



Upper Gunnison River Water Conservancy District



Strategic Management Plan

Including
Discussion of Water Management Issues
Inventory of Water Resources in the District
Legal, Institutional and Environmental Setting

Revised April 15, 2013

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INTRODUCTION

The purpose of this Strategic Management Plan is to identify water resource issues in the Upper Gunnison River Basin, evaluate the Upper Gunnison River Water Conservancy District's options for addressing those issues and to describe the options selected for action. Agricultural, municipal, domestic, commercial, recreational, and environmental water needs are considered. Another objective in undertaking this planning process is to assist the Board of Directors to develop long-term direction for the Conservancy District, and to identify measures that the Board will implement in future years.



Gunnison River

The plan is a dynamic document that the Board of Directors will review annually, and update as necessary to reflect changing conditions in the District and its water environment. In addition to providing guidance for the Conservancy District Staff in executing Board policies, the plan is intended to serve as an accessible informational tool for interested parties regarding the activities of the Conservancy District's Board and staff. Public comments on the plan are encouraged, particularly during the public budget process conducted by the Board in September, October and November each year.

Goals have been developed by the Board based upon the Conservancy District's statutory authority, Mission Statement and Values Statements. They are intended to define the Conservancy District's course of action in meeting the identified water needs. This edition of the plan has been reorganized to reflect correlation of the Conservancy District's activities with specific goals. The goals are revised annually by the Board as part of its budget process and serve as the basis for Board's expenditure of Conservancy District revenues.

CONSERVANCY DISTRICT MISSION AND VALUES

Adopted by the Board of Directors May 21, 2012

Mission Statement.

To be an active leader in all issues affecting the water resources
of the Upper Gunnison River Basin.

This mission statement reflects the following values held by the Conservancy District's Board of Directors.

Values Statements.

The Board opposes any new transfers of water from the headwaters of the Gunnison River to other basins because such transfers would interfere with existing beneficial uses of water, damage economic stability, and reduce environmental quality within the Conservancy District.

The Board supports the use of wise land use policies by local governments to protect the water resources of the basin.

The Board regards irrigation, flood control, ecological needs, recreational opportunities, and aesthetic values to be important matters for the Conservancy District and the public it serves and advocates achieving a balance among competing uses of water within the Conservancy District to avoid conflict among them.

The Board believes that managing and funding an effective water quality monitoring program in order to maintain high water quality standards is a necessary part of a healthy economy and environment in the Conservancy District.

The Board is fully aware of the preponderance of scientific evidence suggesting that warmer future temperatures will have a significant effect in the Conservancy District on precipitation falling as snow, evaporative losses, and timing of spring peak runoff; it is therefore necessary to adapt the Board's planning assumptions to such changed conditions.

The Board strongly supports irrigated agriculture in the Conservancy District because of its economic contribution to the community and because of the cultural and social values of farming and ranching.

EXECUTIVE SUMMARY

Section 1: Geography, Population, and Economy of the Conservancy District.

The Upper Gunnison River Water Conservancy District is located in south-central Colorado in the headwaters of the Gunnison River Basin. The Conservancy District includes most of Gunnison County, and a portion of Hinsdale and Saguache Counties. The Conservancy District includes the headwaters of the Gunnison River, which is formed where the Taylor and East Rivers combine at Almont, approximately nine miles northeast of the City of Gunnison. Approximately 82% of the lands located within the Conservancy District are federal public lands administered by the U. S. D. A. Forest Service, Bureau of Land Management, and National Park Service.

Based on 2010 United States Census data, the total population of the Conservancy District (including seasonal residents) is estimated to be 19,416, a 1.91% increase from the 2000 Census.



Agriculture accounts for over 97% of the current water diversions in the Conservancy District, and is a significant producer of economic revenue. Although some hay is sold, over 75% of the hay

grown in the county is used by ranchers for winter feeding of their own livestock. Over 90% of the hay production in the county is dependent upon irrigation. The total

amount of irrigated acreage (including both irrigated hay and pasture) in the Conservancy District is 66,486 acres.



The Gunnison River drainage is noted for its fishing, boating, skiing, hunting, camping, scenery, and general recreational uses. Popular water-based recreation activities include rafting, kayaking, boating, stream and reservoir fishing and skiing. All of those activities contribute significantly to the basin's economy.

Section 2: Description of the Conservancy District.

The Upper Gunnison River Water Conservancy District was established in 1959 by a vote of its taxpayers pursuant to the *Water Conservancy Act*. The Colorado General Assembly authorized conservancy districts “to provide for the conservation of the water resources of the state of Colorado and for the greatest beneficial use of water within this state.” The Conservancy District’s enabling documents provide that it was created to conserve the waters within the District, defend and protect those waters and the water rights and interests of the owners thereof. Those documents also provide for a number of means and methods to accomplish those purposes.

The Conservancy District is governed by a board of eleven directors, appointed by the District Judge from eight geographical divisions. The judge is required to appoint directors with backgrounds reflecting the agricultural, municipal, industrial, and other interests in the beneficial use of water within the District. A Director must reside and own real property within his or her Division, and must be knowledgeable in water matters.

Based upon the requirements of the Local Government Budget Law and procedures recommended by the Colorado Department of Local Affairs, the Board adopted a budget schedule and procedure that commences with the July Board of Directors meeting and concludes with the December meeting each year.

The major accomplishments of the Conservancy District include the 1975 Taylor Park Reservoir Operation and Storage Exchange Agreement, the Taylor Park Reservoir second fill decree, opposing transbasin diversion, specifically in the Union Park Reservoir project litigation from 1986 to 2000, the 2000 Aspinall Subordination Agreement, the Aspinall Unit contract plan for augmentation, Black Canyon of the Gunnison National Park federal reserved water right settlement, Recreational In-Channel Diversion water right adjudication, the Meridian Lake Reservoir Project, and the Lake San Cristobal Project.

The mission of the Conservancy District is to be an active leader in legal, policy, and management issues affecting the water resources of the Upper Gunnison River Basin, protecting the in-basin beneficial uses and maintaining high quality standards for those water resources which reflects specific values held by the Board of Directors.

Section 3: Management Plan: Goals, Objectives, and Current Action Steps for the Conservancy District.

Eight goals are numbered for identification, but all goals have equal priority unless specifically noted otherwise. The means to accomplish the Board's goals are divided into two categories: Action Items and Ongoing Tasks. Action Items are specific activities that are intended to be completed, or to have substantial progress accomplished, within the year for which they are identified. Ongoing Tasks are activities that the Conservancy District staff

is engaged in on a continuing basis from year to year. The Action Items and Ongoing Tasks have been assigned a priority as follows: Priority 1 - Imperative in achieving the principles outlined in the Mission Statement; Priority 2 - Strongly supports achievement of the Mission Statement principles, but not imperative to the mission; Priority 3 - Supports achievement of the Mission Statement, but to be done as time and budget allow.

Section 4: Discussion of Water Management Issues and Needs.

Transbasin Diversions. The Conservancy District has opposed transbasin diversion projects since it was created in 1959. The Board continues to be concerned that attempts will be made by out-of-basin interests to divert water from the Upper Gunnison River Basin. The Board believes that out-of-basin diversions, whether accomplished by a new appropriation, contract with the Bureau of Reclamation or acquisition of existing water rights, pose a threat to the economy and the environment of the Basin, particularly in the absence of mitigation. A transbasin diversion represents a fully consumptive loss to the Basin that could have a severely detrimental impact on the entire Basin, regardless of the location of the project.

placed a call on the Gunnison River, which severely limited existing water uses in the Upper Gunnison Basin. Water uses that may suffer the impact of future downstream calls include irrigation, municipal, domestic, commercial and industrial uses. The Conservancy District has estimated the number of water rights subject to downstream senior calls and the extent of their curtailments.



East Portal of the Gunnison Tunnel

Downstream Senior Calls. For many years, the threat of calls from senior water rights whose points of diversion are downstream of Blue Mesa Reservoir has concerned water users in the Upper Gunnison Basin. In 2002 and in 2003, the Gunnison Tunnel

Physical Availability of Water. Local water users, and water commissioners, as well as several studies by the Bureau of

Reclamation and others indicate that irrigation water shortages have historically occurred on many tributaries of the Gunnison River. In 2002, the State Engineer declared the entire Upper Gunnison Basin to be over-appropriated. This placed additional restrictions and requirements on development of water supplies to meet new demands. The outcome of this declaration for most domestic and commercial users who seek to develop water supplies in the future, is that they will need to have a plan for augmentation in place to address both internal and basin-wide calls, and they will need to have stored water available for use as replacement water under the augmentation plan. In order to minimize shortages, sufficient water supplies need to be physically available in individual sub-basins for irrigation, municipal, domestic, commercial, and industrial purposes. The Conservancy District has made estimates of shortages that could occur in individual sub-basins of the District.

Water Quality. Water quality planning and management in Colorado has evolved over the last thirty years, largely in response to federal mandates. Current efforts are focused on watershed protection, including protection of human health (Safe Drinking Water Act) and aquatic ecosystems (Clean Water Act). Colorado's approach is based on implementation of a water quality management cycle, an iterative process where planning and management of water quality is accomplished by repeating the major steps in a prescribed sequence. The Conservancy District is active in two elements of Colorado's clean water program: ambient water quality monitoring and

water quality assessment and standards development for Upper Gunnison River Basin streams and water bodies.

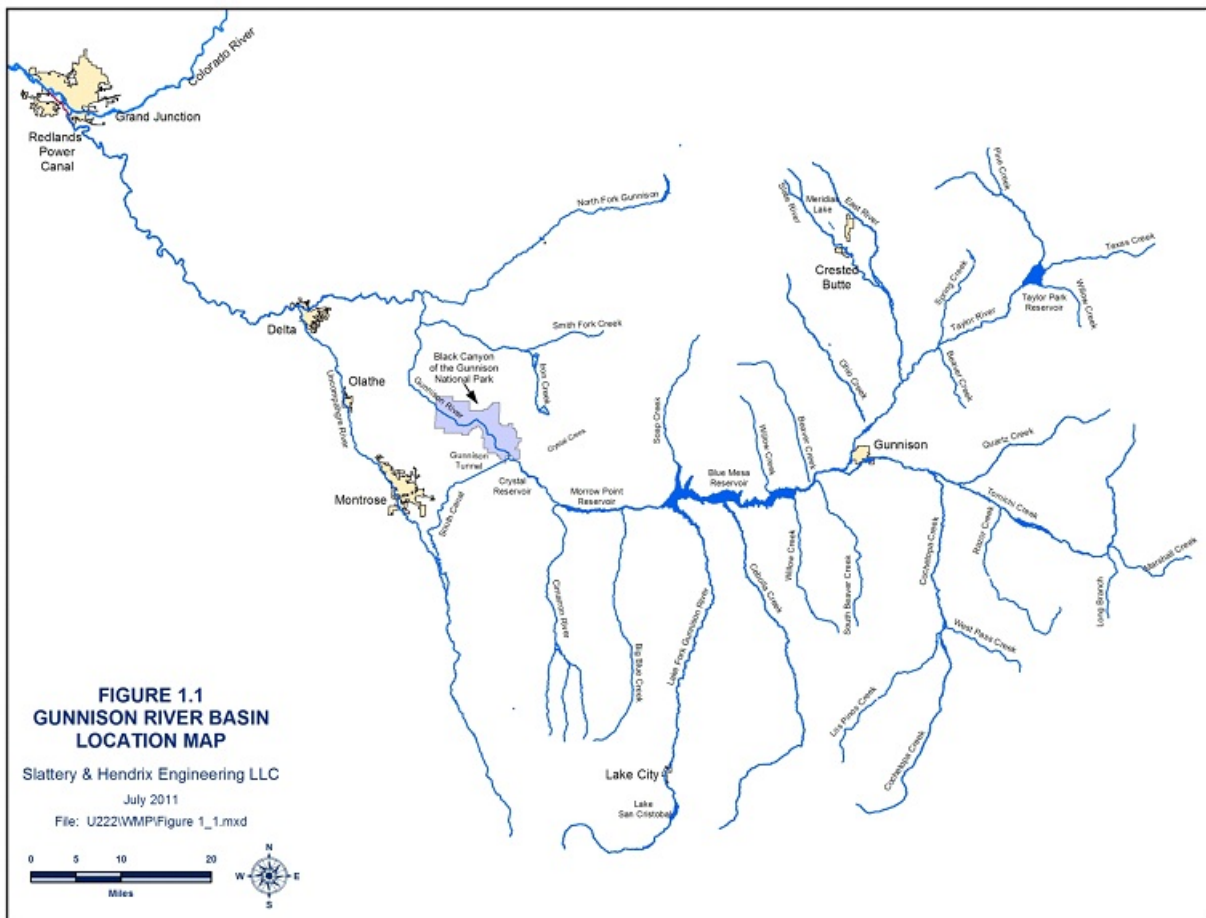
Water for Recreation. Water-based recreation is a significant contributor to the Conservancy District's economy. Sufficient water supplies need to be physically available to accomplish recreational purposes in the District, and to permit recreational facilities to operate as intended.

Water for Environmental Purposes. In July 2000, the Conservancy District completed an estimate of the amount of shortages of water for instream flow purposes historically experienced in several sub-basins.. The analysis was carried out using the water supply that was available for each year from 1976 – 1990. A summary of the instream flow shortages is presented in Table 4.8. No evaluation has yet been made of amounts of future instream shortages that might occur.



Slate River

SECTION 1. GEOGRAPHY, POPULATION, AND ECONOMY OF THE CONSERVANCY DISTRICT.



1.1 GEOGRAPHY.

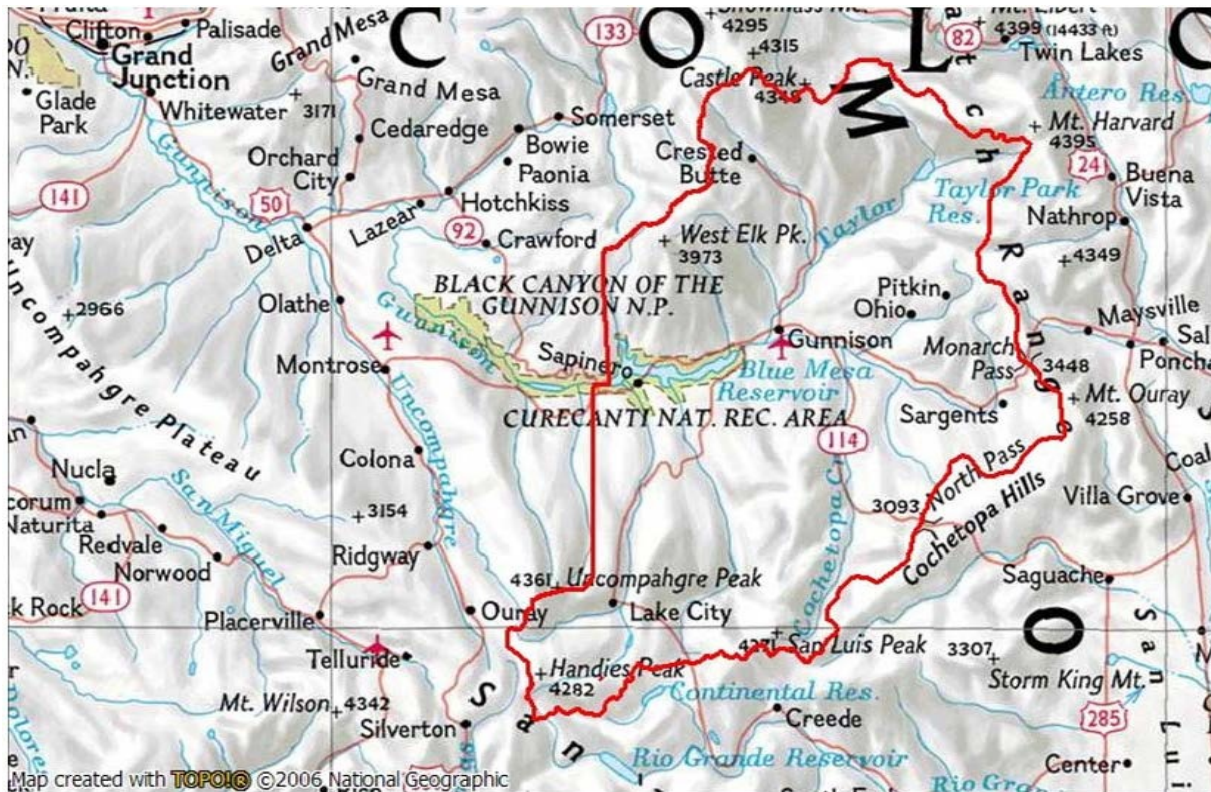
The Upper Gunnison River Water Conservancy District is located in south-central Colorado in the headwaters of the Gunnison River Basin.

The Conservancy District boundaries encompass the portion of the Upper Gunnison River watershed that is tributary to Blue Mesa Reservoir, an area of approximately 3,450 square miles. The Conservancy District includes most of Gunnison County, and a portion of Hinsdale and Saguache Counties. The City of Gunnison, Towns of Crested Butte, Mount Crested Butte, Lake City and Pitkin are located in the Conservancy District. The perimeters of the Conservancy District are mountainous. The Conservancy District's eastern and southern boundaries lie on the

Continental Divide. The highest elevation in the District is over 14,000 feet.

The landscape of the Conservancy District consists of groves of aspen as well as fir, pine, and spruce that occupy the higher elevations; dry grass, sagebrush, and juniper which dominate the hillsides; and irrigated hay meadows and pastures that occupy the valley bottoms. Irrigation is accomplished from streams which have their origins in the surrounding mountains.

The Conservancy District includes the headwaters of the Gunnison River, which is formed where the Taylor and East Rivers combine at Almont, approximately nine miles northeast of the City of Gunnison. From this location, the Gunnison River



flows generally south and west to the point where it enters Blue Mesa Reservoir, which is the uppermost reservoir in a series of three reservoirs comprising the Wayne N. Aspinall Unit of the Colorado River Storage Project. Major tributaries to the Gunnison River that lie within the Conservancy District include Ohio Creek, East River, Taylor River, Tomichi Creek, Quartz Creek, Cochetopa Creek, Cebolla Creek, and Lake Fork of the Gunnison River. The Gunnison River flows out of the Conservancy District at the District's western boundary which is located immediately downstream of Blue Mesa Dam. The lowest point in the District occurs just downstream of Blue Mesa Dam at an elevation of 7,160 feet. See Figure 1.1, above.

Approximately 82% of the lands located within the Conservancy District are federal public lands administered by the U. S. D. A. Forest Service, Bureau of Land Management, and National Park Service. Forest Service and Bureau of Land Management lands are used for livestock grazing, recreation, and wildlife habitat, and to a lesser degree for mining and production of timber.

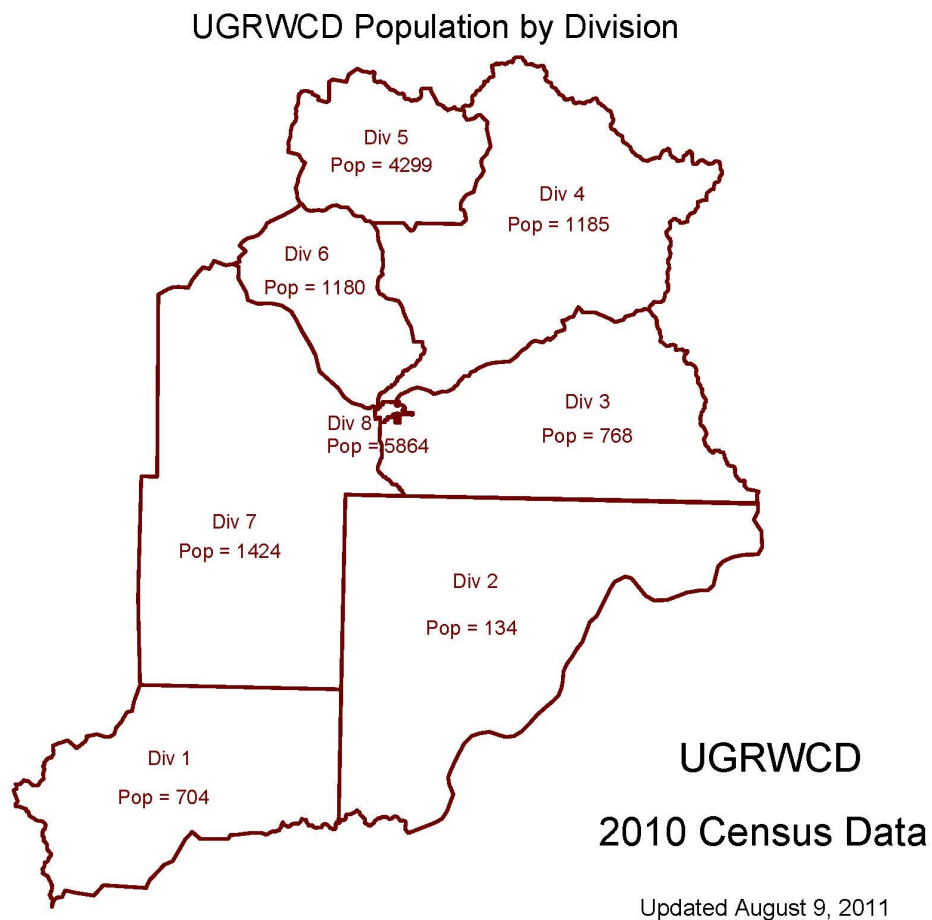
Privately owned lands are concentrated in the valley bottoms of the Conservancy District, although private in-holdings at higher elevations also exist. The most widespread use of private lands is for production of irrigated hay, pasture, and livestock. Private lands are also used extensively for municipal, residential, recreational, and conservation purposes. There is very little manufacturing or industrial activity in the District.



1.2 POPULATION.

The population of the Conservancy District, and of each Division, based upon the 2010 United States Census is shown on the map below. (Additional discussion of Divisions within the District is contained in Section 2 beginning at page 18.) Including an estimated seasonal population of 3,886 persons distributed throughout the District, the total population of the District including seasonal residents (excluding short term

residents in motels, hotels, condominiums, etc.) in 2010 is estimated to be 19,444 persons. The Colorado State Demography Office projects an annual growth rate of slightly more than one percent per year for Gunnison and Hinsdale Counties through 2035, resulting in populations of 20,935 and 1,378, respectively, in that year.



1.3 ECONOMY.

1.3.1 Agriculture.



Agriculture accounts for over 97% of the current water diversions in the Conservancy District, and is a significant producer of economic revenue. According to the 2007 USDA Census of Agriculture for Gunnison County, cattle and calves totaling 15,350 animals were sold by 111 ranches. The agricultural census indicates that total lands in ranches (dry land and irrigated) in the county in 2007 equaled 173,679 acres.

Although some hay is sold, over 75% of the hay grown in the county is used by ranchers for winter feeding of their own livestock. The agricultural census data indicates that over 90% of the hay production in the county is dependent upon irrigation. Since



hay and pasture production are so dependent on irrigation, there would be no practical way to continue year-round livestock production in the county if agricultural water supplies were to become significantly limited.

Similar agricultural statistics exist for Hinsdale and Saguache Counties. Estimates have not been broken out, however, for the parts of those counties which lie within the Conservancy District.

Hydrobase, a CDSS database supported by the Division of Water Resources and the Colorado Water Conservation Board, contains an estimate of irrigated acreage for the basin. The Division of Water Resources current estimate of the total amount of irrigated acreage (including both irrigated hay and pasture) in the Conservancy District is 66,486 acres (Helton & Williamsen, P.C., 2005). This estimate was prepared for the 2003 irrigation season based upon an analysis of aerial photography.

1.3.2 Water Based Recreation.

The Gunnison River drainage is noted for its fishing, boating, skiing, hunting, camping, scenery, and general recreational uses. Popular water-based recreation activities include rafting, kayaking, boating, stream and reservoir fishing and skiing.

The rafting industry contributes significantly to the basin's economy, with

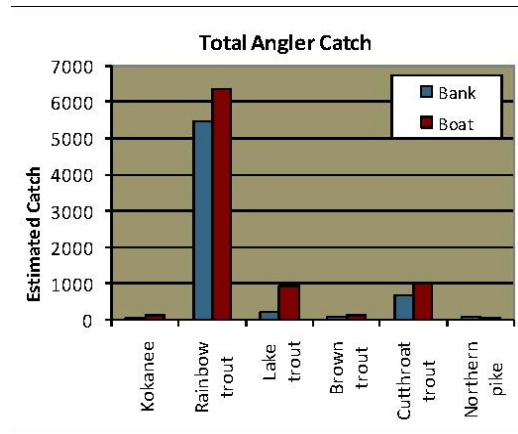
the Taylor and Gunnison Rivers being the primary focus of that activity. Commercial user days, defined as a paying guest on a river for any part of a day, in the basin during the five-year period 2005-2009 average 14,775 user days per year. In 2009, rafting brought in approximately \$1,960,000 in direct expenditures resulting in over \$5,000,000 in economic impact. (Colorado River Outfitters' Association, 2009.)



Fishing continues to grow in popularity in the basin. According to Colorado Division of Wildlife creel survey data for the Taylor River and Lottis Creek, more than 8,000 individuals visited these areas over a two-month period in 1999. (Colorado Division of Wildlife, 2000.)



Taylor Park Reservoir also provides an excellent fishing experience in picturesque Taylor Park and is a popular destination for fishermen.



The graph above reflects the results of angler creel survey data from July and August, 1998 showing total estimated angler catch by species. The table below, from the same survey, shows angler catch per hour by species and average length of harvested fish. (Colorado Division of Wildlife.)

<u>Species</u>	<u>Catch per hour</u>	<u>Size (inches)</u>
Kokanee	0.002	12.9
Rainbow trout	0.236	12.4
Lake Trout	0.023	16.2
Brown trout	0.004	13.1
Cutthroat trout	0.033	13.6
Northern pike	0.002	23.8

During the period 1977 through 2008, Curecanti National Recreation Area has averaged approximately one million annual recreational visitors per year. (National Park Service Public Use Statistics Office, 2010.) For 2008, the National Park Service estimates that visitor spending at Curecanti was \$42,758,000 (\$37,467,000 by non-local visitors). In addition, park payroll for that period totaled \$2,955,000 in salary and benefits. (Stynes, *National Park Visitor Spending and Payroll Impacts 2008*.) Fishing is the primary draw for most recreationists, but visitors engage in other water-based activities such as boating, jet skiing, sailboarding, and waterskiing as well.



Curecanti National Recreation Area

Crested Butte Mountain Resort averaged 372,298 skier visits per year over the ten-year period from the 1999-2000 ski season through the 2008-2009 ski season. The resort utilizes snowmaking on 300 acres of terrain. (Colorado Ski Country USA, 2010.) The resort holds decreed water rights in the East River for snowmaking that divert an average of 196 acre-feet per year, primarily in November and December. (HydroBase, 2010.)



SECTION 2. DESCRIPTION OF THE CONSERVANCY DISTRICT.



Conservancy District Board meets with Bureau of Reclamation officials - 1963

2.1 ORGANIZATION.

The Upper Gunnison River Water Conservancy District was established in 1959 by a vote of its taxpayers pursuant to the *Water Conservancy Act* (§ 37-45-101 - § 37-45-153, Colorado Revised Statutes). The Colorado General Assembly authorized conservancy districts “to provide for the conservation of the water resources of the state of Colorado and for the greatest beneficial use of water within this state.”

The Conservancy District’s enabling instruments provide that it was created to accomplish the following objectives and purposes:

To conserve the waters, including the sub-surface waters, having their source and origin within the boundaries of the proposed District, in order that the greatest possible use thereof may be made within said District, for irrigation, domestic, municipal, industrial, mining and all other beneficial purposes.

By whatever lawful means may be necessary, convenient or required, to defend and to protect the waters having their source and origin within the boundaries of the proposed District, from and against diminution or depletion by unlawful or unwarranted claims or demands thereon by any area or water user or users.

To protect and defend the rights and interests of the owners of ditches, canals, reservoirs and other water rights and water use facilities for irrigation, domestic, municipal, industrial, mining and other beneficial purposes, in the lawful and complete enjoyment and exercise of such rights and facilities.

In furtherance of its principal objects and purposes, the Conservancy District was authorized to perform all of the following acts:

To take surveys and to conduct investigations to determine the best and most beneficial and practicable manner, means and methods of utilizing the stream flow of the several streams within the District and the sub-surface waters therein.

To make filings on stream flow and sub-surface waters within the District; to initiate appropriations for the use and benefit of users of water for all beneficial purposes; and to do and perform any and all acts and things necessary or advisable to secure and insure an adequate supply of water,

within the boundaries of the District and within the limits of available water supplies, for present and future use for all beneficial purposes.

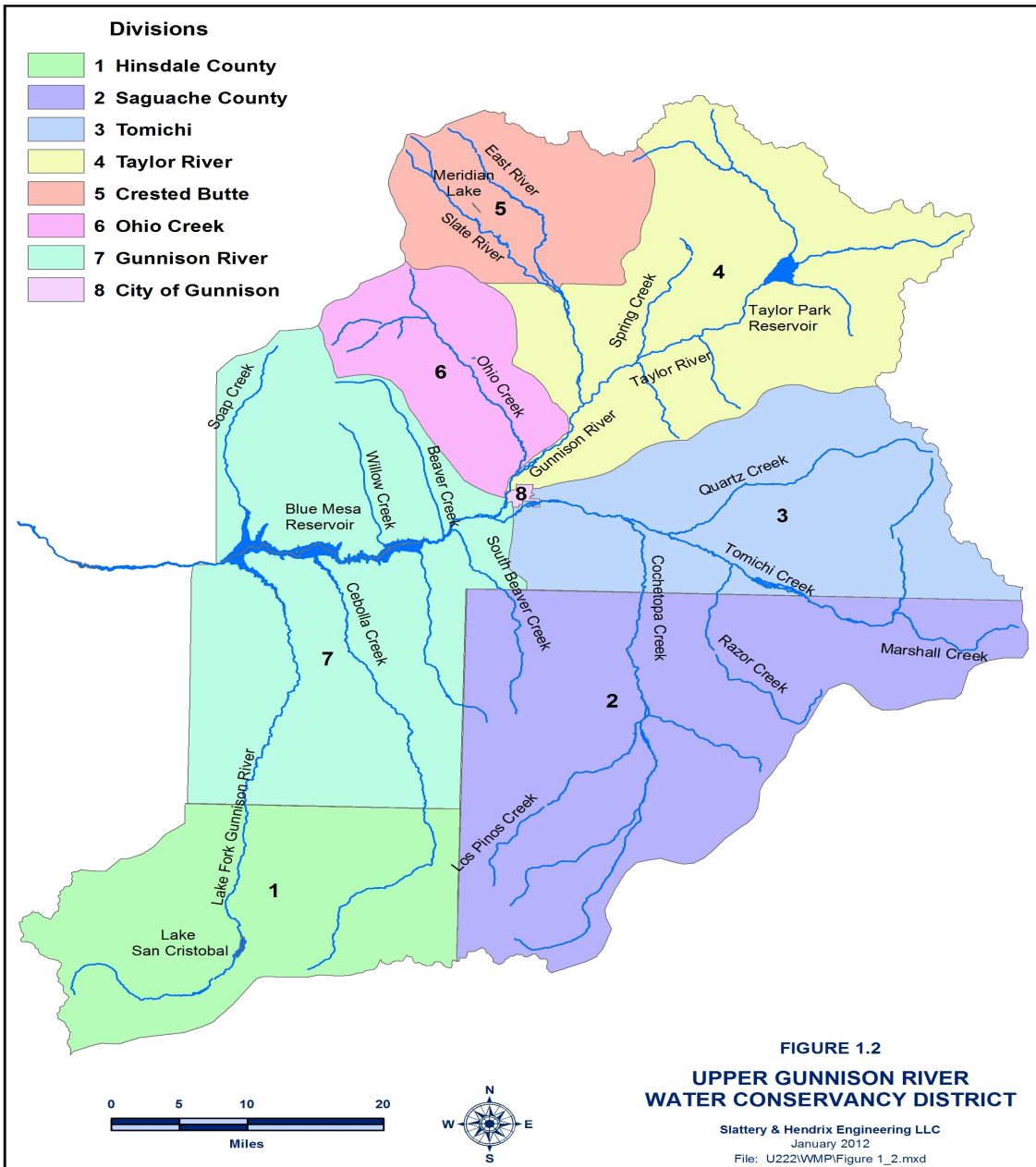
In the name of the District and on its behalf, or in the name and on behalf of individual water users within its boundaries to initiate, prosecute and participate in adjudication proceedings, having to do with priorities of right to the use of water for any and all beneficial purposes, and in like manner, to initiate and to appear and to participate in any and all actions at law or suits in equity which shall or may involve, directly or indirectly, rights to the use of water for all beneficial purposes, whether such rights be owned by the District, or by any individual or corporate water user or users within the boundaries of the District, or in any manner involving or affecting the powers, rights or functions of the District, as the same are defined and prescribed in and by Article 45 of Title 37, Colorado Revised Statutes.

2.2 COMPOSITION OF THE BOARD OF DIRECTORS.

The Conservancy District is governed by a board of eleven directors, appointed by the District Judge from eight geographical divisions.¹ Six of the divisions are defined by counties (one each for Hinsdale and Saguache Counties), and river basins. The other two divisions are the City of Gunnison and the Crested Butte area. The judge is required to appoint directors with backgrounds reflecting the agricultural, municipal, industrial, and other interests in the beneficial use of water within the Conservancy District. A Director must reside and own real property within his or her division, and must be knowledgeable in water matters. The current board is composed of the following individuals, whose terms expire in June of the year shown:

Division 1	Hinsdale County	Paul Hudgeons	2015
Division 2	Saguache County	Rebie Hazard	2015
Division 3	Tomichi	Gary Hausler	2015
Division 4	Taylor River	Ken Spann	2016
Division 5	Crested Butte	Steve Glazer	2015
Division 5	Crested Butte	Matt Peacock	2013
Division 6	Ohio Creek	Brett Redden	2014
Division 7	Gunnison River	Steve Schechter	2014
Division 8	City of Gunnison	Bill Nesbitt	2016
Division 8	City of Gunnison	George Sibley	2014
Division 8	City of Gunnison	Vicki Spencer	2014

¹ Ten percent of the registered electors of a Division may petition the court seeking election of the director from that Division in lieu of appointment by the judge.



2.3 THE BUDGET PROCESS.

Based upon the requirements of the Local Government Budget Law and procedures recommended by the Colorado Department of Local Affairs, the Board adopted the following budget schedule and procedure on May 18, 2009.

July board meeting: Board appoints a budget officer and reviews current year's goals and activities; preliminary discussion of next year's goals and activities.

August board meeting: Budget officer presents draft of goals and activities for the next year to the board for discussion, prioritizing, and preliminary approval. Budget officer advises board of Assessors' estimates of assessed and actual values.

September board meeting: Initial draft budget presented to the board by budget officer (statutory deadline is October 15), based on August discussion. Board discusses draft budget and directs staff to make any agreed-upon changes. (If needed, board conducts budget work session(s) before the October board meeting to complete this process.)

October board meeting: Review of revised budget, including September changes, and draft budget message. Final opportunity for board suggestions and input, subject only to public hearing responses. Proposed revisions must be based upon the budget officer's draft, as reviewed at the September meeting. From this revised budget, the Notice of Budget is prepared and published and public hearing on the budget noticed for the November Board meeting.

November board meeting: Board conducts public hearing on the proposed budget approved at the October board meeting. Following the public hearing, the board may revise the proposed budget, but only in response to public comment. Board directs budget officer to prepare final budget and budget message, subject to final assessed valuations.

December board meeting: Board adopts the budget and sets the mill levy for the next year based upon receipt of final assessed valuations from the three counties by the statutory deadline (December 10).

Mill levy certified to the County Commissioners by the statutory deadline (December 15).

The Conservancy District's current mill levy is 1.77 mills.

2.4 MAJOR ACCOMPLISHMENTS OF THE CONSERVANCY.

2.4.1 1975 Taylor Park Reservoir Operation and Storage Exchange Agreement.

With the completion of Blue Mesa Reservoir in 1965, an opportunity was created for Taylor Park Reservoir to be operated not only for irrigation of the Uncompahgre Valley, but also to accomplish fishery, recreation, irrigation, and flood control purposes in the Upper Gunnison Basin. In 1975, the Conservancy District entered into the Taylor Park Reservoir Operation and Storage Exchange Agreement with the Colorado River Water Conservation District, the Uncompahgre Valley Water Users Association, and the U.S. Bureau of Reclamation. The results of the Agreement are to stabilize flows on the Taylor and Gunnison Rivers, to facilitate the management and exchange of water between Taylor Park Reservoir and Blue Mesa Reservoir, to provide flood control, to supplement irrigation uses, and to optimize fishery and recreation conditions in and below the reservoir. Additional information about the Agreement is provided in Appendix B, Section 4.3, beginning at page 100.



Taylor Park Dam and Reservoir - USBR photo

2.4.2 Taylor Park Reservoir Second Fill Decree.

This decree, also referred to as the Taylor Park Reservoir Refill Decree, was obtained by the Conservancy District in 1990 (Case No. 86CW203). The total amount of the water right decreed to the reservoir is 106,230 acre-feet. Of the total, 44,700 acre-feet is decreed absolute and 61,530 feet conditional. While the water is impounded in Taylor Park Reservoir, it is decreed for use for recreational purposes, including fishery and wildlife. The decree further provides that the impounded water shall be released at times and in quantities calculated to enhance the fishery and recreational uses of the Taylor and Gunnison Rivers above Blue Mesa Reservoir. Of the total amount of the decree, 19,200 acre-feet (13,777 acre-feet absolute and 5,423 conditional) has the additional use for increased and supplemental irrigation within the Conservancy District. Additional information about Taylor Park Reservoir and the Refill Decree is provided in Appendix A, Section 5.1, beginning at page 74, and in Appendix B, Sections 4 and 5, beginning at page 99.

2.4.3 Opposing Transbasin Diversion - Union Park Reservoir Litigation.

In December 1982, and in December 1986, the Natural Energy Resources Company (NECO) applied for water rights for components of the Union Park Reservoir Project. In December 1988, NECO'S successor, Arapahoe County, submitted a

revised water rights application for the project. The project would have included an extensive diversion and water collection system in the headwaters of the Taylor and East River drainages, a 900,000 acre-foot reservoir located south of Taylor Park Reservoir in Union Park, and a system of tunnels to convey up to 100,000 acre-feet of stored water annually to the South Platte basin.

Following a five-week trial held in June 1991, the water court ruled that not more than 20,000 acre-feet of unappropriated water on an average annual basis is available for the Union Park Reservoir Project. Arapahoe County made a determination that the amount is insufficient to build an economically feasible project, and appealed the decision to the Colorado Supreme Court. On February 21, 1995 the Supreme Court remanded the case to the water court for an additional trial on water availability. On April 6, 1998, based on new evidence presented during the second trial, the water court found that not more than 15,000 acre-feet of unappropriated water on an average annual basis is available to the Union Park Reservoir Project from the points of diversion claimed in the case.

Since Arapahoe County had previously acknowledged that 20,000 acre-feet of unappropriated water available on an average annual basis would be insufficient for its project, the water court dismissed the application with prejudice. Arapahoe again appealed to the Colorado Supreme Court. On November 20, 2000, the Supreme Court affirmed the water court's judgment, ending Arapahoe County's effort to divert

water out of the Gunnison Basin. The Conservancy District led the efforts of a number of opposers during extensive pre-trial preparation and motions, both trials and both appeals. Additional information about the Union Park Reservoir Project is provided in Appendix B, Section 9.2, beginning at page 114.

2.4.4 2000 Aspinall Subordination Agreement.

On June 1, 2000, an historic agreement negotiated by counsel for the Conservancy District was executed for the benefit of the Upper Gunnison Basin. The agreement is the "Agreement Among the United States, the Colorado State Engineer, the Colorado River Water Conservation District, and the Upper Gunnison River Water Conservancy District for the Administration of Water Pursuant to the Subordination of Wayne N. Aspinall Unit Water Rights within the Upper Gunnison River Basin" (Subordination Agreement). The Subordination Agreement protects diversions under water rights in the Upper Gunnison Basin which are junior or equal in priority to the Aspinall Unit from being curtailed when a call is being made by the Aspinall Unit, subject to certain limitations. Additional information about the Subordination Agreement is provided in Appendix B, Section 5.3, beginning at page 106.

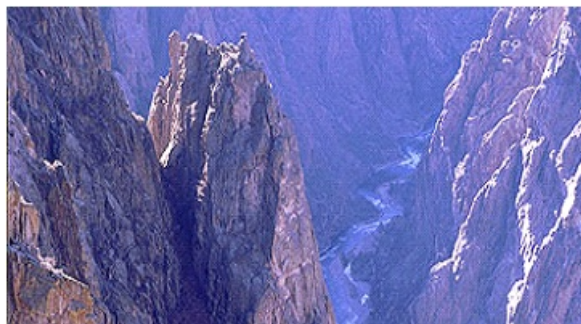
2.4.5 Aspinall Unit Contract Plan for Augmentation.

In 2002, a significant number of non-exempt domestic wells providing water for household use within the Conservancy District were subject to curtailment as a result of a Gunnison Tunnel call on the Gunnison River.² Curtailment of these wells by a Gunnison Tunnel call during 2002 was averted by releases of water stored in priority under the Refill Decree in Taylor Park Reservoir and controlled by the Conservancy District and by releases of storage from Blue Mesa Reservoir pursuant to resales of water acquired by the Conservancy District under a Temporary Water Service Contract obtained from the Bureau of Reclamation. In 2003, the Conservancy District filed an application for approval of a plan for augmentation that relies on releases from Blue Mesa Reservoir pursuant to resales of water acquired by the Conservancy District under a long-term Water Service Contract with the Bureau for 500 acre-feet of water. The Conservancy District operated this plan under a substitute water supply plan that prevented curtailments in 2003 during the Gunnison Tunnel call. The plan for augmentation has been approved by the water court and as of April 1, 2012 the Conservancy District has sold 223 acre-feet of water to augment domestic wells, lawn and garden irrigation, pond evaporation, stockwater, commercial and industrial uses within the District.

² See Appendix B, Section 1, at page 81 for an explanation of curtailment under a call.

2.4.6 Black Canyon of the Gunnison federal reserved water right settlement.

The federal reserved water rights doctrine provides that, when the federal government withdraws land from the public domain for particular purposes, it simultaneously acquires the right to sufficient water to effectuate those purposes. The initial reservation for the Black Canyon of the Gunnison National Monument was established by proclamation of President Herbert Hoover dated March 2, 1933, under



Black Canyon of the Gunnison - NPS photo

the authority granted to the President by the Antiquities Act of 1906. On December 23, 1971, the United States - through the National Park Service - filed an application in Water Division 4, seeking “confirmation of its rights to the use of . . . water rights appurtenant to the Black Canyon of the Gunnison National Monument.” In 1978, the water court entered a decree for an unquantified conditional water right for the Black Canyon. On January 17, 2001, the United States filed an application in the water court seeking to quantify the reserved water right for what had become the Black Canyon of the Gunnison National Park. The application was in the form of an application to make a conditional water right absolute. The application sought

adjudication of a base instream flow plus a one-day peak flow, both in amounts to be determined annually according to a formula based on inflows to Blue Mesa Reservoir, with a priority date of March 2, 1933. The volume of water sought by the application, together with a 1933 priority, created the risk of curtailment of a majority of the water rights in the Upper Gunnison Basin in even moderately dry years. 386 Statements of Opposition were filed in the water court during the permitted period following the application.

On behalf of more than 300 local water users who filed Statements of Opposition without the assistance of an attorney, the Conservancy District negotiated a settlement with the United States that subordinated the Black Canyon water right to the users' water rights and allowed them to withdraw from the case. The Conservancy District led negotiations with the United States that resulted in a settlement that modified the flow rates and contained conditions on the exercise of the water right, including the following:

- The decree shall not be exercised to affect operations under existing federal contracts (e.g. 1975 Taylor Park Agreement).
- Peak flows will be reduced under defined drought conditions to allow recovery of Aspinall Unit storage levels.
- The water right will be exercised with due regard for the fishery in the Gunnison River.
- To the extent practicable, the water right will be exercised so that peak flows are coordinated with releases

from the Aspinall Unit made to protect listed species in the Gunnison River and their habitat.

In addition, the United States agreed to subordinate the Black Canyon water right to all existing in-basin junior water rights and to subordinate the water right to future in-basin development allowed under the Aspinall Subordination Agreement. Additional information on the Black Canyon water right is provided in Appendix B, Section 8, beginning at page 113.

2.4.7 Meridian Lake Reservoir Project.

The drought which the Upper Gunnison River Basin experienced in 2002 and 2003 focused attention on the vulnerability of domestic and other water users in the basin to calls from senior irrigation water rights within the basin as well as senior water rights downstream from the Wayne N. Aspinall Unit. Even though neither the senior irrigation rights diverting from the Slate River nor the Colorado water Conservation Board (CWCB) instream flow rights in the Slate River had ever placed a call when water was in short supply, it became apparent that a significant number of domestic wells diverting from the Slate River had been issued permits based on plans for augmentation which were inadequate. In 2003, the Division Engineer advised well owners that the Division of Water Resources would begin administering domestic wells with non-functioning plans for augmentation. This announcement placed a significant number of domestic wells in the Slate and East River drainages

at serious risk of curtailment as a result of calls by senior irrigation ditches diverting from those streams and the CWCB instream flow water rights. The Conservancy District's Meridian Lake Reservoir project was initiated to respond to this need for replacement water.

Following two years of negotiation and due diligence, and obtaining a decree approving a plan for augmentation, the Conservancy District purchased Meridian Lake Reservoir in August, 2005. The Conservancy District then made improvements to the dam and outlet structure to improve its efficiency and to comply with requirements of the State Engineer. The total cost of the purchase and improvements was approximately \$1,400,000.00.

Under the plan for augmentation, the Conservancy District sells Augmentation Certificates in increments of 0.05 acre-feet of water per year (Base Units) which entitle the holder to have water released from Meridian Lake Reservoir to replace out-of-priority depletions. The owner of an Augmentation Certificate is entitled to the benefits of the Conservancy District's plan for augmentation and is not required to implement or amend an individual plan. As of April 1, 2012, the Conservancy District has sold 533 Base Units. Additional information about the Meridian Lake Reservoir project is provided in Appendix A, Section 2.2, beginning at page 61.

2.4.8 Recreational In-Channel Diversion Water Right.

The Gunnison River Whitewater Park has been in the planning stages since 1996. In March 2002, the Conservancy District entered into an Intergovernmental Agreement with Gunnison County to design and develop the Whitewater Park. Under the agreement, the Conservancy District is responsible for obtaining a water right for the Whitewater Park while Gunnison County is responsible for construction of the physical structures and facilities. By the spring of 2003, design, permitting, and most of the construction work were complete and the Gunnison Whitewater Park was open for its first operational season. In January, 2006, the Conservancy District obtained a conditional recreational in-channel diversion (RICD) water right for the "Gunnison Whitewater Course." In 2007, in response to concerns of its constituents, the Conservancy District adjudicated a change of water right that allows appropriations junior to the RICD water right to be made without the need for augmentation where such appropriations would otherwise be required to provide augmentation to the RICD water right. Construction of all of the designed features was completed in 2011.



Gunnison Whitewater Course

The Course is located within the channel of the Gunnison River, downstream of U. S. Highway 50 West of the City of Gunnison. The Course has been the site of the Gunnison River Festival each year since completion, and has been used by Western State College and local outfitters as a kayak training course, as well as thousands of private recreational boaters and kayakers. In October, 2012, the Water Court issued a decree that made the RICD water right absolute. Additional information on the RICD is provided in Appendix A, Section 2.1, beginning at page 60.

2.4.9 Lake San Cristobal Project.

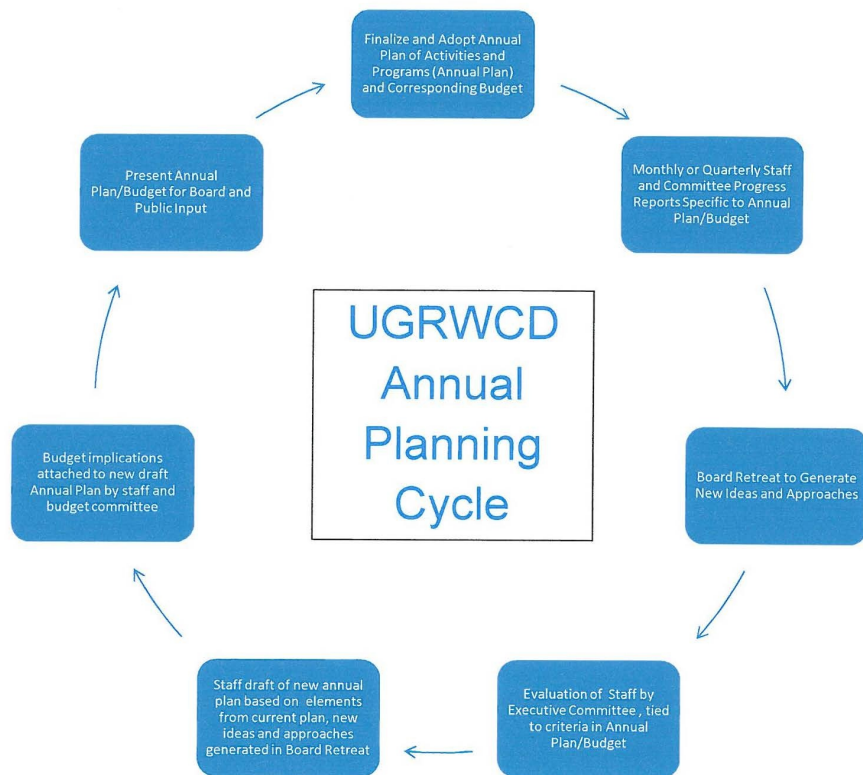
The Town of Lake City relies on wells with junior water rights for its municipal water supply. Presently the wells are augmented by exchange using replacement water stored in Blue Mesa Reservoir pursuant to water service contracts with the Bureau of Reclamation. The Colorado Water Conservation Board's instream flow water rights in the Lake Fork of the Gunnison River downstream from the Town are senior to that exchange and could therefore require curtailment of the Town wells in times of shortage.

To assist the Town in securing a supply of replacement water to protect its existing wells and allow future growth within its service area the Conservancy District joined the Town and Hinsdale County to create the Lake San Cristobal Water Activity Enterprise, for the purpose of constructing an improved outlet control structure on Lake San Cristobal. The low profile outlet structure, completed in the

Fall of 2012, will improve existing regulation of lake levels and permit impoundment of water under a decreed storage right without altering historical conditions at the Lake. Water impounded under the storage right will be utilized for multiple purposes, including augmentation releases into the Lake Fork of the Gunnison River.

The Conservancy District, acting on behalf of the Enterprise, has obtained a decree for storage of 960 acre-feet of water in Lake San Cristobal and approval of a plan for augmentation utilizing that water as a replacement supply for out of priority depletions, primarily in the Lake Fork Basin. In furtherance of the project, the Conservancy District also obtained an easement for inundation of Bureau of Land Management lands bordering the lake, and a permits from the State Engineer and Army Corps of Engineers for construction of the outlet works. Additional information about the Lake San Cristobal Project is provided in Appendix A, Section 2.3, beginning at page 66.

SECTION 3. MANAGEMENT PLAN: GOALS, OBJECTIVES, AND CURRENT ACTION STEPS FOR THE CONSERVANCY.



Goals are numbered for identification, but all goals have equal priority unless specifically noted otherwise. The means to accomplish the Board's goals are divided into two categories: Action Items and Ongoing Tasks. Action Items are specific activities that are intended to be completed, or to have substantial progress accomplished, within the year for which they are identified. Ongoing Tasks are activities that the Conservancy District staff is engaged in on a continuing basis from year to year. The Action Items and Ongoing Tasks have been assigned a priority as follows: Priority 1 - Imperative in achieving the principles outlined in the Mission Statement; Priority 2 - Strongly supports achievement of the Mission Statement principles, but not imperative to the mission; Priority 3 - Supports achievement of the Mission Statement, but to be done as time and budget allow.

As pointed out in the Introduction, this Plan is intended to be a dynamic document. A formal review of the Plan will be conducted by the Board as part of the annual budget process that begins in September each year. The Board recognizes, however, that expected events may not occur, unexpected events may occur, and that flexibility is required to respond to changes in circumstances during the year. Therefore, these goals, objectives and action steps are subject to revision at any regular or special meeting of the Board.

Additional discussion of the issues that provide a context for the Conservancy District's goals is contained in Section 4 beginning at page 40.

3.1 Goal 1 Annually update the Strategic Management Plan during the budget process.

Beginning in 1998, the Board and staff of the Conservancy District have worked to develop and update a formal management plan to guide the Board in accomplishing the objectives and purposes set out in the Conservancy District's enabling instruments. The process began with a grassroots watershed-based planning group that conducted three professionally facilitated public work sessions. The group arrived at a consensus that was approved by the Board regarding basin-wide water resource issues and candidate measures in response to those issues. Based on that input, a draft Water Management Plan was produced in December, 2001. After extensive public comments were received, a final draft Plan was completed in 2005 incorporating many of the comments, then updated in 2006. This Plan incorporates significant elements of the 2006 Plan, but the information has been updated and substantially reorganized to provide a more concise and user friendly resource for the Board, Conservancy District staff and the public.

3.2 Goal 2 Protect Upper Gunnison Basin water resources from new or expanded transmountain diversions.

The Conservancy District has opposed transbasin diversion projects since its inception in 1959. During the past twenty-five years the Conservancy District opposed two major applications for water rights for transbasin diversion projects in the Upper Gunnison Basin. The Board is concerned that additional attempts will be made by out-of-basin interests to divert water from the Upper Gunnison River Basin. The Board believes that out-of-basin diversions pose a threat to the economy and the environment of the Basin. A history of transbasin diversion projects proposed in the Upper Gunnison River Basin is presented in Appendix B, Section 9, beginning at page 114. Additional discussion of the Board's concerns about transbasin diversion can be found in Section 4.1 beginning at page 41.

3.2.1 Action Item to Accomplish Goal 2.

Develop a policy statement regarding appropriate uses for water stored in Blue Mesa Reservoir. [Priority 1]

3.2.2 Ongoing Tasks to be Performed in Pursuit of Goal 2.

- (a) Monitor implementation of the April, 2012 Record of Decision for the Aspinall Unit Operations Final Environmental Impact Statement and activities related to the December, 2009 Final Gunnison River Basin Programmatic Biological Opinion. [Priority 1]
- (b) Participate in the Water for the 21st Century Act³ process; in particular the development of the needs assessments and project development activity of the Gunnison Basin and other Western Slope Roundtables. [Priority 1]
- (c) Monitor the use of the Statewide Water Supply Initiative Report findings by state and local entities, Basin Roundtables and the Interbasin Compact Committee. [Priority 1]
- (d) Participate in legislative and regulatory activities, including those of the Colorado Water Congress. [Priority 1]
- (e) Continue to actively oppose any transbasin diversion from the Gunnison River Basin.

³ § 37-75-101 - § 37-75-107, Colorado Revised Statutes.

3.3 Goal 3 Protect existing and future decreed water uses within the Upper Gunnison Basin from calls from senior water rights whose points of diversion are located downstream of Blue Mesa Reservoir, including a Colorado River Compact “call”.

For many years, the threat of calls* from senior water rights whose points of diversion are downstream of Blue Mesa Reservoir has concerned water users in the Upper Gunnison Basin. In 2002 and 2003, the Gunnison Tunnel placed a call on the Gunnison River, which severely limited existing water uses in the Upper Gunnison Basin. Protection against downstream senior calls is discussed in Section 4.2, beginning at page 42.⁴ Recent studies have raised awareness of the potential for a “call” by Lower Basin states under the Colorado River Compact of 1922 resulting in curtailments that could have significant and sustained affect on water resources in the Upper Gunnison Basin. The Colorado River Compact is discussed in Appendix A, beginning at page 78.

3.3.1 Action Items to Accomplish Goal 3.

- (a) Develop criteria for acquisition of senior water rights within the Upper Gunnison Basin. [Priority 3]
- (b) Develop a strategy for protection of present perfected rights to the beneficial use of waters within the Upper Gunnison Basin that are unimpaired by the Colorado River Compact of 1922. [Priority 3]
- (c) Actively pursue perfection of the Taylor Park Reservoir second fill conditional water right. [Priority 1]
- (d) Change the use of the Taylor Park Reservoir second fill water right to include replacement water to avoid or mitigate a Gunnison Tunnel call for the benefit of agricultural water users in the Upper Gunnison Basin. [Priority 1].

3.3.2 Ongoing Tasks to be Performed in Pursuit of Goal 3.

- (a) Prepare and submit Aspinall Subordination Agreement Annual Report. [Priority 1]

⁴ See Appendix B, Section 1, at page 81 for a general discussion of water right administration.

- (b) Continue to identify ways to improve administration spreadsheet reliability. [Priority 2]
- (c) Participate in and monitor activities relating to the Colorado River Compact of 1922 and the Upper Colorado River Basin Compact of 1948, particularly any State of Colorado proposed actions in response to intrastate shortage allocations and the seven state shortage criteria. [Priority 1]

3.4 Goal 4 Maintain, and where possible, improve the water supply that is physically available in individual sub-basins in the Conservancy District.

Irrigation water shortages have historically occurred on many tributaries of the Gunnison River. In 2002, the State Engineer declared the entire Upper Gunnison River Basin to be over-appropriated*. This placed additional restrictions and requirements on development of water supplies to meet new demands. The outcome of this declaration for most domestic and commercial users who seek to develop water supplies in the future, is that they will need to have a plan for augmentation* in place to address both internal and basin-wide calls, and they will need to have stored water available for use under the augmentation plan. Physical availability of water within the Conservancy District is discussed in Section 4.4 beginning on page 48.

3.4.1 Action Items to Accomplish Goal 4.

- (a) Coordinate and cooperate equally with Hinsdale County and the Town of Lake City in the development of Lake San Cristobal water through the Lake San Cristobal Water Activity Enterprise. [Priority 1]
- (b) Cooperate with others in siting snowpack measuring and monitoring devices and weather stations in the basin. [Priority 3]
- (c) Evaluate, on a case-by-case basis, new water projects for development by the Conservancy District. [Priority 3]
- (d) Monitor information on emerging research on the potential impacts of climate change on water supply. Cooperate with the counties, local municipalities and local power providers on climate change resolutions, solutions and programs to adapt to climate change within the Conservancy District and the State. [Priority 2]

- (e) Assist constituents in improving water supply and making the existing supply more reliable and efficient by making funding for such activities available through a grant or loan program. [Priority 1]
- (f) Develop criteria for a loan program to implement Action Item 3.4.1(e).
- (g) Decide the feasibility of use of the Taylor River Canal conditional water right for augmentation, giving attention to uses compatible with the Intergovernmental Agreement among the Conservancy District, Gunnison County and City of Gunnison. [Priority 3]

3.4.2 Ongoing Tasks to be Performed in Pursuit of Goal 4.

- (a) Coordinate with the Conservancy District's Water Activity Enterprise in conducting activities in pursuit of this goal. [Priority 1]
- (b) Coordinate Taylor Local Users Group process and work with the other partners to the 1975 Taylor Park Reservoir Operation and Storage Exchange Agreement to manage Taylor Park Reservoir releases. [Priority 1]
- (c) Evaluate financial contribution to a cloud seeding program. [Priority 3]
- (d) Contribute financially to the Rocky Mountain Biological Laboratory weather stations to the extent that the stations can produce information useful to the Conservancy District in accomplishing its goals. [Priority 1]
- (e) Participate financially, in cooperation with other sponsors, in the Dust on Snowpack Study to the extent that the study can produce information useful to the Conservancy District in accomplishing its goals. [Priority 1]

3.5 Goal 5 Improve water supplies for in-channel and flatwater recreational purposes.

Water-based recreation is a significant contributor to the Conservancy District's economy. Sufficient water supplies need to be physically available to accomplish recreational purposes in the Conservancy District, and to permit recreational facilities to operate as intended. Water issues and needs related to recreational uses are discussed in Section 4.8.1, beginning on page 54.

3.5.1 Action Item to Accomplish Goal 5.

Develop and adopt policies relating to administration and utilization of the Recreational In-Channel Diversion (RICD) water right. [Priority 2]

3.5.2 Ongoing Task to be Performed in Pursuit of Goal 5.

Continue to support the Gunnison River Festival as an effort to promote the use of the RICD water right. [Priority 1]

3.6 Goal 6 Improve instream water supplies for environmental purposes.

The board believes that it is important that sufficient instream water supplies be available in the Upper Gunnison Basin for environmental purposes. Environmental stakeholders in the Conservancy District have requested that additional instream flow water rights be applied for and granted to protect instream flows.

Ongoing Task to be Performed in Pursuit of Goal 6.

Coordinate with the Colorado Water Conservation Board and others on instream flow water rights within the Upper Gunnison Basin in support of environmental water use needs. [Priority 2]

3.7 Goal 7 Protect Water Quality in a manner that is consistent with the Conservancy District's other responsibilities including protecting and encouraging the beneficial use of water within the Conservancy District.

The Board recognizes that high water quality is desirable, and is a necessary part of a healthy economy and environment in the Upper Gunnison Basin. The Board is committed to assuring that adequate data exists upon which to make informed decisions about water quality matters in the basin, and that regulations of the state and others are promulgated and administered in a fashion that is consistent with the goals and desires of the local community.

3.7.1 Ongoing Tasks to be Performed in Pursuit of Goal 7.

- (a) Evaluate the need for future studies based on the results of the 2009-2010 baseline assessment of macroinvertebrates. [Priority 1]

- (b) Evaluate the results of the riparian assessments performed in 2010 for designated stream segments within the basin to assist in making water quality decisions. [Priority 2]
- (c) Pursue partnerships with Gunnison County, the City of Gunnison and Western State College in improving the existing aquatic environment on lower Tomichi Creek. [Priority 1]
- (d) Contribute to the water quality monitoring program. [Priority 1]
- (e) Provide program coordination for the water quality monitoring program, including the cooperative effort among the Conservancy District, Gunnison County, High Country Citizens' Alliance and Gunnison County Stockgrowers to participate in the triennial review of basin water quality standards. [Priority 1]
- (f) Monitor and support local watershed coalition efforts, including current efforts in the Lake Fork headwaters and Coal Creek. [Priority 1]
- (g) Monitor the cleanup for the Superfund of the Standard Mine and Hinsdale County Superfund action. [Priority 1]
- (h) Continue to assist with funding streamflow gaging on Slate River, Cochetopa Creek, Tomichi Creek, and Ohio Creek. [Priority 1]
- (i) Work with other organizations and agencies to develop a long-term riparian restoration project for the Gunnison River from North Bridge to the Gunnison Whitewater Park. [Priority 2]

3.8 Goal 8 Pursue education of constituents within the Conservancy District on value of basin water resources, including development of an outreach program promoting the Conservancy District and its activities.

3.8.1 Action Item to Accomplish Goal 8.

Provide funding to develop a Project WET school in-service program.

3.8.2 Ongoing Tasks to be Performed in Pursuit of Goal 8.

- (a) Maintain the Conservancy District website to keep the public advised of Conservancy District activities and resources. [Priority 2]
- (b) Develop a more active education and relationship with local and regional media. Provide weekly column or report to local newspapers. [Priority 1]
- (c) Distribute and promote the Strategic Management Plan as a means to educate the public about the Conservancy District and its activities. [Priority 1]
- (d) Promote water conservation awareness and implementation through “Water Wise” and other conservation programs. [Priority 1]
- (e) Participate in local parades and events to create public awareness of the Conservancy District. [Priority 1]

3.9 Goal 9 Work with other organizations and agencies to develop water related projects of mutual interest.

Ongoing Tasks to be performed in Pursuit of Goal 9.

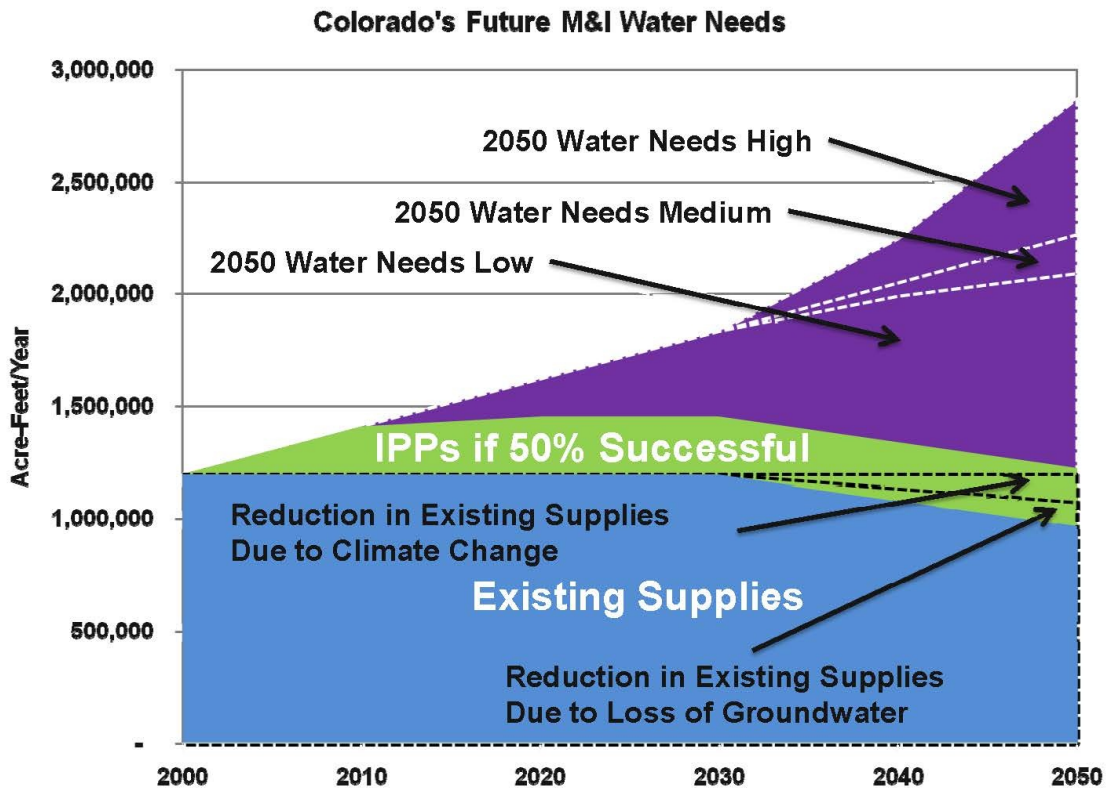
Seek opportunities to facilitate and participate in the development of hydropower projects with local individuals and entities. [Priority 2]

3.10 Administrative Tasks. [Priority 2]

- (a) Continue to improve budget spreadsheets.
- (b) Continue to utilize technology to its greatest advantage in performing District activities and achieving District goals.
- (c) Continue to enhance data availability for both the public and District employees by expanding internet and intranet capabilities.
- (d) Continue to encourage employee development opportunities through funding commitments to training.

- (e) Continue to look into options for scanning and digitizing the District's records and provide protection for the electronic version.
- (f) Provide administrative oversight and management for any Water Supply Reserve Account funded projects that the Conservancy District sponsors.

SECTION 4. DISCUSSION OF WATER MANAGEMENT ISSUES.



4.1 OUT-OF-BASIN DIVERSIONS.

The Conservancy District has opposed projects that propose to divert water from the Upper Gunnison River Basin since the District was created in 1959. The Board continues to be concerned that attempts will be made by out-of-basin interests to divert water from the Gunnison River to the Eastern Slope of Colorado. The Board believes that out-of-basin diversions, whether accomplished by a new appropriation, contract with the Bureau of Reclamation or acquisition of existing water rights, pose a threat to the economy and the environment of the Basin, particularly in the absence of mitigation.

A transbasin diversion represents a fully consumptive loss to the Basin that could have a severely detrimental impact on the entire Basin, regardless of the location of the project. Diversion of water from the headwaters would have the greatest impact. Such a diversion would reduce average flows and alter the current flow regime, adversely affecting irrigation, municipal uses, in-channel water uses for recreation, environmental protection and water availability for in-basin storage. Reduced inflows to Blue Mesa Reservoir could affect storage levels and timing, which in turn would have an impact on flatwater recreation uses at the Curecanti National Recreation Area. An additional concern is reduced water availability to satisfy the water right decreed to the Black Canyon of the Gunnison National Park, and provide recommended flows for the endangered fish species in the Gunnison and Colorado Rivers. The net loss of high quality water from the headwaters would have an impact

on water quality within and downstream from the Conservancy District, as well.

If water is diverted out of the Upper Gunnison River Basin without appropriate mitigation, the resultant economic impacts would be significant. A significant source of revenue in the Basin is recreation and tourism, and most recreation and tourism activity is water related. Agriculture, another significant component of the Basin's economy, is entirely dependent upon irrigation and could suffer from altered or reduced flows within the Basin if the transbasin diversion results from acquisition of existing senior water rights. A reduction in flows needed to support these activities would lead to economic losses Basin wide.

Boating activities on the rivers of the Basin are optimized at certain flow levels. If flows are insufficient to meet the minimum floating requirement⁵ then boating becomes infeasible. If water is transferred from the headwaters, there is a significant risk of reduced stream flows that would have a detrimental impact on the boating industry that is vital part of the Basin's economy (See Section 1.3.2).

Expenditures related to reservoir and stream fishing are also an important source of revenue to the Upper Gunnison River Basin. The health of the fishery resource is dependent on flow conditions that could

⁵ In the Taylor River, for example, the minimum flow to sustain commercial rafting is 250 c.f.s.

suffer significant impact from the transfer of water out of the Basin.

Recreational visitation at the Curecanti National Recreation Area (surrounding the Aspinall Unit reservoirs) is a significant contributor to the Upper Gunnison River Basin economy (See Section 1.3.2.). If the recreational value of the Aspinall Unit reservoirs is substantially diminished by reduced inflows due to upstream diversions,

direct diversion from Blue Mesa Reservoir or extraordinary releases from storage, there will be a significant economic loss to the Basin.

An analysis conducted in 2000 by the Conservancy District's consultants indicates that instream flow deficiencies already exist in the Basin (see Section 4.9.2 at page); reduction of stream flows would worsen the situation.

4.2 PROTECTION AGAINST DOWNSTREAM SENIOR CALLS.

For many years, the threat of calls from senior water rights whose points of diversion are downstream of Blue Mesa Reservoir has concerned water users in the Upper Gunnison Basin. In 2002 and in 2003, the Gunnison Tunnel placed a call on the Gunnison River, which severely limited existing water uses in the Upper Gunnison Basin.

Principal aspects of this issue are:

Can a means be found to assure that downstream senior calls will not occur in the

future, or

If such calls are inevitable, can a solution (such as a plan or plans for augmentation) be developed at reasonable cost to allow holders of upstream junior water decrees to continue to divert when the calls are occurring.

Presented below are estimates of the amount of water that could be curtailed as a result of a downstream senior call, and that would have to be replaced in order for water uses to continue in the Conservancy District.

4.3 EXISTING USES SUBJECT TO A DOWNSTREAM SENIOR CALL.

4.3.1 Irrigation.

The Conservancy District's consultants, Slattery & Hendrix Engineering LLC investigated decreed irrigation diversions and depletions which could be curtailed in the District in the event of a call from the Gunnison Tunnel. The results of this investigation are presented in Table 4.1 on

page 44. Table 4.1 displays an analysis of the amount of junior out-of-priority diversions and depletions in the Conservancy District that could have been curtailed in the years 1990 – 2009 by the Gunnison Tunnel if the Tunnel had called whenever it experienced a shortage. A call was placed on the Gunnison River by the Tunnel in 2002 and 2003. In the other years

during that period, the Uncompahgre Valley Water Users Association elected to use storage released from the Taylor Park Reservoir first fill account in Blue Mesa Reservoir to meet the demand of the Tunnel. (See Appendix B, Section 4, beginning at page 82 for a complete description of Gunnison Tunnel operations.) Column 6 in Table 4.1 shows the total amount of annual diversions subject to a call from the Gunnison Tunnel in each year from 1999 through 2009. Without an adjudicated plan for augmentation, this is the amount of water that Conservancy District irrigators would have collectively been required to replace if they wanted to continue to divert under their decrees during calls from the Gunnison Tunnel. With an adjudicated plan for augmentation, only depletions from out of priority diversions would need to be replaced (column 7).

The Conservancy District has utilized releases of water stored in Taylor Park Reservoir under the second fill decree to respond to a call from the Gunnison Tunnel. For example, during the month of April 2002, approximately 3,700 acre-feet of water was used from the Taylor Park Reservoir

second fill account to increase inflows to the Aspinall Unit and offset the shortage at the Gunnison Tunnel. (The releases replaced the total of out-of-priority diversions, rather than replacement of depletions needed under the terms of a plan for augmentation.) At the beginning of the irrigation season in 2002, approximately 26,000 acre-feet was stored under the second fill decree. Release of that amount postponed the Gunnison Tunnel call for almost one month, which lessened the impact of the call on irrigators in the Conservancy District but did not provide a complete response. Because of dry conditions in 2002, the second fill account held only 2,000 acre-feet at the beginning of the 2003 irrigation season, an amount that was not sufficient to provide any relief from the Gunnison Tunnel call in that year.

Presently, no estimate is available of the replacement requirement associated with calls from the Redlands Power Canal. The replacement requirement for this call would be in addition to the replacement requirement for the Gunnison Tunnel because the Tunnel diverts only during the irrigation season while the Redlands diversion operates year round.

TABLE 4.1

Estimated Out-of-Priority Irrigation Diversions and Stream Depletions in the UGRWCD Due to a Call from the Gunnison Tunnel
(values in acre-feet)

Year	Total Annual Diversions	Diversions by Water Rights Senior to Gunnison Tunnel Water Right	Diversions by Water Rights Junior to Gunnison Tunnel Water Right	Diversions in Excess of Decreed Amounts	Potential Out-of-Priority Diversions to the Gunnison Tunnel Call	Historic Consumptive Use from Potential Out-of-Priority Diversions
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1990	547,476	192,214	300,611	54,652	47,827	1,542
1991	532,177	161,824	310,931	59,423	14,614	1,177
1992	643,998	182,479	388,697	72,823	17,838	1,054
1993	617,548	162,629	382,527	72,391	599	147
1994	419,445	129,502	253,034	36,910	56,448	2,334
1995	603,218	145,270	346,334	111,615	0	105
1996	590,757	170,093	360,601	60,064	21,289	633
1997	694,667	173,829	427,442	93,397	0	48
1998	565,300	161,275	330,484	73,541	16,980	1,210
1999	632,722	180,304	367,858	84,560	553	7
2000	493,638	182,536	275,746	35,355	66,289	3,626
2001	610,820	186,833	350,651	73,337	36,409	2,466
2002	346,766	166,420	171,125	9,221	112,216	8,292
2003	487,774	183,651	261,478	42,645	48,686	3,317
2004	576,842	199,948	328,341	48,553	68,466	4,686
2005	610,688	194,448	365,678	50,562	35,918	1,291
2006	571,845	201,606	328,862	41,376	5,081	167
2007	640,903	218,517	370,668	51,717	25,747	718
2008	633,601	183,646	379,780	70,174	33,614	1,480
2009	598,553	197,367	352,511	48,675	62,096	3,459
Average	570,937	178,719	332,668	59,550	33,533	1,888
Maximum	694,667	218,517	427,442	111,615	112,216	8,292
Minimum	346,766	129,502	171,125	9,221	0	7

Column Explanation:

- 1) Year
- 2) Total surface water diversions through 726 structures.
- 3) Diversions by water rights senior to the Gunnison Tunnel water right. (345 structures)
- 4) Diversions by water rights junior to the Gunnison Tunnel water right. (593 structures)
- 5) Diversions classified as other in the State CU Model. (These diversions occur at 252 structures)
- 6) Potential out-of-priority diversions during days of shortage at the Gunnison Tunnel.
- 7) Historic consumptive use from diversions in Column 6 as estimated using State CU.

Source: Slattery & Hendrix Engineering LLC analysis.

4.3.2 Existing Irrigated Lands Which Benefit from Undecreed Diversions.

Some existing irrigated lands in the Conservancy District are irrigated with a combination of decreed and undecreed

diversions. Undecreed diversions may be legally made by a water user when free river conditions exist (that is, when no call is in place). However, since they have no priority date associated with them, they are the first diversions subject to being curtailed when a downstream call is placed on the river. They

are also unable to benefit from the Aspinall Subordination.

The Conservancy District has estimated the amount of irrigation diversions and depletions which have been historically made that were not associated with a decreed water right. During the years 1990 – 2009, undecreed diversions occurred in 427 structures within the Conservancy District. Average annual diversions under undecreed water rights totaled 59,550 acre-feet for the years 1990 – 2009. The average annual consumptive use associated with these diversions was 1,888 acre-feet. (See Table 4.1, columns 5 and 7.)

At some time in the future, water users may seek to obtain court decrees for these diversions and depletions. These water uses, if decreed, could then be protected under an augmentation plan from calls from downstream of Blue Mesa Reservoir, and could also benefit from the protection provided by the Aspinall Subordination Agreement.

4.3.3 Municipal Uses.

Many of the municipalities and special districts within the Conservancy District have senior water rights or augmentation plans in place, that protect them from calls by downstream senior rights. The Conservancy District has not recently conducted any detailed investigation that would indicate whether there are existing municipal uses in the Conservancy District that could be curtailed in the event of a senior call from downstream of Blue Mesa Reservoir.

4.3.4 Exempt In-house Use Only Wells.

In October, 1997 the Conservancy District prepared an estimate of the amount of existing domestic uses which could be curtailed in the District in the event of a continuous call from senior water rights downstream of Blue Mesa Reservoir throughout the irrigation season (Helton & Williamsen, P.C., 1997). Many people who reside in areas outside of a municipality are served by exempt in-house use only wells. The indoor uses served by these wells have historically been treated as exempt from being curtailed by river calls. In this study, it was assumed that this exempt status would continue in the future. However, the homes served by these wells frequently do not have a source of senior decreed water or an augmentation plan that provides replacement water for outdoor irrigation of lawns and gardens. The administration of the Gunnison Tunnel call and internal calls in the basin resulted in curtailment of outdoor use in 2002.

In the 1997 study, it was estimated that 684 households in unincorporated areas in the Conservancy District, including the towns of Pitkin and Lake City, obtain water from in-house use only wells. The study was updated by Slattery & Hendrix Engineering LLC in 2011. The consumptive use throughout the irrigation season for these households for lawn and garden irrigation in 2010 was estimated to be 226.9 acre-feet annually. This estimate was based upon an assumption of 2,000 square feet of lawn and garden area per household, and a consumptive use rate of 1.67 acre-feet per acre for blue grass. The amount of out-of-priority stream depletions resulting from

this consumptive use was not estimated in this study. Given the assumption of a continuous call throughout the year used in this study, the consumptive use gives a reasonable approximation of the replacement requirement.

by sub-basin. Column 6 of Table 4.2 shows the amount of water that existing domestic users served by in-house use only wells would collectively need to pay back to downstream seniors if they wanted to continue outside irrigation during a continuous downstream call.

Table 4.2 presents a breakdown of the out-of-priority outdoor domestic consumptive use

TABLE 4.2
Estimated Consumptive Use for Outside Irrigation
for Existing Homes within the Conservancy District Served by
In-House Use Only Wells

Sub-Basin	Total 2010 Population	Total 2010 Households	Population per Household	Indoor Consumptive Use (acre-feet)	Outdoor Consumptive Use (acre-feet)
(1)	(2)	(3)	(4)	(5)	(6)
East River	2,219	932	2.4	36.5	71.5
Ohio Creek	677	285	2.4	11.2	21.9
Taylor River	108	51	2.1	2.0	3.9
Tomichi Creek	977	390	2.5	15.3	29.9
Quartz Creek	154	75	2.1	2.9	5.8
Cochetopa Creek	43	24	1.8	0.9	1.8
Cebolla Creek	64	27	2.4	1.1	2.1
Lake Fork G. R.	330	160	2.1	6.3	12.3
Gunnison River	2,345	1,015	2.3	39.8	77.8
Total	6,917	2,959	2.3	116.0	226.9

Column Explanation:

- 1) Sub-basin within the UGRWCD.
- 2) Total unincorporated area population within the sub-basin as summarized from the U.S. Census 2010 TIGER GIS files.
- 3) Total unincorporated area occupied houses within the sub-basin as summarized from the U.S. Census 2010 TIGER GIS files.
- 4) Calculated as Column 2 divided by Column 3.
- 5) Calculated as Column 3 x 350 gallons per day x 10% consumption for indoor use with septic tank systems.
- 6) Calculates as Column 3 x 2,000 square feet of landscaping per house / 43,560 square feet per acre x 1.67 acre-feet per acre of consumptive use per UGRWCD's augmentation plan for areas north of the Gunnison River at elevations of 8,000 feet

Source: U.S. Census data and GIS files obtained from the Colorado Demography Office.

4.3.5 Non-exempt Domestic, Commercial, and Industrial Wells that are Protected by a Plan for Augmentation.

This type of well is decreed with a water right that is junior to downstream rights. A court-approved plan for augmentation is, therefore, required to obtain a permit for these wells from the Division of Water Resources. The augmentation plan protects out-of-priority water uses occurring at these wells from being curtailed during a call on the river. A significant number of the wells in the Conservancy District fall into this category.

For a small number of the wells in this category, the augmentation plan is limited to protecting in-house uses only against a downstream senior call (Kugel, 2001, and Beasley, 2001). Additional augmentation may be required to protect outdoor uses from being curtailed.

Wells with non-functioning augmentation plans and wells which are augmented by junior surface water rights are subject to being curtailed by the State Engineer in the event of a senior call. Since 2003, the Conservancy District has adjudicated umbrella plans for augmentation that protect the majority of wells within the District that have historically operated under non-functioning augmentation plans and those that were augmented by junior surface water rights.

4.3.6 Non-exempt Wells not Covered by an Augmentation Plan.

Indoor and outdoor uses of water made by non-exempt wells which are not protected by an augmentation plan could be curtailed in the event of a downstream senior call at such time as the State Engineer adopts rules and regulations for administration of wells for Water Division 4.

4.3.7 Domestic Surface Water Pumps.

Domestic water diversions may also be made from pumps installed on stream banks. The water diverted by such pumps is typically used for irrigation and stockwatering. Diversions by pumps which are decreed under junior water rights or are not decreed are subject to being curtailed in the event of a senior call.

No estimates are currently available of the total amount of water that might be curtailed at such pumps in the event of a senior call from downstream of Blue Mesa Reservoir. Protection of diversions made by these pumps is available under the Conservancy District's umbrella plans for augmentation.

4.3.8 Diversions for Commercial and Industrial Purposes from Surface Water Sources.

No estimates are currently available of the amount of surface water diversions for commercial and industrial purposes that might be curtailed in the event of a senior call from downstream of Blue Mesa Reservoir.

4.4 PHYSICAL AVAILABILITY OF WATER IN INDIVIDUAL STREAM DRAINAGES

Local water users and water commissioners, as well as studies by the Bureau of Reclamation and others, indicate that irrigation water shortages have historically occurred on many tributaries of the Gunnison River (Helton & Williamsen, P.C., 2000c). In the drought year of 2002, physical water shortages were severe in the Tomichi and Ohio Creek drainages. Internal calls were placed on Tomichi Creek, Cebolla Creek, and the Cochetopa.

In 2002, the State Engineer declared the entire Upper Gunnison Basin to be over-appropriated*. This placed additional restrictions and requirements on development of water supplies to meet new demands. The outcome of this declaration

for most domestic and commercial users who seek to develop water supplies in the future, is that they will need to have a plan for augmentation in place to address both internal and basin-wide calls, and they will need to have stored water available for use under the augmentation plan.

In order to minimize shortages, sufficient water supplies need to be physically available in individual sub-basins for irrigation, municipal, domestic, commercial, and industrial purposes. Presented below are estimates of shortages that are estimated to occur in individual sub-basins of the Conservancy District.

4.5 EXISTING USES SUBJECT TO PHYSICAL WATER SUPPLY SHORTAGES.

4.5.1 Irrigation.

In 2000, the Conservancy District completed an estimate of the amount of irrigation shortages historically experienced in several sub-basins of the District. Slattery & Hendrix Engineering LLC updated the study in 2011. The results of the 2011 update are contained in Table 4.3, below.

The study found that physical shortages of water can be caused by limitations in the total amount of water supply available and timing problems. Flows during May and June are usually sufficient to meet the headgate diversion requirements, but

shortages are frequent during July through September. On Upper Tomichi Creek, for example, approximately 75 percent of the irrigation water supply occurs during May and June when only 40 percent of the headgate diversion requirements occur. Approximately 26 percent of the irrigation season water supply occurs during July through September when 54 percent of the headgate diversion requirements occur. In addition, flows in a dry year like 2002 amount to only about 25 percent of the average flows. These problems are typical of many drainages in Colorado because most of the water supply is derived from snowmelt.

TABLE 4.3
Estimate of Shortages in Irrigation Diversions 1990-2009

Row	Year / Acres	Sub Basin									Total
		East River	Ohio Creek	Taylor River	Tomichi Creek	Quartz Creek	Cochetopa Creek	Cebolla Creek	Lake Fork Gunnison River	Gunnison River	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)	Irrigated Area Evaluated (acres)	8,060	11,874	580	14,463	1,990	6,378	3,025	1,685	6,075	54,130
(2)	1990	1,284	4,018	75	3,226	587	2,941	786	391	2,547	15,853
(3)	1991	1,401	4,798	42	5,008	720	3,196	1,030	501	1,549	18,244
(4)	1992	1,443	8,452	86	5,257	840	4,679	1,146	681	2,629	25,213
(5)	1993	1,684	8,531	41	3,171	211	4,377	891	590	2,345	21,839
(6)	1994	3,608	11,741	271	6,176	997	8,007	1,008	816	3,105	35,728
(7)	1995	1,910	10,555	154	3,910	1,025	3,023	935	534	1,864	23,910
(8)	1996	3,059	9,763	69	5,341	950	7,518	2,004	959	1,852	31,515
(9)	1997	1,809	6,571	42	4,046	731	2,768	1,082	598	1,015	18,661
(10)	1998	1,839	5,228	44	11,295	2,968	9,275	1,572	959	936	34,116
(11)	1999	897	3,128	12	4,130	535	3,853	543	601	920	14,618
(12)	2000	1,521	9,752	45	9,178	1,687	7,297	1,797	1,142	2,339	34,758
(13)	2001	1,220	7,030	27	8,810	1,453	7,727	1,733	1,226	1,351	30,576
(14)	2002	2,003	13,143	91	20,679	3,780	10,978	1,820	1,589	2,388	56,471
(15)	2003	1,473	9,142	188	7,166	1,133	8,657	1,009	1,035	2,323	32,126
(16)	2004	1,522	8,736	181	8,129	1,273	6,053	1,001	960	1,521	29,376
(17)	2005	980	3,982	43	5,792	1,230	3,917	952	672	1,226	18,793
(18)	2006	853	4,376	47	5,152	554	5,027	900	623	1,563	19,095
(19)	2007	661	4,415	3	5,844	838	2,715	685	690	1,481	17,331
(20)	2008	626	6,337	49	4,352	125	2,601	1,395	559	1,662	17,706
(21)	2009	606	5,120	95	5,981	503	2,653	1,270	623	1,647	18,498
(22)	Average Annual Shortage	1,520	7,241	80	6,632	1,107	5,363	1,178	787	1,813	25,721
(23)	Maximum Annual Shortage	3,608	13,143	271	20,679	3,780	10,978	2,004	1,589	3,105	56,471
(24)	Minimum Annual Shortage	606	3,128	3	3,171	125	2,601	543	391	920	14,618

Column Explanation:

- 1) Year and the 2005 Irrigated Acreage as compiled by the Division Engineer's Office in the CDSS Hydrobase.
- 2 - 10) Sub basins within the UGRWCD.
- 11) Total for all sub basins.

Row Explanation:

- 1) The 2005 Irrigated Acreage as compiled by the Division Engineer's Office in the CDSS Hydrobase.
- 2 - 21) Individual years of consumptive use shortage as estimated by StateCU for each sub basins within the UGRWCD.
- 22) Average annual consumptive use shortage as calculated from Rows 2 through 21.
- 23) Maximum annual consumptive use shortage as calculated from Rows 2 through 21.
- 24) Minimum annual consumptive use shortage as calculated from Rows 2 through 21.

Source: Slatery & Hendrix Engineering LLC StateCU analysis in support for the 2009 Subordination Report.

4.6 FUTURE USES SUBJECT TO PHYSICAL WATER SUPPLY SHORTAGES.

4.6.1 Irrigation.

Since shortages are frequently experienced on existing irrigated lands in the major sub-basins of the Conservancy District, it is very likely that a minimal amount of water, if any, would be available for newly irrigated lands from direct flow diversions. Such lands would, therefore, need to be served largely by water released from storage. In order to determine a storage requirement for lands which are newly irrigated in the future, an estimate of the number of acres to be newly irrigated is needed

In its Upper Gunnison Project studies conducted in 1951, 1964 and 1973, the Bureau of Reclamation estimated the amount of existing dry lands that might be converted to irrigated lands in the future. No updated evaluation has been prepared since those studies were concluded. No current estimate is available as to the amount of new irrigation use that might be developed in the future.

4.6.2 Municipal Uses.

The Mt. Crested Butte Water & Sanitation District has indicated that it expects to have an additional future demand of up to 200 acre-feet per year of municipal water supply at buildout of the district. The Conservancy

District is currently negotiating an agreement with the district for cooperative use of Meridian Lake Reservoir storage to provide this additional demand. Future water supply shortages that might be faced by other municipalities have not yet been fully evaluated.

4.6.3 Domestic Uses.

In October 1997 the Conservancy District prepared an estimate of the amount of new domestic uses which could be curtailed in unincorporated areas of the District in the event of a year-round call from downstream senior water rights (Helton & Williamsen, P.C., 1997). The study was updated by Slattery & Hendrix Engineering LLC in 2011. It is assumed that most, if not all, of the new domestic uses could be subject to internal shortages and internal calls in the sub-basins in which they are located. The study assumed a 50-year planning time frame. It is important to note that at least some portion of future development is likely to take place on previously irrigated lands, which may result in some dry-up credits being available. Table 4.4 presents the growth rates in the various sub-basins of the Conservancy District between 2000 and 2040, and an estimate of the population of the unincorporated areas of the Conservancy District in 2040.

TABLE 4.4
Estimate of Future Population in Unincorporated Areas of the
Conservancy District That Will Have Augmentation Needs

Sub-basin	County			Growth Rate		Total 2010 Population	Total 2010 Households	Total Estimated 2040 Population	Total Estimated 2040 Households
	Gunnison	Hinsdale	Saguache	2000 to 2010	2011 to 2040				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
East River	100%	0%	0%	1.39%	1.07%	2,219	932	2,377	999
Ohio Creek	100%	0%	0%	1.39%	1.07%	677	285	725	305
Taylor River	100%	0%	0%	1.39%	1.07%	108	51	116	55
Tomichi Creek	57%	0%	43%	1.61%	1.07%	977	390	1,047	418
Quartz Creek	100%	0%	0%	1.39%	1.07%	154	75	165	80
Cochetopa Creek	3%	0%	97%	1.89%	1.07%	43	24	46	26
Cebolla Creek	36%	47%	17%	1.05%	1.09%	64	27	70	29
Lake Fork G. R.	37%	63%	0%	0.81%	1.09%	330	160	361	175
Gunnison River	84%	0%	16%	1.47%	1.07%	2,345	1,015	2,513	1,088
Total						6,917	2,959	7,420	3,175

Column Explanation:

- 1) Sub basin within the UGRWCD.
- 2) Percent of sub basin within Gunnison County based on GIS evaluation of area for each sub basin.
- 3) Percent of sub basin within Hinsdale County based on GIS evaluation of area of each sub basin.
- 4) Percent of sub basin within Saguache County based on GIS evaluation of area of each sub basin.
- 5) Growth rate of unincorporated area from Table 1.1 Column 6 weighted by percentage of sub basin within the counties.
- 6) Estimated growth rate of unincorporated areas using the compounded growth rate for 2011 to 2040 for Gunnison County of 1.07%, Hinsdale County of 1.11% and Saguache County of 1.07% weighted by percentage of sub basin within the counties.
- 7) Total populations in 2010 from the U.S. Census from Table 4.2 Column 2.
- 8) Total households in 2010 from the U.S. Census from Table 4.2 Column 3.
- 9) Calculated as Column 7 x Column 2 x 1.07 (Gunnison County) + Column 7 x Column 3 x 1.11% (Hinsdale County) + Column 7 x Column 4 x 1.07% (Saguache County)
- 10) Calculated as Column 8 x Column 2 x 1.07 (Gunnison County) + Column 8 x Column 3 x 1.11% (Hinsdale County) + Column 8 x Column 4 x 1.07% (Saguache County)

Source: U.S. Census data and GIS files obtained from the Colorado Demography Office.

It was assumed that both outdoor and indoor domestic uses which are developed in unincorporated areas in the future could be subject to curtailment from downstream calls. No estimate of the amount of future uses in municipalities that could be subject

to curtailment was made in this study.

Table 4.5 on the next page presents an estimate of the indoor and outdoor diversion requirement and consumptive use of the estimated households by 2040.

TABLE 4.5
Estimated Diversion Requirement and Consumptive Use
for Indoor and Outdoor Purposes
for Homes Constructed in the Future in Unincorporated Areas of the
Conservancy District

Sub-Basin	Total Estimated 2040 Population	Total Estimated 2040 Households	Population per Household	Future Indoor Diversion Requirement	Future Outdoor Diversion Requirement	Future Diversions Requirement	Future Indoor Consumptive Use	Future Outdoor Consumptive Use	Future Consumptive Use
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
East River	2,377	999	2.4	391.5	90.1	481.6	39.1	76.6	115.7
Ohio Creek	725,3345	305,34761	2.4	119.7	27.5	147.3	12.0	23.4	35.4
Taylor River	115,71067	54,6411512	2.1	21.4	4.9	26.4	2.1	4.2	6.3
Tomichi Creek	1047,4927	418,13935	2.5	163.9	37.7	201.7	16.4	32.1	48.5
Quartz Creek	164,99485	80,3546341	2.1	31.5	7.2	38.8	3.2	6.2	9.3
Cochetopa Creek	46,143425	25,7544698	1.8	10.1	2.3	12.4	1.0	2.0	3.0
Cebolla Creek	69,59962	29,3623397	2.4	11.5	2.6	14.2	1.2	2.3	3.4
Lake Fork G. R.	360,54921	174,811738	2.1	68.5	15.8	84.3	6.9	13.4	20.3
Gunnison River	2,513	1,088	2.3	426.5	98.1	524.6	42.6	83.4	126.0
Total	7,420	3,175	2.3	1,244.6	286.4	1,531.0	124.5	243.4	367.9

Column explanation:

- 1) Sub-basin within the UGRWCD
- 2) Total estimated unincorporated area population within the sub-basin as derived
- 3) Total unincorporated area occupied houses within the sub-basin as derived
- 4) Calculated as Column 2 divided by Column 3
- 5) Calculated as Column 3 x 350 gallons per day / 325851 gallons per acre-foot.
- 6) Calculated as Column 3 x 2,000 square feet of landscaping per house / 43,560 x 1.96 acre-feet per acre of diversion requirement.
- 7) Calculated as Column 6 + Column 7.
- 8) Calculated as Column 5 x 10% for indoor consumptive use for households using a septic tank system.
- 9) Calculated as Column 3 x 2,000 square feet of landscaping per house / 43,560 square feet per acre x 1.67 acre-feet per acre of consumptive use per UGRWCD's augmentation plan for areas north of the Gunnison River at elevations of 8,000 feet.
- 10) Calculated as Column 8 + Column 9.

Source: U.S. Census data and GIS files obtained from the Colorado Demography Office.

4.7 WATER QUALITY.

Water quality planning and management in Colorado has evolved over the last thirty years, largely in response to federal mandates.⁶ Current efforts are focused on watershed protection, including protection of human health (Safe Drinking Water Act) and aquatic ecosystems (Clean Water Act). Colorado's approach is based on implementation of a water quality management cycle, an iterative process where planning and management of water quality is accomplished by repeating the major steps in a prescribed sequence. The major steps are:

- Water Quality Monitoring, Reporting and Assessment
- Water Quality Classifications and Standards
- Total Maximum Daily Loads (TMDLs)
- Establishment of Source Controls
- Compliance Assurance
- Financial Assistance

The Colorado Water Quality Control Commission is (Commission) the administrative agency responsible for developing water quality policy that implements broader policies established by the Legislature in the *Colorado Water*

⁶ As relevant to Conservancy District activities, the *Federal Water Pollution Control Act* (commonly known as the *Clean Water Act*) 33 U.S.C. § 1251 *et seq.*, founded in nineteenth century law but now controlled by substantial revisions enacted by Congress in 1972.

*Quality Control Act*⁷. The Commission adopts water quality classifications and standards⁸ and regulations intended to achieve compliance with them. The Water Quality Control Division is the agency responsible for implementing and enforcing the Commission's regulations and for providing technical expertise to the Commission.

The Conservancy District is active in two elements of Colorado's clean water program: ambient water quality monitoring and water quality assessment and standards development for Upper Gunnison River Basin streams and water bodies.

Since 1995, the Conservancy District, in cooperation with the U. S. Geological Survey and other local stakeholders, has participated in a water quality monitoring program in the Basin. The program has established a network of monitoring stations, some of which are permanent and others that are rotated periodically to different locations throughout the Basin. These monitoring stations collect water quality samples that are used to develop

⁷ § 25-8-101, *et seq.*, Colorado Revised Statutes.

⁸ Classifications are uses: aquatic life, water supply, agriculture and recreation; standards are the concentration limits of specific pollutants or parameters (physical properties such as pH, dissolved oxygen, temp., etc.) needed to protect the classified uses. The Commission's classifications and standards must be approved by the federal Environmental Protection Agency.

water quality standards and to monitor trends in water quality.

The Water Quality Control Act requires the Commission to review water quality classifications and standards once every three years (triennial review). There are three steps in the triennial review process. The first step is an Issues Scoping Hearing, which provides an opportunity for early identification of potential issues that may need to be addressed in the next major rulemaking hearing, and for identification of any issues that may need to be addressed in rulemaking prior to that time. This second step in the triennial review process - the Issues Formulation Hearing - results in the identification of the specific issues to be addressed in the next major rulemaking hearing. The third step is the Rulemaking Hearing, where any revisions to the water quality standards regulation are formally adopted. For the Gunnison Basin, the most recent scoping hearing occurred in October, 2009, the Issues Formulation Hearing occurred in February, 2012, and the

Rulemaking Hearing is scheduled for September, 2012. The Conservancy District, in cooperation with the Gunnison County Stockgrowers, Gunnison County and High Country Citizens' Alliance participates actively in the triennial review process. In 2011, on behalf of those stakeholders, and in cooperation with the National Park Service, the Conservancy District obtained party status and negotiated modifications to the Water Quality Control Division's recommendations for revisions to revisions to the listing of water-quality-limited segments requiring total maximum daily loads and Colorado's monitoring and evaluation list.

The Conservancy District also acts to protect clean water in the Basin by providing financial support to local watershed protection stakeholder groups that are engaged in water quality management in sub-basins within the District, including the Coal Creek Watershed Coalition and the Lake Fork Valley Conservancy District.

4.8 WATER FOR RECREATION AND THE ENVIRONMENT.

4.8.1 Water for Recreation.

As noted in subsection 1.3.2 above, water-based recreation is a significant contributor to the Conservancy District's economy. Sufficient water supplies need to be physically available to accomplish recreational purposes in the District, and to permit recreational facilities to operate as intended.

- (a) Recreational Boating.

A study compiled by the Colorado River Outfitters Association (CROA) reports 17,001 commercial rafting user days on the Taylor and Upper Gunnison Rivers and 203 commercial rafting user days on the Lake Fork of the Gunnison River in 2009, representing direct expenditures (rafting, food, lodging, souvenirs, etc.) of \$1,961,287.00. CROA estimates that the economic benefit to the area from commercial rafting on these rivers in 2009 was approximately \$5,020,894.00, based upon application of Colorado Tourism

Board's multiplier reflecting the number of times (2.56) each dollar is spent in the local area before being spent outside that area. The CROA estimate of economic impact does not include the expenditures of the many private rafting and kayaking enthusiasts in the area. Based upon documented flows and recreational uses within the Whitewater Course since 2006, and completion of construction of all the designed features, the Conservancy District filed an application to make the RICD water right absolute in January, 2012. (See Section 2.5.7 at page 26 and Appendix A, Section 2.1, at page 60.)

(b) Skiing.

The Crested Butte Mountain Resort has expressed a desire to increase snowmaking activities on its current acreage as well on acreage associated with a potential expansion. The estimated amount needed on an annual basis between now and 2030 is 500 acre-feet.

4.8.2 Water for Environmental Purposes.

In July 2000, the Conservancy District completed an estimate of the amount of shortages of water for instream flow purposes historically experienced in several sub-basins (Helton & Williamsen, P.C., 2000c). In order to estimate the instream flow shortages on a particular stream reach, Helton & Williamsen compared available streamflows with the amount of water decreed under Colorado Water Conservation Board (CWCB) instream flow water rights in the stream reach. Available streamflow was calculated after subtracting the headgate diversion requirements for irrigation because almost all irrigation rights in the basin are senior to the CWCB's instream flow water rights. Shortages were recorded when the available streamflows were less than the amount of the CWCB's instream flow decree. The analysis was carried out using the water supply that was available for each year from 1976 – 1990. A summary of the instream flow shortages is presented in Table 4.6. No evaluation has yet been made of amounts of future instream shortages that might occur.

TABLE 4.6
Estimate of Instream Flow Deficiencies 1976-1990

Sub-basin	CWCB Instream Flow Water Right (c.f.s.)	Maximum Annual Shortage ¹ (acre-feet)	Minimum Annual Shortage ¹ (acre-feet)	Average Annual Shortage ¹ (acre-feet)
Tomichi Creek	18	6,585	1,071	4,538
Cochetopa Creek	8.5	3,104	0	1,459
Los Pinos Creek	none	-	-	-
Ohio Creek	12	3,664	0	1,786

¹ Shortages estimated by Helton & Williamson, P.C. (2000c).