrative watersheds: the Arkansas/Rio Grande, the Upper Colorado, the Lower Colorado, and the South Platte.

A watershed coordinator works in each watershed. The watershed coordinators act as the WQCD's field representatives and can therefore spend more time in the local communities to learn about their concerns. This knowledge, in turn, will lead to more effective solutions to water quality problems in the watersheds. Beyond the watershed teams, the WQCD makes extensive use of interdisciplinary teams to address ad hoc issues and economic concerns as they arise.

Major River Basins in Colorado



Colorado Administrative Watersheds



1. State Water Quality Standards

The Water Quality Standards program was created by the Water Quality Act of 1965 and was expanded by the 1972 CWA. In 1983, EPA issued regulations governing the development, review, revision, and approval of surface water quality standards. EPA has no role in setting or approving ground water standards. Colorado's Water Quality Control Act authorizes the Water Quality Control Commission (WQCC or the Commission) to set ground water standards.

States have the primary responsibility in setting surface water quality standards. Colorado adopted standards in the early 1970's. The WQCC is the body that adopts the standards through a public hearing process. The WQCC is a citizen board whose nine members are appointed by the Governor and approved by the state senate. The WQCD acts as staff to the Commission. Once a standard is adopted by the state, it is sent to EPA for approval.

a. Setting Water Quality Standards

Water quality standards provide the goals for the water body (stream, lake, reservoir, or aquifer) for common constituents found in water. Standards are dependent on the classified uses to be made of the water and are the regulatory basis for treatment requirements that may be more stringent than the technology-based requirements of the CWA. In setting water quality standards, the state designates uses for each water body and adopts numeric or narrative water quality standards to protect those classified uses. In Colorado, the classified uses for surface water are: Aquatic Life Cold, Class 1; Aquatic Life Cold, Class 2; Aquatic Life Warm, Class 1; Aquatic Life Warm, Class 2; Water Supply; Agriculture; Recreation Class 1a, Recreation Class 1b; and Recreation Class 2.

Different standards may exist for different segments of a surface water body. Segments were originally delineated to include reaches of similar water quality. Over time, however, political processes have modified segmentation of water bodies to address more than hydrologic differences. In addition, there are statewide standards for radionuclides and organic chemicals.

Classified ground water uses are Domestic, Agricultural, Surface Water Quality Protection, Potentially Usable Quality, and Limited Use and Quality.

There are two ways water quality standards are set for specific surface water body segments in Colorado: table value standards (TVS) and site-specific standards. TVS are adopted statewide as the levels that are protective of uses under general conditions. Site-specific standards are proposed by a water user for a specific segment. Before a site-specific standard can be adopted, the proponent must gather a great deal of data to show that the classified uses of the segment will be protected at the constituent level proposed. Colorado has a unique solution to situations where current conditions are poor, but it is believed that improvement is possible. The Commission will adopt an underlying standard that acts as the goal and issues a temporary modification at some poorer quality level for a finite period.

For ground water, specified areas are designated to delineate a special activity or use. Site-specific uses and standards are then promulgated for the specified areas. Where there is no

specified area, and therefore no site-specific standards, the "interim narrative standards" apply. These standards specify that the less restrictive of the following two alternatives apply: either ambient quality as of January 31, 1994 or the most stringent table value use-based standard.

b. Standards Review and Rulemaking

The CWA requires states to review their water quality standards at least once every three years and if appropriate, schedule a rulemaking hearing to revise them. Colorado follows a triennial review schedule, with the Commission holding two informational hearings: an Issues Scoping hearing for early identification of issues and a year later an Issues Formulation hearing for more detailed proposals. The goal of these public hearing is to hear from WQCD and other interested parties regarding standards issues in the basins. A rulemaking hearing is then set for the basin in eight months. The Basic Standards (surface water) and Ground Water Standards also go through a similar review process. The following table presents the surface water review schedule:

Table 7: Surface Water Standards Review Schedule

River Basins (and Regulation Number)	Issues Scoping Informational Hearing	Issues Formulation Informational Hearing	Rulemaking Hearing
Arkansas & Rio Grande (#32 & #36)	--	November 2001	July 2002
Colorado Basin (#33 & #37)	October 2001	November 2002	July 2003
South Platte (#38)	October 2002	November 2003	July 2004
Basic Standards (#31)	October 2003	November 2004	July 2005
San Juan, Dolores & Gunnison (#34 & #35)	October 2004	November 2005	July 2006

c. Standards Updated this Biennium

During this biennium, the Commission adopted changes to several regulations and held standards hearings for specific segments in river basins. The "Statement of Basis and Purpose" for each regulation summarizes these hearings and the changes to the regulations. Additional information is provided in the hearing files, available by contacting the Commission office. A summary of the major changes is provided below.

South Platte, Laramie, and Republican Basins (Reg. No. 38) surface water classifications and standards – triennial review (November 1999), informational hearing to set the scope of the basin-wide classification and standards hearing for the basins. Basin-wide Rulemaking Hearing (November 2000) based on assessment and review of standards for 82 segments, including use classifications, temporary modifications, ambient standards and site-specific standards.

Basic Standards and Methodologies for Surface Waters (January, 2000) - informational hearing to set the scope of the Basic Standards hearing. Rulemaking hearing (July, 2000) - The Commission

adopted a new hardness-based table value equation for manganese to protect aquatic life; rejected proposals to add table values for agricultural classifications for fecal coliform, nitrate and phosphorus; and rejected a proposal to adopt a new "wastewater treatment plant effluent dominated" sub-classification (with numeric criteria) under the water supply classification. The Commission adopted a site-specific narrative standards option for waters impacted by historic mining, and changes to the temporary modification provisions. The significance tests in the Antidegradation provisions were revised and the Statewide Organic Chemical Standards were updated. The recreational classifications were revised to include class 1a for actual primary contact use, 1b for potential use and class 2 for secondary contact use. E. coli standards were adopted. Standards based upon secondary drinking water standards for iron, manganese and sulfate were relaxed to ambient levels where no existing drinking water use is present. Metals table value equations were revised to address conversion factors from total recoverable to dissolved fractions, and the hardness cap was clarified.

San Juan and Dolores Basins (Reg. No. 34), Gunnison, and Lower Dolores Basins (Reg. No. 35) and Lower Colorado Basin (Reg. No. 37) surface water classifications and standards – triennial review (September 2000), informational hearing to set the scope of the basin-wide classification and standards hearing for the basins, Rulemaking hearing (July, 2001) to set the standards in these basins.

Upper and Lower Colorado Basins (Reg. No. 33 and No. 37- Issues Scoping Informational Hearing (October 2001), informational hearing to identify potential issues for the basin wide classification and standards hearing set for 2003.

Arkansas (Reg. No. 32) and Rio Grande (Reg. No. 36) Basins Issues Formulation Hearing (November 2001), informational hearing to identify specific issues for the basin wide classification and standards hearing set for 2002.

2. Point Source Control Programs

The Permits Unit of the WQCD drafts and issues the Colorado Discharge Permit System (CDPS) discharge permits, as provided by the Colorado Water Quality Control Act. The permits are designed to limit the amount of pollutants entering streams, lakes, rivers and groundwater to protect the beneficial uses of the water. The permits program is an integrated program and covers industrial and domestic wastewater, groundwater, and stormwater discharges. In addition, the industrial pretreatment program, biosolids program, housed commercial swine feeding operations, and animal feeding operations programs are also operated within the Permits Unit**.**

The WQCD received delegation for the federal National Pollutant Discharge Elimination System (NPDES) permitting program in 1974. However, the State has not received delegation for pretreatment, biosolids, or federal facilities. While the state operates fully functional programs addressing pretreatment and biosolids, EPA has previously withheld delegation because of concerns about the Self-Audit Law that Colorado enacted in 1994. These concerns were resolved and the Division expects to move forward with delegation of these programs over the next two years.

a. Colorado Discharge Permit System Program

As of June 30, 2001, the Division had a total of 4,310 active permits covering industrial, domestic, and general certifications, as well as groundwater, pretreatment, and stormwater discharges. General permits comprise over 91% of these permits. A general permit covers many of the smaller and less complex discharges. These permits are issued quickly; usually within 30 days or less of receiving the completed application.

Industrial and Domestic Permits and Certifications

There were a total of 1,070 active industrial and domestic permits and general certifications at the end of June 2001. This is slightly higher than June 2000, which had a total of 1,000 active permits. In FY 2001, a total of 340 permits were issued compared to 414 in 2000 and 357 in 1999.

Outlook for the Next Biennium

The CDPS program will continue to issue and reissue discharge permits with a focus on reducing the permit backlog. However, resources may be diverted to address the emerging issues of concentrated animal feeding operations (feedlots or CAFOs) and pursue program delegation for the Pretreatment and Biosolids Programs.

Status of the Permit Backlog

A permit is considered backlogged when the Division receives a renewal application from the permittee, but the facility review has not been completed. These backlogged permits are then administratively extended to enable the facilities to continue to operate under the existing permit until the permit renewal process can be completed.

As of June 2001, the Division had 667 active general permit certifications, of which 6 were backlogged. This results in a <1% backlog on general permit certifications.

The Division continues to experience an individual permit backlog with 32% (131 out of 403) of the individual active permits being backlogged. However, progress continues on reducing the number of backlogged permits.

As of June 2001, there were 131 backlogged permits; 32 were major permits, and 99 were minor permits. There were a total of 103 active major permits which results in a 31% backlog for major permits. In addition, there were 300 active minor permits, which results in a 33% backlog for minor permits. The Division's goal is to reduce the backlog of major permits to 10% by December 2002 or sooner, and minor permits to 10% by December 2005 or sooner.

b. Stormwater Program

The purpose of the stormwater program is to reduce the amount of pollutants entering streams, lakes and rivers as a result of runoff from residential, commercial and industrial sources. The responsibilities of the program include development, issuance and oversight of compliance with discharge permits that regulate the quality of stormwater discharged to State waters. In addition, the program provides technical assistance, and educates the regulated community on the importance of stormwater quality management. The following list highlights some of the recent accomplishments in the Stormwater Program.

- The Stormwater Program, with help from the Phase II Task Force, drafted the Phase II regulation. It was presented to the WQCC with no dissenting testimony. Final approval was granted in January, 2001.

- A mailing list with over 270 contacts has been continued to keep the regulated community and other stakeholders informed of progress on Phase II implementation.

- Twenty-two presentations, on both Phase II and construction permitting, were conducted at various seminars and conferences, such as for the Colorado Municipal League, Water Quality Forum, WQCC, EPA, Red Rocks Community College, and industries and trade groups.

- The Colorado Dept. of Transportation (CDOT) individual municipal stormwater permit was issued in December, 2000.

- The stormwater inspection work plan/MOA with Denver Environmental Health was renewed.

- The customer survey form continues to be distributed with each permit certification issuance. A spreadsheet was developed to analyze the data. For FY01, 531 surveys were sent out, and 46 returned, a rate of 9%. The survey includes 15 categories, such as Professionalism, Telephone Service, and Compliance Assistance, each with a ranking of one (poor) to five (excellent). The average overall was 4.4. The average per category was always greater than 4, except for Site Visit, the average for which was 3.3 (three responses). Nineteen comments were received; 15 were positive, 3 were negative, and 1 was neutral/mixed. The negative comments were typically regarding timeliness of receiving their certification.

- The Cherry Creek Reservoir Control Regulation was amended by the Division and numerous stormwater provisions were included. Extensive negotiations were carried out with a stakeholder's group. Preliminary final approval of the regulation was granted by the Commission in May, 2001.

- Meetings were held to streamline the permitting required for two large projects: the Southeast Corridor, or T-Rex (I-25), and Lowry redevelopment.

- Stormwater permit billing was successfully switched from KLEROS to an Access database.

- The first draft of a municipal stormwater permit guidance document was developed, with the help of the Municipal work group. It will be completed by late 2001.

- A 'No Exposure' certification form was developed and implemented. Fifty-two entities filed the form with the Division by June 30, 2001.

- Enforcement action was begun against Denver International Airport.

- Enforcement action was begun against A-Du-Well Auto Recycler.

- The Light Industry stormwater general permit expired on June 30, 2001. The permit was reissued in May, and the 630 reissued certifications were sent out before the end of June.

Stormwater applications, permits and other forms are now available on the Department's web page. This was publicized in various mailings, and as a result, the number of requests for hard copies of forms has decreased substantially. In total, 2153 stormwater forms, permits, rationales, and fact sheets were accessed and downloaded in June, 2001. This is compared to 793 items downloaded in June 2000.

c. Housed Commercial Swine Feeding Operations and CAFOs

The Animal Feeding Operation (AFO) program regulates livestock operations that confine and feed animals in enclosed structures or outdoor pens that have no vegetation. Small AFOs are required to implement appropriate best management practices (BMPs) for the purpose of protecting waters of the state. Large AFOs must comply with specific regulatory provisions and are categorized as either CAFO or Housed Commercial Swine Feeding Operations (HCSFOs). HCSFOs are regulated separately as the result of a ballot initiative known as Amendment 14 that was passed by Colorado voters on November 3, 1998. The program issues permits, inspects AFOs and CAFOs on a complaint basis, inspects HCSFOs twice per year, reviews reports, provides compliance assistance, and initiates enforcement actions as appropriate.

Summary of Accomplishments

- Received proposed final, approvable Swine Waste Management Plans (SWMPs) by August 15, 2000.

- Contracted with four local health agencies that inspected all HCSFOs twice annually, and with which we met on a quarterly basis.

- After working with stakeholders, wrote and issued a general permit for CAFOs on May 11, 2000. Also developed an application form for this permit.

- Completed 27 inspections of AFOs and CAFOs as the result of receiving complaints.

- Issued two Notices of Violation; one to a CAFO, the other to a HCSFO. Calculated penalties for the violations.

- Significantly updated the CAFO database.

•Issued three amendments of HCSFO individual permits.

•Reviewed and commented on a Financial Assurance Plan and Monitoring Plan from one HCSFO.

•Presented six talks about AFO regulations.

d. Industrial Pretreatment

The Division's industrial pretreatment program permits, inspects, and conducts compliance monitoring for communities that do not have an EPA approved industrial pretreatment program to ensure wastewater from industrial processes do not adversely impact the wastewater treatment plant. The program assists EPA in conducting pretreatment compliance audits of approved programs, and provides technical assistance to all pretreatment personnel statewide, and to local health department staff. The program provides training to other units in the Division and to other Divisions in the Department.

The Division completed the following industrial pretreatment actions during FY 2001:

•Completed 28 facility inspections.

•Worked with the Towns of Dolores, Monte Vista, Durango, and Ovid to help them control the discharge from problem industries in their collection systems.

•Provided 3 training sessions for Publicly Owned Treatment Works (POTW) staff in small communities to educate them on how pretreatment can help control problem discharges.

•Assisted EPA with 3 pretreatment program audits.

•Assisted EPA with the development of training programs for small POTW's with large or uncooperative industries.

•Served as the chair for the Colorado Industrial Pretreatment Coordinators Association.

e. Biosolids Program

The Biosolids Program regulates the land application of biosolids and water treatment plant sludges for beneficial use. The program develops and issues Notices of Authorization to use and distribute biosolids to facilities and contractors for reuse as a fertilizer on agricultural land, mined land reclamation sites, and for various experimental projects. The program monitors the compliance status of permittees through inspections, sampling, and review of annual reports. The program also initiates enforcement of the provisions of the biosolids regulations.

Summary of Accomplishments

- Provided leadership for the Biosolids Stakeholders Committee, addressing issues raised by the regulated communities, counties, and concerned citizens regarding the beneficial use of biosolids in the state.

- Provided several counties with technical support regarding federal regulatory requirements for the land application of septage.

- A grant was provided to Colorado State University and Mesa State College to determine the long term impacts of biosolids on the remediation of land in Northwestern Colorado.

- An pilot inspection project with local health departments was developed and will be implemented in late 2001.

3. Nonpoint Source Control Program

a. Management Program Overview

The goal of Colorado's Nonpoint Source (NPS) Program is to restore to full designated use all waters currently impaired by nonpoint sources, and to prevent future impairments of Colorado's waters. Colorado has been actively involved in Section 319 Nonpoint Source Control efforts since the passage of the 1987 amendments to the CWA. Those amendments required each state to complete an assessment of its nonpoint sources and a management program to describe how those sources would be addressed.

Colorado's NPS Assessment Report was first approved in 1988, and updated in 1989. The Assessment Report is now updated through the biennial Status of Water Quality 305(b) report.

In developing the original assessment report, EPA and the Division agreed on the following categories and subcategories of nonpoint source pollution. Not all categories or subcategories are currently causing impairments to Colorado waters.

Agriculture

- Non-irrigated crop production
- Irrigated crop production
- Specialty crop production (e.g. truck farming and orchards)
- Pasture land
- Animal feeding operations (unless permitted)
- Aquaculture
- Animal holding/management areas
- Rangeland
- Stream bank erosion

Silviculture

- Harvesting, reforestation, residue management

- •Forest management
- •Road construction/maintenance

Construction runoff

- •Highway/road/bridge
- •Land development
- •Stream bank erosion

Urban runoff

- •Storm sewers (source control)
- •Combined sewers (source control)
- •Surface runoff
- •Stream bank erosion

Resource extraction/exploration/development

- •Surface mining
- •Subsurface mining
- •Placer mining
- •Dredge mining
- •Smelters
- •Mill tailings
- •Stream bank erosion

Land disposal (runoff/leachate from areas)

- •Sludge
- •Wastewater
- •On-site wastewater systems (septic tanks, etc.)

Hydrologic modifications

- •Channelization/dredging
- •Dam construction
- •Stream bank erosion
- •Bridge construction
- •Riparian modification
- •Flow regulation/modification

Other

- •Atmospheric deposition
- •Highway maintenance and runoff
- •Natural
- •Off road vehicles

It should also be noted that, by definition, if one of the above activities requires a permit, it would not be considered a nonpoint source, but would fall into one of the regulatory programs.

Colorado's original NPS Management Program was initially approved in 1989, and updated in

1990. Programs for agriculture, silviculture, urban and construction runoff, and mining were approved at that time. In 1992, a management program for hydrologic modifications was proposed by the state and approved by the EPA. The NPS Management Program was updated in its entirety in 2000. The program was adopted by the Commission and approved by the EPA in January 2000.

The Management Program includes information on the best management practices available to address nonpoint sources in all categories, as well as programs which can be used for restoration and prevention activities. The Management Program also provides a strategy for information and education efforts. Since nonpoint sources are often referred to as "people pollution," outreach activities are an important part of protecting Colorado's waters. An example of outreach includes the "Colorado NPS Connection," a statewide quarterly newsletter which was initiated in 2000 by the Colorado Water Protection Project. More information on the Management Program may be obtained at http://www.cdphe.state.co.us/op/wqcc/cnpsmpu.html or by contacting nps@state.co.us.

The Clean Water Action Plan, released by the Clinton Administration in February 1998, continued to influence nonpoint source project activities. In particular, the Unified Watershed Assessment was used to target nonpoint source activities in priority watersheds. By 2001 the definition of a priority watershed was expanded to include any watersheds where a Total Maximum Daily Load (TMDL) was scheduled for development.

Outlook for the Next Biennium

Over the next two years, the nonpoint source program anticipates an increasing role in the TMDL process. Based on EPA guidance for 2002 funding, half of Colorado's funding must be used to develop TMDLs, develop TMDL implementation plans, or implement those plans. As the TMDL activity increases, the emphasis and use of the Unified Watershed Assessment as a targeting tool will likely decrease.

The program will also continue its work on a statewide strategy for dealing with nonpoint source animal feeding operations. In addition, the program will initiate a review and update of the best management practices available for restoration and prevention activities, in preparation for a full program update by 2005.

b. Section 319 Funding Efforts

Since 1990 when Congress began appropriating funds specifically for Section 319 nonpoint source activities, Colorado has received approximately $15 million dollars (through May 15, 2001). Section 319 funds support a wide variety of activities to prevent or reduce the impact of nonpoint source pollution to waters in Colorado. The funds are divided into two allocations: the base allocation, which can be used for any effort identified in the management program, and the incremental allocation, which originally was approved for use only in watersheds needing restoration, as identified in the 1998 Unified Watershed Assessment.

The requirements on the incremental funds have continually evolved. By 2001, the funds could

be used in any watershed where a TMDL was required, as well as in watersheds needing restoration. Also in 2001, projects using incremental funds were required to have a watershed restoration action strategy fully developed before funds could be expended. This was a change from 2000 and earlier, where Watershed Restoration Action Strategy (WRAS) development was itself an eligible use of the funds. EPA capped the incremental funds at $100 million nationally; any appropriation from Congress above that amount would be allocated to the base funding.

In 2000 and continuing in 2001, EPA Region 8 began to conduct endangered species consultations prior to funding on-the-ground projects, in accordance with Section 7 of the Endangered Species Act. These consultations were required before the project implementation plans could be approved. In nearly all instances, biologic evaluations determined the projects, as planned, would have "no effect" on the endangered or threatened species in the various watersheds. In a few cases, project work plans were slightly modified to change the timing for construction activities and avoid seasons which are critical for species nesting or reproduction.

Outlook for the Next Biennium

If Congressional appropriations hold steady, Colorado's Section 319 allocation will continue to be split 50-50 between the base funds and the incremental funds.

Projects Funded by Section 319 in 2000 and 2001

Table 8: NPS Projects Funded in 2000 and 2001

Project Title	***Year***	***Project Sponsor***	***Status***	***Project Category***	***Project Type***	***319(h) Ezpense***
James Creek Watershed Restoration	2001	James Creek Watershed Initiative	On schedule	Agriculture	Watershed	$18,000
Southern High Plains Resource Center	2001	Baca Soil Conservation District	Not yet initiated	Agriculture	Information and Education	$25,000
Clean up of the Little Six #2	2001	Clear Creek Watershed Foundation	Not yet initiated	Mining	Watershed	$142,000
Lower Rio Blanco Habitat Restoration	2001	San Juan Water Conservancy District	Not yet initiated	Hydrologic Modification	Watershed	$250,000
Animas Coordinator	2001	San Juan Resource Conservation and Development	On schedule	Mining	Watershed	$40,831
Rio Grande Riparian Stabilization Project	2001	Rio Grande Soil Conservation District	On schedule	Agriculture	Watershed	$125,100

Table 8: NPS Projects Funded in 2000 and 2001 (Continued)

Handies Peak Mine Waste Control	2001	San Juan Resource Conservation and Development	On schedule	Mining	Watershed	$135,000
Project Title	***Year***	***Project Sponsor***	***Status***	***Project Category***	***Project Type***	***319(h) Ezpense***
NPS Educational Outreach	2001	Colorado Foundation for Agriculture	Not yet initiated	Cross Cutting NPS Category	Statewide I&E	$84,510
Gunnison Basin Selenium Task Force Coordinator	2001	Painted Sky Resource Conservation and Development	Not yet initiated	Agriculture	Watershed	$58,968
Fremont Pass Riparian Corridor Restoration	2001	Bureau of Land Management	Not yet initiated	Other	Watershed	$68,000
Willow Creek Watershed Restoration	2001	San Luis Valley Resource Conservation and Development	Not yet initiated	Mining	Watershed	$173,200
Water and Nutrient Management in Western Yuma County	2001	Yuma Soil Conservation District	Not yet initiated	Agriculture	Watershed/ Groundwater	$237,500
Identifying and Encouraging Western Colo. Cattle Producers	2001	Colorado Cattlemen's Assn.	On schedule	Agriculture	Statewide I&E	$94,358
Urban Polluted Runoff Public Education Continuation	2001	League of Women Voters	On schedule	Urban	Statewide I&E	$159,500
North Fork River Improvement	2001	North Fork River Improvement Assn.	Not yet initiated	Agriculture	Watershed	$150,000
NPS Newsletter continuation	2001	League of Women Voters	Not yet initiated	Cross Cutting NPS Category	Statewide I&E	$16,000
Improved Irrigation in the Purgatoire/ Frijole Watershed	2001	Spanish Peaks – Purgatoire Soil Conservation District	Not yet initiated	Agriculture	Watershed	$252,798
Longmont NPS I&E	2001	City of Longmont	Not yet initiated	Urban	Information and Education	$26,700

Table 8: NPS Projects Funded in 2000 and 2001 (Continued)

Turkey Creek WEPP	2001	Colorado Geological Survey	Not yet initiated	Cross Cutting NPS Category	Watershed	$39,000
Role of BMPs and PRFs	2001	Cherry Creek Basin Water Quality Authority	Not yet initiated	Urban	Information and Education	$30,500
Project Title	***Year***	***Project Sponsor***	***Status***	***Project Category***	***Project Type***	***319(h) Ezpense***
Lower Cottonwood Creek Water Quality Plan	2001	Cherry Creek Basin Water Quality Authority	Not yet initiated	Urban	Watershed	$188,467
Information/ Education Outreach Grants	2001	Various	On schedule	Cross Cutting NPS Category	Information and Education	$30,000
Alamosa River Continuation	2000	Alamosa – La Jara Water Conservancy District	On schedule	Agriculture	Watershed	$233,568
Animas Mine Waste Control	2000	San Juan Resource And Conservation Development	On schedule	Mining	Watershed	$145,360
Choices And Consequences	2000	Colorado Foundation For Agriculture	On schedule	Agriculture	Statewide I&E	$149,400
Colorado AFO Program	2000	Colorado Livestock Assn	On schedule	Agriculture	Statewide I&E	$292,705
Contingency Fund For Small I&E Projects	2000	To Be Determined	On schedule	Cross Cutting NPS Category	Statewide I&E	$10,000
Eagle River Coordinator	2000	Eagle County Watershed Council	On schedule	Cross Cutting NPS Category	Watershed	$37,500
Fountain Creek Master Plan	2000	Pikes Peak Area Council of Governments	On schedule	Cross Cutting NPS Category	Watershed	$109,400
Grape Creek	2000	Custer – Divide Soil Conservation District	On schedule	Agriculture	Watershed	$72,000
Land Use and Selenium Loading	2000	Mesa Soil Conservation District	On schedule	Cross Cutting NPS Category	Watershed	$82,335

Table 8: NPS Projects Funded in 2000 and 2001 (Continued)

Mountain Groundwater Quality Booklet	2000	Jefferson County Planning And Zoning Dept	On schedule	Urban Runoff	Statewide I&E	$12,000
NPS Information And Education Coordinator	2000	CSU Cooperative Extension	On schedule	Cross Cutting NPS Category	Statewide I&E	$164,950
NPS Newsletter	2000	League of Women Voters Colorado Education Fund	On schedule	Cross Cutting NPS Category	Statewide I&E	$30,200
Project Title	***Year***	***Project Sponsor***	***Status***	***Project Category***	***Project Type***	***319(h) Ezpense***
Selenium Phytoremediation	2000	Shavano Soil Conservation District	On schedule	Agriculture	Watershed	$123,760
Silver Bells Closure	2000	PacifiCorp	On schedule	Mining	Watershed	$156,498
Three Lakes Clean Lakes Assessment	2000	Grand County	On schedule	Cross Cutting NPS Category	Watershed	$135,000
Willow Creek Continuation	2000	San Luis Valley Resource and Development Area, Inc.	On schedule	Mining	Watershed	$167,200

4. Water Pollution Control Revolving Fund

Colorado's Water Pollution Control Revolving Fund (WPCRF) Program was established by legislation in April 1988. Also in April 1988, the Commission adopted the Revolving Fund Regulation (No. 51), which governs the priority and eligibility lists and administrative procedures for the fund. The Intended Use Plan (IUP), which includes the project eligibility list, is evaluated and brought before the Commission annually. Additions and modifications to the eligibility list are adopted by the Commission by December 31st of each year and approved by the Colorado General Assembly during the subsequent legislative session, prior to April 1.

Summary of Accomplishments

This summary of accomplishments is for the period of January 1, 2000 through December 31, 2000. The capitalization grant funds for the 2000 loan cycle include approximately $7,270,967 remaining from the federal fiscal year 1996 grant, $5,150,055 from the FFY 1997 grant, $4,104,632 from the FFY 1998 grant, $10,772,190 from the FFY1999 grant and $10,735 659 from the FFY 2000 grant. From these grant amounts, $819,220 remains to cover administrative

expenses for the WPCRF.

The WQCC held a formal public hearing on October 12, 1999 at which time the 2000 IUP was approved. There were no public comments on the 2000 IUP that included the projects listed under the new categories for the expanded use of the funds.

In the 2000 IUP, projects totaling over $68,000,000 were identified for potential loans. Six loans were executed in 2000 with a total principal amount of $36,880,234. Three direct loans were awarded to small communities totaling $819,000 and three leveraged loans were made totaling $36,061,234. All direct loans were funded using recycled monies. The three communities that received leveraged loans included: the Parker Water and Sanitation District, Summit County and Three Lakes Water and Sanitation District. The three communities that received direct loans included: the Columbine Water and Sanitation District, Left Hand Water and Sanitation District, and the Town of Springfield. All direct and leveraged loans are included in two tables in Appendix C: Table 3: WPCRF Loan Summary as of November 2001, Direct Loans and Table 4: WPCRF Loan Summary as of November 2001; Leveraged Loans.

Four of the six projects the WPCRF funded in 2000, with 82% of cumulative funding, were in Category I High Priority watersheds. It is noted that determination of a single category for an 8-digit watershed does not mean every sub-watershed or every acre within the 8-digit watershed needs restoration. Watershed Restoration Action Strategies (WRAS) were developed by the WQCD. The WPCRF can be used in the implementation of a WRAS once it is identified in the IUP.

The following environmental benefits are provided on each project awarded in 2000:

PARKER W&S DISTRICT: COSPCH04 (Tributary of Cherry Creek)
(South Platte Basin – Cherry Creek Sub-basin)

Water Quality Issues: This wastewater treatment plant (WWTP) discharges to a tributary that ultimately discharges to Cherry Creek Reservoir. There are high levels of phosphorous in the lake. The major source of phosphorous in the lake is non-point sources and upstream dischargers.

Potential Environmental Benefits and Improvements in Water Quality: With improvements in the facility the levels of phosphorous that are discharged into the stream can be reduced. This could improve water quality in Cherry Creek Reservoir.

SUMMIT COUNTY SNAKE RIVER WWTP: Soda Creek from source to Dillon Reservoir
COUCBL05 (Upper Colorado Basin – Blue River Sub-basin).

Water Quality Issues: 1990, the Commission set a site-specific standard for pH on this segment of 6.0-9.0 to accommodate the lower pH in the effluent of the Summit County Snake River WWTP. The phosphorous levels in Dillon Reservoir are low, but there are phosphorous

control regulations in the Dillon Reservoir that must be considered when looking at water quality in this area. Soda Creek flows into Dillon Reservoir.

Potential Environmental Benefits and Improvements in Water Quality: Through reduction of phosphorous that is discharged into Soda Creek the water quality of Dillon Reservoir can be improved.

THREE LAKES WATER AND SANITATION DISTRICT: COUCUC06b/06c: Willow Creek (Upper Colorado Basin).

Water Quality Issues: The Three Lakes Water and Sanitation District (District) WWTP discharges treated municipal wastewater near the top of the un-named tributary. This tributary is listed on the 1998 303(d) List for Impaired Waters. Sources of ammonia in the watershed include the wastewater treatment plant discharge (point source), animal waste from grazing cattle and occasional wildlife (nonpoint source) and decomposing plant life. The nonpoint source contributions could be considered negligible (less than one percent of total new load) when compared to the contributions from the WWTP discharge. The only significant source of ammonia is from the WWTP. The current WWTP discharges up to 29 mg/L total ammonia. These loads must be reduced in order to meet standards.

Potential Environmental Benefits and Improvements in Water Quality: The TMDL, completed in 2000, will be implemented in the form of a District discharge permit limit for total ammonia. The District has been planning to upgrade for many years; the new facility will provide better treatment that will reduce the ammonia loading into the tributary. The downstream segment should be then in attainment of water quality standards.

COLUMBINE W&S: located near COSPUS16 (Tributaries to the South Platte). (South Platte Basin – Upper South Platte Sub-basin)

Water Quality Issues: This system does not discharge to surface water. Columbine W&S has total service from Denver Water Board. Columbine W&S is located between W. Bowles Ave and West Coal Mine Road and between South Sheridan and Santa Fe Drive.

Potential Environmental Benefits and Improvements in Water Quality: There may be environmental benefits due to groundwater quality improvements.

LEFT HAND W&S: COSPSV05 (South Platte Basin – St. Vrain Sub-basin).

Water Quality Issues: Left Hand W&S has a groundwater permit (COG630057), and does not discharge to surface water. Many of the WWTP in Boulder County are looking into ammonia treatment where there are elevated levels of ammonia in the streams.

Potential Environmental Benefits and Improvements in Water Quality: The old WWTP will be replaced. There may be environmental benefits due to groundwater quality improvements.

TOWN OF SPRINGFIELD: Near Cat Creek, COARLA09c.
(Arkansas River Basin – Lower Arkansas Sub-basin)

Water Quality Issues: Located in Baca County. The groundwater permit is pending. They are working on system improvements. The Town of Springfield discharges to ground water near Cat Creek.

Potential Environmental Benefits and Improvements in Water Quality:
There may be environmental benefits due to groundwater quality improvements.

As of December 31, 2000, the WPCRF administered 34 direct loans totaling $16,561,110 and 47 leveraged loans (3 loans to the cities of Littleton and Englewood for one project) totaling $327,411,840. The total loan amount for the 81 loans is $343,972,950.

In 2000, the Water Resources and Power Development Authority's Board collected information on the financial end of the WPCRF and determined that the interest rate for the direct loans could be reduced with no significant impact to the fund. This policy change was published in the 2001 Intended Use Plan and presented to the public at WQCC hearing in October 2000. The policy of a 4% interest rate for direct loans went into effect November 1, 2000 and benefited the Town of Springfield.

During the 2000 reporting period, the State prepared Environmental Assessments (EA) or reviewed EA's prepared by consultants on behalf of the borrower. Seven Findings of No Significant Impact (FONSI) or Categorical Exclusions were published on behalf of the Water Pollution Control Revolving Fund. The communities included: FONSI's -Cortez Sanitation District, Grand County Water and Sanitation District #1, Three Lakes Water and Sanitation District, Summit County – Snake River Wastewater Treatment Plant, City of Steamboat Springs/ Mt. Werner Water and Sanitation District, Categorical Exclusions -Niwot Sanitation District, Columbine Water and Sanitation District.

Outlook for the Next Biennium:
The 2001 IUP includes a list of projects from the eligibility list that have or are anticipated to submit loan applications. These projects are considered the State's projected commitments for the

2001 WPCRF loan program.

The first bond issue for 2001 totaling over $70,000,000 in April included the following entities: Cortez Sanitation District, City of Fort Collins (storm water), City of Steamboat Springs, Parker Water and Sanitation District, Plum Creek Wastewater Authority, Fraser Sanitation District, City of Lafayette, Mt. Crested Butte Water and Sanitation District.

Beginning January 1, 2001, $50,000 was made available for planning and/or design grants for communities under 10,000 population that are identified on the 2001 Eligibility List. The maximum amount will be $10,000 per community. These are non-reimbursable grants, unless the entity is not borrowing funds from the WPCRF in which case the Authority Board wants the ability to review, and if appropriate, waive this requirement. These funds are provided from the Administrative Fee Account from income received after the Capitalization Grant period. January 1, 2002, $100,000 will be available for planning and/or design grants.

5. Water Quality Limited Segments and Total Maximum Daily Load Program

The 303(d) list identifies water quality limited segments of water bodies. It is prepared in fulfillment of section 303(d) of the CWA, which requires that states submit to EPA a list of those waters for which technology-based effluent limitations and other required controls are not stringent enough to result in attainment of water quality standards.

Once it is determined that a segment is impaired, the Division must develop a TMDL for the segment. A TMDL is the amount of a specific pollutant that the water body can accept without exceeding the water quality standard. During development of TMDLs, WQCD determines the following: the current pollutant load from all the sources, the amount of pollutant reduction that is required to attain standards, and the apportionment of the allowable pollutant load to the different contributing point and nonpoint sources. A TMDL must also account for seasonal variation and include a margin of safety. Although WQCD has overall responsibility to complete TMDLs for all segments on the 303(d) list, it relies heavily on local watershed groups and other entities to participate and sometimes conduct TMDL analyses for their segments.

a. 1998 303(d) List

In late 1996, the TMDL Subcommittee of the Colorado Water Quality Forum was formed to discuss TMDLs in Colorado and provide public input into the 1998 303(d) list. In 1997, the Commission widened participation in the subcommittee and asked it to act as a formal advisory committee to WQCD. This new TMDL Advisory Committee met to discuss issues related to the 1998 303(d) list, such as criteria for listing and delisting segments, determining credible evidence of impairment, degree of classified use support, prioritization of TMDL development, and scheduling.

Listing criteria used to place a segment on the 1998 303(d) list included the following:

- Segments that have temporary modifications of standards

- Segments that have classified use impairment based on credible evidence of impairment (see discussion in Section III, Chapter 2. Surface Water Assessment Methodology)

- Delisting criteria used to remove a segment from the proposed 1998 list included the following:

  * Segments where federal, state, or local requirements are stringent enough to attain water quality standards

  * Segments where approved TMDLs address all the pollutants of concern

  * The Division compiled and reviewed all existing and readily available water-quality related information during the 1998 list development. Both administrative records and water quality data were reviewed.

The 1998 list is the most current approved iteration of the list. The 1998 303(d) List is presented in Appendix A.

b. Monitoring and Evaluation List

WQCD, in cooperation with the TMDL Advisory Committee, determined that there was a need for an ancillary list to the 303(d) list. The Monitoring and Evaluation List was devised as an administrative and tracking tool to identify the many segments where there was reason to suspect water quality problems, but there was some uncertainty about their degree of use support. In some cases, segments identified on the 1996 303(d) list lacked information to support the reason for requiring a TMDL. In other, reports of water quality problems did not meet the credible data criteria for the 1998 list. The 1998 Monitoring and Evaluation list that is currently in use by the WQCD is included in Appendix B.

Specific water quality problems include: 1) segments where there is a need to evaluate the effectiveness of control measures to determine if water quality standards will be met in the future (this is particularly the case for CERCLA sites); and 2) segments where data or current conditions must be evaluated to determine whether standards are exceeded or uses are not supported. For example, in the South Platte River Basin, a number of Class 2 Aquatic Life segments no longer support one or two sensitive native fish species, which were present when these segments were classified. The 303(d) listing criteria do not classify this situation as use impairment because "Class 2" is defined in Colorado's Basic Standards regulations as not supporting a wide variety of biota, including sensitive species. Colorado, however, has begun to focus attention and resources on areas where native species are known to be in decline.

WQCD, with technical and monetary assistance from the U. S. Forest Service and Bureau of Land Management, have initiated monitoring of a number of segments located on federally managed lands. These are segments which are included on the 1998 Monitoring and Evaluation List due to potential impairment resulting from excessive sediment deposition. WQCD has also developed monitoring information necessary to determine the status of several segments included on the

1998 Monitoring and Evaluation list for chemical parameters.

c. 1999 Settlement Agreement

The Colorado Environmental Coalition and Biodiversity Legal Foundation filed a complaint against EPA in August 1997, and amended it in February 1998, alleging that EPA had failed to assure that Colorado had established a reasonable schedule for completion of TMDLs for waters on the 1998 303(d) list. At EPA's request, WQCD had prepared a schedule for development of TMDLs for segments and pollutants included on the 1998 303(d) list. All TMDLs would be developed by June 30, 2010. Colorado intervened in the lawsuit and was signatory to a Settlement Agreement filed on August 24, 1999. The Settlement Agreement stipulated a revised schedule for TMDL completion. Table 9 below shows the completion schedule for the TMDLs.

Table 9: TMDL Completion Schedule for 1998 Section 303(d) List

Biennium	*End Date*	*Number of TMDLs to be Completed*		
		Number	*Percent of Total*	*Cumulative Percentage*
1st	6/30/00	30	15	15
2nd	6/30/02	50	25	40
3rd	6/30/04	40	20	60
4th	6/30/06	40	20	80
5th	6/30/08	38	20	100

WQCD's first biennium commitment includes 30 TMDLs to be "completed" by June 30, 2000. The Settlement Agreement identifies four mechanisms by which a TMDL may be "completed." These are: 1) submission of TMDL by the state to EPA for approval; 2) final completion of a TMDL by EPA; 3) written determination by EPA or the state that a TMDL is not needed; or 4) revision of TMDLs previously included in CDPS permits for specific water quality limited segments.

WQCD submitted 12 TMDLs to EPA within the first biennium (prior to June 30, 2000). An additional 21 written determinations that TMDLs are not necessary for specific pollutant/segment combinations were also be submitted. EPA did not complete any TMDLs prior to June 30, 2000, nor did WQCD revise and re-issued any of the CDPS permits identified in the Settlement Agreement. TMDLs and written determination that TMDLs are not necessary which were completed prior to the June 30, 2000 are identified in Table 10: TMDLs Completed as of June 30, 2000.

The Settlement Agreement also incorporated a commitment on the Colorado's part to develop a TMDL website by December 30, 1999. That site has been developed and may be visited at www.cdphe.state.co.us/wq/wqhom.asp.

d. TMDLs Completed as of Year 2000

Table 10: TMDLs Completed as of June 30, 2000

WBID	*Name*	*Parameters*	*Status (6/30/01)*
COARLA01	Lower Arkansas	Se, Fe, Mn, SO_4	Mn delisted.
COARUA21	Cripple Creek	Fe, Mn	Fe delisted.
COARUA22	Arequa Gulch	Al, CN, Fe, Mn, Zn pH	Fe, Mn, Zn delisted
COGUSM03B	San Miguel R. below Idarado	Sediment, Cd, Mn, Zn	Sediment TMDL approved
CORGCB12	Big Springs Creek	Sediment	delisted
COSJDO03	Dolores River, Horse Cr to Bear Cr	Mn	delisted
COSJLP04	Box Canyon Creek	Sediment	TMDL approved
COSPBT05	Big Thompson, I-25 to South Platte	Fecal Coliform, Mn	FC delisted
COSPBT09	Little Thompson, Culver Ditch to Big Thompson	Fecal Coliform, Mn	FC delisted.
COSPUS02B COSPUS02C	Mosquito Creek & South Mosquito Creek	2B=Cd, Pb, Zn 2C=Cd, Fe, Mn, Zn	TMDL approved
COSPUS15	South Platte, Burlington Ditch to Big Dry Creek	DO,NO_3, Cd, Cu	DO TMDL approved.
COSPUS16L	Mary Lake, Ladora Lake, Lower Derby Lake	Aldrin, Dieldrin, Hg	delisted.
COUCBL18	Straight Creek	Sediment	TMDL approved
COUCEA07	Cross Creek	Cd, Mn, Zn	Cd delisted
COUCUC06C	Un-named tributary to Willow Creek	NH_3	TMDL approved.
COUCUC08	Williams Fork	Mn	delisted.

In fall 1999, WQCD began developing the 2000 303(d) List. Work group meetings were held with stakeholders to examine listing and prioritization criteria. WQCD also began assessments of recent water quality data. Colorado suspended work on the 2000 list when EPA vacated the requirement for a 2000 303(d) List. EPA took this action because of the delay in promulgation of its new 303(d) List/TMDL rules.

e. 2002 303(d) List

The terms of the Settlement Agreement include a target of 50 TMDLs to be completed prior to June 30, 2002. Table 11 identifies TMDLs and delisting rationales which are currently in development and which the WQCD anticipates may be completed to fulfill the June 30, 2002 commitment.

Table 11: TMDLs to be Completed as of June 30, 2002

WBID	*Name*	*Parameter*
COSJAF02 Et al	Animas River & tribs	Metals (29 TMDLs)
COSJDO04L	McPhee Reservoir	Hg
COSJDO05	Tribs to Dolores River above West Dolores & Silver Creek above Rico	Mn
COSJLP08L	Narraguinnep Reservoir`	Hg
COGUUN04	Uncompahgre River, Hwy 90 to Gunnison River	FC
COGULG09	Fruitgrowers Reservoir	FC, NH3
COGUSM03b	San Miguel River, Marshall Creek to South Fork San Miguel River	Cd
COSPBO09 COSPBO10	Boulder Creek (2 segs)	NH3
COSPCL02	Clear Creek, Silver Plume to Argo Tunnel	Cu, Zn
COSPCL11	Clear Creek, Argo Tunnel to Farmers' Highline Diversion	Fe
COSPCL14	Clear Creek, Farmers' Highline Diversion to Youngfield Street	Cd, Mn
COSPCL15	Clear Creek, Youngfield Street to South Platte	Mn
COSPBT05	Big Thompson, I-25 to South Platte	Mn
COSPBT09	Little Thompson, Culver Ditch to Big Thompson	Mn
COSPCP07	Cache la Poudre below Halligan Reservoir	Sediment
COSPSV03	St. Vrain Creek	NH3
COSPSV04	Little James & Left Hand Creeks	pH, Cd, Fe, Mn, Zn
COSPUS01a	South Platte River, Eleven Mile Reservoir to Cheeseman Reservoir	Sediment
COSPUS04	North Fork. South Platte River & tribs, Hall Valley to Geneva Creek	Cd, Pb, Fe
COSPUS14	South Platte River, Bowles Avenue to Burlington Ditch	NO3, Mn

WQCD again initiated work group meetings in the fall of 2000 with the intent of refining Colorado's listing and prioritization criteria. This process has again been suspended pending EPA's re-proposal and promulgation of amended 303(d) List/TMDL rules. Current federal rules require submittal of the 2002 303(d) List by October 1, 2002.

D. Watershed Overview

The Colorado WQCD administratively divides the state's waterbodies into four major watersheds, which generally correspond to the four quadrants of the state. These watersheds and their corresponding quadrants are the Arkansas/Rio Grande watershed (southeast), Lower Colorado watershed (southwest), Upper Colorado watershed (northwest) and South Platte watershed (northeast).

1. Arkansas / Rio Grande Watershed

The Arkansas and Rio Grande River Basins comprise two distinct watersheds covering the entire south-central and southeastern portions of the state.

In addition to the Arkansas River, the major tributaries in the Arkansas River Basin are the Cucharas River, Huerfano River, Apishapa River, Purgatoire River and Fountain Creek. The Arkansas River Basin also includes a portion of the Cimarron River in the far southeastern corner of the state. The Cimarron River Basin drains the highlands of Mesa de Maya and Black Mesa in Colorado and New Mexico; the mainstem flows through New Mexico and northwestern Oklahoma before reaching Colorado.

The Pikes Peak Area Council of Governments (PPACG) is the designated regional Water Quality Planning (208) Agency for El Paso, Teller, and Park Counties. As the designated planning agency, PPACG is required to prepare and update a Water Quality Management (208) Plan to address regional water quality issues. The 208 Plan was last updated in 1999 and covers five watersheds - Fountain Creek, Chico Creek, Upper Arkansas, South Platte Headwaters and Upper South Platte. The Plan addresses point source and nonpoint source issues within each of these watersheds and, in doing so, recognizes that water pollution is both diffuse and site-specific and that problems must be addressed collectively.

The Rio Grande Basin drains the San Luis Valley, and portions of the San Juan and Sangre de Cristo Mountains. The Conejos River, Alamosa River, La Jara River, and Trinchera Creek are the major tributaries to the Rio Grande. The Closed Basin, which occupies the northern section of the San Luis Valley, has no natural surface connection to the Rio Grande.

Water Quality Issues: Water quality issues in the Arkansas and Rio Grande River Basins include water quality problems associated with the impacts of urban and rural development, active and legacy mining operations, current and legacy agricultural practices, and meeting interstate river compact obligations.

Local Initiatives: Citizens in both the Arkansas and Rio Grande River Basins are concerned about the management and protection of their rivers and streams, and have formed coalitions to address specific issues. Watershed groups in the two basins include the following:

* **Fountain Creek Watershed Plan**: Three groups are involved in developing the Fountain Creek Watershed Plan, these include the watershed plan policy approval committee, the project management team, and the watershed technical advisory committee. The groups include representatives from the Boards of Directors of the two area councils of governments, elected officials from the two counties (El Paso and Pueblo) and from the 11 affected municipalities, the utilities and the soil conservation district. The technical advisory committee is composed of technical representatives from the cities and counties within the Fountain Creek Watershed, Colorado Springs Utilities, military installations, etc. The group has focused the first year's efforts on evaluating the critical issues and areas within the watershed, evaluating and characterizing channel instability, and defining technical and policy management strategies, including past and present watershed management practices. The stakeholders are focusing on developing a comprehensive plan for the watershed, a public outreach and education program, and the development of a GIS (geographic information systems) database. The plan will address the sedimentation, bank erosion, and nutrient-load problems in Fountain Creek. This is the first year of a three-year effort.

* **Upper Arkansas Watershed Council** formed to help address watershed issues in the Upper Arkansas River Basin (Lake, Chaffee, Custer and Fremont counties) and to provide a framework for coordination and cooperation among watershed interests. The Council provides a forum for people with diverse interests in water and natural resources to discuss issues and seek common ground.

* **Upper Arkansas Restoration Project** spun off from the Upper Arkansas Watershed Council to focus specifically on the restoration of the 11-mile reach of the River from California Gulch to two miles above Balltown. This stretch has sustained serious stream bank erosion and general degradation from mine waste, hydrologic modification, and grazing practices. A voluntary approach to correcting the problems has attracted landowners, mining companies, water operators, and state and federal regulators.

* **Alamosa River Technical Assistance Group (TAG)** is a citizen watchdog group that tracks activities at the Summitville Superfund Site. Members have worked closely with the CDPHE and EPA on cleanup and restoration strategies. Currently, the TAG is working with the Natural Resources Damage Suit trustees on the development of a restoration plan to address pollution of the Alamosa River.

* **Alamosa River Watershed Restoration Project (ARWP)** grew out of citizen concern about the devastating pollution of the Alamosa River that resulted from the Summitville Mine discharges. The goal of the ARWP is to restore the water quality in the river to its pre-mining condition. The focus of the ARWP has been the restoration of the riparian areas south of the mine. To date, the project has installed rock weirs and vanes to draw the water away from the banks thus reducing the erosion. They have also begun replacing the meanders that were removed. The effect of this action is to slow the flow and reduce the sediment loading and erosion of the banks.

* **Willow Creek Reclamation Committee** formed to reclaim the West Fork of Willow Creek above Creede. This stream has been polluted by mine drainage associated with silver

mining operations that began in the 19th century. The metals-laden water in the Creek threatens the Rio Grande below the town. The Reclamation Committee has been collecting water quality information to determine the river's potential for recovery. The high and low flow sampling events have been conducted. The data collection and the characterization of the pollutant sources will be completed in 2003. Plans are underway to begin remedial action on those sources that have been identified, and for which funds can be obtained prior to the conclusion of the assessment.

* **Citizens for San Luis Valley Water** formed to build coalitions among Valley organizations with an interest in conserving and protecting water and agricultural resources. Specific activities include developing agricultural land trusts and public education projects.

* **Rio Grande Alliance** exists as an international forum with Mexico to support collaboration among the diverse groups of the Rio Grande Basin concerned with the protection, improvement and conservation of natural resources, and human health. Colorado participates in the Alliance as the headwaters state for the Rio Grande River.

* **Rio Grande Corridor Advisory Committee** is a diverse group representing area ranchers, environmentalists, landowners, and local elected officials. Their goal is to restore the riparian ecosystem of the Rio Grande corridor between Las Sauces and the New Mexico border.

* **The San Luis Valley Ecosystem Council** is a non-profit environmental advocacy and education group that provides a local voice on biodiversity and public land issues. Current projects include efforts to protect the Rio Grande corridor and its headwaters; protect roadless areas on public lands; and expand recreational and hiking opportunities.

* **Rio Grande/Rio Bravo Basin Coalition** is a non-profit organization whose mission is to support local efforts to sustain and restore the environment, economies and social well-being of the Rio Grande/Rio Bravo Basin. The coalition seeks to strengthen local grassroots organizations through support and training; encourage public awareness and involvement in building a more sustainable river basin; foster better communication between community–based organizations in the Rio Grande Basin; and provide a voice for the Basin. Partners include both Mexican and US organizations.

2. Lower Colorado River Watershed

The Lower Colorado River Watershed encompasses the southwest quadrant of the state. The major river basins within this area include the Colorado, Gunnison, North Fork of the Gunnison, San Miguel, Uncompahgre, Dolores, San Juan, and Animas Rivers. The major population centers in the region are the Grand Junction, Durango, and Montrose areas.

Water Quality Issues: Water quality issues in the Lower Colorado River watershed consist of impacts from growth, selenium and mining. The current growth surge in Colorado is especially evident in the Lower Colorado River Watershed. This region has two main areas of growth: towns in the lower valleys where the climate is very attractive to retirees and mountain resort

areas where many people are building large homes. Wherever this growth is occurring, it has the potential to threaten water quality. This growth brings with it an increased demand for drinking water, which is taxing the capacity of drinking water treatment plants. The availability of water to meet the increased demand, in a region where water availability is an historic problem, is a major concern. The large number of new septic systems in the area also has the potential to impact surface water and ground water supplies. Where sewers exist, the growth often threatens the capacity of existing wastewater treatment plants.

Threatened and endangered species of fish inhabit the Colorado River and some of its tributaries. Protection of these species is a driving force in water quality and water quantity policies within the reaches that the fish inhabit and the reaches that affect those areas. High selenium concentrations in several segments of the Gunnison and Uncompahgre Rivers are a serious concern that is also related to the threatened and endangered species issue. The selenium problem has the potential to impact development and agriculture along both of these rivers.

Mining related water quality problems exist around the region, especially in the headwaters areas of the rivers. One of the more notable of these areas is the headwaters area of the Animas River around the town of Silverton.

Local Initiatives: Community based, collaborative watershed initiatives continue to prosper throughout the watershed. New groups continue to form to address emerging water quality issues.

* **Animas River Stakeholders Group**: One of the more established efforts, this group formed to identify the major sources of metals loading in the Upper Animas Basin and to attempt to remediate these sources in a voluntary, collaborative manner. The group has been very successful, and is often cited as one of the premier groups of its kind in the nation. One of the recent accomplishments of the group is the development of a Use Attainability Analysis (UAA) and its application in determining the proper standards and classifications for stream segments in the area. New standards and classifications for portions of the Upper Animas Watershed were established in a rulemaking hearing by the WQCC in 2001, based on information in the UAA.

* **Gunnison Basin/Grand Valley Water Forum**: A group of government agencies, ranchers, and private citizens that was established to educate and inform residents about water quality issues, prevent water pollution, and maintain or improve water quality in the region. The Forum recently merged with the Mesa County Water Association. Outreach and education is expected to remain the focus for the group.

* **San Miguel Watershed Coalition**: This Coalition developed a collaborative management framework, the San Miguel Watershed Plan, for the San Miguel Basin. It is currently working to implement the plan.

* **North Fork River Improvement Association**: The primary focus of this group is to improve riparian habitat along the North Fork of the Gunnison River. A river restoration demonstration project has been completed along a 1.5-mile segment of the river and funding

to restore another segment of the river has been secured. The Association hosts an annual float, open to those interested in learning about the threats to the river's quality.

* **Fruitgrowers Reservoir Coalition**: Serious nutrient problems have plagued Fruitgrowers Reservoir in Delta County. The Coalition was formed to address this problem; and a two-year study of pollution sources to the reservoir has been completed. A study is underway to determine the specific sources of fecal coliform contributing to levels in the reservoir.

* **Selenium Task Force**: This group formed to address the high selenium concentrations in some segments of the Gunnison and Uncompahgre Rivers. It hopes to identify the major sources of the selenium loadings; provide outreach to the community on the issue; and implement BMPs to reduce the loading to the rivers. To date, three Section 319 Nonpoint Source Pollution grants have been acquired to address this issue.

* **Dolores River Watershed Forum**: The purpose of this Forum is to give stakeholders an opportunity to communicate watershed concerns and issues of interest. Several workshops have been sponsored by the Forum and there are plans to develop a monitoring program for McPhee Reservoir to establish a baseline of water quality data.

* **Pine River Watershed Group**: This Group is unique, in that there is not currently a serious water quality problem in the basin. It is focused on ensuring that the current water quality is maintained or improved. A volunteer monitoring program has been initiated at Vallecito Reservoir.

3. Upper Colorado Watershed

The Upper Colorado Watershed encompasses the northwest quadrant of the state and includes the Blue, Eagle, Roaring Fork, Fraser, North Platte, Yampa, Green, and White River Basins, as well as the headwaters of the Colorado River above Glenwood Springs.

The Northwest Colorado Council to Governments has been the designated Regional Water Quality Planning Agency (208 Planning Agency) for the Eagle, Grand, Jackson, Pitkin, and Summit Counties since February 1976. The region includes the North Platte, the Upper Colorado, the Blue, the Eagle, and a portion of the Roaring Fork watersheds. The 1996 208 Plan was last updated in 1998 and received Water Quality Control Commission, Governor, and EPA Region VIII approval. The PLan is currently being revised through an extensive watershed and regional initiative.

Water Quality Issues: Upper Colorado River watershed water quality issues relate to impacts due to growth and mining; and the protection of threatened and endangered fish species. Growth related water quality issues are becoming increasingly important as the population continues to grow at rates among the highest in Colorado. Sediment and nutrient loading to streams in the watershed have the potential to create significant water quality problems. These loadings are caused primarily by runoff from construction activities at new subdivisions, commercial centers,

roads, ski area expansions and naturally erosive soils.

Another water quality issue that has historically been the center of attention is metals pollution attributed to inactive mining areas and a Superfund site. Peru Creek, the upper Snake River, and French Gulch in Summit County are all heavily impacted by acid mine drainage from abandoned or inactive mines. The Eagle River is impacted by metals pollution from the Eagle Mine Superfund site near Gilman, although remediation has significantly decreased metal loads to the Eagle River and Cross Creek over the last several years.

The Upper Colorado River Fish Recovery Program has made progress in 2000 and 2001. The program was developed by the US Fish and Wildlife Service for the Colorado threatened and endangered fish species, including the pike minnow, humpback chub, bonytail chub, and razorback sucker. The "Programmatic Biological Opinion," required by Section 7 of the federal Endangered Species Act, has produced fish recovery goals which are expected to become final in 2002. The recovery program has a significant effect on water quantity management in the lower White and Yampa rivers.

Local Initiatives: Watershed water quality initiatives are found throughout the quadrant.

* **Summit Water Quality Committee**: This group monitors water quality in the Upper Blue River, tributary to Dillon Reservoir; and manages the phosphorus control program defined in regulations adopted by the WQCC. The regional erosion and stormwater specialist position in Summit County, supported by funding from the Committee, continues to be a successful approach for review of development plans and inspection of construction sites. The Committee's proposal for Copper Mountain Metro District's purchase of phosphorus credits from the Frisco Sanitation District was approved by the WQCC in 2001 and incorporated into the Dillon Reservoir control regulation. The purchase provided Copper Mountain with 40 lbs. per year in added point source allocation. The United States Geological Survey (USGS) has been hired by the Committee to compile all historical water quality data for the Blue River Basin. This "restrospective" study will be completed in early 2002.

* **Snake River Watershed Task Force**: The task force is comprised of local, county, state, federal agencies and local citizens, with the purpose of improving water quality in the Snake River Basin. Metals pollution from historic, abandoned mines on Peru Creek and the Upper Snake River is the focus. Keystone Center provides meeting facilitation and administrative services to the Task Force. Significant projects include Summit County and the US Forest Service determining ownership of key mine properties; characterization studies by several agencies on metals loading; and investigation of clean-up projects feasibility. TMDLs and UAAs will be the future focus.

* **Three Lakes Watershed Association**: This organization was formed in 1999, consisting of homeowners and interested citizens in the Three Lakes area of Grand County (Grand Lake, Shadow Mountain Lake, and Granby Reservoir). They have helped organize and obtain funding for water quality protection projects, including the 319 Clean Lakes assessment, Shadow Mountain Lake restoration evaluation, automated stormwater monitoring for the

town drain into Grand Lake, and investigation into the ownership of Grand Lake and long-term responsibility for lake management. There are committees and interest groups doing on-going work on watershed protection issues.

* **French Gulch Remedial Opportunities Group:** This stakeholders group was formed in 1995 to address the metals pollution and mine waste remediation issues of the Wellington-Oro Mine site on French Gulch near Breckenridge. Active stakeholders include the owners of the mine property, Summit County, EPA Region VIII, Northwest Colorado Council of Governments, Keystone Center, CDPHE, Colorado Division of Wildlife (CDOW), and USGS. Much effort has been put into investigation and pilot studies on passive treatment alternatives. EPA intends to complete the "Engineering Evaluation and Cost Analysis" in 2002, which will determine feasible treatment alternatives and costs. Use attainability for aquatic life is being evaluated for French Gulch Segment 11 and Blue River Segment 2.

* **Eagle River Watershed Council**: A watershed plan for the Eagle River was developed in 1995/96 by an ad hoc group of citizens and agencies. The group was organized in 2000 as the Eagle River Watershed Council, and has elected officers. EPA provided funding assistance for the Council to hire a local watershed coordinator for two years. A long-range funding strategy is being developed so the Council can provide on-going coordination and implementation of watershed improvement and protection projects. Major projects include the clean-up of Black Gore Creek, spearheaded by the Black Gore Steering Committee and the Watershed Council. Sand control projects are proceeding on Vail Pass, such as the new Colorado Department of Transportation (CDOT) sand shed and the related improvements to drainage problems in the Black Gore headwaters, including Black Lakes. The Watershed Council also is facilitating community involvement in the development of projects utilizing the Natural Resource Damage Recovery Fund monies. These escrowed funds of approximately $3,000,000 are from the principal responsible party of the Eagle Mine Superfund clean-up.

* **Roaring Fork Conservancy**: A major initiative in 2000/2001 was the Roaring Fork Conservancy's water quality monitoring network. Volunteer teams were recruited and trained to monitor 23 sites in the Roaring Fork/Fryingpan/Crystal River Basin. Glenwood Springs High School, Basalt High School, and other local schools are participating in the monitoring network, incorporating the "River Watch" activities of the past. The teams monitor water quality monthly for basic parameters, quarterly for nutrient samples and annually for biological assessment of macroinvertebrates, in cooperation with the WQCD. The Conservancy also completed the 319 Nonpoint Source project for watershed education in 2001, including the Town of Basalt stormwater sources and controls evaluation, and water quality education programs in the Roaring Fork R-1 Schools.

* **Owl Mountain Partnership (Jackson County)**: This group represents agencies and landowners in the North Platte Basin in Jackson County. The group is administering a 319 Nonpoint Source grant, in cooperation with the Colorado Wildlife Heritage Foundation, to improve water resources on both public and private lands. Accomplishments include development of resource management plans, stock-watering BMPs to protect riparian areas, vegetation improvements, wildlife management strategies and ecosystems education. A

nonpoint source continuation grant was obtained in 1999 to continue cost-share BMPs with landowners. The project will continue through 2002.

* **East Grand Water Quality Board**: Local agencies in the Fraser River Basin formed this group in the 1980's. The primary focus has been monitoring of the Fraser River for point-source impacts from wastewater treatment facilities. Agreement has been reached to consolidate two major wastewater treatment facilities in the valley. The Grand County Water and Sanitation District #1 lagoon system, which serves the Town of Winter Park, will be closed and a wastewater line constructed to connect with the Fraser Sanitation District. The new regional facility will be designed to discharge low ammonia concentrations, addressing a major discharge permit issue in the Winter Park/Fraser area. A grant has been obtained by the Northwest Colorado Council of Governments to develop a regional erosion control and stormwater management program in Grand County, focusing on the Fraser Valley.

* **Yampa River Basin Partnership**: The endangered fish recovery effort is making progress, as noted above. The Yampa Basin Watershed Plan, which is an update to the 208 Area-wide water quality management plans for Routt and Moffat counties, is drafted and out for public comment. The watershed plan, sponsored through the Partnership and funded by the WQCD, Routt County, and Moffat County will be completed in 2002. A number of interests in the Yampa River Basin participated in the water quality standards hearings with the Commission in 2001.

* **White River:** An initial meeting on the need for a White River watershed group was held in January, 2001. There is no on-going, organized committee to date, but Rio Blanco County remains interested in a focus on watershed protection and has incorporated such features in the revisions to the County master plan. This includes an “overlay protection zone” for the White River corridor, which requires performance-based mitigation for new land use activities. Local entities are cooperating with the USGS to conduct an annual water quality monitoring program, with financial participation by Rio Blanco County, Yellowjacket Water Conservancy District, the Towns of Meeker and Rangely, Meeker Sanitation District, and the Colorado River Water Conservation District. The Lower Colorado water quality standards hearing with the Commission in 2001 generated considerable interest in water quality issues.

4. South Platte River Basin

The South Platte, Republican, and Smoky Hill Rivers, or South Platte Watershed, encompasses the northeast quadrant of Colorado. The South Platte River originates in the mountainous central region of the state, while the Republican and Smoky Hill Rivers originate in the east-central high plains area.

Water Quality Issues: The water quality issues in the South Platte watershed are very diverse, complex, and dependent upon the particular geographic area of interest. The upper South Platte watershed above Chatfield Reservoir serves as the primary source water area for the greater Denver metropolitan region. This reach has been affected by historic mining districts (Mosquito Creek), water resource development (South Park dams and water diversions), severe sediment deposition from forest fires (Buffalo Creek and Hi Meadows areas), and elevated nutrients in

groundwater from mountainous area population growth (Park and Jefferson counties). The protection of water quality classifications is a high priority for this area.

The middle reach of the watershed from below Chatfield Reservoir to the confluence with the Cache la Poudre River has undergone some of the most intensive use and resulting impacts experienced by any river in Colorado. Historic mining districts (Clear Creek, James Creek), explosive urban development (Cherry Creek, Plum Creek, I-25 Corridor), Superfund sites (Rocky Mountain Arsenal, Rocky Flats, Sand Creek, Shattuck, Broderick, Marshall, Woodbury, Lowry, Chemical Sales), stormwater runoff (Denver, Boulder, Fort Collins metropolitan areas), extensive hydrologic modification (Boulder, St. Vrain, Big Thompson, Cache la Poudre Rivers), and urban and agricultural nutrient loading have resulted in varying types of water quality impacts. The improvement of water quality within this reach of the watershed will require considerable resource expenditure.

The lower reach of the watershed from below the Cache la Poudre River to Julesburg has seen different types of impacts. The effects of upstream urbanization and historic agricultural land use on off-stream reservoir water quality (Jackson, Prewitt); elevated nitrogen in agricultural ground water (Bijou Hills); increasing total suspended solids and salinity (Julesburg area); and animal feeding operations waste disposal (Weld, Morgan, Yuma, and Phillips counties) are activities of concern in this area. The potential conversion of agricultural water to municipal supply is of growing concern in this area.

The importance of high quality waters originating in the mountainous region of the watershed continues to focus stakeholders in several areas on protection and maintenance of this valuable resource. The impacts of timber harvest roads and subsequent off-road vehicle use has come to the forefront on federal lands. The federal land management agencies, along with local and distant water users, are beginning to implement mechanisms to further their common goals.

The urban growth experienced along the Front Range corridor and the resulting pressure on the current water supply and treatment mechanisms require expanded planning and development of the associated infrastructures. The impacts of large-scale forest fires, such as the Hi Meadows and Bobcat fires, continue to affect the operations of regional drinking water utilities. Local municipality and county governments are faced with increasing demands on land use for preservation of open space (parks, forest, farm lands) versus urban development. These pressures continue the need for innovative, collaborative actions by the various stakeholders groups. The reuse of municipal wastewater discharges as a nonpotable water source has seen a rapid increase in several Front Range cities.

Water diversion, storage, and delivery will continue to dominate the interests of the agricultural industry. The increasingly high-tech agricultural activities associated with crop irrigation, crop nutrient and pesticide management, and animal waste disposal will compliment other efforts focused on water resources in the lower and eastern reaches of the watershed. The effects of excessive nutrient loads into the off-stream irrigation reservoirs need more investigation. The variability in the snow pack between years has caused concern regarding the storage and distribution of water as it relates to maintaining adequate in-stream flows.

Local Initiatives: The number of local initiatives in the upper and middle reaches of the watershed has remained static. These areas are beginning to realize the benefits of local watershed efforts, especially in communication and coordination activities. There are currently ten established groups at a watershed level, with other areas planning to organize in the near future. The following descriptions present the geographic area (from upper to lower watershed), organization, and its interests within the South Platte watershed.

* **Upper South Platte Watershed Protection Association:** This group is concerned with the geographic area from the headwaters of the South Platte to Strontia Springs Reservoir. Steering committee members include Douglas, Jefferson, Park and Teller counties; Denver Water Board; City of Aurora; Centennial Water and Sanitation District; Central Colorado Water Conservancy District; Upper South Platte Water Conservancy District; local Soil Conservation Districts; and Colorado State Land Board. Other organizations also participate in the efforts. Its mission is to protect the ecological health and water quality for all water uses by balancing watershed activities. The Association's current interests include protection of drinking water supplies, mitigation of development and agricultural practices, potential Wild & Scenic River designation, historic mining impacts, and establishing long-term funding mechanisms. The association has developed a strategic watershed plan among other activities through a Section 319 Nonpoint Source grant.

* **Chatfield Watershed Authority:** Members of the Authority include point source dischargers, Douglas and Jefferson counties, and municipalities. The geographic area extends from Strontia Springs Reservoir to Chatfield Reservoir, including Plum and Deer Creeks. The Authority is the designated water quality management agency and is responsible for implementing point and nonpoint source controls to meet the Chatfield Reservoir phosphorus TMAL. Its current interests include mitigation of urban development impacts, determining the nutrient contribution of the upper watershed, and expanding the current funding mechanism. The authority participated in a WQCC informational hearing regarding the Chatfield Reservoir Control Regulation in September 2001. No revisions to the control regulation were made at that time.

* **Cherry Creek Basin Water Quality Authority:** The geographic area for the Authority extends from the headwaters of Cherry Creek to Cherry Creek Reservoir. Members include point-source dischargers, Arapahoe and Douglas counties, municipalities, and members-at-large. The Authority is the designated water quality management agency and is responsible for implementing point and nonpoint source controls to meet the Cherry Creek Reservoir phosphorus TMAL. Its current interests include mitigation of urban development impacts, monitoring to support the revision of the TMAL, and attainment of water quality standards. The WQCC adopted a revised control regulation for Cherry Creek Reservoir in August 2001 that requires reduced phosphorus wasteload allocations, increased nonpoint controls, integration with stormwater requirements, and a watershed education and information program. The Authority started implementing the control regulations revisions in the fall of 2001.

* **Bear Creek Watershed Association:** Members of the Association include point source dischargers; Clear Creek, Jefferson, and Park counties; and municipalities. The geographic

area extends from the headwaters of Bear Creek to Bear Creek Reservoir. The Authority is the designated water quality management agency and is responsible for implementing point and nonpoint source controls to meet the Bear Creek Reservoir phosphorus TMAL. Its' current interests include mitigation of urban development impacts, determining transportation corridor impacts on water quality, and expanding the current funding mechanism. The association participated in a WQCC informational hearing regarding the Bear Creek Reservoir Control Regulation in September 2001. No revisions to the control regulation were made at that time.

* **Upper Clear Creek Watershed Association:** The geographic area for the Association extends from the headwaters of Clear Creek to its confluence with the South Platte. Members include point source dischargers; Clear Creek, Gilpin, Jefferson, Adams, and Denver counties; and twelve municipalities. The Association is the designated water quality management agency and is responsible for implementing point and nonpoint source controls throughout the watershed. Its current interests include mitigation of historic mining and current urban development impacts, determining transportation corridor impacts on water quality, and expanding the current funding mechanism. The association in conjunction with other parties presented its annual progress report to the WQCC in August 2001.

* **James Creek Watershed Initiative:** Stakeholders in the initiative include local, state, and federal agencies and private citizens. The geographic area extends from the headwaters of James Creek to the confluence with Left Hand Creek. Its mission is to engage the community in protecting the quality of drinking water supplies and the forest ecosystems surrounding it. Current interests include mitigation of historic mining and current forest access roads, and expansion of the current funding mechanism. The initiative is in it's first year of a Section 319 Nonpoint Source grant to address excessive turbidity in Jamestown's source water.

* **Boulder Creek Watershed Initiative:** This initiative is concerned with the geographic area from the headwaters of Boulder Creek through the City of Boulder. The stakeholders include local, state, and federal agencies and private citizens. Its mission is to educate the community, increase community involvement; increase awareness and communication between interests; conduct educational seminars and public forums; and distribute newsletters to increase understanding of and participation in watershed management decisions. Its current interests include mitigation of urban development impacts and expansion of the current funding mechanism. The initiative invited the WQCD to present the standards and classifications and current water quality of Boulder Creek at a regular meeting in September 2001.

* **Big Dry Creek Watershed Association:** The association is made up of the cities of Broomfield, Northglenn, and Westminster; Jefferson and Weld counties; Department of Energy (Rocky Flats); irrigation ditch companies; and private citizens. It is concerned with the geographic area from the headwaters of Big Dry Creek to the confluence with the South Platte. Its purpose is to develop a sound scientific understanding of water quality and flow, aquatic life, and habitat conditions. This information will be used in making environmentally responsible decisions regarding land and stream uses and improving and protecting Big Dry

Creek. Current projects involve mitigation of urban development and agricultural impacts; and expanding the current funding mechanism. The association is currently identifying and prioritizing its goals through an informal survey process.

* **Big Thompson Watershed Forum:** The geographic area of concern to this group extends from the headwaters of the Little Thompson and Big Thompson Rivers to the their confluence with the South Platte. Stakeholders in the forum include the cities of Fort Collins, Greeley, and Loveland; Larimer and Weld counties; Northern Colorado Water Conservancy District; North Front Range Water Quality Planning Association; and private citizens. Its' mission is to protect water quality throughout the watershed by accurately assessing conditions and developing cooperative water quality protection plans. Its current interests include mitigation of impacts from urban development, forest fires near drinking water supplies, dam retrofitting of drinking water storage facilities, and expanding the current funding mechanism. The forum has taken an active interest in increasing the public involvement component in the Colorado Source Water Assessment and Protection Program.

* **Cache la Poudre Watershed Stakeholders:** The interested stakeholders include the Friends of the Poudre; cities of Fort Collins and Greeley; Larimer and Weld counties; Northern Colorado Water Conservancy District; and North Front Range Water Quality Planning Association. The geographic area of concern is from the headwaters of the mainstem and North Fork of the Cache la Poudre to the confluence with the South Platte River. This group originally focused on the upper watershed and its use as a source water area. The stakeholders are continuing to assess the need to formally organize a comprehensive watershed effort by identifying and determining the interest of potential stakeholders.

E. Cost/Benefit Assessment

Colorado's water quality programs continue to achieve goals of the Clean Water Act and improve instream water quality throughout the State. These improvements do not occur without an associated cost. These costs/benefits are difficult to quantify. There are several examples of costs/benefits; however, that may be qualified. The following are two such examples of a nonpoint source control project and a point source control project.

The North Fork River Improvement Association conducted a Stream Restoration Demonstration Project on the North Fork of the Gunnison River. The North Fork has been impacted by erosion and sedimentation due to various anthropogenic impacts over the past 100 years. One of these impacts is the annual bulldozing of gravel bars to provide water diversions into irrigation ditches. The project demonstrated that permanent concrete diversion structures could reduce sediment loads and decrease down cutting of the streambed. Stream bank erosion has also been decreased in the demonstration reach by implementation of willow plantings and other stream bank stabilization techniques. The successful project was originally funded by a variety of sources, and is continued and monitored through a 319 Nonpoint Source Program grant. In this case, funding stream restoration directly resulted in an improvement in water quality.

Antelope Creek is a tributary to the Gunnison River. The aquatic life of Antelope Creek was impacted due to a poor wastewater treatment plant discharging high quantities of ammonia. After much collaboration with the State, the small community's wastewater system was connected to the City of Gunnison's wastewater treatment plant. Due to the removal of the discharge from Antelope Creek, improvements were observed in the Creek including reduced ammonia concentrations. Since the connection of the system to the Gunnison plant, the Creek once with impacted aquatic life is home to white suckers, speckled dace and brown trout. In this case, funding the piping system to consolidate the discharges directly resulted in an improvement in water quality.

F. Special State Concerns

The State of Colorado has experienced a tremendous amount of growth in recent years. The State's population rose from 3.3 to 4.3 million from 1990 to 2000. This thirty percent growth rate has greatly increased the workload in several aspects of Colorado's water quality program. The increase in the number of new wastewater and water treatment facilities, and expansions of existing facilities has put additional pressure on the State's already backlogged permits issuance process.

In order to address the ever-increasing backlog of discharge permits, Colorado implemented a backlog reduction plan in March 2000. The plan will take three years to implement fully. Colorado's goal is to reduce the major permit backlog to ten percent by December 2002 or sooner, and the minor permit backlog to ten percent by December 2005 or sooner. Colorado is currently on plan to meet these goals.

Colorado has exceeded the six-month target of issuing at least twelve major permits and twenty-eight minor permits during all three periods since the backlog reduction plan was implemented. As of June 30, 2001, there were 103 major permits, of which 32 were backlogged. In addition, there were 300 minor permits, of which 99 were backlogged. The number of backlogged major permits continues to decline; however, the minor permit backlog increased slightly during the third six-month period from 92 to 99 minor permits due to an unusually large number of minor permits that expired during the period spanning January to June of 2001.

G. Ecoregions

Ecoregions are classifications of geographic areas based on natural patterns of geographic characteristics including soil type, land surface form, potential natural vegetation and land use. Table 12, on the next page, summarizes the Ecoregions of Colorado, and in addition there are tables in each basin section in Part III describing specific water basins describe the ecoregions in each basin.

EPA’s Science Advisory Board has suggested that certain aspects of a quality characterization and management program may benefit from an ecoregions approach. Studies conducted by the WQCD did not identify any significant correlations between ecoregions and observed water

quality in the state. The WQCD therefore is not using ecoregions as a water quality characterization tool at this time.

Table 12: Ecoregions of Colorado

Ecoregion		Land Surface Form [1]	Potential Natural Vegetation[2]	Land Use[3]
18	Wyoming Basin	Plains with hills or low mountains	Sagebrush steppe, wheatgrass/needlegrass shrub-steppe, saltbush/greasewood, juniper/pinyon woodland	Desert shrubland grazed, some irrigated agriculture
20	Colorado Plateaus	Tablelands with considerable to very high relief, plains with high mountains	Saltbush/greasewood, blackbush, juniper/ pinyon woodland, Great Basin sagebrush	Open woodland grazed, desert shrubland grazed, some irrigated agriculture
21	Southern Rockies	High mountains and tablelands with high relief	Western spruce/fir, Douglas-fir, pine/ Douglas-fir, southwestern spruce/fir, alpine meadows (bentgrass, sedge, fescue, bluegrass)	Forest and woodland grazed
22	Arizona/New Mexico Plateau	Tablelands with considerable to high relief and plains with low mountains	Grama/galleta steppe, Great Basin sagebrush, saltbush/greasewood	Subhumid grassland and semiarid grazing land, desert shrubland grazed
25	Western High Plains	Smooth to irregular plains	Grama/buffalo grass	Cropland, cropland with grazing land, irrigated agriculture
26	Southwestern Tablelands	Tablelands with moderate to considerable relief	Grama/buffalo grass, sandsage/bluestem prairie, mesquite/buffalo grass, bluestem grama prairie	Subhumid grassland and semiarid grazing land, some cropland with grazing land

[1] Hammond, E.H., 1970. "Classes of land-surface form," in *The national atlas of the United States of America,* USGS, Washington, D.C., Plates 62-63.

[2] Kuchler, A.W., 1970. "Potential natural vegetation," in *The national atlas of the United States of America*, USGS, Washington, D.C., Plates 89-91.

[3] Anderson, J.R., 1970. "Major land uses," *The national atlas of the United States of America,* USGS, Washington, D.C., Plates 158-159.

Source: Adapted from "Ecoregions of the South Central States," by James M. Omernik and Alisa L. Gallant, EPA, EPA/600/D-87/315,1987.