RECLAMATION
Managing Water in the West

EA No. EC-1300-08-04

Green Mountain Reservoir Substitution and Power Interference Agreements

Final Environmental Assessment

DOE/EA-1633

U.S. Department of the Interior
Bureau of Reclamation
Great Plains Region
Eastern Colorado Area Office

Cooperating Agency:
U.S. Department of Energy
Western Area Power Administration
Rocky-Mountain Customer Service Region
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Acronyms

ACHP	Advisory Council on Historic Preservation
AF	acre-feet
Authority	Upper Eagle Valley Water Authority
BLM	Bureau of Land Management
Breckenridge	Town of Breckenridge
C-BT	Colorado-Big Thompson Project
CDOW	Colorado Division of Wildlife
CDPHE	Colorado Department of Health and the Environment
CDSS	Colorado Decision Support System Model
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
Continental-Hoosier System	Continental-Hoosier Transmountain Diversion System
CWCB	Colorado Water Conservation Board
Denver Water	Denver Board of Water Commissioners
D.O.	Dissolved oxygen
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
HUP	Historic Users Pool
Kw	Kilowatt
MOA	Memorandum of Agreement
MPWCD	Middle Park Water Conservancy District
MW	megawatt
NCWCD	Northern Colorado Water Conservancy District
NDIS	Natural Diversity Information Source
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRCS	Natural Resources Conservation Service
OHV	off-highway vehicle
ORV	Outstandingly Remarkable Value

PACSM	Platte and Colorado Simulation Model
ppt	parts per thousand
Reclamation	Bureau of Reclamation
River District	Colorado River Water Conservation District
RMP	Resource Management Plan
SHPO	State Historic Preservation Officer
Springs Utilities	Colorado Springs Utilities
Subdistrict	Municipal Subdistrict of the NCWCD
SWSI	Statewide Water Supply Initiative
TMDL	Total Maximum Daily Load
TVS	Total Value Standards
UAA	Use Attainability Analysis
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
Vail	Vail Summit Resorts
WAPA	Western Area Power Administration
WGFP	Windy Gap Firming Project
WQCC	Water Quality Control Commission
WQCD	Water Quality Control Division
WRCC	Western Regional Climate Center

1.0 Purpose and Need

1.1 Introduction

In response to a request from Colorado Springs Utilities (Springs Utilities), the Bureau of Reclamation (Reclamation), an agency of the Department of the Interior, is considering entering into a Green Mountain Reservoir Substitution Agreement with Springs Utilities and a Power Interference Agreement with Springs Utilities and Western Area Power Administration (WAPA). The execution of the proposed agreements would allow Springs Utilities to provide a reliable source of municipal water to the citizen owners and customers of Springs Utilities.

This Environmental Assessment (EA) was prepared by Reclamation, the lead federal agency, in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] 1500-1508), and Reclamation's Draft NEPA Handbook (U.S. Department of the Interior 2000). This EA is not a decision document, but rather it is a disclosure of the potential environmental consequences of the No Action and Proposed Action alternatives. Implementation of the Green Mountain Reservoir Substitution and Power Interference Agreements requires approval by Reclamation. This EA provides the basis for Reclamation's review and evaluation of potential effects of the agreements, as well as reviewing the range of reasonable alternatives.

WAPA, an agency of the U.S. Department of Energy, with statutory authority over the proposed project, was invited to participate in the NEPA process as a cooperating agency (40 CFR 1501.6 and 1508.5). WAPA has accepted formal cooperating agency status and retains review and comment responsibility on the project.

1.2 Project Purpose and Need

Springs Utilities is obligated to provide substitution water for diversions from the Blue River in years when Green Mountain Reservoir may not fill. Springs Utilities currently does this on an annual basis subject to the terms of the Blue River Decree, which specifically allows for releases to be made from water stored on the Blue River and the Williams Fork River to meet the substitution obligation. The purpose of the Substitution Agreement is to allow Springs Utilities to comply with the Blue River Decree by approving the 2003 Memorandums of Agreement (MOAs) as Springs Utilities' substitution operation plan. This would specifically approve the additional water sources of Wolford Mountain Reservoir and Homestake Reservoir, which are beyond those sources authorized in the Blue River Decree. The need for the additional sources of substitution water is to provide additional operational flexibility in meeting substitution obligations to complete the fill of Green Mountain Reservoir during dry years. Reclamation must operate and maintain Green Mountain Reservoir to fulfill its purpose of assuring replacement water and power generation to the West Slope of Colorado.

In addition to the Substitution Agreement, during both substitution and non-substitution years, Springs Utilities repays WAPA for interfering with power generation from the Green Mountain Reservoir power plant. In the past, this has been accomplished through informal, annual, as-needed agreements with WAPA. The purpose of the Interference

Agreement is to provide a long-term, formalized agreement for the arrangement and conditions of repayment. The need for the agreement is to ensure that Springs Utilities repays WAPA for the interference of power generation from the Green Mountain Reservoir hydroelectric plant.

1.3 Study Area

Figure 1-1 presents a vicinity map of the Study Area for the EA. The Study Area primarily encompasses the Continental-Hoosier System as shown in Figure 1-2. In addition, the Study Area is defined by potentially affected reaches of streams and reservoirs that may experience fluctuating flows or water levels. A more detailed Study Area used to describe existing conditions and evaluate impacts is described in Chapter 3 and presented in Figure 3-1.

1.4 Background

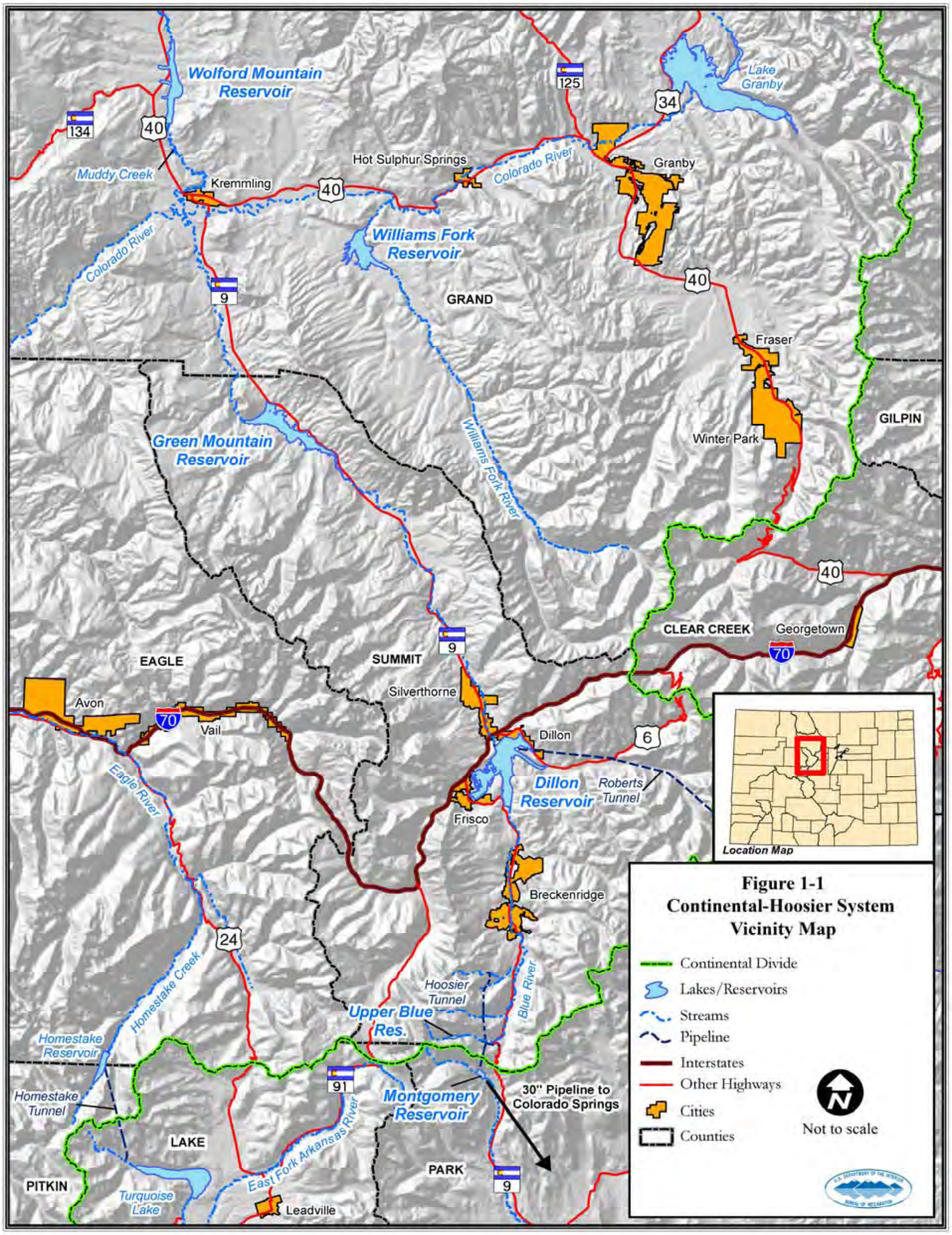
This section provides a description of Springs Utilities' existing operations as well as the relationship between these operations, Reclamation's and WAPA's operations at Green Mountain Reservoir, and the Blue River Decree. A description of the prior appropriation system is included in this section to facilitate an understanding of Springs Utilities' water rights.

1.4.1 Prior Appropriation System

A legal framework called the **prior appropriation system** regulates the use of surface water in Colorado and operates on a first in time/first in right basis. "Prior" means water users with earlier water rights (senior water rights) can fill their needs before others (junior water rights) in times of short supply. "Appropriation" occurs when a public agency, private person, or business places water to a beneficial legal use per a plan to divert, store, or otherwise capture and control the water. Only previously unappropriated water can be appropriated. The prior appropriation system provides a legal procedure by which water users can obtain a court decree for their water rights. This process of court approval is called adjudication, which sets the priority date of the water right, its source of supply, amount, point of diversion, type and place of use, and terms and conditions that govern the operation of the water right. Adjudication also confirms that the water right will not cause injury to existing water right holders. The prior appropriation system lays out an orderly process for state officials to distribute water according to decreed water priority rights, shutting off junior rights as needed to satisfy senior rights (Colorado Foundation for Water Education 2004).

1.4.2 Reclamation and Green Mountain Reservoir

Reclamation owns, operates and maintains the Colorado-Big Thompson Project (C-BT) which stores, regulates, and diverts water from the Colorado River on the western slope of the Continental Divide to the eastern slope of the Rocky Mountains. It provides supplemental water for irrigation of land, municipal and industrial use, hydroelectric power, and water-oriented recreation opportunities. To preserve existing and future water uses and interests on the West Slope, Green Mountain Reservoir was constructed on the Blue River. Spring runoff is stored in this reservoir and later released for C-BT-authorized purposes on the West Slope. Reclamation has rights to fill Green Mountain Reservoir with a 1935 water right, which are senior to Springs Utilities' 1948 water rights.


Wolford Mountain Reservoir
Lake Granby
Muddy Creek
Kremmling
Hot Sulphur Springs
Colorado River
Granby
Williams Fork Reservoir
GRAND
Fraser
Winter Park
GILPIN
Green Mountain Reservoir
Williams Fork River
CLEAR CREEK
Georgetown
EAGLE
SUMMIT
Silverthorne
Avon
Vail
Dillon
Eagle River
Dillon Reservoir
Roberts Tunnel
Frisco
Breckenridge
Homestake Creek
Hoosier Tunnel
Upper Blue Res.
Blue River
Homestake Reservoir
Homestake Tunnel
Montgomery Reservoir
30" Pipeline to Colorado Springs
LAKE
PARK
PITKIN
Turquoise Lake
East Fork Arkansas River
Leadville
Location Map
Figure 1-1
Continental-Hoosier System
Vicinity Map
Continental Divide
Lakes/Reservoirs
Streams
Pipeline
Interstates
Other Highways
Cities
Counties
Not to scale

A hydroelectric power plant is located at the base of the Green Mountain Reservoir Dam and uses the regulated streamflow of the Blue River and the water released from storage in Green Mountain Reservoir to generate electricity. Historically, power interference has been administered on a year–to-year basis.

Springs Utilities' operations on the Blue River impacts Reclamation's ability to produce hydropower; therefore Springs Utilities is required to replace the power that would have been generated by the water that Springs Utilities diverts under its 1948 water rights. During the months the Blue River System is operated, Springs Utilities provides Reclamation with daily operations data. Reclamation then determines the amount of power interference calculated at a rate of 210 kilowatt-hours per acre-feet (AF) of depletion. Since Springs Utilities owns and operates power generation facilities, power interference is typically repaid with power. Springs Utilities coordinates with WAPA to deliver the required amount of replacement power at a time and location determined by WAPA. Springs Utilities may also pay WAPA in cash.

1.4.3 Western Area Power Administration

WAPA was created under the Department of Energy Organization Act of 1977. At this time, the power marketing functions of Reclamation were transferred to WAPA including the construction, operation, and maintenance of transmission lines, and attendant facilities. The operation and maintenance of Reclamation power plants was not transferred to WAPA. WAPA markets power under the same authority that was exercised by Reclamation before the power marketing function was transferred to WAPA. WAPA takes delivery of Reclamation's generation at the power plant switch yards and then transmits the energy to preference power customers.

1.4.4 Springs Utilities' Collection Systems and Customers

The service area for Springs Utilities' customers includes the City of Colorado Springs and portions of the suburban residential areas surrounding the City. The military installations of Fort Carson Army Post, Peterson Air Force Base, and the United States Air Force Academy also receive water and other utility services from Springs Utilities. The water system serves water to an estimated 423,317 people in the Pikes Peak region. This represents the City's population, as well as persons living in the Ute Pass communities west of the City, and military bases and other areas outside the City limits. In 2007, the overall water system delivered 78,389 AF (25,543 million gallons) of potable water to Springs Utilities' customers.

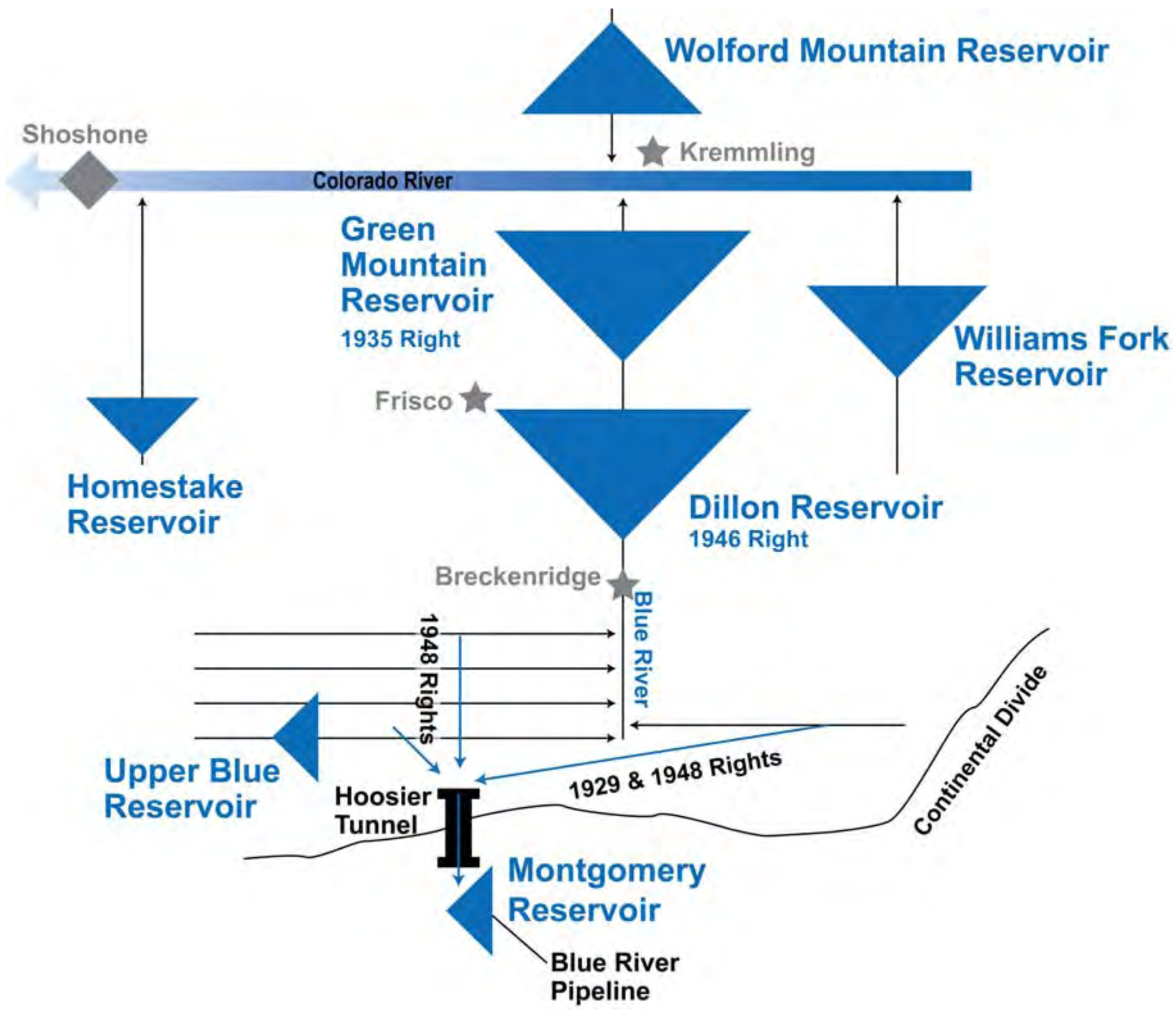
Springs Utilities' water collection system is defined as all facilities that divert, collect, store and transport water prior to treatment. Springs Utilities' extensive water collection and transmission system is made up of 25 reservoirs and/or storage accounts, more than 200 miles of major pipelines and four major pump stations. The entire system stretches through a total of nine counties: Chaffee, Lake, Eagle, El Paso, Teller, Park, Summit, Pueblo and Crowley.

Springs Utilities' collection system is comprised of local and non-local water systems. Because Colorado Springs is not located near a major source of water supply such as a river or lake, local water supplies are limited. As a result, Springs Utilities must also utilize non-local systems to meet its water demands. The non-local water supply systems utilized by Springs Utilities pertinent to this EA include the following: water diverted from the headwaters of the Blue River through its Continental-Hoosier Transmountain Diversion System (Continental-Hoosier System) facilities; and the Homestake Project (Figure 1-2).

Continental-Hoosier Transmountain Diversion System

The Continental-Hoosier System, commonly referred to as the "Blue River System," was completed in the early 1950s and is Springs Utilities' first transmountain diversion system. The Continental-Hoosier System is a major contributor to Colorado Springs'

Figure 1-2 Continental-Hoosier System and Other Relevant Upper Colorado River Facilities



water supply, bringing an average of about 8,500 AF per year to Colorado Springs. This system diverts water from the headwaters of the Blue River and its tributaries above the Town of Breckenridge, Colorado. The Blue River is a tributary of the Colorado River.

The Continental-Hoosier System is located upstream of Denver Water's Dillon Reservoir and Reclamation's Green Mountain Reservoir (Figure 1-2). The Continental-Hoosier System includes storage in the Upper Blue Reservoir, and diversion points on Crystal Creek, Spruce Creek, McCullough Creek, East and West Hoosier Creeks, Silver Creek, and the Blue River. Water diverted from these points, along with water released from the Upper Blue Reservoir, is transported through a series of canals, tunnels and siphons to the Hoosier Tunnel. The Hoosier Tunnel transports the water beneath the Continental Divide to Montgomery Reservoir, located on the Middle Fork of the South Platte River above the town of Alma, Colorado. From Montgomery Reservoir, water is delivered by gravity through a 30-inch, 70-mile long Blue River pipeline to the City of Colorado Springs (Springs Utilities 2006; Springs Utilities 2007).

Springs Utilities owns two water rights for the West Slope portion of this system. The 1929 water rights are for a portion of the flow in East and West Hoosier Creeks. The remaining diversions are made under Springs Utilities 1948 water rights. Diversions under the 1948 rights are also governed by the Blue River Decree, which relates to Reclamation's 1935 Green Mountain Reservoir rights (Section 1.4.5 Blue River Decree). As Springs Utilities' 1929 rights are senior to Reclamation's 1935 Green Mountain Reservoir rights, diversions under these rights are not subject to substitution replacement operations under the Blue River Decree.

Water Reuse and Conservation

Springs Utilities also has a longstanding and extensive nonpotable water system that uses reclaimed wastewater, untreated raw surface water, and untreated groundwater. This system meets nonpotable irrigation demands including; parks, golf courses, cemeteries, schools, businesses, and military facilities, as well as industrial uses for power generation and wastewater treatment plant process water. The nonpotable water delivered through this system comprises about 13% of the total water provided by Springs Utilities.

Conservation has been an integral part of water resource planning and management in Colorado Springs for more than 60 years. In the 1996 Water Resource Plan, conservation was identified as one of four components for meeting future demands. A Water Conservation Master Plan was completed in 1999, followed by the Drought Response Plan in 2001. Most recently, Springs Utilities completed its Water Conservation Plan for 2008-2012, which was approved by the Colorado Water Conservation Board (CWCB) in January 2008. Currently, Springs Utilities' water conservation portfolio includes customer education, demonstration projects, community partnerships, rates and metering, regulatory requirements, financial incentives, and low-income programs. Conservation programs contribute significantly to water resource planning and management, while education, demonstrations and partnerships serve as a strong foundation for an active and accountable water conservation program. Since 2001, Springs Utilities' customers have reduced their water use by 28% per account, leading to a total annual water usage decrease of about five billion gallons (about 15,000 AF).

1.4.5 Blue River Decree

Reclamation's 1935 Green Mountain Reservoir water rights were adjudicated in Federal District Court in Consolidated Case Nos. 2782, 5016, and 5017. The decrees and stipulations in these cases are collectively known as the Blue River Decree. This decree and its related stipulations allow Springs Utilities to exercise its 1948 water rights (junior) in relation to Reclamation's 1935 Green Mountain Reservoir rights (senior). The Blue River Decree also provides for replacement of water and power to mitigate impacts to Reclamation's operations resulting from Springs Utilities' exercising of its 1948 water rights. The Blue River Decree requires the approval of the Secretary of the Interior for Springs Utilities to exercise its 1948 water rights, to assure that such exercise would not adversely affect the ability of Green Mountain Reservoir to fulfill its functions.

One major provision of the Blue River Decree is that Springs Utilities must replace the power that would have been generated by Reclamation in Green Mountain Reservoir's hydroelectric turbines had Springs Utilities not diverted water. In other words, Springs Utilities must pay for power interference. Springs Utilities has historically provided the replacement power year-to-year by mutual agreement with the WAPA at a time and location requested by WAPA. Springs Utilities has carried out this operation under the authority of the Blue River Decree.

Another major provision of the Blue River Decree is that Springs Utilities, and other junior water rights owners specifically identified in the Blue River Decree, must implement water substitution plans to help assure the filling of Green Mountain Reservoir. Each year, Reclamation determines, based on snow pack and other forecasting, whether it is reasonably probable that Green Mountain Reservoir will fill as provided for in the Blue River Decree. If a fill is reasonably probable, then it is projected to be a non-substitution year, and Reclamation allows Springs Utilities to divert under its 1948 rights. Typically, during non-substitution years, Reclamation mails a letter between April 1st and May 15th notifying Springs Utilities that the most Probable Forecast is that Green Mountain Reservoir will fill, and therefore Springs Utilities may divert its 1948 water rights. Because the hydrology of the basin has generally been sufficient to assure the filling of Green Mountain Reservoir, this procedure, historically, has been the typical operation in most years.

If Reclamation determines that it is reasonably probable that Green Mountain Reservoir will not fill, then it is projected to be a substitution year, and Springs Utilities may not divert Blue River water without a plan for substitution approved by the Secretary of the Interior. The Decree specifically identifies and authorizes water stored on the Blue River and the Williams Fork River as acceptable substitution supplies.

Typical substitution operation under the terms of the Blue River Decree includes the following:

- A volume of replacement water equal to or greater than the anticipated fill deficit is diverted and held in storage during the fill season, or carried over from a previous storage season.
- At the end of the fill season, the actual fill deficit is determined and the amount of replacement water required from each diverting entity is calculated.

- The entity releases its replacement water according to a schedule of releases set by Reclamation.

1.4.6 Substitution Year Operations

Historical Substitution Year Operations

Typically, Springs Utilities has operated during substitution years by proposing an annual plan for substitution to Reclamation after receiving notice that Green Mountain Reservoir is not expected to fill. Springs Utilities has used replacement storage on the Blue River and Williams Fork River as authorized Blue River Decree replacement supply sources during several of the substitution years. Springs Utilities has also used, with Reclamation's approval, replacement storage from Wolford Mountain Reservoir on Muddy Creek during more recent substitution years. However, this source is not specifically identified in the Blue River Decree, but was utilized as part of interim agreements pending approval of the 2003 MOAs by Reclamation (see description in Section 1.4.7 Substitution Memorandum of Agreement). Thus, this source is not considered part of the existing operating conditions. Because each substitution year that has occurred has resulted in a different annual plan for substitution, each year's substitution operation and implementation has been different. The operations in the substitution years that have occurred during the period of 1964 through 2005 are described below and are based on Springs Utilities' Annual Blue River Reports and related correspondence. Additionally, the amount and supply source of the substitution water is summarized in Table 1-1. These substitution years serve as examples of the different sets of existing conditions that result from using the year-by-year substitution plans and substitution sources identified in the Blue River Decree.

Table 1-1: Summary of Historical Substitution Year Operations

1964 Substitution Year	
Total Green Mountain Reservoir Shortage	23,531 AF
Springs Utilities' Replacement from Dillon Reservoir	1,583 AF
Springs Utilities' Net 1948 Diversions	8,997 AF
Total Green Mountain Reservoir Shortage	Unknown
Springs Utilities' Replacement from Upper Blue Reservoir	589 AF
Springs Utilities' Net 1948 Diversions	2,182 AF
1981 Substitution Year	
Total Green Mountain Reservoir Shortage (est.)	36,000 AF
Springs Utilities' Replacement (full replacement provided by Denver Water)	0 AF
Springs Utilities' Net 1948 Diversions	5,425 AF
1994 Substitution Year	
Total Green Mountain Reservoir Shortage	4,740 AF
Springs Utilities' Replacement from Williams Fork Reservoir	474 AF
Springs Utilities' Net 1948 Diversions	8,390 AF

1964 Substitution Year

Denver Water's Dillon Reservoir filled for the first time in 1964. Springs Utilities and Denver Water entered into a one year water supply agreement, which was approved by Reclamation. Under this agreement, Springs Utilities diverted water physically available under the 1948 rights. Denver Water reserved water in and released water from Dillon Reservoir to replace the shortage in Green Mountain Reservoir. Replacement was based on Springs Utilities' pro-rata share of depletions.

1977 Substitution Year

This year was declared a substitution year by Reclamation. Based on direction in the annual letter from Reclamation, Springs Utilities started storing water in Upper Blue Reservoir only, but not diverting through Hoosier Tunnel. Then, in early June, Reclamation notified Springs Utilities that the reserved amounts in Dillon Reservoir and Upper Blue Reservoir were sufficient to fill Green Mountain Reservoir. Thus, Springs Utilities began diverting water until it was no longer in-priority and was called out on June 20, 1977. On July 6, 1977 Reclamation notified Springs Utilities by telephone that Green Mountain Reservoir would fill without the water stored in the Upper Blue Reservoir and Springs Utilities began transferring the Upper Blue Reservoir water through Hoosier Tunnel. On July 13, 1977 Reclamation reversed itself and conveyed by telephone that it needed about 600 AF from Springs Utilities to complete the fill of Green Mountain Reservoir. Springs Utilities held 614 AF in the Upper Blue Reservoir to cover the deficit, and on September 7, 1977, Reclamation notified Springs Utilities that it owed 589 AF to Green Mountain Reservoir, which was released from Upper Blue Reservoir.

1981 Substitution Year

In contrast to the 1977 substitution year, the Probable Fill letter from Reclamation approved diversions under Springs Utilities' 1948 water rights without any reference to holding the water in storage. Therefore, Springs Utilities diverted under the 1948 rights through the entire runoff period until Shoshone called the 1948 right out of priority. There were no communications from Reclamation or from the Division 5 Office of the State Engineer to curtail diversions (other than the Colorado River Call). Simultaneously, Denver Water had proposed and operated a 55,000 AF replacement and exchange from Williams Fork Reservoir to Dillon Reservoir. Reclamation may have concluded that since Denver Water had reserved 55,000 AF, which was more than sufficient to fill Green Mountain Reservoir, substitution water from Springs Utilities was not needed.

1994 Substitution Year

Initially there was no request from Reclamation for Springs Utilities to store water or to curtail their 1948 rights. Later in the season, Reclamation informed all parties that Green Mountain Reservoir would not fill. Denver Water paid back the total Green Mountain Reservoir shortage of 4,740 AF with releases from Williams Fork Reservoir and Springs Utilities agreed to repay Denver Water a pro-rata share of the shortage (474 AF) with releases to the South Platte River from Springs Utilities' Homestake Pipeline.

Recent Substitution Years

Substitution was required for the filling of Green Mountain Reservoir during 2001, 2002, and 2004. In addition, the years 2003 and 2005 were initially declared substitution years, but hydrologic conditions were such that Green Mountain Reservoir filled without any substitution operations or releases necessary. Although 2001 was initially declared a non-substitution year, Reclamation reversed this position mid-year. Springs Utilities did not gain approval from Reclamation for its proposed substitution operation in 2001, and, accordingly, diversions under Springs Utilities' 1948 water rights were curtailed. Substitution operations during the years 2002 through 2005 were proposed or carried out under interim agreements that partially implemented the Proposed Action. Operations during some of these years included releases from Wolford Mountain Reservoir to cover Springs Utilities' substitution obligations.

Summary of Substitutions

Since the entry of the Blue River Decree, during non-substitution years, Springs Utilities has diverted water under its 1948 rights after notice from Reclamation that Green Mountain Reservoir will most probably fill. During substitution years, Springs Utilities has typically diverted water under its 1948 rights after submitting an annual substitution plan under the authority of the Blue River Decree and receiving approval from Reclamation on behalf of the Secretary of the Interior. Water owed to Green Mountain Reservoir during substitution years has been repaid at various times from Dillon Reservoir, Williams Fork Reservoir, and Upper Blue Reservoir, as expressly authorized in the Blue River Decree. Use of Dillon and Williams Fork Reservoirs as replacement sources for Springs Utilities has been subject to agreement between Springs Utilities and Denver Water. For water diverted during both substitution and non-substitution years, Springs Utilities has repaid power interference through informal, year-to-year agreements with WAPA.

1.4.7 Substitution Memorandums of Agreement

In May 2003, Springs Utilities entered into a MOA, which formalized a long-term substitution plan and sets forth the terms and conditions among the parties to the MOA regarding substitution operations by Springs Utilities. A copy of the 2003 MOA is available on Reclamations' project website at: http://www.usbr.gov/g//nepa/quarterly.cfm#ecao. The parties to this MOA are Springs Utilities, Colorado River Water Conservation District (River District), the Denver Board of Water Commissioners (Denver Water), Northern Colorado Water Conservancy District (NCWCD), Summit County, Vail Summit Resorts (Vail), and the Town of Breckenridge (Breckenridge). Springs Utilities also signed a Supplemental MOA in October 2003 to address protection of the Upper Blue River entities' exchanges under certain conditions. The parties to this agreement include Summit County, Vail, and Breckenridge. Reclamation is not a party to the MOAs. The NEPA process, through this EA, must be completed prior to Reclamation's decision to approve the substitution plan set forth in the MOAs.

Springs Utilities has proposed that Reclamation approve and adopt the 2003 MOAs to serve as a flexible and reliable substitution plan that will meet the requirements of the Blue River Decree. In addition to operations that are specifically authorized in the Blue River Decree, the 2003 MOAs provide for the addition of two new sources of substitution water: Wolford Mountain Reservoir and Homestake Reservoir. The 2003 MOAs contain additional provisions not directly related to the substitution operation required for the filling of Green Mountain Reservoir, and documents some substitution operations that are already specifically authorized by the Blue River Decree. Chapter 2 of this EA provides a description of the Proposed Action.

The proposed project also formalizes a long-term power interference agreement with Reclamation and WAPA. Under the agreement, Springs Utilities would compensate for lost hydropower with power generated from their own facilities, at a time and location determined by WAPA.

In separate but related actions, Colorado Springs has filed applications in Colorado Water Court and in Federal Court to formally decree and adjudicate its long-term Substitution Plan (discussed in Section 1.5 Required Permits and Approvals).

1.5 Required Permits and Approvals

Federal, state, and local permits and approvals may be required to implement the proposed project. However, the project does not involve ground disturbing activities and therefore, would not require an extensive list of permits and/or authority. This EA provides information for the other regulatory agencies having jurisdictional responsibility for lands and resources affected by the project. Permits and/or approvals required to implement and/or are related to the project include:

Bureau of Reclamation – Formal approval of a long-term Substitution Agreement per the conditions of the 2003 MOAs between Reclamation and Springs Utilities. Formal approval of a long-term Power Interference Agreement between WAPA, Reclamation, and Springs Utilities.

Western Area Power Administration – Formal approval of a long-term Power Interference Agreement between WAPA, Reclamation, and Springs Utilities.

Colorado Water Court System – Final determination in the Springs Utilities' substitution filing (Case No. 03CW320) in Colorado Water Court Division 5. This filing does not impact the NEPA process, but runs concurrent to the project.

Federal Court System – Final determination in the Springs Utilities' filing in Federal District Court parallel to the Colorado Water Court for the same purpose. Again, this filing does not impact the NEPA process, but runs concurrent to the project.

County Permits – Additional county permits may be required. Summit County may require a 1041 permit per the County's Land Use and Development Code regulations (Chapter 10: Areas and Activities of State Interest).

1.6 Agency and Public Input

In accordance with the NEPA (40 CFR 1501.7), Reclamation initiated the scoping process to provide for an early and open process to gather information from the public and interested agencies on the issues and alternatives to be evaluated in this EA. Reclamation conducted stakeholder interviews with federal and state agencies to solicit concerns and comments on the project, and determine the level of anticipated participation from each agency, and is described in the scoping summary report prepared for this project (URS 2008).

During the scoping period, Reclamation held a public scoping meeting on March 6, 2008 in Silverthorne, Colorado. The scoping period extended from March 6 to April 4, 2008. The NEPA scoping process, original scoping letters, and specific comments gathered by Reclamation during the process are detailed in the scoping summary report and in Chapter 4 Coordination and Consultation (URS 2008).

1.7 Environmental Resources

Chapter 3 Affected Environment and Environmental Consequences describes a summary of the resources Reclamation identified to be included for further evaluation in the EA, and those considered but excluded from further evaluation along with a brief explanation. In summary, resource issues and impact topics evaluated in Chapter 3 include:

- Hydroelectric generation
- Hydrology
- Water quality
- Aquatic resources
- Wetlands/riparian resources
- Special status species associated with aquatic resources and wetland and riparian areas
- Recreation
- Socioeconomics

Resource issues and impacts topics considered, but excluded from further evaluation in the EA include:

- Geology
- Soils
- Farmlands
- Air quality
- Noise
- Transportation
- Land use
- Visual resources
- Hazardous materials
- Terrestrial upland communities and wildlife
- Terrestrial special status species
- Environmental justice
- Cultural and Indian Trust resources

2.0 Alternatives

2.1 Introduction

Compliance with the NEPA requires that the environmental effects of a proposed federal action (i.e., Proposed Action) be studied and compared with the environmental effects of an alternative that does not require the proposed federal action (No Action alternative). For this specific project, the No Action alternative is the same as existing conditions, which is operations per the Blue River Decree using a combination of water from the Blue River and Williams Fork River, as described in Chapter 1, Section 1.4 Background. This EA compares the Proposed Action and the No Action alternatives, as described in Sections 2.2 and 2.3, respectively. The CEQ characterizes the alternatives screening process in an EA as a process to identify reasonable alternatives to be evaluated and appropriate mitigation measures to be incorporated into the alternatives (Section 40 CFR 1508.9[a]). The preliminary alternative screening analysis conducted for this EA is described in Section 2.2.

2.2 Alternative Screening Process

In accordance with NEPA, a reasonable range of preliminary alternatives was evaluated during the screening process. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint using common sense, rather than simply desirable from the standpoint of the applicant ("Forty Most Asked Questions Concerning NEPA," Question 2a). Under NEPA, the comparison of a full spectrum of alternatives should provide "a clear basis for choice among options for the decision maker and the public" (40 CFR 1502.14).

Preliminary alternatives were configured using a variety of potential water supply sources and infrastructure components (i.e., new storage sites, pipelines, pump station). Potential water sources identified must be available (physically and legally) from a sustainable source in amounts sufficient to be practicably developed. Unlike the Proposed Action, all of the preliminary alternatives that were considered required the construction of new facilities. These alternatives were carefully screened based on numerous evaluation criteria related to purpose and need, existing technology, logistics, water rights, costs, environmental impacts, and complying with the requirements of the Blue River Decree. Examples of alternatives that were considered, but screened out are described below.

Additional Storage on the Blue River

Springs Utilities has conditional water rights on the Blue River that could be developed at their original decreed locations or transferred to new storage facilities. The development of additional storage on the Blue River would be used to divert and store water in wet years and hold it for substitution releases in substitution years. Two options for Blue River storage were identified and evaluated during the screening process. The first option included the development of approximately 3,166 AF of storage in one or more new reservoirs in the upper reaches of tributaries to the Blue River using Springs Utilities conditional storage rights. The second option for storage that was considered during screening involved the construction of approximately 5,000 AF of new gravel lake storage on the Blue River below Dillon Reservoir or on the Williams Fork River below Williams Fork Reservoir.

Although construction of additional storage on the Blue River is feasible, it would require regulatory approval from the Army Corps of Engineers (USACE) through the NEPA process, as well as 401 Certification through the Colorado Department of Health and Environment, Water Quality Control Division (CDPHE WQCD). Additionally, there would likely be lengthy water rights litigation required for the development of the additional storage. Both Blue River storage options include construction of new structural components and the cost and environmental impacts were deemed to be far greater than implementing the non-structural Proposed Action.

Montgomery Reservoir Pump-Back

Another structural alternative that was considered during the screening process was a pump-back project from Springs Utilities' Montgomery Reservoir, located on the headwaters of the South Platte River. Under this scenario, the pump-back would operate during substitution years by diverting water through the Hoosier Tunnel and storing it in Montgomery Reservoir. When substitution releases are required, the pump station would pump the necessary amount of water from that stored in Montgomery Reservoir back through the Hoosier Tunnel to be discharged into the Blue River, where it would then flow down to Green Mountain Reservoir to complete its filling. This alternative would consist of a new pump station constructed at Montgomery Reservoir, and a new pipeline through the Hoosier Tunnel. This alternative would also require the extension of power to the Montgomery Reservoir site. Additionally, conditional storage rights may need to be obtained to operate this alternative.

The same type of federal action required by Reclamation for the Proposed Action would be required for a pump-back since Montgomery Reservoir is not approved as a substitution source under the Blue River Decree. Water rights litigation in Colorado Water Court Division 5 would also be required for this alternative to allow this operation to be approved for use as a source of substitution water for Green Mountain Reservoir. This option would require the construction of new structural components and the cost and environmental impacts were deemed to be far greater than implementing the non-structural Proposed Action.

2.3 No Action Alternative

Water Substitution

If Reclamation does not approve the Proposed Action, Springs Utilities would operate during substitution years strictly per the Blue River Decree (refer to Chapter 1, Section 1.4.5 Blue River Decree) according to annual substitution plans approved by the Secretary of the Interior as needed. The Blue River Decree authorizes substitution operations using a combination of water from the Blue River and Williams Fork River. Denver Water would be willing to continue to provide replacement water in the future on behalf of Springs Utilities in substitution years for water Springs Utilities is obligated to provide to Green Mountain Reservoir, depending on Denver Water's own operational needs and water supply requirements (Denver Water 2008). Based on this information for the purposes of this analysis, it is assumed that Denver Water would provide replacement water. If Denver Water chose not to provide replacement water, Springs Utilities might have to identify other replacement sources for approval by the Secretary of Interior, and the comparative impacts of the No Action and action alternatives likely would change. Springs Utilities would not use Wolford Mountain or Homestake Reservoirs as sources of replacement water under the No Action alternative. The terms and conditions agreed to in the May 2003 MOA are not part of the No Action alternative. Approval of the October 2003 MOA is also not part of the No Action alternative.

For the purposes of the analysis of hydrologic effects, Springs Utilities' substitution payback under the No Action alternative is modeled as follows. Water is released first from Upper Blue Reservoir to Dillon Reservoir in August. Releases to Dillon Reservoir decrease Springs Utilities' substitution obligation while increasing Denver Water's substitution obligation by a commensurate amount. If contents in Upper Blue Reservoir are not sufficient to payback Springs Utilities' entire substitution obligation, it is assumed that Denver Water would payback any remaining obligation with releases from William Fork Reservoir and/or Dillon Reservoir. To be conservative and reflect the maximum possible change in Middle Fork South Platte River streamflows and contents in Montgomery and Elevenmile Canyon reservoirs, it was assumed that Springs Utilities would provide Denver Water with water released from Montgomery Reservoir to the degree Springs Utilities' substitution obligation exceeds contents in Upper Blue Reservoir.

Power Interference Substitution

Under the No Action alternative, replacement of power at the Green Mountain Reservoir power plant would continue to be accomplished through informal, as-needed, annual agreements between WAPA, Reclamation, and Springs Utilities as authorized in the Blue River Decree (see discussion in Chapter 1, Section 1.4.2 Reclamation and Green Mountain Reservoir). Springs Utilities' operations on the Blue River impacts Reclamation's ability to produce hydropower; therefore Springs Utilities is required to replace the power that would have been generated by the water that Springs Utilities diverts under their 1948 water rights. Springs Utilities reserves the right to pay WAPA monetarily or with power. Since Springs Utilities owns and operates power generation facilities, power interference may be repaid with power. Springs Utilities coordinates with WAPA to deliver the required amount of replacement power at a time and location determined by WAPA.

2.4 Proposed Action

Water Substitution

Under the Proposed Action, Reclamation would enter into up to a 40-year Substitution Agreement with Springs Utilities. This agreement would approve Springs Utilities' substitution plan according to the terms and conditions set forth in the 2003 MOAs. The elements of the May 2003 MOA that are specific to the Proposed Action are the use of Wolford Mountain Reservoir and Homestake Reservoir as sources of replacement water in a manner consistent with the terms and conditions of the 2003 MOAs. Reclamation may approve the use of these additional water sources on a long-term basis, but Springs Utilities must submit for approval of its substitution plan specific for that substitution year. Another component of the Proposed Action (May 2003 MOA) is that Springs Utilities provides up to 250 AF stored in the Upper Blue Reservoir to the Colorado River Water Conservation District (River District) each year in return for a like-amount of water stored in Wolford Mountain Reservoir. The 250 AF is intended for water users in the Blue River Basin including Summit County, Vail, Summit Resorts, and Breckenridge. A storage account in an amount up to 1,750 AF is maintained by the River District at

Wolford Mountain Reservoir for the benefit of Springs Utilities to store Upper Blue Reservoir water booked into Wolford Mountain Reservoir. This account is referred to throughout the rest of this document as Springs Utilities' account in Wolford Mountain Reservoir.

For the purposes of the analysis of hydrologic effects, Springs Utilities' substitution payback under the Proposed Action is modeled as follows. Springs Utilities would divert water in dry years when Reclamation determines that Green Mountain Reservoir would likely not fill and substitute this water using water stored on the Blue and Williams Fork rivers per the terms of the Blue River Decree and if needed, from Wolford Mountain Reservoir and Homestake Reservoir per the terms of the 2003 MOAs. The first 2,100 AF of replacement water would be provided from Springs Utilities to Denver Water from Springs Utilities' Upper Blue Reservoir and their South Platte River supplies such as Montgomery Reservoir, if necessary. The amount provided to Denver Water would be added to the Denver Water replacement obligation and released by Denver Water in accordance with the Denver Water substitution agreements and decree. The next increment of Springs Utilities' replacement obligation (up to 1,750 AF) would be comprised of releases from water accrued by exchange in the substitution account maintained for Springs Utilities at Wolford Mountain Reservoir. Any remaining replacement obligation would be made with releases from Homestake Reservoir. The MOA outlines the use Wolford Mountain Reservoir and Homestake Reservoir as alternate replacement sources to Green Mountain Reservoir operations. Therefore, releases from Springs Utilities' account in Wolford Mountain Reservoir and Homestake Reservoir would be made in replacement of all uses of Green Mountain Reservoir in lieu of releasing water from Green Mountain Reservoir.

To reflect the exchange of 250 AF between Upper Blue Reservoir and Wolford Mountain Reservoir in the model, releases of 250 AF are made from Upper Blue Reservoir every November. For modeling purposes, this water is assumed to be diverted above Dillon Reservoir in the same month and fully consumed. In actuality, all or a portion of the 250 AF may be used for augmentation purposes, in which case it would be used to replace out-of-priority depletions to the Blue River or its tributaries, directly or by exchange. This use would be fully consumptive. Alternatively, some or all of the water may be diverted or stored, directly or by exchange and may or may not be fully consumed in the month of diversion. In return for this water, 250 AF is booked into an account in Wolford Mountain Reservoir up to a maximum of 1,750 AF and is available for substitution payback. Per the terms of the MOA, no evaporative losses are charged to the 250 AF account in Upper Blue Reservoir or Springs Utilities' account in Wolford Mountain Reservoir.

Springs Utilities' Continental-Hoosier System diversions deplete the Blue River, therefore, these diversions affect the ability to meet the CWCB instream flow requirements above Dillon Reservoir, which are junior to Springs Utilities' water rights and the Blue River Decree. However, in order to ensure this alternative protects the natural environment in a manner consistent with the instream flow requirements above Dillon Reservoir, during substitution years, Springs Utilities' would refrain from diverting to the extent necessary in order to maintain flows at the instream flow levels.

Compliance for this mitigation will be to maintain a flow of 5 cfs just upstream of Goose Pasture Tarn Reservoir. Flows at this location will be estimated based on the USGS gage 09046490 Blue River at Blue River, which is located just downstream of Goose Pasture Tarn Reservoir, plus diversions to storage at Goose Pasture Tarn. The location of compliance was chosen because Springs Utilities' Continental-Hoosier System is the primary diversion upstream of Goose Pasture Tarn Reservoir whereas downstream of this point, flows are influenced by reservoir operations at Goose Pasture Tarn and diversions and returns flows associated with water users other than Springs Utilities.

Based on model results, which are explained in Chapter 3, there would be 13 substitution years during the 56-year study period with total substitution obligations ranging from 139 AF to 4,318 AF. Based on the frequency of substitution years during the study period (one in every 4 to 5 years), there would be approximately 9 to 10 substitution years during the 40-year life of the contract with Reclamation.

Power Interference Substitution

Under the Proposed Action, a long-term Power Interference Agreement would be formalized with Reclamation and WAPA. Under the agreement, Springs Utilities would compensate for lost hydropower with power generated from their own facilities, at a time and location determined by WAPA. Springs Utilities reserves the right to pay WAPA monetarily or with power.

3.0 Affected Environment and Environmental Consequences

3.1 Introduction and Methodology

This chapter describes the affected environment and discloses the potential environmental consequences associated with implementing the No Action and Proposed Action alternatives as described in Chapter 2. Resources evaluated in this chapter include: hydrology, hydroelectric generation, water quality, aquatic resources, wetland and riparian resources, recreation, and socioeconomics. A summary of those impacts is shown in Table 3-25 in Section 3.10. As described in Section 3.2 Issues and Impacts Topics Considered but Excluded from Further Evaluation, there are no effects expected to impact geology, soils, farmlands, air quality, noise, transportation, land use, visual resources, hazardous materials, terrestrial upland communities, wildlife, terrestrial special status species, environmental justice, and cultural and Indian trust resources. Therefore, impacts to these topics have been considered but eliminated from further evaluation.

The No Action alternative represents a continuation of operations as outlined in the Blue River Decree. In addition, replacement of power at the Green Mountain Reservoir hydroelectric plant would continue to be accomplished through informal, as-needed, annual agreements between WAPA, Reclamation, and Springs Utilities as authorized in the Blue River Decree. The No Action alternative provides a baseline condition, which was used to evaluate the level of potential impact resulting from the implementation of the Proposed Action. Impact thresholds used to analyze the Proposed Action are defined in Section 3.1.1.

3.1.1 Impact Thresholds

Direct, indirect, and cumulative effects were analyzed for each resource topic and are described in terms of type, duration, and intensity with general definitions of each provided below.

Type – describes the classification of the impact as beneficial or adverse, and direct, indirect or cumulative.

Beneficial: positive change in the condition or appearance of the resource, or a change that moves the resource toward a desired condition.

Adverse: negative change that detracts from the resource's appearance or condition, or a change that moves the resource away from a desired condition.

Direct: effect caused by the Proposed Action and occurs in the same time and place.

Indirect: effect caused by the Proposed Action but occurs later in time or farther removed in distance

Cumulative: incremental effect caused by the Proposed Action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions (40 CFR 1508.7). Cumulative impacts can result from individually minor, but collectively significant actions taking place over time.

Several reasonably foreseeable actions are anticipated to occur in the future regardless of the implementation of the Proposed Action. The cumulative effects analysis evaluates reasonably foreseeable actions that when combined with the Proposed Action, results in a cumulative effect on the environment. Potential future actions were considered reasonably foreseeable and included in the cumulative effects analysis if they met all of the following criteria:

- The action would occur within the same geographic area where effects from the Proposed Action are expected to occur,
- The action would affect the same environmental resources as the Proposed Action, and contribute to the total resource impact, and
- There is reasonable certainty as to the likelihood of the action occurring (e.g., actions that are funded or permitted for implementation or are included in firm near-term plans).

Potential water-based future actions were identified through available data on known projects or actions under consideration in the vicinity of the Study Area. Future actions meeting the criteria described above are described in the Section 3.3. Because the Proposed Action would not result in any new infrastructure or ground disturbance, reasonably foreseeable actions were limited to those water-based actions that would have overlapping effects with the Proposed Action on water resources.

Duration – describes the length of time an effect would occur as short-, intermediate- or long-term.

Short-term: lasting no longer than one year of substitution.

Intermediate-term: lasting no more than one year beyond a substitution year. In the case of a series of consecutive substitution years, the length of time would not extend for more than one year beyond the last substitution year in the series.

Long-term: lasting more than one year beyond the substitution year or series of substitution years up to the length of the contract, which is up to 40 years.

Intensity – describes the degree, level, or strength of an impact as no impact, negligible, minor, moderate, or major. The following explains the thresholds used to determine the change in intensity.

No impact: no discernable effect.

Negligible: effect is at the lowest level of detection and causes very little or no disturbance.

Minor: effect that is slight, but detectable, with some perceptible effects of disturbance.

Moderate: effect is readily apparent and has measurable effects of disturbance.

Major: effect is readily apparent and has significant effects of disturbance.

3.1.2 Climate Change

Numerous studies have been conducted on the relationship between climate change and water resources in the West. Most climate models project that temperatures will continue to rise in the West. For instance, in Colorado temperatures have increased about 2°F in the past 30 years and future winter projections indicate fewer extreme cold months, more extreme warm months, and more strings of consecutive warm winters (Western Water Assessment 2008; National Research Council 2007).

Results from hydrological modeling of the impact of rising temperatures on water resources in mountainous western regions, including Colorado, vary widely (Hoerling and Eischeid 2007; Garfin and Lenart 2007; Woodhouse 2007; IPCC 2008; Western Water Assessment 2008). The general scientific consensus is that increased temperatures would change the composition of winter precipitation and the timing of spring snowmelt. In other words, as temperatures rise the West would receive less snow and the snow that does accumulate would melt earlier in the spring than in past years. In Colorado, the onset of stream flows from melting snow has shifted earlier by two weeks between 1978 and 2004 and the projected timing of runoff is projected to shift earlier in the spring, reducing late-summer flows (Western Water Assessment 2008). Additionally, western snowmelt runoff is expected to decrease due to the higher evaporation and transpiration rates that accompany increased temperatures (Garfin and Lenart 2007; Letheby 2007; Nijhuis 2006a and 2006b; USDA 2007; USGS 2005; Watershed Management Council Networker 2005; IPCC 2008). It is estimated that nearly 75% of water supplies in western states are derived from snowmelt; thus, water managers will likely have to address greater extremes in water systems in the foreseeable future. Water managers may best cope with the combination of these anticipated changes by flexible operations that can incorporate increasing amounts of new scientific information as it becomes available (Woodhouse 2007; Garfin and Lenart 2007). Climate change and global warming may be considered reasonably foreseeable; however currently there is no accepted scientific method of transforming the general concept of increasing temperatures into incremental changes in streamflow or reservoir levels. Thus, hydrologic changes in response to global climate change have not been quantitatively described in this EA.

3.1.3 Reasonably Foreseeable Water-Based Actions Considered in Cumulative Effects Analysis

Water-based actions refer to proposed water storage and diversion projects, water rights changes, and Section 404 activities. The Cumulative Effects Analysis focused on water-based actions because the Proposed Action does not involve land-disturbing activities or other on-the-ground changes. The following reasonably foreseeable water-based actions were considered in the evaluation of cumulative effects.

Windy Gap Firming Project

The Subdistrict of the NCWCD, on behalf of several of the Windy Gap Project unit holders and the Middle Park Water Conservancy District, is proposing to improve the firm yield from the existing Windy Gap Project water supply by constructing the Windy Gap Firming Project (WGFP). The Subdistrict's Proposed Action is the construction of a 90,000 AF Chimney Hollow Reservoir located just west of Carter Lake on the East Slope. This project is anticipated to result in additional surface diversions at the Windy Gap Project diversion site on the Colorado River, which is downstream of the confluence of the Colorado and Fraser rivers. The WGFP is anticipated to generate approximately 26,000 AF/yr of firm yield for the project participants. The cumulative effect of the WGFP would be reduced flows in the Colorado River downstream of the Windy Gap Project diversion in average and wet years from April through August.

Moffat Collection System Project

Denver Water's total system demand is anticipated to grow to 363,000 AF/yr on average by 2030. Denver Water's current demand is 285,000 AF/yr on average; therefore, an average increase in demand of 78,000 AF/yr is anticipated by the year 2030. The Moffat Collection System Project is currently proposed by Denver Water to develop 18,000 AF/yr of new, annual yield to the Moffat Treatment Plant to meet future raw water demands on the East Slope. The remainder of the deficit would be comprised of savings from implementing various conservation measures. The alternatives include additional storage in the Moffat Collection System. This project is anticipated to result in additional diversions, primarily from the upper Fraser River and Williams Fork River basins. The Moffat Collection System Project and Denver Water's increase in demand would cumulatively reduce flows in the Colorado River, Williams Fork River, and Blue River in average and wet years primarily during runoff.

Other Increased Water Use in Grand and Summit Counties

The population in Grand and Summit Counties is expected to more than double over the next 25 years, from a year-round population of about 39,000 in 2005 to about 79,000 in 2030 (ERO 2007). Most growth in Grand County is likely to occur in the Fraser River basin while future increases in water use in Summit County would occur primarily in the Blue River basin. The largest growth in water demands in the Blue River basin is expected to occur in areas below Dillon Reservoir including the Towns of Silverthorne, Eagles Nest and Mesa Cortina. Build-out municipal and industrial demands are estimated to be 16,168 AF for Grand County and 17,940 AF for Summit County as identified in the Upper Colorado River Basin Study (Hydrosphere 2003). The timing of the growth in demand depends upon economic development trends in the respective service areas of the individual water providers. Increased water use and wastewater discharges are expected to result in changes in the quantity and timing of streamflows and water quality.

In addition, Springs Utilities has claimed absolute and conditional rights of exchange in Case No. 03CW314 in connection with the Continental-Hoosier System. These exchange rights would allow Springs Utilities to divert additional water at the Continental-Hoosier System when their rights are out of priority (e.g., Xcel Energy's Shoshone Power Plant rights are calling) and exchange potential exists in the Blue River basin. These exchange rights would typically be exercised in late summer/early fall after Springs Utilities has completed diverting under the Blue River Decree. The circumstances under which these exchanges could occur are varied and difficult to predict since it depends on the physical availability of water at the Continental-Hoosier System and intervening water rights in the exchange reach including Denver Water's rights at Roberts Tunnel and Dillon Reservoir. The operation of these exchanges also depends on Springs Utilities' operational needs and potential benefits to their system. Although Springs Utilities may have the physical and legal ability to exercise an exchange, they may choose not to based on other factors related to their overall system operation.

Reduction of Xcel Energy's Shoshone Power Plant Call

The Shoshone Power Plant, which is owned by Xcel Energy, has two water rights to divert a total of 1,408 cfs from the Colorado River eight miles east of Glenwood Springs. Denver Water and Xcel Energy have negotiated an agreement to periodically invoke a relaxation of the Shoshone call at times flows are less than 1,408 cfs at the point of diversion. The agreement to relax the call could result in a one-turbine call of 704 cfs, which would be managed in such a way to avoid a Cameo call by the Grand Valley Water users. The Cameo call refers to a suite of senior water right located near Grand Junction. The Shoshone call could be increased above 704 cfs as needed to keep the Cameo water rights satisfied. The Shoshone call relaxation could be invoked if, in March, Denver Water predicts its total system storage to be at or below 80% on July 1 that year, and the March 1 Natural Resources Conservation Service (NRCS) forecast for Colorado River flows at Kremmling or Dotsero are at or below 85% of average. The Shoshone call relaxation could be invoked between March 14 and May 20. The term of this agreement is from January 1, 2007, through February 28, 2032.

Key projects/water rights that would benefit from a reduction of the Shoshone call include the Continental-Hoosier Project, Green Mountain Reservoir, Wolford Mountain Reservoir, Moffat Collection System (Moffat Tunnel, Williams Fork Reservoir, Roberts Tunnel, and Dillon Reservoir), Windy Gap, and the Homestake Project. The relaxation of the Shoshone call would allow diverters that would otherwise be called out to divert water in-priority even if they are junior to the Shoshone Power Plant water rights. Because more diversions would be made in-priority, releases from reservoirs such as Green Mountain, Wolford Mountain, and Williams Fork for exchange or substitution purposes would also be less. Increased in-priority diversions and reduced reservoir releases for exchange and/or substitution would decrease flows primarily in the Williams Fork River, Muddy Creek, the Blue River, and the Colorado River mainstem below the Windy Gap diversion during the relaxation period. Colorado River flows at Dotsero could be affected outside of the relaxation period if additional water diverted to storage during the relaxation period is released to the Colorado River. The magnitude and timing of flow reductions attributable to a Shoshone call relaxation could vary widely from year to year and would depend on many factors including streamflows, storage contents, project operations, and bypass/instream flow requirements.

Because of the very high elevation of the Continental-Hoosier system, the snow pack and stream system has generally remained frozen during the period of a potential Shoshone call relaxation described in this section. Therefore, there is very little water that could be diverted by the Continental-Hoosier system under a relaxed call scenario.

Changes in Releases from Williams Fork and Wolford Mountain Reservoirs to Meet USFWS Flow Recommendations for Endangered Fish in the 15-Mile Reach

The Programmatic Biological Opinion for the recovery of endangered fish includes a provision for East and West Slope water users to split equally the delivery of 10,825 AF of water to the 15-Mile Reach of the Colorado River east of Grand Junction. An agreement exists between Denver Water, the Colorado Water Conservation Board (CWCB) and the USFWS, for the interim provision of water to the 15-Mile Reach of the Colorado River near Grand Junction as part of the Recovery Program. A similar agreement exists between River District, CWCB, and the USFWS. These agreements provide for the total release of 10,825 AF of water annually from both Williams Fork and Wolford Mountain Reservoirs (5,412.5 AF from each reservoir) to meet USFWS flow recommendations for the 15-Mile Reach.

These contracts expire in 2009 and 2010, respectively, and both Denver Water and the River District do not plan to continue making these releases from Williams Fork and Wolford Mountain Reservoirs in the future. This action affects the timing and quantity of reservoir storage and releases and the flows in Williams Fork River and Muddy Creek below the reservoirs. Fish releases from these reservoirs have historically been made in the late summer and fall when flows drop below the USFWS flow recommendations. When fish releases are not made from Williams Fork and Wolford Mountain Reservoirs, flows in the Williams Fork River and Muddy Creek would be less by a commensurate amount in the fall. The reduction in fish flow releases would be offset by a corresponding change in the amount of water stored in these reservoirs on average. Less water would need to be stored during the runoff season to replace these releases. As a result, cumulative changes in Williams Fork and Wolford Mountain reservoir storage and releases due to this action would affect the timing of flows below these reservoirs, but would have little affect on the annual quantity of flow on average.

Increases in Wolford Mountain Reservoir Contract Demands

According to the River District, the demand for contract water out of Wolford Mountain Reservoir is expected to increase in the future. River District staff indicated there is currently about 8,750 AF/yr of available contract water in Wolford Mountain Reservoir that would likely be contracted for in the future. In addition, Middle Park Water Conservancy District (MPWCD) has 3,000 AF/yr of contract water in Wolford Mountain Reservoir, which would also likely be contracted for in the future. The specific entities that would contract for this water in the future and the locations of the depletions are not known at this time. Releases from Wolford Mountain Reservoir would need to be made to meet contract demands when depletions (consumptive use) are out-of-priority, which would likely be during winter months (September through March) and in summer months of dry years depending on whether the Shoshone Power Plant rights are calling.

This future action cumulatively affects the timing and quantity of Wolford Mountain Reservoir contents and releases and the flows in Muddy Creek below the reservoir. Because releases for contract demands would increase in the future, flows in Muddy Creek would increase on average by a commensurate amount primarily during winter months and in summer months of dry years. However, more water would be stored during the runoff season to replace these releases, so flows during runoff would decrease on average below the reservoir.

Expiration of Denver Water's Contract with Big Lake Ditch in 2013

The Big Lake Ditch is a senior irrigation right in the Williams Fork basin that diverts below Denver Water's Williams Fork collection system and above Williams Fork Reservoir. Big Lake Ditch diversions are currently delivered for irrigation above Williams Fork Reservoir and for use in the Reeder Creek drainage, which is a tributary of the Colorado River. Return flows associated with irrigation in the Reeder Creek drainage return to the Colorado River below the confluence with the Williams Fork.

The following information on the operation of Big Lake Ditch and the terms and conditions of the contract with Denver Water was provided by Denver Water. In

1963, Denver Water entered into a contract with Bethel Hereford Ranch Inc., which owned and operated the Big Lake Ditch, whereby Denver Water purchased the Ranch's water rights. Bethel Hereford was granted a 40-year lease to continue its operation under the condition that the Big Lake Ditch water rights are not called if needed by Denver Water. The 1963 agreement was superseded by a 1998 agreement, which extended the operation of the Big Lake Ditch through 2013, and provided more detail on the conditions under which Denver Water would need the water. The 1998 agreement expires in 2013 and Denver Water does not plan to extend the existing contract. After the contract expires in 2013, the Big Lake Ditch can no longer divert water under the enlargement decree for 111 cfs for irrigation in the Reeder Creek drainage.

This action cumulatively affects the timing and quantity of flows in Williams Fork River and the Colorado River. The abandonment of all Big Lake Ditch diversions to the Reeder Creek basin would allow Denver Water to divert additional water for storage in Williams Fork Reservoir when their water rights are in priority. Big Lake Ditch diversions would decrease, deliveries to the Reeder Creek drainage would be curtailed, and all Big Lake Ditch return flows would accrue to the Williams Fork River instead of the Colorado River below the confluence with the Williams Fork River. The change in Big Lake Ditch diversions and return flows would result in less depletion and a corresponding increase in flows on average in the Williams Fork River basin. Changes in flow would be greatest from June through October when differences in Big Lake Ditch depletions and return flows are greatest.

3.2 Issues and Impact Topics Considered but Excluded from Further Evaluation

Resource issues and impacts topics considered, but excluded from further evaluation in the EA are described below. In general, these issues and impact topics were dismissed from further evaluation because the Proposed Action does not involve land-disturbing activities or other on-the-ground changes. Additionally, none to minimal surface water changes would occur under the Proposed Action (refer to Section 3.3 Hydrology), therefore no impacts are anticipated to any of these resources.

Geology

The Study Area lies within the central Rocky Mountain geographic region, which consists of steep mountain uplands complemented by areas of glacial drift. The underlying geology consists of sandstone, siltstone, shale and limestone substrates (USGS 2002). The Study Area occurs within Seismic Risk Zone 1 (on a scale of 0 to 3, with Zone 3 having the highest risk) (Algermissen et al. 1990). Since no ground disturbing activities would occur within the Study Area, no impacts to geologic resources, such as aggregate material or minerals, would occur. Additionally, impacts to the project from geologic hazards, such as earthquakes, are not anticipated.

Soils

The Study Area generally contains medium-to-fine textured loamy soils that occur on mountainsides and ridges, interspersed with areas of exposed bedrock. Since the Proposed Action does not include ground disturbing activities, soil loss or displacement from wind or water erosion is not anticipated. Fluctuating water levels in the reservoirs would be minimal; thus, shoreline instability, sloughing, and slippage are unlikely to occur as a result of the Proposed Action.

Farmlands

Agricultural production in the Study Area is limited by a cold climate and associated short growing season. Additionally, agriculture has steadily declined in the project vicinity as land is increasingly converted to recreational and residential use. Four categories of important farmlands are federally regulated by the United States Department of Agriculture (USDA) under the Farmland Protection Policy Act: (1) Prime farmlands, (2) Unique farmlands, (3) Farmlands of statewide importance, and (4) Farmlands of local importance. Important farmlands are a distinction made by the USDA as soils that support the crops necessary for the preservation of the nation's domestic food and other supplies, specifically the capacity to preserve high yields of food, seed, forage, fiber, and oilseed with minimal agricultural amendment of the soil, adequate water, and a sufficient growing season. Several USDA and other federal natural resource programs, permits, and regulations require the identification of important farmlands.

No lands are classified as Prime and Unique Farmlands in Summit or Grand counties (NRCS 2008a). Similarly, a majority of farmlands are not classified as Prime or Unique in Park and Eagle counties (NRCS 2008b). Many irrigated farmlands in the Study Area, however, are recognized as farmlands of statewide importance (NRCS 2008a and 2008b). The Proposed Action does not include construction of new facilities. Thus, farmlands in the Study Area would not be directly impacted. Additionally, the amount of water that is diverted from rivers and streams within the Study Area for agricultural uses would not be depleted as a result of the Proposed Action.

Air Quality, Noise, and Transportation

No new structures would be built within the Study Area as part of the Proposed Action. Thus, temporary noise impacts associated with construction activities would not occur. Similarly, temporary air impacts resulting from fugitive dust emissions generated from construction activity would not occur. Increased traffic or traffic disruptions associated with construction activity would also not occur. Traffic associated with operations and maintenance of existing facilities within the Study Area is expected to be minimal.

Land Use

Several different land uses (e.g., recreational, agricultural, forest, urban, etc.) occur within the Study Area. No above-ground structures would be built within or adjacent to the Study Area as part of the Proposed Action, thus the existing land uses would not be altered or impacted.

Visual Resources

Scenic quality is defined as the harmonious relationship between physical, biological, and cultural attributes that, when viewed by people, elicits psychological and physiological benefits (USDA 1995). In general, streams in the Study Area occur in high quality scenic or visually sensitive locations. Water levels fluctuate diurnally and seasonally as a result of natural hydrologic cycles, reservoir management, irrigation practices, and diversions for other purposes. Even in a natural state, Colorado streams are characterized by substantial variations in flow, typically reaching the highest flow levels in May or June and then rapidly dropping off through the remainder of the year until they reach the low flows that predominate during the winter months. As a result, a stream is a dynamic system that rarely remains static and the viewer has an expectation of observing change over the course of the seasons. The Proposed Action would result in no to minimal flow changes and thus would not impact the visual quality of streams and reservoirs in the Study Area.

Hazardous Materials

Hazardous materials are defined in various ways under a number of state and federal regulatory programs (e.g., Environmental Protection Agency [EPA] and Colorado Department of Public Health and Environment [CDPHE]). Sites with recognized environmental conditions of concern are sites where known, existing, or past releases of hazardous substances, including petroleum products and other organic substances, metals and other inorganic substances have been released to soil or groundwater. Risks to human health and the environment may occur when these materials are not managed properly. Since the Proposed Action does not include ground disturbing activities, hazardous materials that may occur within the Study Area would not be exposed.

Terrestrial Upland Communities, Wildlife, and Special Status Species

Upland communities in the Study Area vary in accordance with elevation. Areas above 10,000 feet generally consist of Engelmann spruce, subalpine fir, and alpine meadows. Lodgepole pine, aspen, blue spruce, and Douglas-fir are examples of tree species found in the plant communities below 10,000 feet. Shrubland communities that occur between 6,000-8,000 feet include mountain mahogany, sage and pinon-juniper associations. Grasses in the Study Area include various species of fescue, brome, wheatgrass, and bluegrass. Upland communities in the Study Area support terrestrial wildlife such as big game (e.g., mule deer [*Odocoileus hemionus*], American elk [*Cervus elaphus*]) and small and medium-sized mammals (e.g., mountain cottontail [*Sylvilagus nuttalii*], Colorado chipmunk [*Tamias quadrivittatus*]). These upland areas may also support special status species such as Gunnison's prairie dog (*Cynomys gunnisoni)* and mountain plover (*Charadrius montanus*). No construction activities associated with the Proposed Action would occur in the Study Area that would disturb or displace wildlife or reduce associated habitat.

Environmental Justice

As required by Executive Order 12898, *General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." The Study Area is not comprised of definable minority or low-income populations (U.S. Census Bureau [Census] 2000a). The Proposed Action would not result in disproportionate impacts to any populations within the Study Area.

Cultural Resources and Indian Trust Resources

On January 23, 2007, Reclamation and the Colorado State Historic Preservation Officer (SHPO) signed a Programmatic Agreement to document the means to determine and evaluate the impacts on historic properties from reservoir operations and storage contracts as required by Section 106 of the National Historic Preservation Act (NHPA) and stipulated in 36 CFR 800. The Advisory Council on Historic Preservation (ACHP) declined an invitation to participate in this agreement.

Changes in operational strategies within the Study Area in response to project demands would affect timing, depth, and duration of drawdown within the water system network. However, because the water level and flow fluctuations associated with the Proposed Action are within the boundaries of normal flows and levels already experienced within the Study Area, there would be no impact to cultural resources.

Indian trust assets are owned by American Indians but are held in trust by the United States. Requirements are included in the Secretary of the Interior's Secretarial Order 3206, American Indian Tribal Rites, Federal-Tribal Trust Responsibilities, the Endangered Species Act; and Secretarial Order 3175, Departmental Responsibilities for Indian trust resources. There are no known Indian trust assets within the Study Area; therefore there would be no effects on Indian trust resources, resulting from the Proposed Action.

3.3 Hydrology

This section describes the existing surface water resources in the Study Area and the effects of the Proposed Action and No Action alternatives on streamflow quantity and reservoir storage content. Potentially affected river segments and reservoirs in the Study Area are shown in Figure 3-1. For each of the affected river basins in the Study Area, regional surface water characterizations are provided that include an overview of the drainage basins (geographic location, drainage area, elevation range, major tributaries, and flow sources) and a summary of surface water use. Additionally, monthly average historical stream graphs are provided for USGS stream gages that are representative of river reaches within the Study Area. Monthly time series graphs showing historical reservoir storage contents are also provided. Simulated streamflow and reservoir storage content are summarized and environmental consequences associated with the Proposed Action and No Action alternatives are compared. This section also describes the cumulative effects of the Proposed Action in relation to other reasonably foreseeable projects in the Study Area.

Issues raised during scoping that specifically relate to surface water resources are also addressed in this section. These issues include the following:

- Effects on Colorado River stream flows below the Windy Gap Project diversion point due to utilizing Williams Fork Reservoir as a source of substitution replacement.
- Effects on Springs Utilities' diversions from the West Slope to the East Slope.
- Effects on the operation and use of the Green Mountain Reservoir Historic User's Pool (HUP).
- Effects on future projects, such as the Green Mountain Reservoir Pumpback Project.
- Effects of Bureau of Land Management's (BLM) Wild and Scenic River designations on stream reaches within the Study Area.
- Adequacy of a monthly time step model for evaluating environmental consequences.

3.3.1 Affected Environment

The Study Area encompasses portions of the Colorado River and South Platte River basins (refer to Figure 3-1). Potentially affected river segments include sections of the Blue River, Williams Fork River, Muddy Creek, Colorado River, Homestake Creek, Eagle River, Middle Fork South Platte River, and South Platte River. Potentially affected reservoirs include Upper Blue Reservoir, Dillon Reservoir, Green Mountain Reservoir, Williams Fork Reservoir, Wolford Mountain Reservoir, Homestake Reservoir, Montgomery Reservoir, and Elevenmile Canyon Reservoir. The study area did not extend below Elevenmile Canyon Reservoir because flow changes downstream of this point would be negligible. Changes in contents in Elevenmile Canyon Reservoir and additional releases under the No Action and Proposed Action alternatives would likely be negligible in comparison to Denver Water's storage and operations. Each of these river segments and reservoirs is discussed in the following sections.

3.3.1.1 Blue River Basin

Historical Streamflow

Potentially affected river segments in the Blue River basin include the Blue River and tributaries in the upper Blue River basin from Springs Utilities' Continental-Hoosier System diversion points downstream, as shown in Figure 3-1.

The Blue River flows generally northwest, toward Dillon Reservoir, then on toward the Colorado River, forming a long valley between the Williams Fork Mountains to the north and east, and the Gore Range to the south and west. Springs Utilities' Continental-Hoosier System is located in the upper Blue River basin. The total drainage area of the basin is 680 square miles (Hydrosphere 1989). Precipitation varies with elevation across the Blue River basin, ranging from 15.5 inches at Green Mountain Reservoir Dam in the lower Blue River basin, to nearly 24 inches at Climax mine near Fremont Pass (WRCC 2005). Stream flows are highly variable by season across the basin. Most of the annual stream flow results from snow melt between the months of May and July.

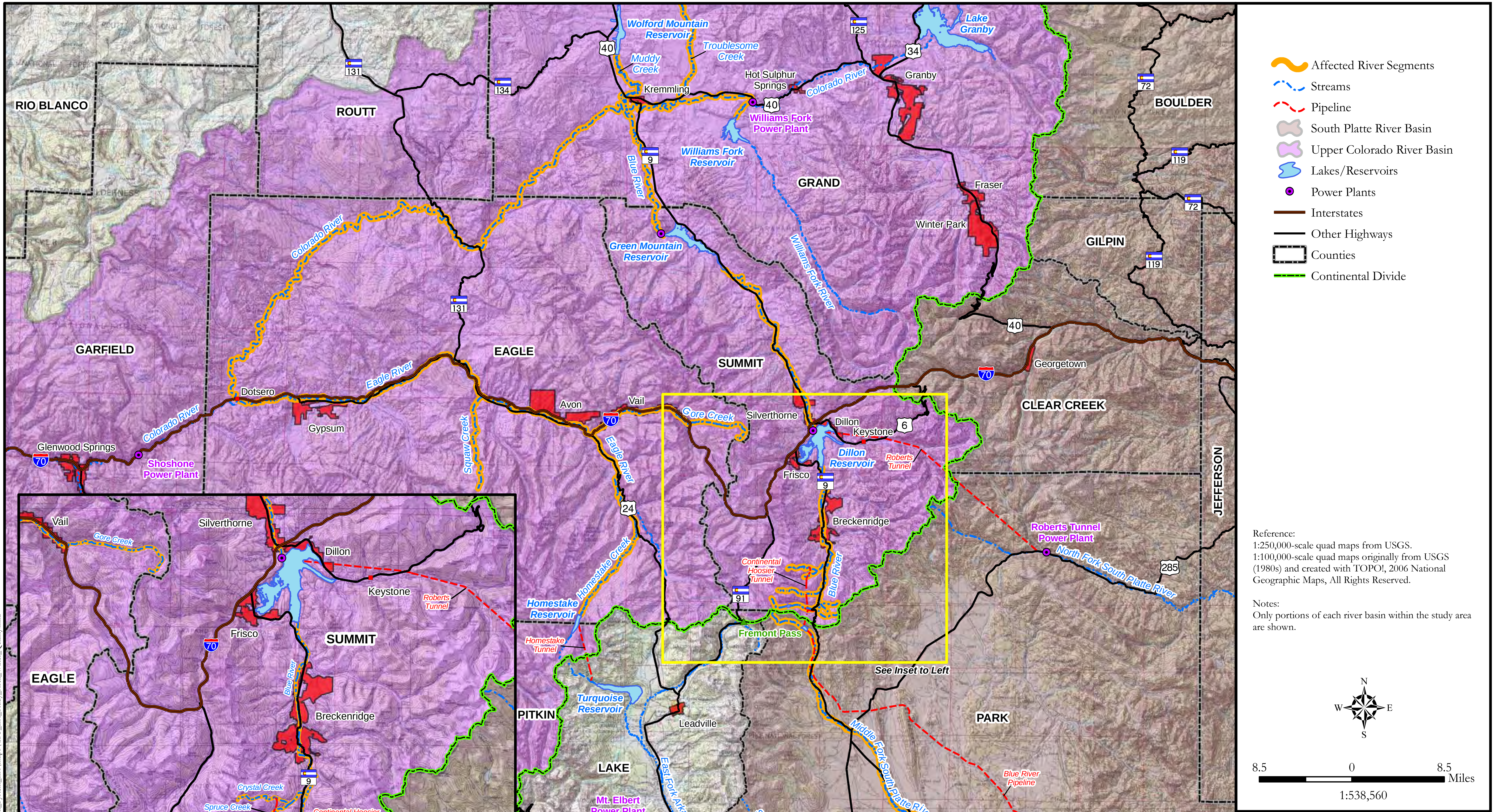
The following table lists the CWCB minimum instream flow rights on the Blue River and tributaries that Springs Utilities diverts from above Dillon Reservoir. There are other CWCB instream flow requirements above Dillon Reservoir that are not included in this table, because those rights are outside of the Study Area. The listed CWCB rights were decreed in 1985 and 1986 and are junior to Springs Utilities' Continental-Hoosier System rights and the Blue River Decree.

CWCB Minimum Instream Flow Rights above Dillon Reservoir		
Reach	**Flow (cfs)**	**Period**
Crystal Creek from Lower Crystal Lake to confluence with Spruce Creek	0.5	October through April
	2	May through September
Spruce Creek headwaters to confluence with Blue River	0.5	October through March
	2	April through September
Confluence of Monte Cristo and Bemrose Creeks to Hwy 9 Bridge	1	October through April
	2	May through September
Hwy 9 Bridge to Goose Pasture Tarn	2	October through April
	5	May through September
5,200 ft upstream of Swan R. to confluence with Swan R.	10	November through April
	20	May through October
Swan River to Dillon Reservoir	16	November through April
	32	May through October

The following table lists the CWCB minimum instream flow rights on the Blue River below Dillon Reservoir. These rights were decreed in 1987 and are junior to Springs Utilities' Continental-Hoosier System rights and the Blue River Decree.

Mean daily historical streamflows and the range of historical daily stream flows are shown in Figures 3-2, 3-3, and 3-4 for the Blue River near Dillon gage (09046600), Blue River below Dillon gage (09050700) and Blue River below Green Mountain Reservoir gage (09057500), respectively.

Blue River CWCB Minimum Instream Flow Rights below Dillon Reservoir		
Reach	**Flow (cfs)**	**Period**
Dillon Reservoir outlet to confluence with Straight Creek	50	Year Round
Confluence with Straight Creek to confluence with Willow Creek	55	May through July
	52	August through September
	50	October through April
Confluence with Willow Creek to confluence with Rock Creek	75	April through September
	58	October through March
Confluence with Rock Creek to confluence with Boulder Creek	115	May through August
	90	September, April
	78	October
	67	November through March
Confluence with Boulder Creek to confluence with Slate Creek	125	May through August
	90	September through October
	70	November through February
	78	March
	90	April
Confluence with Slate Creek to Green Mountain Reservoir inlet	125	May through September
	90	October, November, March, April
	85	December through February
	90	March through April
Green Mountain Reservoir outlet to Colorado River	60	May through July 15
	85	July 16 through April



Green Mountain Reservoir Substitution and Power Interference Agreements EA

Figure 3-1 Study Area

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Figure 3-2
Blue River near Dillon Gage 09046600
Daily Mean Historical Streamflow (1958-2005)

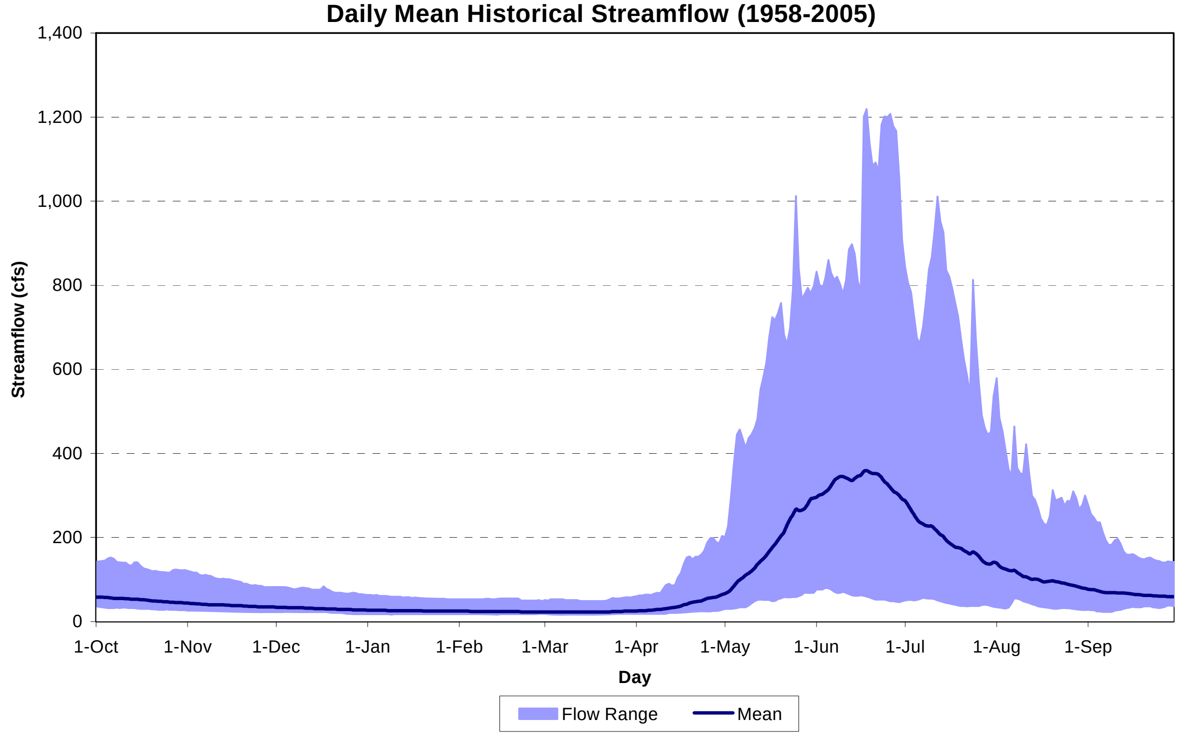


Figure 3-3
Blue River below Dillon Gage 09050700
Daily Mean Historical Streamflow (1963-2005)

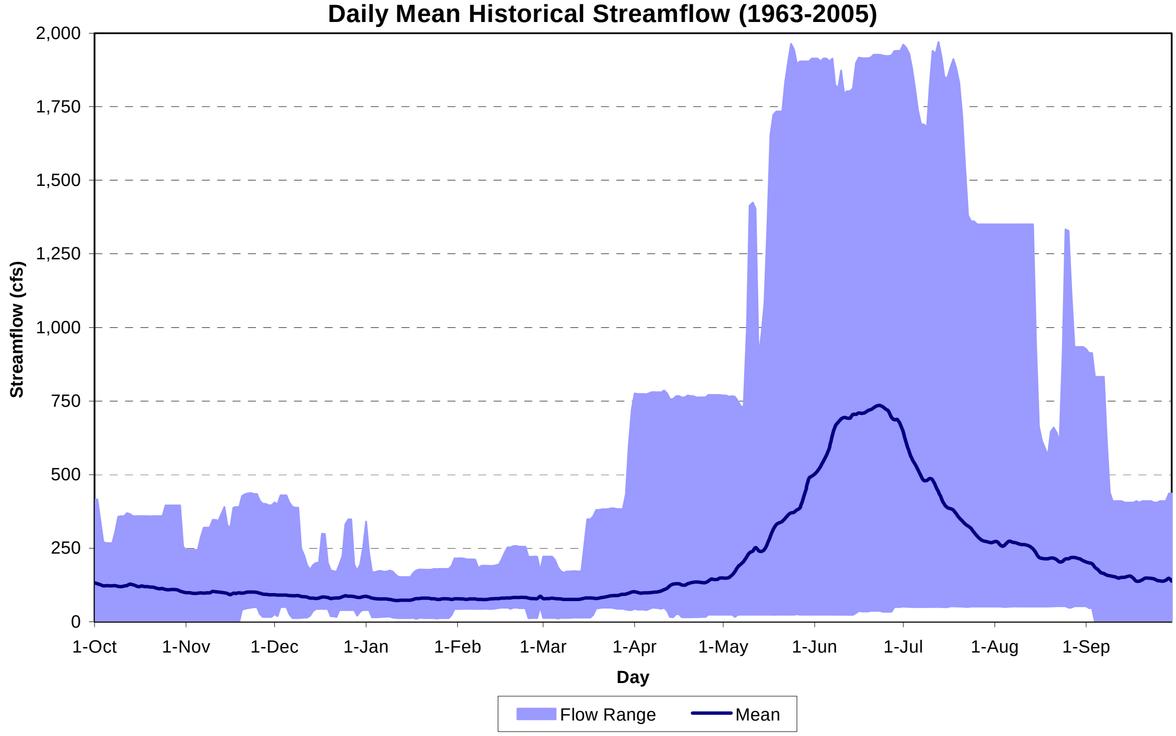
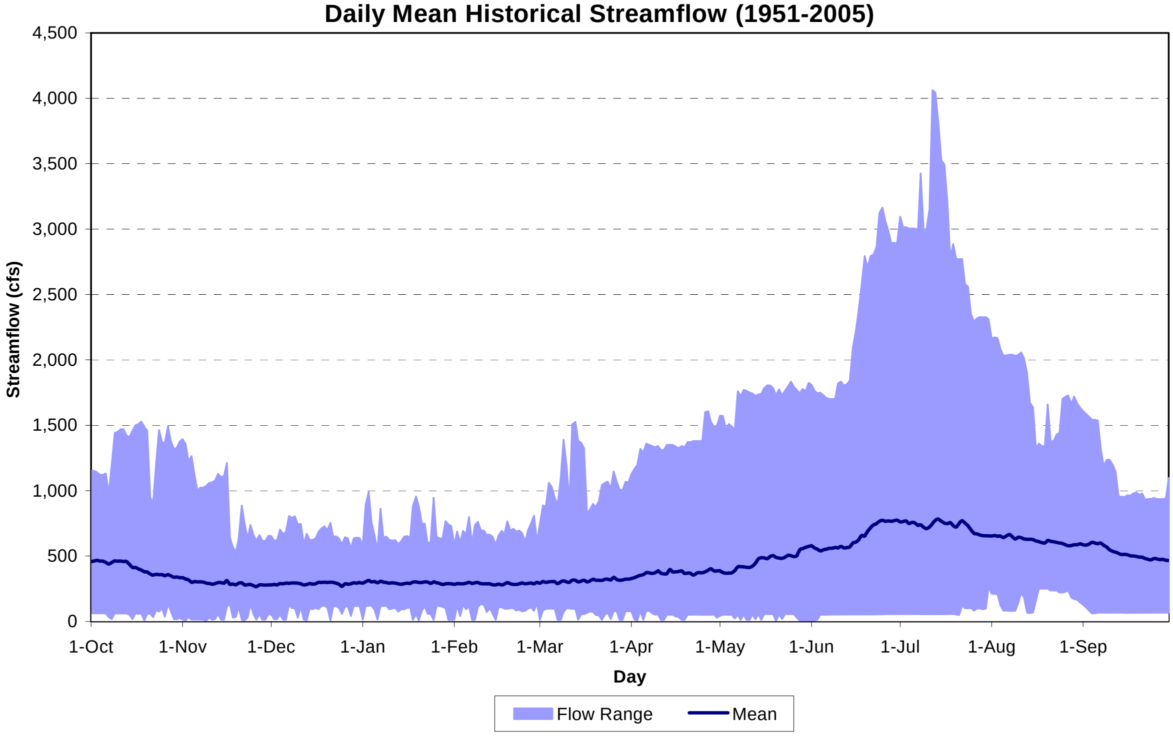


Figure 3-4
Blue River below Green Mountain Reservoir Gage 09057500
Daily Mean Historical Streamflow (1951-2005)



Wild and Scenic Rivers Designation

In the summer of 2006, the Kremmling and Glenwood Springs Field Offices of the BLM began the eligibility phase of a Wild and Scenic Rivers evaluation as part of their Resource Management Plan (RMP) revision process. The Wild and Scenic Rivers study process is composed of two main components: the eligibility phase, and the suitability phase. The eligibility phase involves identifying eligible rivers and stream segments, and determining a tentative classification (Wild, Scenic, or Recreational). To be eligible for designation, a river must be free flowing and contain at least one Outstandingly Remarkable Value (ORV) that is scenic, recreational, geological, fish-related, wildlife-related, historic, cultural, botanical, hydrological, paleontological, or scientific. Upon conclusion of the eligibility phase, the BLM prepared a Wild and Scenic Eligibility Report that identified a few river segments within the EA Study Area (portions of the Colorado and the Blue Rivers) that were eligible for inclusion in the National Wild and Scenic Rivers System (BLM 2007). The suitability phase is now being conducted and a Draft Suitability Plan is expected to be made available to the public in the fall of 2009.

Three segments of the Blue River have been preliminarily classified as recreational and wild for purposes of being deemed eligible for Wild and Scenic River status. These segments and their associated ORVs include:

- Segment 1 from the border of BLM and USFS land (approximately 1.5 miles downstream of Green Mountain Reservoir) to the border between BLM and private land (approximately 2.5 miles downstream of Green Mountain Reservoir) – scenic (unique canyon), recreational fishing, recreational floatboating, geological (unique canyon), wildlife (bald eagle and river otter).

- Segment 2 downstream of Segment 1 from the BLM land boundary downstream of the confluence with Spring Creek to the BLM land boundary located upstream of the confluence with Spruce Creek – recreational fishing, recreational floatboating, and wildlife (bald eagle and river otter).
- Segment 3 includes several small sections of the Blue River as it occurs on BLM land from approximately ¼-mile upstream of the confluence with Dry Creek to approximately 1 mile upstream of the confluence with the Colorado River – recreational fishing, recreational floatboating, wildlife (bald eagle and river otter), and biodiversity (riparian communities).

The BLM also has an established fishing access and boat take-out at the downstream end of Segment 3.

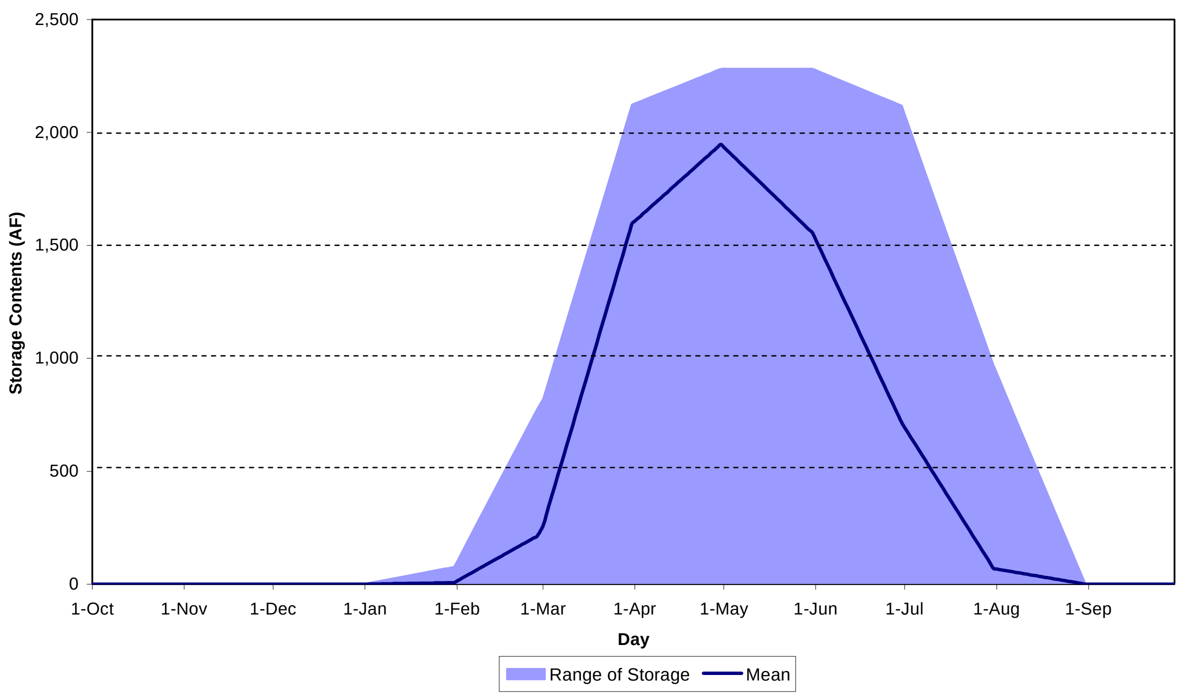
Historical Reservoir Operations and Contents

<u>Upper Blue Reservoir</u>

Upper Blue Reservoir is a 2,113 AF reservoir located on Monte Cristo Creek, a tributary to the Blue River in the upper Blue River basin. The reservoir was completed in 1967 as a component of Springs Utilities' Continental-Hoosier System. Water is stored in Upper Blue Reservoir during runoff and the reservoir generally fills by the end of June. Water is typically released from August through October to meet Springs Utilities' substitution obligation or for delivery through Hoosier Tunnel to Montgomery Reservoir on the Middle Fork South Platte River. Mean daily historical storage contents and the range of contents for Upper Blue Reservoir are shown in Figure 3-5. Daily contents were interpolated based on historical end-of-month contents.

The water rights associated with Upper Blue Reservoir are junior in priority to Green Mountain Reservoir. Under the Blue River

Figure 3-5
Upper Blue Reservoir Daily Mean Historical Storage Summary (1967-2005)



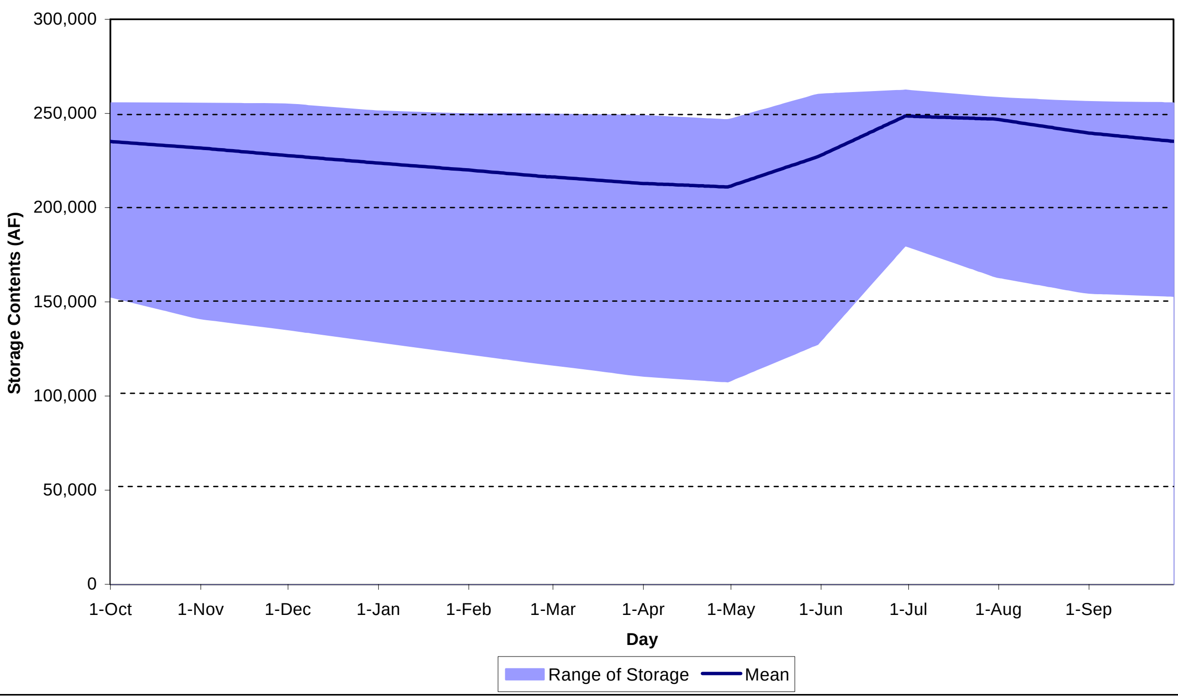
Decree, Springs Utilities can store water at Upper Blue Reservoir on an out-of-priority basis against Green Mountain Reservoir's senior first fill storage right. To the extent that Green Mountain Reservoir does not fill, Springs Utilities must provide substitution water to Green Mountain Reservoir. Blue River Decree operations are discussed in more detail under the section for the Green Mountain Reservoir.

Dillon Reservoir

Dillon Reservoir is a 257,305 AF reservoir located at the confluence of the Blue River, Snake River and Ten Mile Creek approximately 20 miles upstream of Green Mountain Reservoir. The reservoir, which was completed in 1963 is owned and operated by Denver Water primarily for municipal use. Dillon Reservoir and Roberts Tunnel are components of Denver Water's Roberts Tunnel Collection System. Dillon Reservoir is a major component of Denver Water's long-term carryover storage and is operated in conjunction with Denver Water's North and South System facilities to meet their demands. Water stored in Dillon Reservoir is conveyed through Roberts Tunnel to the North Fork of the South Platte River. Denver Water must bypass 50 cubic feet per second (cfs) or inflow, whichever is less, to the Blue River from Dillon Reservoir pursuant to their right-of-way agreement with the USFS and the terms of the 1984 FERC Order granting a license exemption to Denver Water's Blue River Hydroelectric Project. Mean daily historical storage contents and the range of contents for Dillon Reservoir are shown in Figure 3-6. Daily contents were interpolated based on historical end-of-month contents.

There are two power plants associated with the Roberts Tunnel Collection System. The Dillon Power Plant generates power from Dillon Reservoir releases to the Blue River. The Roberts Tunnel Power Plant generates power from Dillon Reservoir releases through Roberts Tunnel.

Figure 3-6
Dillon Reservoir Daily Mean Historical Storage Summary (1966-2005)



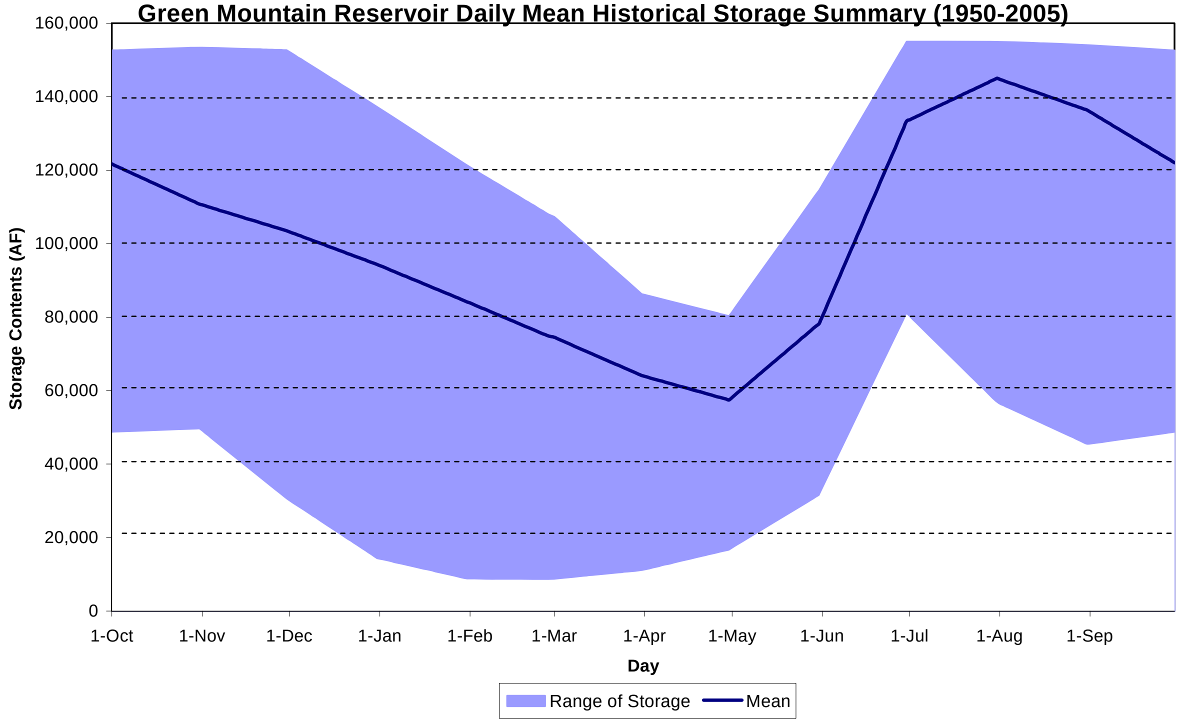
The water rights associated with Dillon Reservoir and Roberts Tunnel are junior in priority to Green Mountain Reservoir. Under the Blue River Decree, Denver Water can divert and store water at Roberts Tunnel and Dillon Reservoir on an out-of-priority basis against Green Mountain Reservoir's senior first fill storage and direct flow power rights. To the extent that Green Mountain Reservoir does not fill in a given runoff year, Denver Water must provide substitution water to Green Mountain Reservoir. Blue River Decree operations are discussed in more detail under section for the Green Mountain Reservoir.

<u>Green Mountain Reservoir</u>

Green Mountain Reservoir is a 153,639 AF reservoir located on the Blue River approximately 13 miles upstream of the confluence with the Colorado River. The reservoir was completed in 1943 as a component of the Colorado-Big Thompson (C-BT) Project. The reservoir's primary purposes are to provide replacement water for out of priority diversions in the Upper Colorado River basin by the C-BT Project and to preserve existing and future water uses and interests on the West Slope. It is also authorized to generate power. The reservoir has an operating pool of 152,000 AF, of which 52,000 AF is dedicated to replacement of C-BT Project transmountain diversions, and the remaining 100,000 AF is for power and West Slope purposes.

Green Mountain Reservoir stores flows during runoff from the Blue River and water diverted from Elliot Creek, which is delivered to the reservoir via the Elliot Creek Feeder Canal. Water is released from the reservoir later in the year for various authorized purposes. Releases from the reservoir are made through the Green Mountain Power Plant for power generation. Mean daily historical storage contents and the range of contents for Green Mountain Reservoir are shown in Figure 3-7. Daily contents were interpolated based on historical end-of-month contents.

Figure 3-7
Green Mountain Reservoir Daily Mean Historical Storage Summary (1950-2005)



The Blue River Decree (Consolidated Case Nos. 2782, 5016, and 5017) specifies the relative priorities of the storage and hydroelectric rights for Green Mountain Reservoir and the upstream rights at Dillon Reservoir, the Roberts Tunnel and the Continental-Hoosier System. Under the Blue River Decree, Springs Utilities and Denver Water can divert and store water at their facilities, which are upstream of Green Mountain Reservoir, on an out-of-priority basis against Green Mountain Reservoir's senior first fill storage and direct flow power rights. The Interim Policy, which was first adopted by the State Engineer in 2003, is the current administration of the Blue River Decree. The Interim Policy currently defines the administrative and accounting principles concerning Green Mountain Reservoir and specifically outlines the paper fill of Green Mountain Reservoir under its senior storage right. The terms and conditions of the Interim Policy and the manner in which it is reflected in the Colorado Decision Support System (CDSS) Model are described in the technical memorandum, *Model Selection and Parameters* (ERC 2008) included in Appendix A.

3.3.1.2 Williams Fork River Basin

Historical Streamflow

The potentially affected river segment in the Williams Fork River Basin extends from Williams Fork Reservoir downstream to the confluence with the Colorado River, as shown in Figure 3-1. The Williams Fork River flows generally northwest, forming a relatively narrow basin between the Fraser River basin to the east and the Blue River basin to the west. The southern end of the basin is delimited by the Continental Divide, which separates the Williams Fork River basin from Clear Creek. The total drainage area of the basin is 230 square miles at the USGS gage 09038500 Williams Fork downstream of Williams Fork Reservoir. Annual precipitation varies with elevation across the basin, ranging from approximately 14 inches at Williams Fork Dam to about 24 inches near Jones Pass (WRCC 2005).

Mean daily historical streamflows and the range of historical daily streamflows are shown in Figure 3-8 for the Williams Fork River below Williams Fork Reservoir gage (09038500).

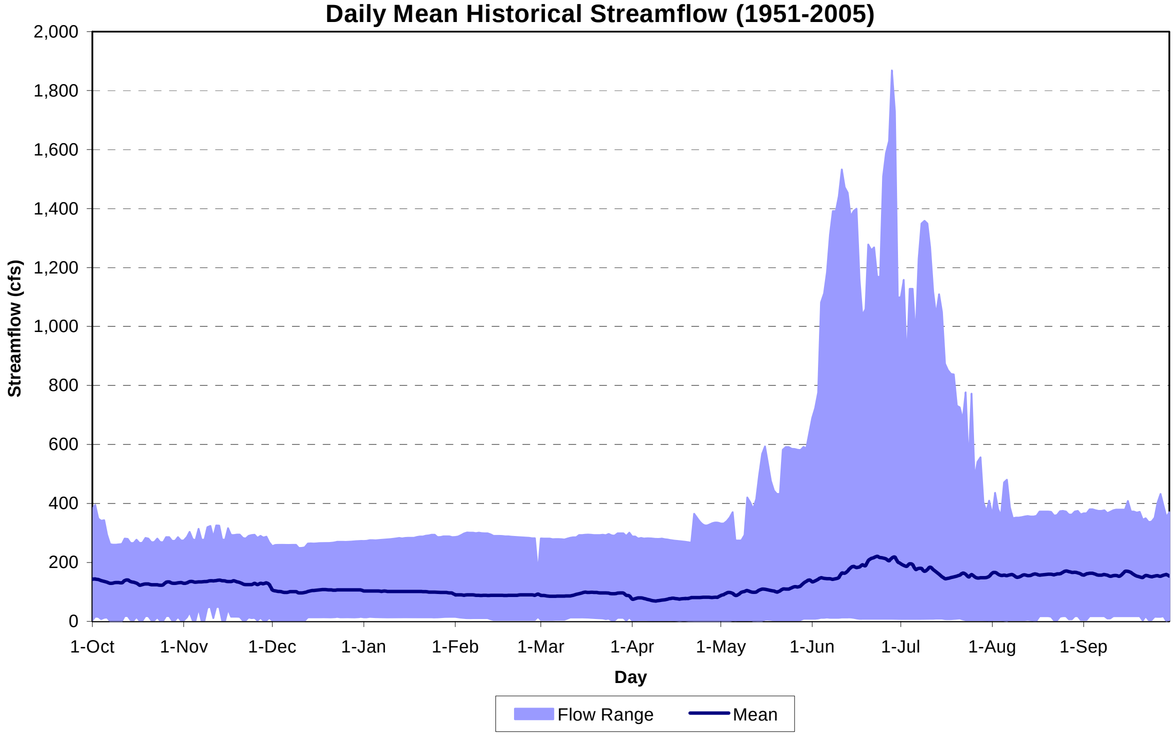
Historical Reservoir Operations and Contents

Williams Fork Reservoir

Williams Fork Reservoir is a 96,822 AF reservoir located on Williams Fork River approximately three miles upstream of the Colorado River confluence. The reservoir, which was completed in 1959, is the only significant reservoir in the basin. The reservoir's primary purpose is to provide replacement water for out-of-priority diversions by Denver Water and to generate power. A power plant is located at Williams Fork Reservoir, and as a condition of Denver Water's FERC license, Denver Water must bypass 15 cfs or inflow, whichever is less, at all times. Williams Fork Reservoir stores flows during runoff from Williams Fork River. Power operations generally influence reservoir releases during much of the year. Replacement water is released later in the year to allow out-of-priority diversions by Denver Water and to meet substitution obligations.

Denver Water's headwater diversions are protected by Williams Fork Reservoir such that when the Denver Water rights are out-of-priority with respect to senior diverters downstream of Williams Fork Reservoir, the reservoir releases water for the satisfaction

Figure 3-8
Williams Fork River below Williams Fork Reservoir Gage 09038500
Daily Mean Historical Streamflow (1951-2005)



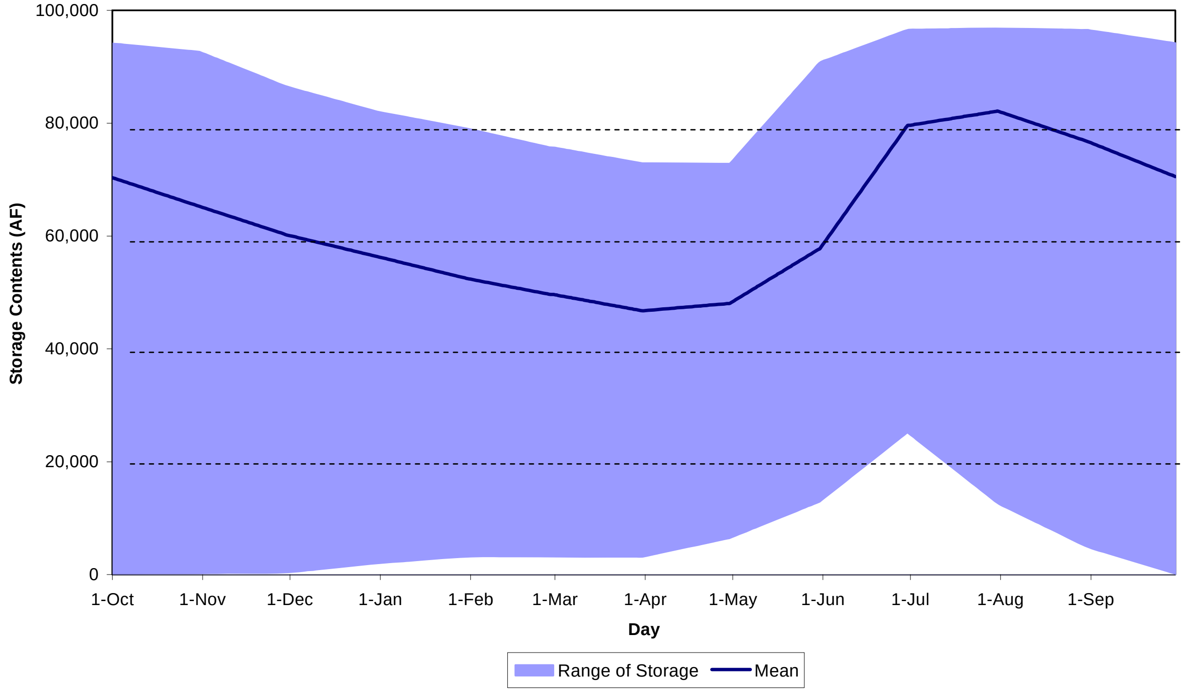
of those rights. Williams Fork Reservoir is operated similarly to replace out-of-priority on diversions at Denver's Moffat Collection system, Roberts Tunnel, and Dillon Reservoir. Denver Water also has an obligation to provide up to 2,200 AF of replacement water to the Henderson Mill out of Williams Fork Reservoir. Releases from Williams Fork Reservoir are also made in substitution for releases from Green Mountain Reservoir in years that Green Mountain Reservoir does not fill and Denver Water has a substitution obligation. To the extent that Green Mountain Reservoir does not fill in a given runoff year, water from Williams Fork Reservoir may be released (substituted) to downstream water demands in place of releases from Green Mountain Reservoir. Mean daily historical storage contents and the range of contents for Williams Fork Reservoir are shown in Figure 3-9. Daily contents were interpolated based on historical end-of-month contents.

3.3.1.3 Muddy Creek Basin

Historical Streamflow

The affected river segment in the Muddy Creek Basin extends from Wolford Mountain Reservoir downstream to the confluence with the Colorado River, as shown in Figure 3-1. Muddy Creek is a north side tributary of the Colorado River that enters the mainstem at Kremmling. Muddy Creek drains the Rabbit Ears Range to the north, the north end of the Gore Range to the west, and a relatively low ridge dividing the Muddy Creek valley from the Troublesome Creek basin to the east. The drainage area of the basin is 270 square miles at the USGS gage 09041400 Muddy Creek below Wolford Mountain Reservoir. Muddy Creek generally experiences earlier runoff peaks and lower unit runoff compared with the Williams Fork, Blue and Eagle River basins. Average annual precipitation at Kremmling is approximately 12 inches, but exceeds 25 inches near the headwaters (WRCC 2005). Mean daily historical

Figure 3-9
Williams Fork Reservoir Daily Mean Historical Storage Summary (1960-2005)



streamflows and the range of historical daily streamflows are shown in Figure 3-10 for the Muddy Creek.

The following table lists the CWCB minimum instream flow rights on Muddy Creek from the outlet of Wolford Mountain Reservoir to the headgate of Deberard Ditch, which were decreed in 1998. In addition, Wolford Mountain Reservoir must bypass 20 cfs or inflow, whichever is less at all times as a permit condition.

Muddy Creek CWCB Minimum Instream Flow Rights below Wolford Mountain Reservoir		
Reach	**Flow (cfs)**	**Period**
Wolford Mountain Reservoir to Deberard Ditch	20	July 15 to April 3
	70	May 1 to May 14
	105	May 15 to June 30
	70	July 1 to July 14

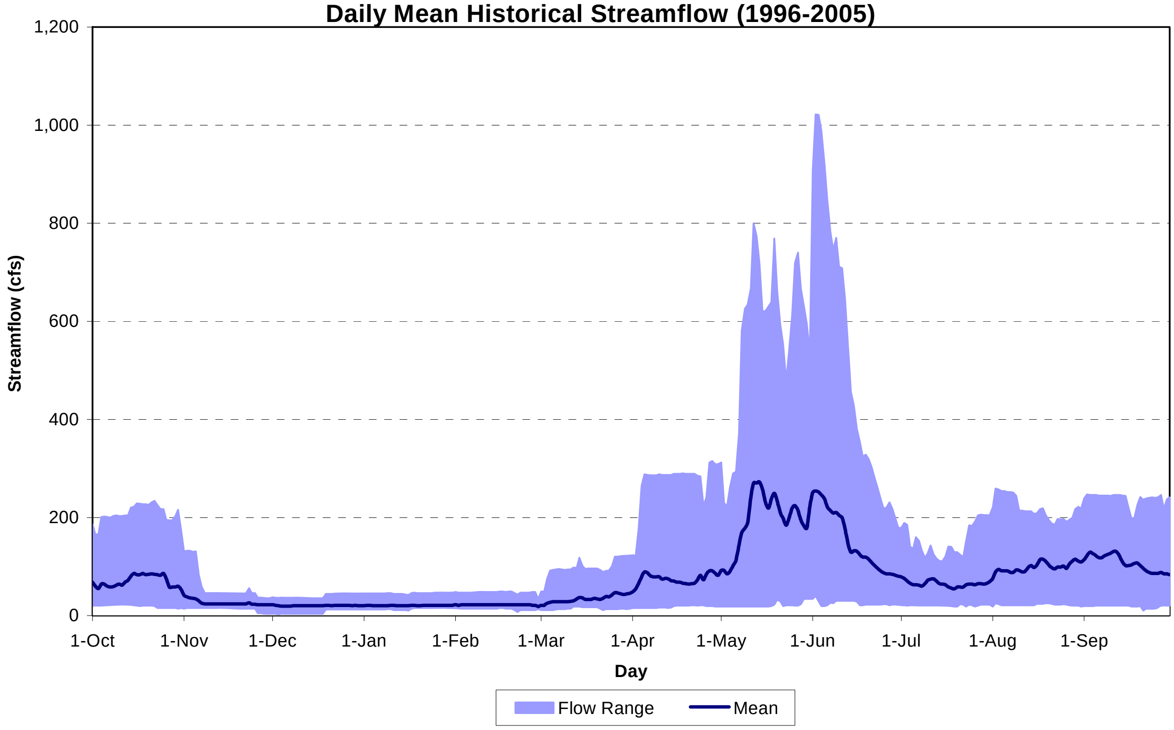
Historical Reservoir Operations and Contents

Wolford Mountain Reservoir

Wolford Mountain Reservoir is a 65,985 AF reservoir located on Muddy Creek approximately 12 miles upstream of the Colorado River confluence. The reservoir, which was completed in 1995, is jointly owned and operated by the River District and Denver Water. Under the Amended Lease Agreement between Denver Water and the River District, which is dated July 21, 1992, Denver Water acquired the ownership of 40% of the capacity of the reservoir and water right.

Wolford Mountain Reservoir operations reflect permit requirements as well as a history of agreements between Denver Water and the River District, and the negotiated settlement of Case 91CW252, in which the two parties applied for substitution and exchange rights to allow substitution and exchange rights to allow Denver Water to substitute water stored in Wolford Mountain Reservoir for water otherwise storable in Green Mountain Reservoir. Releases from Wolford Mountain Reservoir are made in substitution for releases from Green Mountain Reservoir in years that Green Mountain Reservoir does

Figure 3-10
Muddy Creek below Wolford Mountain Reservoir Gage 09041500
Daily Mean Historical Streamflow (1996-2005)



not fill and Denver Water has a substitution obligation. In addition to Denver Water's operations, Wolford Mountain Reservoir is operated by the River District to meet endangered Colorado River fish flows and other West Slope water uses. Mean daily historical storage contents for Wolford Mountain Reservoir are shown in Figure 3-11. Daily contents were interpolated based on historical end-of-month contents.

3.3.1.4 Colorado River Basin

Historical Streamflow

The affected river segment of the Colorado River extends from the confluence with the Williams Fork River downstream to the confluence with the Eagle River, as shown in Figure 3-1. Major tributaries in this reach include the Williams Fork River, Troublesome Creek, Muddy Creek, Blue River, and Eagle River.

The Azure Settlement Agreement dated June 23, 1980 established instream flow requirements on the reach of the Colorado River downstream of the Windy Gap diversion to the confluence with the Blue River. These instream flow requirements are as follows:

- From the Windy Gap diversion point to the confluence with the Williams Fork River, 90 cfs;
- From the confluence with the Williams Fork River to the confluence with Troublesome Creek, 135 cfs; and
- From the confluence with Troublesome Creek to the confluence with the Blue River, 150 cfs.

The instream flow requirements that pertain to this Study Area extend from the confluence with the Williams Fork River downstream to the confluence with the Blue River.

Mean daily historical streamflows and the range of historical daily streamflows are shown in Figure 3-12 for the Colorado River near Kremmling gage (09058000)

Figure 3-11
Wolford Mountain Reservoir Daily Mean Historical Storage Summary (1996-2005)

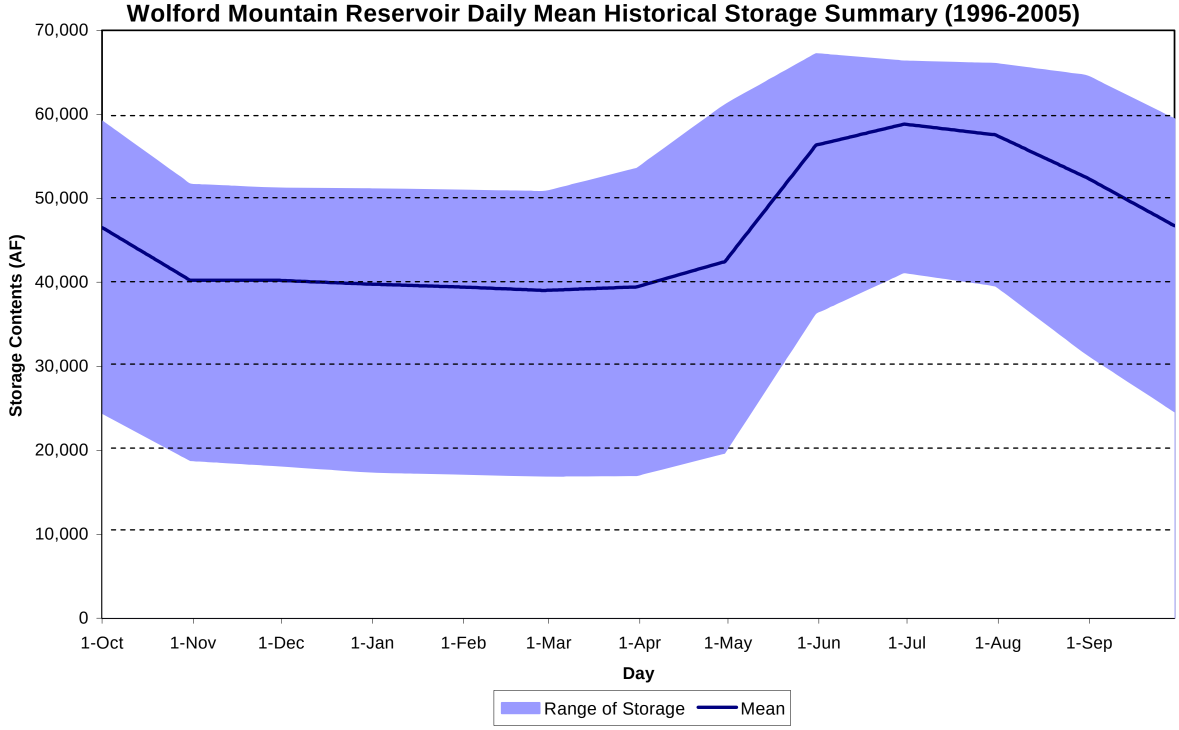
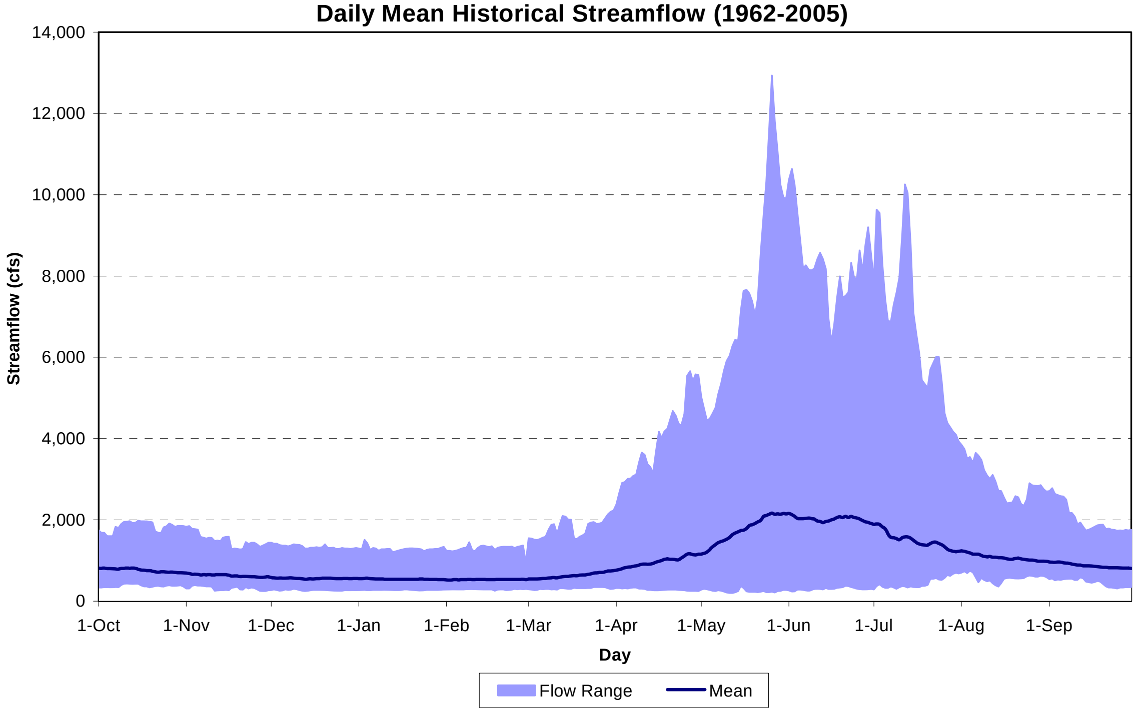


Figure 3-12
Colorado River near Kremmling Gage 09058000
Daily Mean Historical Streamflow (1962-2005)



Wild and Scenic Rivers Designation

As discussed under Section 3.3.1.1 for the Blue River, three segments of the Colorado River located between Windy Gap and the mouth of Gore Canyon, have been preliminarily classified as recreational for purpose of being deemed eligible for Wild and Scenic River status. These segments and their associated ORVs include:

- Colorado River Segment 3 (Byers Canyon to Mouth of Gore Canyon) - recreational fishing, recreational scenic driving, wildlife (bald eagle and river otter).
- Colorado River Segment 4 (Gore Canyon) - scenic, recreational fishing, recreational floatboating, recreational scenic driving, geological, wildlife (bald eagle and river otter), historic.
- Colorado River Segment 5 (Pumphouse to State Bridge) - scenic, recreational fishing, recreational floatboating, recreational scenic driving, geological, wildlife (bald eagle and river otter), historic, paleontological (BLM 2007).

3.3.1.5 Eagle River Basin

Historical Streamflow

The potentially affected river segments in the Eagle River basin include Homestake Creek downstream of Springs Utilities' Homestake Project to the confluence with the Eagle River and the Eagle River from the confluence of Homestake Creek to the confluence with the Colorado River, as shown in Figure 3-1. The Eagle River flows generally northwest to the confluence with Gore Creek and then east to the confluence with the Colorado River near the Town of Dotsero. The Eagle River basin is bounded by the Blue River basin to the north and east and the Roaring Fork River basin to the south and west. The total drainage area of the basin is approximately 944 square miles at the USGS gage 09070000 Eagle River below Gypsum. Precipitation varies with elevation across the Eagle River basin, ranging from 11 inches near the Colorado River confluence to in excess of 25 inches on the high ridges at the southern end of the basin (WRCC 2005).

The following table lists the CWCB minimum instream flow rights on the Eagle River below Homestake Creek. These rights were decreed in 1978 and 1980.

In addition to the CWCB instream flow rights listed above, the Homestake Project must bypass water such that 24 cfs or inflow, whichever is less, is met at the Gold Park gage on Homestake Creek as a permit condition.

Mean daily historical streamflows and the range of historical daily streamflows are shown in Figure 3-13 for the Homestake Creek at Gold Park gage (09064000).

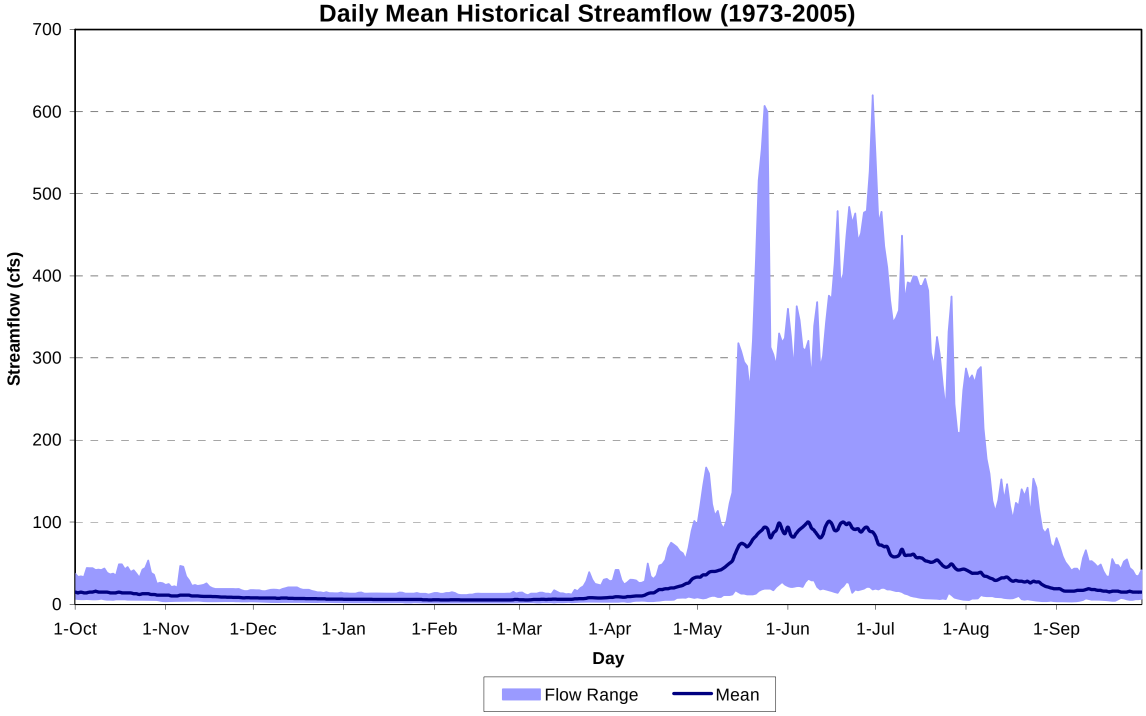
Historical Reservoir Operations and Contents

<u>Homestake Reservoir</u>

Springs Utilities' and Aurora's Homestake Project is a transmountain diversion project that diverts water from the East Fork and

Eagle River CWCB Minimum Instream Flow Rights below the Confluence with Homestake Creek		
Reach	**Flow (cfs)**	**Period**
Confluence with Homestake Creek to confluence with Cross Creek	11	October through April
	25	May through September
Confluence with Cross Creek to confluence with Gore Creek	2	October through April
	50	May through September
Confluence with Gore Creek to confluence with Lake Creek	3	October through April
	85	May through September
Confluence with Lake Creek to confluence with Brush Creek	4	October through April
	110	May through September
Confluence with Brush Creek to confluence with Colorado River	5	October through April
	130	May through September

Figure 3-13
Homestake Creek at Gold Park Gage 09064000
Daily Mean Historical Streamflow (1973-2005)



Middle Fork of Homestake Creek, French Creek, Fancy Creek, Missouri Creek and Sopris Creek for storage in Homestake Reservoir and delivery through Homestake Tunnel to Turquoise Lake, which is located in the Arkansas River Basin. Water delivered to the east slope is used for municipal purposes by Springs Utilities and the City of Aurora. Annual diversions through Homestake Tunnel averaged approximately 23,970 AF from 1967 through 2007 (Springs Utilities 2008).

Homestake Reservoir is a 43,539 AF reservoir located on the Middle Fork of Homestake Creek, which is a tributary to the Eagle River. The reservoir was completed in 1966 and is equally owned and operated by Springs Utilities and the City of Aurora. Homestake Reservoir is the primary West Slope storage facility for the Homestake Project. Water stored in Homestake Reservoir during runoff is typically released in March and April and in summer months to a lesser degree for delivery through Homestake Tunnel to Lake Fork Creek upstream of Turquoise Reservoir. Mean daily historical storage contents and the range of contents for Homestake Reservoir are shown in Figure 3-14. Daily contents were interpolated based on historical end-of-month contents.

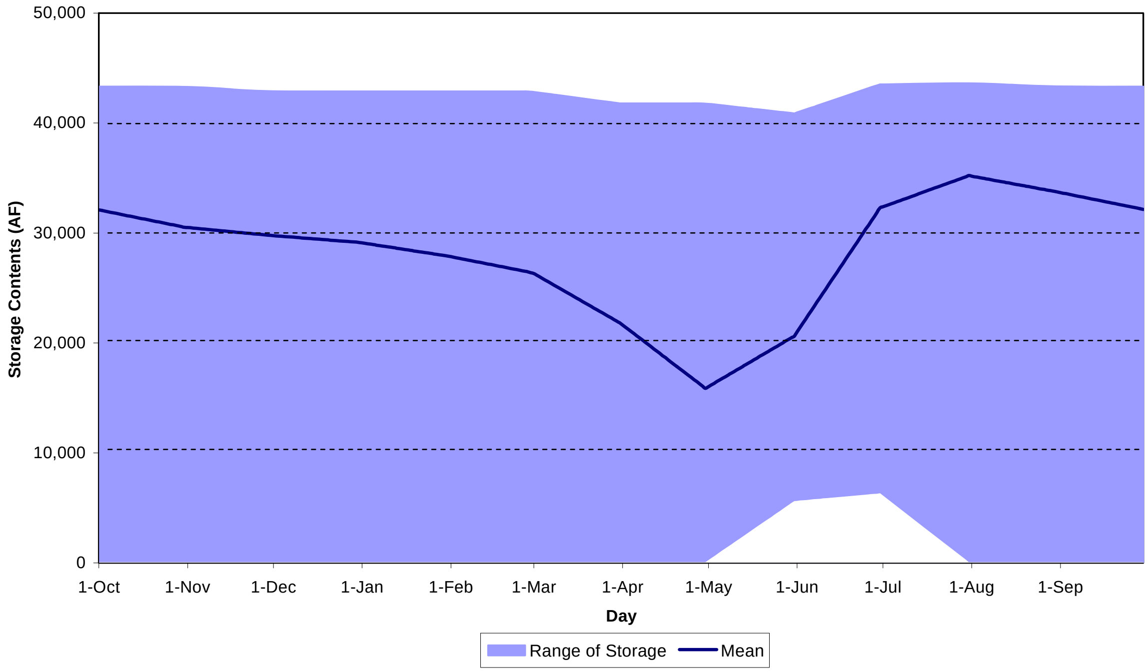
3.3.1.6 South Platte River Basin

Historical Streamflow

The potentially affected river segments in the South Platte River basin include the Middle Fork South Platte River from Montgomery Reservoir to the confluence with the South Fork South Platte River and the South Platte River from the confluence with the Middle Fork and South Forks of the South Platte River to Elevenmile Canyon Reservoir, as shown in Figure 3-1.

The headwaters of the South Platte River lie in the western perimeter of Colorado's South Park on the east side of the Mosquito Range. Although the western peaks receive

Figure 3-14
Homestake Reservoir Daily Mean Historical Storage Summary (1970-2005)



over 30 inches of precipitation annually, normal precipitation at the Town of Hartsel near Elevenmile Canyon Reservoir is approximately 11 inches. Three major streams flow generally southeast across the plain of South Park. From north to south they are Tarryall Creek, Middle Fork South Platte River, and South Fork South Platte River. Three miles east of the Town of Hartsel, the Middle Fork joins the South Fork to form the South Platte River.

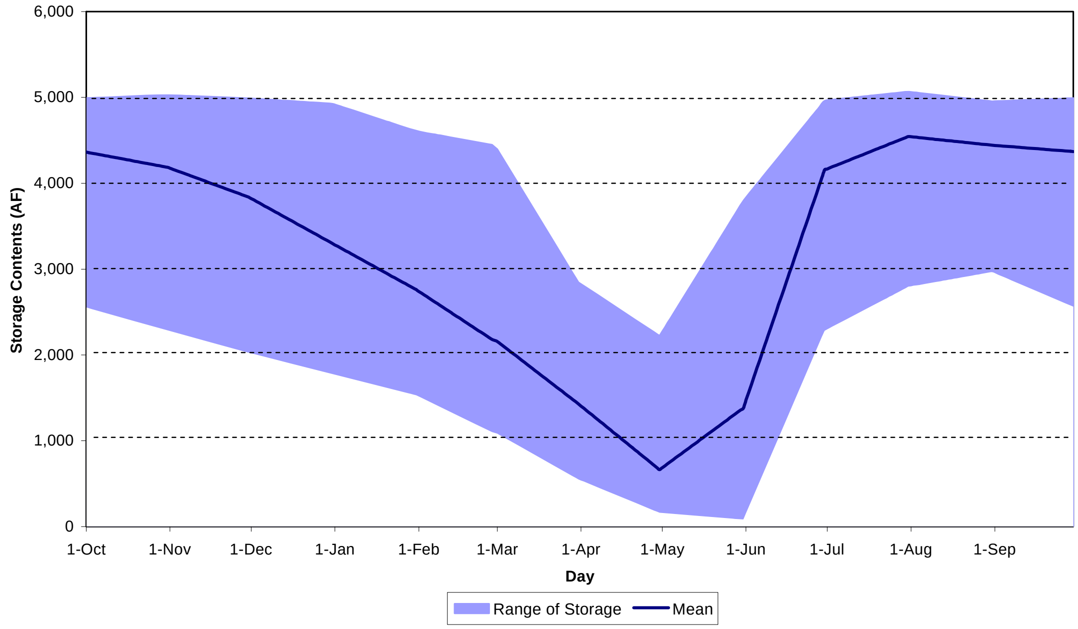
The following table lists the CWCB minimum instream flow rights on the Middle Fork South Platte River downstream of Montgomery Reservoir. These rights were decreed in 1978 and 1980.

<u>Montgomery Reservoir</u>

Montgomery Reservoir is a 5,088 AF reservoir located on the Middle Fork South Platte River, which is a headwaters tributary to the South Platte River. The reservoir is owned by Spring Utilities and is used to store flows diverted from the Middle Fork South Platte River and to regulate water supplies from the Blue River basin that are delivered through the Hoosier Tunnel. Water is only occasionally diverted from the Middle Fork South Platte River because of the reservoir's relatively junior water right. From Montgomery Reservoir, water is conveyed through the Blue River Pipeline to Springs Utilities' North Slope reservoirs. Mean daily historical storage contents and the range of contents for Montgomery Reservoir are shown in Figure 3-15. Daily contents were interpolated based on historical end-of-month contents.

Middle Fork South Platte River CWCB Minimum Instream Flow Rights below Montgomery Reservoir		
Reach	**Flow (cfs)**	**Period**
Montgomery Reservoir to confluence with Buckskin Creek	4	Year round
Confluence with Buckskin Creek	6	October through April
to confluence with Sacramento Creek	12	May through September
Confluence with Sacramento Creek	8	October through April
to confluence with South Fork South Platte River	16	May through September

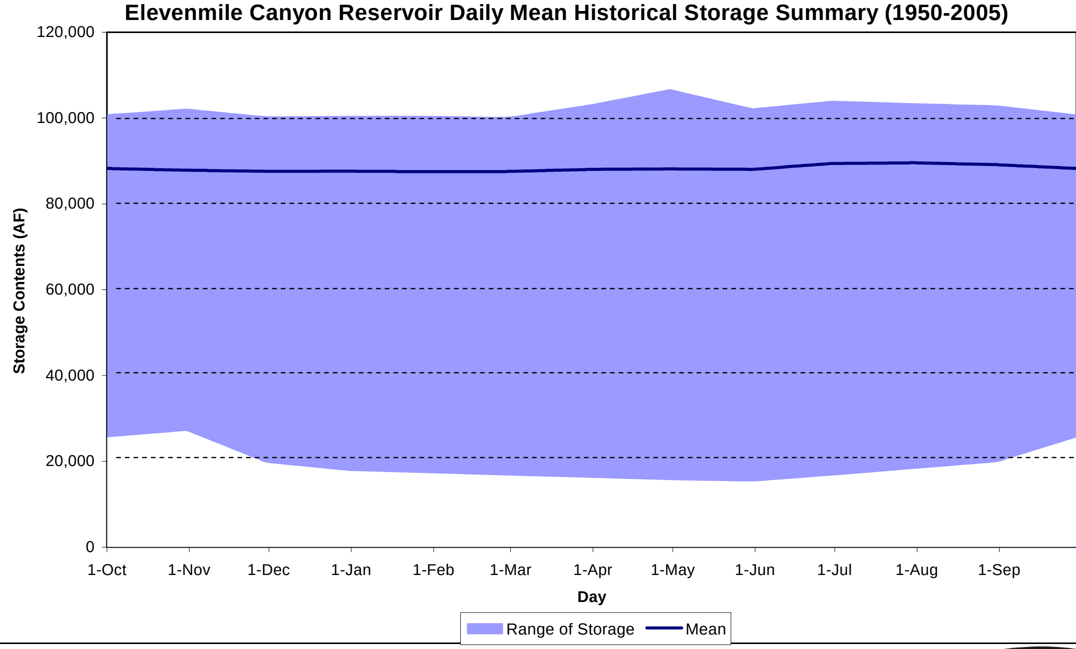
Figure 3-15
Montgomery Reservoir Daily Mean Historical Storage Summary (1963-2005)



Elevenmile Canyon Reservoir

Elevenmile Canyon Reservoir is a 98,000 AF reservoir located on the South Platte River at the eastern edge of South Park. The reservoir, which was completed in 1932, is owned and operated by Denver Water. Elevenmile Canyon Reservoir is operated for long-term drought storage and typically remains full during most years. During a drought, water is released from the reservoir to meet Denver Water's demands. The reservoir may require multiple seasons to fill after being drawn down because of the reservoir's relatively junior water rights. Mean daily historical storage contents and the range of contents for Elevenmile Canyon Reservoir are shown in Figure 3-16. Daily contents were interpolated based on historical end-of-month contents.

Figure 3-16
Elevenmile Canyon Reservoir Daily Mean Historical Storage Summary (1950-2005)



3.3.1.7 Grand County Stream Management Plan

Grand County is currently involved in an ongoing effort to develop a Stream Management Plan (SMP) for the County. Phase 1 of the SMP was completed in the spring of 2007 and included an inventory and review of existing data and information for streams within the County. Phase 2 of the SMP, *Grand County's Stream Management Plan, Phase 2, Environmental and Water Users Flow Recommendations*, which was completed in April 2008, includes recommendations of environmental stream flows and flows to support non-consumptive water uses. The stream reaches evaluated in the SMP that overlap with the Study Area for this EA are listed below.

- Reach WR: Williams Fork River below Williams Fork Reservoir to the Colorado River
- Reach CR5: Colorado River below Williams Fork River to the KB Ditch
- Reach CR6: Colorado River below KB Ditch to the Blue River confluence
- Reach CR7: Colorado River below Blue River confluence to Grand-Eagle County Line
- Reach MC2: Muddy Creek below Wolford Mountain Reservoir to the Colorado River
- Reach BR: Blue River downstream of Green Mountain Reservoir

Phase 2 of the SMP defined environmental flows as flows that were determined to best maintain the ecological needs of the stream in relation to its fisheries. For the Colorado River, the preferred range for summer environmental flows is 250 to 450 cfs below the confluence with the Williams Fork River. As major tributaries (Williams Fork River, 40 to 140 cfs; Muddy Creek, 60 to 90 cfs; Blue River, 200 to 250 cfs) enter the Colorado River, the preferred range for summer environmental flows increases to 600 to 1000 cfs (Grand County 2008).

Flow recommendations for water users were defined as preferred flow regimes for irrigators, municipalities and industry, and recreation use.

An independent review of the SMP flow recommendations has not been conducted, and the recommendations are currently being evaluated by basin stakeholders as to their validity and applicability, however, they were recognized in the analysis of environmental consequences.

3.3.2 Environmental Consequences

The effects on streamflows and reservoir contents from the Proposed Action and No Action alternatives were determined using hydrologic modeling. The State's CDSS Model was used to simulate streamflows and reservoir operations for the No Action and Proposed Action alternatives. The CDSS Model is a surface water allocation model of the Upper Colorado River Basin. A description of the CDSS Model including information on the study period, network configuration, water rights, diversions, demands, and operational rights is provided in the technical memorandum, *Model Selection and Parameters* (ERC 2008), and the reports, *Upper Colorado River Basin Information* (CWCB 2007a) and *Upper Colorado River Basin Water Resources Planning Model User's Manual* (CWCB 2007b). Pertinent modeling assumptions and variables for the No Action and Proposed Action alternatives are described in Chapter 2, Sections 2.3 and 2.4.

The study period selected extends 56 years from 1950 through 2005. This time frame was evaluated because it includes a variety of hydrologic conditions. The selected study period contains a balance of dry years (1954, 1966, 1977, 1981, and 2002), wet years (1957, 1983, 1984, 1995, and 1996), and average years. Of particular concern for this EA was the inclusion of several dry years, since hydrologic effects associated with the Proposed Action would occur primarily in substitution years, which generally correspond with dry years. Starting the model a few years prior to the mid 1950's drought period minimizes the influence of initial conditions on model results for those years. The study period ends in 2005 because the CDSS Model data sets currently available extend through 2005. A monthly time step was considered adequate for the purposes of this EA based on the magnitude and timing of hydrologic effects anticipated under the Proposed Action. As discussed in the following sections, differences in the timing of substitution releases within a month between the No Action and Proposed Action alternatives are not likely, in which case a more refined time step was not warranted. In addition, flow changes under the Proposed Action would occur primarily in dry years in the fall (August and September) when there is typically less variability in flows over the month since runoff is over and flows are generally lower. Potential differences in hydrologic effects (percentage change in flows, reservoir contents, etc.) estimated on a monthly basis versus daily basis are not expected to be so great as to warrant a daily model.

While the majority of the Study Area for this EA is located in the upper Colorado River basin, a small portion is located in the upper South Platte River basin, including Springs Utilities' Montgomery Reservoir, Denver Water's Elevenmile Canyon Reservoir and the Middle Fork South Platte River. The CDSS Model does not include the South Platte River basin; therefore, potential hydrologic effects in that portion of the Study Area were based on an assessment of historical end-of-month contents and releases for Montgomery Reservoir provided by Springs Utilities and data provided by Denver Water from their Platte and Colorado Simulation Model (PACSM) for Elevenmile Canyon Reservoir.

Direct and indirect effects were determined based on the difference between simulated conditions under the Proposed Action and No Action alternatives. Simulated flow and reservoir content data at key locations in the Study Area for the entire study period is presented in Appendix B for the No Action and Proposed Action alternatives. The hydrologic data presented in Tables 3-2 through 3-19 consists of simulated maximum monthly streamflow and reservoir end-of-month content increases and decreases and average monthly streamflows and reservoir end-of-month contents for the five driest years and all substitution years for the Proposed Action compared with the No Action alternative. Total natural flow from April through September at the USGS gage Colorado River near Kremmling (#09058000) was ranked from low to high to define the five driest in the 56-year study period because that gage is centrally located within the West Slope Study Area. The five driest years of the study period are 1954, 1966, 1977, 2002, and 2004.

3.3.2.1 No Action Alternative

Under the No Action alternative, Springs Utilities would continue to operate according to the Blue River Decree during substitution years. Therefore, river flows and reservoir contents would continue to fluctuate as they have historically as a result of Springs Utilities substitution operations.

This alternative is expected to have no direct, indirect or cumulative impacts on streamflows or reservoirs.

3.3.2.2 Proposed Action

The impacts of the Proposed Action are evaluated as compared to the No Action alternative. Therefore, in the discussion of the impacts to follow, unless otherwise noted, a “decrease” in a quantity (i.e. flow, storage amount, etc.) means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an “increase” in a quantity means that the quantity for the Proposed Action is greater than the comparable quantity for the No Action alternative.

Substitution Operations

The majority of hydrologic changes under the Proposed Action would occur in substitution years. Model results indicate there would be 13 substitution years during the 56-year study period with total substitution obligations ranging from 139 AF to 4,318 AF. Substitution years would include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004. All of these years are within the driest 30 percent of years in the study period. There is no substitution obligation in years that Green Mountain Reservoir fills, which is approximately 80% of the time during the 56-year study period.

There would be no change in Springs Utilities *total* substitution obligation between the No Action and Proposed Action alternatives in substitution years because there would be no difference in the deficit at Green Mountain Reservoir in those years. In addition, Springs Utilities would divert the same amount of water under the Proposed Action from the Blue River at their Continental-Hoosier System diversion points. There would be no increase in Springs Utilities diversions from the West Slope to the East Slope through the Hoosier or Homestake Tunnels under the Proposed Action. In fact, Springs Utilities diversions to the East Slope would decrease in non-substitution years because up to 250 AF in Upper Blue Reservoir would be released to West Slope users in the Blue River basin, which would not occur under the No Action alternative. While Springs Utilities’ total substitution obligation would not change under the Proposed Action, the timing and sources of water used for substitution payback would change.

In years the substitution obligation is less than 2,100 AF and the total contents in Upper Blue Reservoir are sufficient to fully payback the substitution obligation, there would be no difference in the location or amount of substitution payback under the Proposed Action. There may be slight differences in the timing of substitution releases under the Proposed Action since releases from Upper Blue Reservoir would be coordinated to provide environmental benefits in the late summer and early fall per the terms and conditions of the 2003 MOA. Since substitution releases under the No Action alternative typically occur in the late summer and early fall, changes in the timing of releases under the Proposed Action are expected to be small. In years the obligation is less than 2,100 AF, Springs Utilities would release water from their Upper Blue Reservoir to Denver Water’s Dillon Reservoir under both the No Action and Proposed Action alternatives. In return, Springs Utilities’ entire substitution obligation would be paid back by Denver Water with releases from Williams Fork Reservoir and/or Dillon Reservoir.

The biggest difference in the payback of the substitution obligation under the Proposed Action would occur when the substitution obligation is greater than 2,100 AF. The substitution bill is greater than 2,100 AF in approximately seven of the substitution years during the 56-year study period. In those years, contents in Upper Blue Reservoir would not be sufficient to fully pack back the substitution obligation. Therefore, under the Proposed Action more water would be released from Springs Utilities' accounts in Wolford Mountain and Homestake Reservoirs while Denver Water's substitution releases for Springs Utilities from either Dillon Reservoir and/or Williams Fork Reservoir would decrease.

Table 3-1 shows substitution releases from Upper Blue Reservoir under the No Action and Proposed Action alternatives. Monthly substitution releases from Upper Blue Reservoir would decrease by a maximum of 252 AF. Monthly substitution releases from Upper Blue Reservoir would decrease by 153 AF on average and 248 AF in the driest years. Under the Proposed Action, substitution releases would decrease by up to 250 AF in August because that amount of water must be reserved in Upper Blue Reservoir for West Slope users in the Blue River basin each year. Water for these users would typically be released in November under the Proposed Action as opposed to August for substitution payback under the No Action alternative. When contents in Upper Blue Reservoir are sufficient to fully payback the substitution obligation and release 250 AF for West Slope users in the Blue River Basin, there would be no difference in the substitution release from Upper Blue Reservoir between the alternatives. Decreases in substitution releases from Upper Blue Reservoir would occur in 8 years out of the 56-year study period.

Under the Proposed Action, releases from Springs Utilities' account in Wolford Mountain Reservoir would occur in 7 years out of the 56-year study period and range up to 1,750 AF under the Proposed Action, as shown in Table 3-1. Monthly substitution releases would be 340 on average and 426 AF in the driest years. Under the No Action alternative, no substitution releases from Wolford Mountain Reservoir on behalf of Springs Utilities would be made from Denver Water's account. Substitution releases for Springs Utilities would be allocated among the releases from Denver Water's Williams Fork and/or Dillon Reservoirs

Under the Proposed Action, releases from Springs Utilities' account in Homestake Reservoir would occur in only 1 year out of the 56-year study period in the amount of 469 AF, as shown in Table 3-1. Under the No Action alternative, substitution releases would not be made from Springs Utilities' Homestake Reservoir account.

Table 3-1 shows Denver Water's substitution releases for Springs Utilities under the No Action and Proposed Action alternatives. Denver Water's monthly substitution release for Springs Utilities would decrease by a maximum of 2,220 AF. Monthly substitution releases for Springs Utilities would decrease by 374 AF on average and 424 AF in the driest years. Denver Water's substitution releases for Springs Utilities would decrease in 7 years out of the 56-year study period. Under the Proposed Action, Springs Utilities would release water from their accounts in Wolford Mountain and Homestake Reservoirs to payback their substitution obligation in excess of 2,100 AF, therefore, Denver Water's substitution release from either Williams Fork Reservoir and/or Dillon Reservoir for Springs Utilities would decrease.

Table 3-1
Springs Utilities Substitution Summary
Modeled Differences Between No Action and Proposed Action Alternatives (AF)

	Maximum Decrease in August			Maximum Increase in August			Dry Year Average in August[3]			Substitution Year Average in August[1]		
Springs Utilities Substitution Obligation	**No Action**	**Proposed Action**	**Difference**	**No Action**	**Proposed Action**	**Difference**	**No Action**	**Proposed Action**	**Difference**	**No Action**	**Proposed Action**	**Difference**
Total Substitution Obligation	4319.0	4318.0	-1.0	2759.0	2767.0	8.0	2424.4	2427.4	3.0	1830.4	1832	1.6
Upper Blue Reservoir Release	848.0	596.0	-252.0	724.0	726.0	2.0	1379	1131.2	-247.8	1113.1	960.2	-152.9
Wolford Mountain Reservoir Release from Springs Utilities Account	-----	-----	0.0	0.0	1750.0	1750.0	0	426	426.4	0	340	339.8
Homestake Reservoir Release	-----	-----	0.0	0.0	469.0	469.0	0.0	0.0	0.0	0.0	36.1	36.1
Denver Water Substitution Release for Springs Utilities[2]	4320.0	2100.0	-2220.0	724.0	726.0	2.0	2424.8	2001.0	-423.8	1830.5	1456.3	-374.2

[1] Substitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004.

[2] Denver Water's substitution release for Springs Utilities includes the amount released from Upper Blue Reservoir to Dillon Reservoir.

[3] The dry year average is the average of the five driest years in the study period, which include 1954, 1966, 1977, 2002, and 2004.

The decrease in Denver Water's substitution release from either Williams Fork or Wolford Mountain Reservoirs depends on Denver Water's total substitution bill. In a substitution year, Denver Water reserves the first 1,000 AF of its substitution obligation in Dillon Reservoir. This water is available to augment releases from Dillon Reservoir if necessary to meet the bypass flow requirement of 50 cfs. This water would be the last water released for substitution payback and is generally not needed since inflow to Dillon Reservoir is almost always greater than 50 cfs. In the model, this water is released from Dillon Reservoir to the river at the end of March to fully payback Denver Water's substitution obligation. However, under actual operations this water reverts to Denver Water ownership. If this water is not released to the river, flows below Dillon Reservoir would be slightly lower in March than estimated in the model in substitution years and contents in Dillon Reservoir slightly higher until the reservoir fills. The difference between actual and modeled operations of the 1,000 AF in Dillon Reservoir would not affect Springs Utilities' substitution obligation or the manner in which their substitution payback is made. Because Green Mountain Reservoir generally releases through the winter months to meet storage targets, the release of 1,000 AF from Dillon Reservoir in March would also not affect modeled storage contents in Green Mountain Reservoir. After the 1,000 AF is reserved in Dillon Reservoir, substitution releases are alternated between Wolford Mountain and Williams Fork reservoirs, with the first 5,000 AF released from Wolford Mountain Reservoir. Williams Fork Reservoir provides the next 10,000 AF of substitution water, in Wolford Mountain Reservoir the next increment up to an annual maximum of 26,000 AF in total from Wolford Mountain Reservoir (Denver Water 2003). The next 25,000 AF is released from Williams Fork Reservoir and any remaining obligation is met with releases from Dillon Reservoir. For modeling purposes, all releases from Denver Waters' facilities (i.e., Denver Water's substitution obligation plus Springs Utilities' obligation) are aggregated and released according to the schedule of releases described above. However, for the No Action alternative, Springs Utilities' releases are allocated among releases from Dillon Reservoir and/or Williams Fork Reservoir to be consistent with the Blue River Decree.

In years that the last increment of Denver Water's substitution obligation is released from Wolford Mountain Reservoir, there would be no change in the total substitution release from Wolford Mountain and Williams Fork Reservoirs under the Proposed Action. In those years, the total amount released from Wolford Mountain Reservoir for substitution payback would be the same; however, the releases would be allocated from different accounts in that reservoir and from Williams Fork Reservoir. Under the No Action alternative, water would be released from Denver Water's Williams Fork Reservoir for Springs Utilities and a larger proportion of Denver Waters' release would be allocated to Wolford Mountain Reservoir, whereas, under the Proposed Action, water would be released from Springs Utilities' Wolford Mountain Reservoir account. The only exception to this would be when Springs Utilities account in Wolford Mountain is not sufficient to fully payback their obligation and an additional substitution release is needed from Homestake Reservoir.

In years that the last increment of Denver Water's substitution obligation is released from Williams Fork Reservoir, substitution releases from Wolford Mountain Reservoir would increase, while substitution releases from Williams Fork Reservoir would decrease by a commensurate amount. The total amount released from these reservoirs would be the same under both alternatives unless Springs Utilities' account in Wolford Mountain is not sufficient to fully payback their obligation and an additional substitution release is needed from Homestake Reservoir.

Blue River Basin

Blue River

Flow changes along the Blue River are shown in Tables 3-2 through 3-4. Refer to Table 3-2 for a summary of monthly average changes in flows in the Blue River downstream of the Continental-Hoosier System and upstream of Dillon Reservoir. Under the Proposed Action, flows would increase in November due to the additional release from Upper Blue Reservoir to West Slope users in the Blue River basin. In one September out of the 56-year study period, flows under the Proposed Action would increase by 4.2 cfs because 250 AF less would be stored in Upper Blue Reservoir that month. This type of flow change would occur infrequently because there is typically little to no water available for diversion to storage in Upper Blue Reservoir that late in

Table 3-2
Blue River below the Continental-Hoosier System
Modeled Differences in Flow Between No Action and Proposed Action Alternatives (cfs)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Avg
Maximum Monthly Flow Decrease[1]													
No Action Flow	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	27.8	N/A	51.0	N/A	
Proposed Action Flow	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	27.6	N/A	46.5	N/A	
Flow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	-4.6	0.0	
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.8%	0.0%	-8.9%	0.0%	
Maximum Monthly Flow Increase[1]													
No Action Flow	N/A	19.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	63.5	19.6	
Proposed Action Flow	N/A	23.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	63.5	23.8	
Flow Change	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	
Percent Change	0.0%	21.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	21.4%	
Dry Year Monthly Average Flow (Average of 1954, 1966, 1977, 2002, 2004)													
No Action Flow	25.3	16.7	14.6	12.3	11.9	11.5	19.8	35.6	28.7	31.4	49.2	21.2	23.2
Proposed Action Flow	25.3	20.9	14.6	12.3	11.9	11.5	19.8	35.6	28.6	31.4	45.2	21.2	23.2
Flow Change	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-4.0	0.0	0.0
Percent Change	0.0%	25.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.2%	0.0%	-8.2%	0.0%	0.0%
Average Flow During Substitution Years[2]													
No Action Flow	23.0	16.9	14.7	12.2	11.4	11.2	20.4	46.0	49.8	43.1	56.6	28.4	27.8
Proposed Action Flow	23.0	21.1	14.7	12.2	11.4	11.2	20.4	46.0	49.8	43.1	54.1	28.7	28.0
Flow Change	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.5	0.3	0.2
Percent Change	0.0%	24.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-4.5%	1.1%	0.6%

[1]A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004
N/A: Not applicable.

the year. Under the Proposed Action, flows would decrease in August of substitution years when the total substitution obligation is greater than the contents in Upper Blue Reservoir less 250 AF. This amount of water must be reserved in Upper Blue Reservoir for release later in the year.

Springs Utilities' Continental-Hoosier System diversions deplete the Blue River, therefore, these diversions affect the ability to meet the CWCB instream flow requirements above Dillon Reservoir, which are junior to Springs Utilities' water rights and the Blue River Decree. However, in order to ensure the Proposed Action protects the natural environments in a manner consistent with the CWCB instream flow requirements above Dillon Reservoir, during substitution years, Springs Utilities would refrain from diverting to the extent necessary in order to maintain flows at the instream flow levels as described in Section 2.4. Therefore, there would be no impact on these instream flow requirements as a result of the Proposed Action. Compliance for this mitigation will be to maintain a flow of 5 cfs just upstream of Goose Pasture Tarn Reservoir. Flows at this location will be estimated based on the USGS gage 09046490 Blue River at Blue River, which is located just downstream of Goose Pasture

Table 3-3
Blue River below Dillon Reservoir at USGS Gage 09050700
Modeled Differences in Flow Between No Action and Proposed Action Alternatives (cfs)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Avg
Maximum Monthly Flow Decrease[1]													
No Action Flow	N/A	N/A	N/A	N/A	52.9	N/A	N/A	225.6	121.1	390.8	454.7	N/A	
Proposed Action Flow	N/A	N/A	N/A	N/A	52.4	N/A	N/A	217.7	117.0	386.8	448.8	N/A	
Flow Change	0.0	0.0	0.0	0.0	-0.5	0.0	0.0	-7.8	-4.1	-3.9	-5.9	0.0	
Percent Change	0.0%	0.0%	0.0%	0.0%	-1.0%	0.0%	0.0%	-3.5%	-3.4%	-1.0%	-1.3%	0.0%	
Maximum Monthly Flow Increase[1]													
No Action Flow	N/A	N/A	N/A	51.9	68.2	N/A	N/A	1,061.1	1,711.1	N/A	174.8	N/A	
Proposed Action Flow	N/A	N/A	N/A	51.9	68.2	N/A	N/A	1,061.2	1,711.1	N/A	174.8	N/A	
Flow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Dry Year Monthly Average Flow (Average of 1954, 1966, 1977, 2002, 2004)													
No Action Flow	73.0	66.8	58.5	58.0	60.0	60.3	50.0	50.0	71.9	185.3	151.6	59.8	78.8
Proposed Action Flow	73.0	66.8	58.5	58.0	60.0	60.3	50.0	50.0	71.9	185.3	150.5	59.8	78.7
Flow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.2	0.0	-0.1
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.8%	0.0%	-0.1%
Average Flow During Substitution Years[2]													
No Action Flow	58.8	56.5	53.3	53.2	54.2	55.8	50.0	50.0	103.3	141.3	155.9	53.8	73.8
Proposed Action Flow	58.8	56.5	53.3	53.2	54.2	55.8	50.0	50.0	103.3	141.3	155.4	53.8	73.8
Flow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.5	0.0	0.0
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.3%	0.0%	-0.1%

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004
N/A: Not applicable.

Tarn Reservoir, plus diversions to storage at Goose Pasture Tarn.

Refer to Table 3-3 for a summary of monthly average changes in flows in the Blue River downstream of Dillon Reservoir. Changes in flow downstream of Dillon Reservoir would occur due to small differences in reservoir end-of-month contents when Dillon Reservoir fills and spills. These flow changes would occur due to the release of 250 AF from Upper Blue Reservoir for West Slope users in the Blue River basin under the Proposed Action.

Since this water would be used to extinction it would not be available for storage in Dillon Reservoir. Therefore, Dillon Reservoir contents would decrease by 250 AF in substitution years under the Proposed Action. Changes in Dillon Reservoir contents would also occur under the Proposed Action due to slight differences in the amount and timing of Denver Water's substitution payback from Dillon Reservoir. However, these changes in contents would be small and infrequent. Differences in Dillon Reservoir contents would carry forward from year to year, which would result in less water spilled in years when the reservoir fills.

Refer to Table 3-4 for a summary of monthly average changes in flows in the Blue River downstream of Green Mountain

Table 3-4
Blue River below Green Mountain Reservoir
Modeled Differences in Flow Between No Action and Proposed Action Alternatives (cfs)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Avg
Maximum Monthly Flow Decrease[1]													
No Action Flow	307.5	241.8	240.6	241.6	251.1	237.3	N/A	N/A	1,828.1	1,179.4	841.1	395.6	
Proposed Action Flow	306.1	241.1	240.0	240.9	250.4	236.6	N/A	N/A	1,820.0	1,175.4	836.4	394.5	
Flow Change	-1.4	-0.7	0.0	-0.7	-0.7	-0.7	0.0	0.0	-8.1	-3.9	-4.7	-1.2	
Percent Change	-0.5%	-0.3%	0.0%	-0.3%	-0.3%	-0.3%	0.0%	0.0%	-0.4%	-0.3%	-0.6%	-0.3%	
Maximum Monthly Flow Increase[1]													
No Action Flow	241.8	185.2	166.5	162.5	169.4	191.7	276.2	580.8	1,935.7	2,329.6	612.9	229.5	
Proposed Action Flow	243.0	185.5	166.7	162.8	169.7	192.0	276.3	580.9	1,935.7	2,329.6	613.2	229.9	
Flow Change	1.2	0.3	0.3	0.3	0.3	0.3	0.0	0.1	0.0	0.0	0.3	0.4	
Percent Change	0.5%	0.2%	0.2%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	
Dry Year Monthly Average Flow (Average of 1954, 1966, 1977, 2002, 2004)													
No Action Flow	519.4	240.0	218.2	249.9	208.0	236.8	259.8	84.6	253.7	568.5	252.9	189.0	273.4
Proposed Action Flow	519.4	240.0	218.3	249.9	208.0	236.8	259.8	84.6	253.7	568.5	252.4	188.9	273.4
Flow Change	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	-0.5	-0.1	0.0
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.2%	0.0%	0.0%
Average Flow During Substitution Years[2]													
No Action Flow	444.5	217.4	204.7	207.7	198.4	214.2	216.6	82.1	204.4	544.6	348.5	236.6	260.0
Proposed Action Flow	444.5	217.4	204.8	207.8	198.5	214.2	216.6	82.1	204.4	544.6	348.2	236.6	260.0
Flow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	0.0	0.0
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.0%

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Substitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004
N/A: Not applicable.

Reservoir. The reduction in flows downstream of Dillon Reservoir would be translated downstream to the confluence with the Colorado River. Reductions in flows downstream of Dillon Reservoir would decrease the inflow to Green Mountain Reservoir, and therefore, reduce the amount and possibly timing of spills at Green Mountain Reservoir. Small increases and decreases in flows downstream of Green Mountain Reservoir would also occur due to slight differences in the timing of HUP releases from Green Mountain Reservoir. While the total amount released would be the same under both the No Action and Proposed Action alternatives, the timing of these releases may be offset by a few months. These slight differences are likely a function of the reservoir storage targets and the sequence and priority of operating rules in the CDSS Model and may not occur under actual operations.

As discussed in Section 3.3.1.7, Phase 2 of the Grand County SMP identified environmental flows to support ecological needs in relation to fisheries for the reach below Green Mountain Reservoir. The preferred range for summer environmental flows is 200 to 250 cfs below Green Mountain Reservoir. As indicated in the Phase 2 report, flow records for the USGS gage station 09057500 below Green Mountain Reservoir, show the recommended summer environmental flow range is typically present and often exceeded within this reach. Flow reductions under the Proposed Action in this reach would be infrequent and small and not affect the ability to meet these recommendations.

Based on the magnitude and frequency of flow changes along the Blue River below Dillon and Green Mountain reservoirs, there would be little to no impact on potential future projects such as the Green Mountain Reservoir Pumpback Project or on the BLM's potential Wild and Scenic River designations in the Blue River basin.

In summary, flows in the Blue River downstream of the Continental-Hoosier System and upstream of Dillon Reservoir. would decrease by up to 4.6 cfs or 8.9% in August and increase by up to 4.2 cfs or 21.5% in November. Maximum flow increases and decreases at this location would be similar in the driest years and substitution years. Flows below Dillon Reservoir would decrease by up to 7.8 cfs or 3.5% in May. Flows below Green Mountain Reservoir, would decrease by up to 8.1 cfs or 0.4% in June and increase by up to 1.2 cfs or 0.5% in December. In the driest years and substitution years, monthly average flows would decrease by less than 1.2 cfs below Dillon and Green Mountain Reservoirs.

The changes in flows along the Blue River downstream of the Continental-Hoosier System, Dillon Reservoir and Green Mountain Reservoir under the Proposed Action would be well within the normal range of flows that have historically occurred at these locations, as shown in Figures 3-2, 3-3, and 3-4.

<u>Upper Blue Reservoir</u>

Refer to Table 3-5 for a summary of monthly average changes in contents in Upper Blue Reservoir. In summary, end-of-month contents in Upper Blue Reservoir would increase by up to 250 AF in August, September and October. Under the Proposed Action, Upper Blue Reservoir contents would increase because 250 AF must be reserved in Upper Blue Reservoir

Table 3-5
Upper Blue Reservoir
Modeled Differences in Content Between No Action and Proposed Action Alternatives (AF)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Maximum Monthly Content Decrease[1]												
No Action Content	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	319	2,090
Proposed Action Content	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	318	2,087
Content Change	0	0	0	0	0	0	0	0	0	0	-1	-3
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.3%	-0.1%
Maximum Monthly Content Increase[1]												
No Action Content	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2,053	1,269	0	0
Proposed Action Content	250	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2,066	1,281	250	250
Content Change	250	0	0	0	0	0	0	0	13	12	250	250
Percent Change	N/A	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.9%	N/A	N/A
Dry Year Content (Average of 1954, 1966, 1977, 2002, 2004)												
No Action Content	0	0	0	0	0	0	18	432	1,500	1,379	0	0
Proposed Action Content	250	0	0	0	0	0	18	432	1,503	1,381	250	250
Content Change	250	0	0	0	0	0	0	0	3	2	250	250
Percent Change	N/A	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%	N/A	N/A
Average Content During Substitution Years[2]												
No Action Content	0	0	0	0	0	0	7	482	1,636	1,699	449	344
Proposed Action Content	250	0	0	0	0	0	7	482	1,637	1,700	622	497
Content Change	250	0	0	0	0	0	0	0	1	1	173	154
Percent Change	N/A	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	38.5%	N/A

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004
N/A: Not applicable.

for release in November for West Slope users in the Blue River basin. Under the No Action alternative, this water would be released earlier in the year for either substitution payback or delivery through Hoosier Tunnel. The same amount of water would be released from Upper Blue Reservoir under the Proposed Action; however, the timing of the release would change slightly. Since this water likely will be released later in the year under the Proposed Action, storage contents would be higher from August through October.

Dillon Reservoir

Refer to Table 3-6 for a summary of monthly average changes in contents in Dillon Reservoir. In summary, end-of-month contents in Dillon Reservoir would increase by up to 113 AF or 0.1% and decrease by up to 522 AF or 0.3%. In the driest years and substitution years, average end-of-month contents would decrease by

Table 3-6
Dillon Reservoir
Modeled Differences in Content Between No Action and Proposed Action Alternatives (AF)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Maximum Monthly Content Decrease[1]												
No Action Content	134,664	130,949	126,819	124,275	120,406	115,275	112,363	135,890	202,413	235,097	155,891	142,785
Proposed Action Content	134,144	130,429	126,299	123,754	119,913	114,783	111,871	135,400	201,925	234,610	155,369	142,264
Content Change	-520	-520	0	-521	-493	-492	-492	-490	-488	-487	-522	-521
Percent Change	-0.4%	-0.4%	0.0%	-0.4%	-0.4%	-0.4%	-0.4%	-0.4%	-0.2%	-0.2%	-0.3%	-0.4%
Maximum Monthly Content Increase[1]												
No Action Content	102,089	95,649	88,579	83,080	77,805	71,532	71,946	118,491	189,471	205,009	131,006	113,703
Proposed Action Content	102,202	95,762	88,692	83,193	77,918	71,645	72,059	118,603	189,583	205,121	131,119	113,816
Content Change	113	113	113	113	113	113	113	112	112	112	113	113
Percent Change	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
Dry Year Content (Average of 1954, 1966, 1977, 2002, 2004)												
No Action Content	215,246	210,606	205,097	200,972	196,133	192,422	186,344	192,098	192,939	171,538	150,546	135,011
Proposed Action Content	215,268	210,628	205,119	200,994	196,155	192,444	186,366	192,120	192,958	171,557	150,391	134,856
Content Change	22	22	22	22	22	22	21	22	19	19	-156	-155
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%
Average Content During Substitution Years[2]												
No Action Content	194,852	190,639	185,768	181,561	177,292	173,793	168,403	181,521	193,463	180,732	166,511	156,485
Proposed Action Content	194,803	190,590	185,719	181,512	177,242	173,744	168,354	181,472	193,413	180,682	166,334	156,328
Content Change	-49	-49	-49	-49	-49	-49	-49	-49	-50	-50	-176	-157
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004
N/A: Not applicable.

up to 176 AF or 0.1% and increase by up to 22 AF or less than 0.1%.

Changes in content at Dillon Reservoir would primarily occur due to the release of 250 AF from Upper Blue Reservoir for West Slope users in the Blue River basin under the Proposed Action instead of being released for substitution purposes by Springs Utilities. Since this water would be used to extinction it would not be available for storage in Dillon Reservoir in substitution years. Therefore, Dillon Reservoir contents would decrease by 250 AF in substitution years under the Proposed Action. Changes in Dillon Reservoir contents would also occur under the Proposed Action due to slight differences in the amount and timing of Denver Water’s substitution payback from Dillon Reservoir. However, these changes in content would be small and infrequent. Differences in contents under the Proposed Action would carry forward from year to year until Dillon Reservoir fills.

Green Mountain Reservoir

Refer to Table 3-7 for a summary of monthly average changes in contents in Green Mountain Reservoir. In summary, end-of-month contents in Green Mountain Reservoir would increase by up to 414 AF or 0.3% in August and decrease by up to 479 AF or 0.6% in May. In the driest years and substitution years, average end-of-month contents would increase by up to 24 AF or less than 0.1%.

Decreases in contents at Green Mountain Reservoir would be due primarily to reduced inflow when Dillon Reservoir fills. Reduced spills from Dillon Reservoir would decrease the inflow to Green Mountain Reservoir, and therefore, reduce the amount and possibly timing of spills at Green Mountain Reservoir. Increases in contents

Table 3-7
Green Mountain Reservoir
Modeled Differences in Content Between No Action and Proposed Action Alternatives (AF)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Maximum Monthly Content Decrease[1]												
No Action Content	107,962	64,490	64,021	63,523	63,007	63,115	70,506	81,884	146,782	129,697	75,348	73,593
Proposed Action Content	107,759	64,302	63,833	63,335	62,819	62,927	70,317	81,405	146,544	129,456	75,027	73,319
Content Change	-203	-188	0	-188	-188	-188	-189	-479	-238	-241	-321	-274
Percent Change	-0.2%	-0.3%	0.0%	-0.3%	-0.3%	-0.3%	-0.3%	-0.6%	-0.2%	-0.2%	-0.4%	-0.4%
Maximum Monthly Content Increase[1]												
No Action Content	105,573	96,410	87,381	78,322	69,148	N/A	75,031	150,073	107,138	120,612	143,684	131,295
Proposed Action Content	105,926	96,693	87,593	78,463	69,219	N/A	75,032	150,074	107,139	120,625	144,098	131,649
Content Change	353	283	212	141	71	0	1	1	1	13	414	354
Percent Change	0.3%	0.3%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%
Dry Year Content (Average of 1954, 1966, 1977, 2002, 2004)												
No Action Content	101,583	95,220	88,989	82,729	76,351	69,926	65,243	80,405	89,872	78,994	80,287	77,814
Proposed Action Content	101,601	95,234	88,999	82,736	76,354	69,926	65,243	80,405	89,872	78,994	80,312	77,835
Content Change	18	14	10	7	3	0	0	0	0	0	24	21
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Average Content During Substitution Years[2]												
No Action Content	97,644	91,916	86,316	80,689	74,947	69,157	66,844	85,955	105,664	95,615	93,186	88,728
Proposed Action Content	97,653	91,923	86,322	80,693	74,948	69,157	66,844	85,955	105,664	95,616	93,195	88,735
Content Change	9	7	5	3	2	0	0	0	0	1	9	8
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004
N/A: Not applicable.

at Green Mountain Reservoir would be due to slight differences in the timing of releases from the HUP pool. While, the operation and use of Green Mountain's HUP pool would not change under the Proposed Action, there may be slight differences in the timing of HUP releases from Green Mountain Reservoir. While the total amount released from Green Mountain Reservoir would be the same under both the No Action and Proposed Action alternatives, the timing of these releases may be offset by a few months. These slight differences are likely a function of the reservoir storage targets and the sequence and priority of operating rules in the CDSS Model and may not occur under actual operations.

Williams Fork River Basin

Williams Fork River

Flow changes in Williams Fork River downstream of Williams Fork Reservoir are shown in Table 3-8. In summary, monthly average flows in Williams Fork River would decrease by a maximum of 8.3 cfs or 11.5% in March and increase by a maximum of 3.4 cfs or 2.5% in June. In the driest years and substitution years, monthly average flows would increase or decrease by less than 0.6 cfs or less than 0.7%. The changes in flows in the Williams Fork River under the Proposed Action would be well within the

Table 3-8
Williams Fork River below Williams Fork Reservoir
Modeled Differences in Flow Between No Action and Proposed Action Alternatives (cfs)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Avg
Maximum Monthly Flow Decrease[1]													
No Action Flow	264.0	N/A	48.6	75.6	59.1	72.1	N/A	N/A	657.0	222.3	310.9	110.2	
Proposed Action Flow	263.1	N/A	48.4	75.6	59.0	63.8	N/A	N/A	656.3	222.3	308.9	109.3	
Flow Change	-0.9	0.0	0.0	0.0	-0.2	-8.3	0.0	0.0	-0.6	0.0	-2.0	-0.9	
Percent Change	-0.3%	0.0%	0.0%	0.0%	-0.3%	-11.5%	0.0%	0.0%	-0.1%	0.0%	-0.6%	-0.9%	
Maximum Monthly Flow Increase[1]													
No Action Flow	93.4	N/A	N/A	87.2	64.4	N/A	N/A	N/A	134.1	273.5	186.2	207.2	
Proposed Action Flow	94.8	N/A	N/A	88.6	64.9	N/A	N/A	N/A	137.4	273.5	187.7	208.8	
Flow Change	1.4	0.0	0.0	1.4	0.5	0.0	0.0	0.0	3.4	0.0	1.5	1.6	
Percent Change	1.6%	0.0%	0.0%	1.6%	0.8%	0.0%	0.0%	0.0%	2.5%	0.0%	0.8%	0.8%	
Dry Year Monthly Average Flow (Average of 1954, 1966, 1977, 2002, 2004)													
No Action Flow	143.0	107.2	94.4	77.7	62.2	87.3	95.1	32.8	55.4	95.0	242.9	107.0	100.0
Proposed Action Flow	143.3	107.2	94.4	77.7	62.2	87.3	95.1	32.8	55.4	95.0	242.6	106.9	100.0
Flow Change	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	-0.2	0.0
Percent Change	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.2%	0.0%
Average Flow During Substitution Years[2]													
No Action Flow	169.2	117.0	98.4	85.3	69.3	88.6	87.6	37.4	83.7	84.7	247.7	156.3	110.4
Proposed Action Flow	169.3	117.0	98.4	85.3	69.3	87.9	87.6	37.4	83.7	84.7	247.4	156.4	110.4
Flow Change	0.1	0.0	0.0	0.0	0.0	-0.6	0.0	0.0	0.0	0.0	-0.4	0.1	-0.1
Percent Change	0.1%	0.0%	0.0%	0.0%	0.0%	-0.7%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	-0.1%

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004
N/A: Not applicable.

normal range of flows that have historically occurred downstream of Williams Fork Reservoir, as shown in Figure 3-8.

Flow changes in the Williams Fork River would occur under the Proposed Action due to differences in the amount and timing of water released from Williams Fork Reservoir for substitution payback. Under the Proposed Action, substitution releases from Wolford Mountain and Homestake reservoirs would increase, while substitution releases from Williams Fork Reservoir would decrease by a commensurate amount. Changes in substitution releases from Williams Fork Reservoir would only occur in years the last increment of Denver Water's substitution obligation is released from Williams Fork Reservoir. A reduced substitution release under the Proposed Action would result in higher contents in Williams Fork Reservoir. As a result, less water would be stored in subsequent months depending on storage targets at Williams Fork Reservoir as the reservoir refills. Reductions in the amount stored would increase flows below the reservoir in some months under the Proposed Action. Changes in flows in some months would also occur due to differences in the timing of substitution releases from Williams Fork Reservoir. While the total amount released would be the same under both alternatives, the timing of the substitution releases may be offset by a few months. For example, a reduction in flow in one month due to a reduced substitution release would be offset by a corresponding increase in flow in subsequent months due to an increased substitution release. These differences are small and infrequent and likely a function of modeling assumptions such as reservoir storage targets and the sequence and priority of operating rules in the CDSS Model and may not occur under actual operations.

There would be no impact on the ability to meet the bypass requirement at Williams Fork Reservoir under the Proposed Action.

As discussed in Section 3.3.1.7, Phase 2 of the Grand County SMP identified environmental flows to support ecological needs in relation to fisheries for the reach below Williams Fork Reservoir. The preferred range for summer environmental flows is 40 to 140 cfs below Williams Fork Reservoir. As indicated in the Phase 2 report, flow records for the USGS gage station 09038500 below Williams Fork Reservoir show the recommended summer environmental flow range is quite commonly present in this reach. Flow reductions under the Proposed Action would be infrequent and minor and would not affect the ability to meet these flow recommendations particularly since substitution releases from William Fork Reservoir augment flows in this reach during the late summer and fall.

Williams Fork Reservoir

Refer to Table 3-9 for a summary of monthly average changes in contents in Williams Fork Reservoir. In summary, end-of-month contents in Williams Fork Reservoir would increase by up to 564 AF or 2.8% in March and decrease by up to 37 AF or 0.1% in February, March, April and May. In the driest years and substitution years, monthly average contents would increase by up to 85 AF or 0.2%.

Changes in content at Williams Fork Reservoir would primarily occur due to differences in the timing and amount of releases for substitution payback. In substitution years when the last increment of Denver Water's substitution obligation is released from Williams Fork Reservoir, substitution releases from Wolford Mountain Reservoir and possibly

Table 3-9
Williams Fork Reservoir
Modeled Differences in Content Between No Action and Proposed Action Alternatives (AF)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Maximum Monthly Content Decrease[1]												
No Action Content	3,042	1,479	4,288	54,709	53,188	51,415	66,434	92,205	N/A	N/A	89,267	18,573
Proposed Action Content	3,025	1,462	4,279	54,672	53,151	51,378	66,397	92,168	N/A	N/A	89,266	18,571
Content Change	-17	-17	0	-37	-37	-37	-37	-37	0	0	-1	-2
Percent Change	-0.6%	-1.1%	0.0%	-0.1%	-0.1%	-0.1%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Maximum Monthly Content Increase[1]												
No Action Content	19,686	16,423	13,747	11,356	9,228	19,930	16,057	26,229	32,254	32,168	28,783	23,165
Proposed Action Content	20,234	16,971	14,295	11,905	9,777	20,494	16,619	26,788	32,811	32,722	29,335	23,714
Content Change	548	548	548	549	549	564	562	559	557	554	552	549
Percent Change	2.8%	3.3%	4.0%	4.8%	5.9%	2.8%	3.5%	2.1%	1.7%	1.7%	1.9%	2.4%
Dry Year Content (Average of 1954, 1966, 1977, 2002, 2004)												
No Action Content	46,241	43,526	40,926	38,906	37,710	35,670	35,158	39,824	43,156	40,602	27,832	23,010
Proposed Action Content	46,294	43,580	40,979	38,960	37,764	35,723	35,212	39,877	43,209	40,654	27,902	23,091
Content Change	53	53	53	53	54	53	54	53	53	53	70	81
Percent Change	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.3%	0.4%
Average Content During Substitution Years[2]												
No Action Content	47,083	43,568	40,499	37,866	36,303	33,964	33,812	41,302	48,369	47,547	35,033	27,858
Proposed Action Content	47,107	43,592	40,524	37,891	36,328	34,028	33,876	41,366	48,433	47,610	35,118	27,939
Content Change	25	25	25	25	25	64	64	64	63	63	85	80
Percent Change	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.1%	0.1%	0.2%	0.3%

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004.
N/A: Not applicable.

Homestake Reservoir would increase, while substitution releases from Williams Fork Reservoir would decrease by a commensurate amount. A reduced substitution release under the Proposed Action would result in higher contents in Williams Fork Reservoir until the reservoir refills.

Some increases and decreases in contents would also occur due to slight differences in the timing of substitution releases from Williams Fork Reservoir under the Proposed Action. While the total amount released would be the same under both the No Action and Proposed Action alternatives, the timing of substitution releases may be offset by a few months. These slight differences are likely a function of modeling assumptions such as reservoir storage targets and the sequence and priority of operating rules in the CDSS Model and may not occur under actual operations.

Muddy Creek Basin

Muddy Creek

Flow changes in Muddy Creek downstream of Wolford Mountain Reservoir are shown in Table 3-10. In summary, monthly average flows in Muddy Creek would decrease by a maximum of 5.7 cfs or 4.3% in June and increase by a maximum of 6.1 cfs or 4.4% in October. In the driest years and substitution years, monthly average flows would increase or decrease by less than 0.2 cfs or less than 0.5%. The changes in Muddy Creek flows under the Proposed Action would be well within the range of flows that have historically occurred downstream of Wolford Mountain Reservoir, as shown in Figure 3-10.

Flow changes in Muddy Creek would occur due to differences in the amount and timing of water released for substitution payback from Wolford Mountain Reservoir. In substitution years when the last increment of Denver Water's substitution obligation is

Table 3-10
Muddy Creek below Wolford Mountain Reservoir
Modeled Differences in Flow Between No Action and Proposed Action Alternatives (cfs)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Avg
Maximum Monthly Flow Decrease[1]													
No Action Flow	316.2	N/A	N/A	39.6	12.9	N/A	86.0	66.5	132.9	139.8	78.5	34.9	
Proposed Action Flow	311.7	N/A	N/A	38.2	12.9	N/A	85.9	64.9	127.2	139.7	77.9	33.3	
Flow Change	-4.4	0.0	0.0	-1.4	0.0	0.0	0.0	-1.6	-5.7	0.0	-0.7	-1.6	
Percent Change	-1.4%	0.0%	0.0%	-3.5%	-0.1%	0.0%	0.0%	-2.4%	-4.3%	0.0%	-0.8%	-4.6%	
Maximum Monthly Flow Increase[1]													
No Action Flow	137.2	N/A	N/A	N/A	N/A	130.3	461.0	355.8	319.5	N/A	270.4	33.1	
Proposed Action Flow	143.3	N/A	N/A	N/A	N/A	131.3	461.4	356.1	324.2	N/A	271.2	34.0	
Flow Change	6.1	0.0	0.0	0.0	0.0	1.0	0.4	0.3	4.6	0.0	0.8	0.9	
Percent Change	4.4%	0.0%	0.0%	0.0%	0.0%	0.8%	0.1%	0.1%	1.5%	0.0%	0.3%	2.8%	
Dry Year Monthly Average Flow (Average of 1954, 1966, 1977, 2002, 2004)													
No Action Flow	14.5	22.0	14.2	13.4	10.5	26.5	89.2	177.3	104.3	93.4	224.8	38.9	69.1
Proposed Action Flow	14.5	22.0	14.2	13.4	10.5	26.5	89.2	177.3	104.3	93.4	224.8	39.1	69.1
Flow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%
Average Flow During Substitution Years[2]													
No Action Flow	55.7	23.6	15.6	13.9	11.4	26.9	88.2	156.5	137.8	92.1	194.9	56.2	72.7
Proposed Action Flow	55.7	23.6	15.6	13.9	11.4	27.0	88.2	156.6	137.8	92.1	194.9	56.1	72.7
Flow Change	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004.
N/A: Not applicable.

released from Wolford Mountain Reservoir, there would be no change in the total substitution release from Wolford Mountain. In those years, the total amount released from Wolford Mountain Reservoir for substitution payback would be the same; however, the releases would be allocated from different accounts in that reservoir and from Williams Fork Reservoir. Under the No Action alternative, water would be released from Denver Water's Williams Fork Reservoir for Springs Utilities and a larger proportion of Denver Waters' release would be allocated to Wolford Mountain Reservoir, whereas, under the Proposed Action, water would be released from Springs Utilities' Wolford Mountain Reservoir account. An exception to this would be when Springs Utilities account in Wolford Mountain is not sufficient to fully payback their obligation and an additional substitution release would be needed from Homestake Reservoir. Under the Proposed Action, substitution releases from Homestake Reservoir would occur infrequently (once in the 56-year study period). A reduced substitution release from Wolford Mountain Reservoir under the Proposed Action would result in higher contents in Wolford Mountain Reservoir. As a result, less water would be stored in subsequent months depending on storage targets as Wolford Mountain Reservoir refills. Reductions in the amount stored would increase flows in some months under the Proposed Action.

Changes in flows in some months would also occur due to differences in the timing of substitution releases from Wolford Mountain Reservoir. While the total amount released would be the same under both alternatives, the timing of substitution releases may be offset by a few months. These slight differences are likely a function of modeling assumptions such as reservoir storage targets and the sequence and priority of operating rules in the CDSS Model and may not occur under actual operations.

There would be no impact on the ability to meet the bypass requirement at Wolford Mountain Reservoir or the CWCB instream flow requirements below the reservoir under the Proposed Action.

As discussed in Section 3.3.1.7, Phase 2 of the Grand County SMP identified environmental flows to support ecological needs in relation to fisheries for the reach below Wolford Mountain Reservoir. The preferred range for summer environmental flows is 60 to 90 cfs below Wolford Mountain Reservoir. As indicated in the Phase 2 report, flow records for the USGS gage station 09041400 below Wolford Mountain Reservoir show the recommended summer environmental flow range is typically present in this reach. Flow reductions under the Proposed Action would be infrequent and minor and would not affect the ability to meet these recommendations, particularly since substitution releases from Wolford Mountain Reservoir augment flows in this reach during the late summer and fall.

<u>Wolford Mountain Reservoir</u>

Refer to Table 3-11 for a summary of monthly average changes in contents in Wolford Mountain Reservoir. In summary, end-of-month contents in Wolford Mountain Reservoir would increase by a maximum of 280 AF or 1.3% in December, January and February and decrease by a maximum of 343 AF or 1.7% in January and February. In the driest years and substitution years, monthly average contents would increase by up to 6 AF or less than 0.1% and decrease by up to 8 AF or less than 0.1%.

Table 3-11
Wolford Mountain Reservoir
Modeled Differences in Content Between No Action and Proposed Action Alternatives (AF)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Maximum Monthly Content Decrease[1]												
No Action Content	19,790	19,724	19,699	19,684	19,639	19,551	19,386	48,920	50,859	50,445	45,286	38,423
Proposed Action Content	19,448	19,382	19,356	19,341	19,296	19,209	19,045	48,582	50,755	50,342	45,184	38,323
Content Change	-342	-342	0	-343	-343	-342	-341	-338	-104	-103	-102	-100
Percent Change	-1.7%	-1.7%	0.0%	-1.7%	-1.7%	-1.7%	-1.8%	-0.7%	-0.2%	-0.2%	-0.2%	-0.3%
Maximum Monthly Content Increase[1]												
No Action Content	20,914	20,844	20,821	20,812	20,763	20,673	22,136	51,363	45,605	39,507	62,196	46,444
Proposed Action Content	21,193	21,123	21,101	21,092	21,043	20,952	22,414	51,639	45,613	39,516	62,236	46,542
Content Change	279	279	280	280	280	279	278	276	8	9	40	98
Percent Change	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	0.5%	0.0%	0.0%	0.1%	0.2%
Dry Year Content (Average of 1954, 1966, 1977, 2002, 2004)												
No Action Content	54,312	54,236	54,258	54,298	54,253	54,138	53,862	57,469	57,938	55,234	41,894	39,825
Proposed Action Content	54,317	54,241	54,263	54,303	54,258	54,143	53,867	57,474	57,943	55,240	41,897	39,817
Content Change	5	5	5	5	5	5	5	5	5	6	3	-8
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Average Content During Substitution Years[2]												
No Action Content	50,986	50,737	50,685	50,657	50,561	50,183	49,925	58,838	59,909	57,609	46,308	43,364
Proposed Action Content	50,988	50,738	50,686	50,658	50,562	50,180	49,922	58,832	59,904	57,604	46,303	43,363
Content Change	1	1	1	2	1	-3	-3	-6	-5	-5	-5	-1
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004.
N/A: Not applicable.

Changes in content at Wolford Mountain Reservoir would primarily occur due to differences in the amount and timing of releases for substitution payback. In substitution years when the last increment of Denver Water's substitution obligation is released from Williams Fork Reservoir, substitution releases from Wolford Mountain Reservoir would increase while substitution releases from Williams Fork Reservoir would decrease by a commensurate amount. An increased substitution release under the Proposed Action would result in lower contents in Wolford Mountain Reservoir until the reservoir refills. In substitution years when the last increment of Denver Water's substitution obligation is released from Wolford Mountain Reservoir, there would often be no change in contents in Wolford Mountain Reservoir. In those years, the total amount released from Wolford Mountain Reservoir for substitution payback would be the same; however, releases would be allocated differently as described previously. If Springs Utilities account in Wolford Mountain Reservoir is not sufficient to fully payback their obligation an additional substitution release would be needed from Homestake Reservoir. In those years, Wolford Mountain Reservoir contents would be higher until the reservoir refills, because some water would be released from Homestake Reservoir under the Proposed Action instead of Wolford Mountain Reservoir.

Some small increases and decreases in contents under the Proposed Action reflect slight differences in the timing of substitution releases from Wolford Mountain Reservoir under the Proposed Action. While the total amount released would be the same under both the No Action and Proposed Action alternatives, the timing of substitution releases may be offset by a few months. These slight differences are likely a function of modeling assumptions such as reservoir storage targets and the sequence and priority of operating rules in the CDSS Model and may not occur under actual operations.

Colorado River Basin

Colorado River

Flow changes in the Colorado River downstream of the confluence with Williams Fork River, at the USGS gage near Kremmling (09058000), and downstream of the confluence with the Eagle River are shown in Tables 3-12, 3-13, and 3-14, respectively.

Flow changes in the Colorado River downstream of the confluence with the Williams Fork River reflect changes in the amount and timing of substitution releases from Williams Fork Reservoir and the amounts stored as the reservoir refills. Model results indicate there would be a slight difference in the magnitude of flow change downstream of Williams Fork Reservoir compared to the Colorado River downstream of the confluence with the

Williams Fork River due to differences in the amount diverted by HUP beneficiaries downstream of Williams Fork Reservoir under the Proposed Action. This change may or may not occur depending on the location, amount and timing of HUP demands and their associated consumptive use and return flows.

The Municipal Subdistrict (Subdistrict) of the Northern Colorado Water Conservancy District (NCWCD) expressed concerns that the Proposed Action would result in decreased flows in the Colorado River below the confluence with the Williams Fork River. The Subdistrict indicated that decreased flows in the Colorado River below the Williams Fork River during the spring could affect the Windy Gap Project water rights because those rights cannot legally divert unless certain downstream minimum stream flows in the Colorado River below the Williams Fork River are maintained and downstream senior water rights are satisfied. As discussed above, substitution releases from Williams Fork Reservoir would decrease under the Proposed Action, while substitution releases from Wolford Mountain and Homestake reservoirs would increase. The decrease in substitution releases from Williams Fork Reservoir would occur from August through March of dry years when Windy Gap is not diverting. A reduced substitution release under the Proposed Action would result in higher contents in Williams Fork Reservoir. As a result, less water would be stored in subsequent months as the reservoir refills. Reductions in the amount stored would

Table 3-12
Colorado River below the Confluence with the Williams Fork River
Modeled Differences in Flow Between No Action and Proposed Action Alternatives (cfs)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Avg
Maximum Monthly Flow Decrease[1]													
No Action Flow	345.3	203.0	230.0	166.8	147.1	169.1	288.9	156.2	2,591.7	172.0	232.6	231.7	
Proposed Action Flow	344.4	203.0	229.7	166.8	147.0	162.8	287.9	155.9	2,590.3	171.9	228.5	230.5	
Flow Change	-0.9	0.0	0.0	0.0	0.0	-6.3	-1.0	-0.3	-1.4	-0.1	-4.1	-1.2	
Percent Change	-0.3%	0.0%	0.0%	0.0%	0.0%	-3.7%	-0.3%	-0.2%	-0.1%	-0.1%	-1.7%	-0.5%	
Maximum Monthly Flow Increase[1]													
No Action Flow	158.9	N/A	N/A	211.2	159.6	N/A	300.9	1,350.5	2,434.5	274.7	294.7	299.9	
Proposed Action Flow	160.4	N/A	N/A	212.6	160.1	N/A	301.3	1,350.9	2,438.6	274.7	296.1	301.8	
Flow Change	1.4	0.0	0.0	1.4	0.5	0.0	0.4	0.4	4.1	0.0	1.4	1.9	
Percent Change	0.9%	0.0%	0.0%	0.7%	0.3%	0.0%	0.1%	0.0%	0.2%	0.0%	0.5%	0.6%	
Dry Year Monthly Average Flow (Average of 1954, 1966, 1977, 2002, 2004)													
No Action Flow	226.8	239.9	209.0	183.1	168.4	235.1	228.6	157.6	173.1	276.8	368.3	216.0	223.6
Proposed Action Flow	227.1	239.9	209.0	183.1	168.4	235.1	228.6	157.6	173.1	276.8	368.1	215.8	223.6
Flow Change	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.2	0.0
Percent Change	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%	0.0%
Average Flow During Substitution Years[2]													
No Action Flow	261.7	255.4	198.6	184.5	173.4	224.5	239.9	177.4	209.7	241.5	375.0	274.7	234.7
Proposed Action Flow	261.9	255.4	198.6	184.5	173.3	224.0	239.8	177.3	209.7	241.5	374.4	274.8	234.6
Flow Change	0.1	0.0	0.0	0.0	0.0	-0.5	-0.1	0.0	0.0	0.0	-0.6	0.1	-0.1
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	-0.2%	0.0%	0.0%	0.0%	0.0%	-0.2%	0.0%	0.0%

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004.
N/A: Not applicable.

increase flows along the Colorado River in some months under the Proposed Action and potentially benefit the Windy Gap Project. Model results show there would be no impact on Windy Gap diversions under the Proposed Action.

The ability to meet the CWCB instream flow requirements along the Colorado River below the confluence with the Williams Fork River under the Proposed Action was evaluated. The analysis focused on August and September, which are key low flow months during which there are occasionally flow changes under the Proposed Action due to differences in substitution releases from Williams Fork Reservoir. Springs Utilities diversions from the Upper Blue River do not deplete the Colorado River from the confluence of the Williams Fork downstream to the confluence to the Blue River. Springs Utilities' Continental-Hoosier System diversions deplete the Blue River and Colorado River mainstem from the confluence of the Blue River downstream. In substitution years, water released from Williams Fork Reservoir in August and September for substitution payback augments flows in the Colorado River below the confluence Williams Fork River. Therefore, the only potential impact

Table 3-13
Colorado River near Kremmling at USGS Gage 09058000
Modeled Differences in Flow Between No Action and Proposed Action Alternatives (cfs)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Avg
Maximum Monthly Flow Decrease[1,3]													
No Action Flow	880.9	668.9	546.6	557.5	527.2	411.3	707.5	663.2	5,485.8	1,329.6	921.3	376.0	
Proposed Action Flow	876.8	668.2	545.9	556.8	526.5	405.3	706.6	661.6	5,477.7	1,325.7	915.6	375.0	
Flow Change	-4.1	-0.7	0.0	-0.7	-0.7	-5.9	-0.9	-1.6	-8.1	-3.9	-5.7	-0.9	
Percent Change	-0.5%	-0.1%	0.0%	-0.1%	-0.1%	-1.4%	-0.1%	-0.2%	-0.1%	-0.3%	-0.6%	-0.2%	
Maximum Monthly Flow Increase[1,3]													
No Action Flow	636.4	568.4	452.6	421.3	460.7	400.8	1,334.3	2,802.2	1,402.3	2,676.4	1,437.4	859.7	
Proposed Action Flow	641.0	568.7	452.9	421.6	461.0	401.3	1,335.2	2,802.6	1,406.9	2,676.4	1,438.9	861.2	
Flow Change	4.6	0.3	0.3	0.3	0.3	0.5	0.9	0.4	4.6	0.0	1.5	1.5	
Percent Change	0.7%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.3%	0.0%	0.1%	0.2%	
Dry Year Monthly Average Flow (Average of 1954, 1966, 1977, 2002, 2004)													
No Action Flow	817.5	581.4	501.3	469.1	476.5	578.6	620.9	363.0	435.9	871.4	863.5	484.8	588.6
Proposed Action Flow	817.8	581.5	501.3	469.1	476.5	578.7	620.9	363.0	435.9	871.4	862.9	484.6	588.6
Flow Change	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	-0.6	-0.2	0.0
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.0%
Average Flow During Substitution Years[2]													
No Action Flow	807.8	578.1	485.3	464.4	471.5	559.1	623.9	434.2	514.0	821.0	934.6	599.6	607.8
Proposed Action Flow	808.0	578.1	485.3	464.4	471.5	558.7	623.8	434.2	514.0	821.0	933.8	599.6	607.7
Flow Change	0.1	0.0	0.0	0.0	0.0	-0.4	-0.1	0.0	0.0	0.0	-0.8	0.0	-0.1
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.0%

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004.
[3]The first year of the study period was not included in the analysis of maximum increases and decreases due to start-up conditions in the model.
N/A: Not applicable.

on CWCB instream flow rights along the Colorado River from the confluence with the

Williams Fork River downstream to the confluence with the Blue River would be a reduction in the amount of water ***added*** to the river due to a change in substitution releases from Williams Fork Reservoir.

CDSS Model results show that average monthly flows in the Colorado River below the confluence with the Williams Fork River would occasionally be less than the instream flow requirement of 135 cfs in August and September under the Proposed Action. However, flows can be less than 135 cfs in August and September in non-substitution years because water is not released from Williams Fork Reservoir for substitution payback purposes. Flows in August and September would not decrease under the Proposed Action in non-substitution years. Model results show the average monthly flow exceeded the instream flow requirement of 135 cfs in all months that flows in the Colorado River below the confluence with the Williams Fork River would decrease under the Proposed Action. Therefore, a reduction in substitution releases from Williams Fork Reservoir

Table 3-14
Colorado River Below the Confluence with the Eagle River
Modeled Differences in Flow Between No Action and Proposed Action Alternatives (cfs)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Avg
Maximum Monthly Flow Decrease[1,3]													
No Action Flow	1,142.9	1,070.3	891.0	882.8	809.6	626.7	1,061.2	2,399.7	10,746.8	3,367.2	1,654.5	554.4	
Proposed Action Flow	1,138.8	1,069.6	890.3	882.1	808.9	620.7	1,060.3	2,398.1	10,738.7	3,363.2	1,649.8	553.4	
Flow Change	-4.1	-0.7	0.0	-0.7	-0.7	-5.9	-0.9	-1.6	-8.1	-4.0	-4.7	-0.9	
Percent Change	-0.4%	-0.1%	0.0%	-0.1%	-0.1%	-0.9%	-0.1%	-0.1%	-0.1%	-0.1%	-0.3%	-0.2%	
Maximum Monthly Flow Increase[1,3]													
No Action Flow	858.8	887.4	728.1	663.0	687.3	632.4	3,008.5	5,970.7	5,764.7	2,928.5	1,330.9	1,404.1	
Proposed Action Flow	863.4	887.7	728.4	663.3	687.6	632.9	3,009.4	5,971.1	5,769.4	2,928.5	1,332.8	1,405.6	
Flow Change	4.6	0.3	0.3	0.3	0.3	0.5	0.9	0.4	4.6	0.0	1.9	1.5	
Percent Change	0.5%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	
Dry Year Monthly Average Flow (Average of 1954, 1966, 1977, 2002, 2004)													
No Action Flow	1,138.6	924.8	775.3	731.0	699.0	856.9	1,097.9	1,453.7	1,309.1	1,170.5	1,063.8	706.9	994.0
Proposed Action Flow	1,138.9	924.8	775.4	731.1	699.1	857.0	1,097.9	1,453.7	1,309.1	1,170.5	1,063.4	706.7	994.0
Flow Change	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	-0.5	-0.2	0.0
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Average Flow During Substitution Years[2]													
No Action Flow	1,114.1	932.0	758.2	707.4	703.6	821.7	1,099.7	1,779.6	1,842.8	1,246.9	1,217.3	887.7	1,092.6
Proposed Action Flow	1,114.2	932.0	758.3	707.4	703.6	821.3	1,099.6	1,779.6	1,842.7	1,246.8	1,217.1	887.6	1,092.5
Flow Change	0.1	0.0	0.0	0.0	0.0	-0.4	-0.1	0.0	0.0	0.0	-0.2	0.0	0.0
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004.
[3]The first year of the study period was not included in the analysis of maximum increases and decreases due to start-up conditions in the model.
N/A: Not applicable.

under the Proposed Action would have negligible impact on the ability to meet the CWCB instream flow requirements along the Colorado River.

This analysis coincides with a review of flow data for the gage maintained by the Northern Colorado Water Conservancy District (NCWCD), Colorado River below the confluence of the Williams Fork River at Parshall. Since 1992, recorded flows at that gage in August and September were less than 135 cfs for only 4 days in early September 2006. Since 2006 was not a substitution year, Springs Utilities operations had no effect on flows in the Colorado River in that reach.

As discussed in Section 3.3.1.7, Phase 2 of the Grand County SMP identified environmental flows to support ecological needs in relation to fisheries for several stream reaches along the Colorado River. The preferred range for summer environmental flows in the Colorado River is 250 to 450 cfs below the confluence with the Williams Fork River and 600 to 1000 cfs below the confluence with the Blue River. As indicated in the Phase 2 SMP, flow records for gage stations near Parshall and below the KB Ditch, which are operated by NCWCD, and the USGS gage 09058000 Colorado River near Kremmling, show the recommended summer environmental flow ranges are quite commonly present in these reaches. Substitution releases from Williams Fork Reservoir and Wolford Mountain Reservoir contribute to meeting these flow recommendations since they augment naturally occurring flow along the Colorado River in the fall. Flow reductions along the Colorado River under the Proposed Action would be infrequent and minor and would have negligible affect on the ability to meet these flow recommendations particularly since substitution releases augment flows in this reach during the late summer and fall.

Flow changes in the Colorado River near Kremmling reflect changes in the amount and timing of substitution releases from Williams Fork Reservoir and Wolford Mountain Reservoir and the amounts stored as these reservoirs refill. These changes in flows are translated downstream. Slight changes in flow may also occur due to the location, amount and timing of HUP demands and their associated consumptive use and return flows.

Flow changes in the Colorado River downstream of the Eagle River reflect changes in the timing of substitution releases from Williams Fork, Wolford Mountain, and Homestake Reservoirs, reservoir spills, and the additional 250 AF that would be used by West Slope users in the Blue River basin. Slight changes in flow may also occur due to the location, amount and timing of HUP demands and their associated consumptive use and return flows. Downstream of the Eagle River there would be little change in the total flow across the year since the total substitution payback by Springs Utilities and Denver Water would not change at this location. The majority of flow changes downstream of the Eagle River would be due to changes in the timing of reservoir releases and spills.

In summary, average monthly flows in the Colorado River downstream of the confluence with Williams Fork River would decrease up to 6.3 cfs or 3.7% in March and increase by up to 4.1 cfs or 0.2% in June. Monthly average flows in the Colorado River near Kremmling would decrease by up to 8.1 cfs or 0.1% in June and increase by up to 4.6 cfs or 0.7% in October. Monthly average flows in the Colorado River downstream of the Eagle River would decrease by up to 8.1 cfs or 0.1% in June and increase by up to 4.6 cfs or 0.5% in October. In the driest years and substitution years, monthly average flows at all these locations would increase or decrease by less than 0.8 cfs.

The changes in flows under the Proposed Action would be well within the normal range of flows that have historically occurred along the Colorado River at these locations, as shown in Figure 3-12 for the Colorado River near Kremmling. Based on the magnitude and frequency of flow changes along the Colorado River, there would be little to no impact on the BLM's potential Wild and Scenic Rivers designation along the Colorado River.

Eagle River Basin

Homestake Creek

Flow changes downstream of the Homestake Project on Homestake Creek are shown in Table 3-15. In summary, monthly average flows in Homestake Creek would increase by a maximum of 7.6 cfs or 18.1% in August. In substitution years, average monthly flows would increase by up to 0.6 cfs or 2.3%. There would be no change in flows in the driest years. Flows in Homestake Creek would change under the Proposed Action due to a substitution release from Homestake Reservoir in one year during the 56-year study period. This substitution release would result in a reduced delivery through Homestake Tunnel. The increase in flows under the Proposed Action would be well within the normal range of flows that have historically occurred in Homestake Creek downstream of the Homestake Project, as shown in Figure 3-13.

There would be no impact on the ability to meet the instream flow requirements along Homestake Creek and the Eagle River under the Proposed Action.

Table 3-15
Homestake Creek below Homestake Project at USGS Gage 09064000
Modeled Differences in Flow Between No Action and Proposed Action Alternatives (cfs)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Avg
Maximum Monthly Flow Decrease[1]													
No Action Flow	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Proposed Action Flow	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Flow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Maximum Monthly Flow Increase[1]													
No Action Flow	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	82.9	42.1	N/A	
Proposed Action Flow	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	83.1	49.8	N/A	
Flow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.6	0.0	
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	18.1%	0.0%	
Dry Year Monthly Average Flow (Average of 1954, 1966, 1977, 2002, 2004)													
No Action Flow	11.2	5.4	4.2	4.1	3.8	6.7	24.7	69.0	82.9	35.3	20.5	11.3	23.3
Proposed Action Flow	11.2	5.4	4.2	4.1	3.8	6.7	24.7	69.0	82.9	35.3	20.5	11.3	23.3
Flow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Average Flow During Substitution Years[2]													
No Action Flow	10.4	6.6	4.9	4.2	4.0	5.7	19.8	55.6	68.2	49.0	25.7	14.1	22.3
Proposed Action Flow	10.4	6.6	4.9	4.2	4.0	5.7	19.8	55.6	68.2	49.0	26.3	14.1	22.4
Flow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	0.0%	0.2%

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004.
N/A: Not applicable.

Homestake Reservoir

Refer to Table 3-16 for a summary of monthly average changes in contents in Homestake Reservoir. Changes in contents at Homestake Reservoir under the Proposed Action would be infrequent and minor. End-of-month contents would decrease in seven months during the 56-year study period by up to 469 AF or 18.9% in August. Contents would decrease under the Proposed Action due to a substitution release from Homestake Reservoir in one year during the study period.

Table 3-16
Homestake Reservoir
Modeled Differences in Content Between No Action and Proposed Action Alternatives (AF)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Maximum Monthly Content Decrease[1]												
No Action Content	2,464	2,462	2,471	2,482	2,484	N/A	N/A	N/A	N/A	8,118	4,895	4,814
Proposed Action Content	1,998	1,996	2,004	2,014	2,015	N/A	N/A	N/A	N/A	8,111	4,426	4,347
Content Change	-466	-466	-467	-468	-469	0	0	0	0	-7	-469	-467
Percent Change	-18.9%	-18.9%	0.0%	-18.9%	-18.9%	0.0%	0.0%	0.0%	0.0%	-0.1%	-9.6%	-9.7%
Maximum Monthly Content Increase[1]												
No Action Content	18,967	N/A	14,187	N/A	N/A	N/A	169	5,052	17,401	N/A	29,055	N/A
Proposed Action Content	18,968	N/A	14,188	N/A	N/A	N/A	170	5,053	17,402	N/A	29,056	N/A
Content Change	1	0	1	0	0	0	1	1	1	0	1	0
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Dry Year Content (Average of 1954, 1966, 1977, 2002, 2004)												
No Action Content	25,768	25,016	25,038	25,063	25,068	20,981	13,410	17,249	19,324	19,137	17,786	16,190
Proposed Action Content	25,768	25,016	25,038	25,063	25,068	20,981	13,410	17,249	19,324	19,137	17,786	16,190
Content Change	0	0	0	0	0	0	0	0	0	0	0	0
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Average Content During Substitution Years[2]												
No Action Content	24,860	24,555	24,577	24,602	24,607	19,327	11,170	16,221	21,104	19,592	18,357	17,279
Proposed Action Content	24,824	24,519	24,541	24,566	24,571	19,327	11,170	16,221	21,104	19,592	18,321	17,242
Content Change	-36	-36	-36	-36	-36	0	0	0	0	-1	-37	-37
Percent Change	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.2%	-0.2%

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004.
N/A: Not applicable.

South Platte River Basin

Middle Fork South Platte River

Flow changes downstream of Montgomery Reservoir on the Middle Fork South Platte River are shown in Table 3-17. Springs Utilities' flow measurements at the outlet of Montgomery Reservoir were used to evaluate changes in streamflows along the Middle Fork South Platte River. Changes in flow reflect a 6% transit loss which would be assessed on deliveries from Montgomery Reservoir to Elevenmile Canyon Reservoir per the 2003 MOA. In summary, average monthly flows in the Middle Fork South Platte River would decrease by 34.1 cfs or 61.6% and increase by 4.3 cfs or 14.6% in August. The decrease in flows would be greater than 7 cfs in only one month during the study period. In the driest years and substitution years, average monthly flows in

Table 3-17
Middle Fork South Platte River below Montgomery Reservoir[3]
Modeled Differences in Flow Between No Action and Proposed Action Alternatives (cfs)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Avg
Maximum Monthly Flow Decrease[1]													
No Action Flow	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	55.3	N/A	
Proposed Action Flow	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	21.2	N/A	
Flow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-34.1	0.0	
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-61.6%	0.0%	
Maximum Monthly Flow Increase[1]													
No Action Flow	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	29.6	N/A	
Proposed Action Flow	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	33.9	N/A	
Flow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.6%	0.0%	
Dry Year Monthly Average Flow (Average of 1954, 1966, 1977, 2002, 2004)													
No Action Flow	2.9	0.1	0.0	0.0	0.0	0.0	0.7	16.7	33.7	28.7	30.6	6.9	10.0
Proposed Action Flow	2.9	0.1	0.0	0.0	0.0	0.0	0.7	16.7	33.7	28.7	27.5	6.9	9.8
Flow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-3.0	0.0	-0.3
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-10.0%	0.0%	-2.5%
Average Flow During Substitution Years[2]													
No Action Flow	2.8	0.1	0.0	0.0	0.0	0.0	0.9	19.8	40.1	36.2	26.8	7.9	11.2
Proposed Action Flow	2.8	0.1	0.0	0.0	0.0	0.0	0.9	19.8	40.1	36.2	23.0	7.9	10.9
Flow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-3.8	0.0	-0.3
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-14.3%	0.0%	-2.8%

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004.
[3] Middle Fork South Platte River flows below Montgomery Reservoir were assumed to equal the measured outflow to the river. Measured outflows were not available prior to 1990, therefore, monthly flows prior to 1990 were assumed to be the average of flows from 1990 through 2005.
N/A: Not applicable.

August would decrease by 3.8 cfs or 14.3%. The decrease in flows under the Proposed Action would be well within the normal range of flows that have historically occurred in the Middle Fork South Platte River.

Flows in the Middle Fork South Platte River would change under the Proposed Action due to differences in releases from Montgomery Reservoir. Under the Proposed Action, less water would be released from Montgomery Reservoir to payback Denver Water for substitution releases made for Springs Utilities on the West Slope. Under the Proposed Action, Denver Water would release less water from Williams Fork and Wolford Mountain Reservoirs to meet Springs Utilities' substitution obligation, therefore, Springs Utilities' releases from Montgomery Reservoir to payback Denver Water would also decrease. Flows in the Middle Fork South Platte River would change in eight months during the 56-year study period.

The only potential impact on CWCB instream flow rights along the Middle Fork South Platte River below Montgomery Reservoir would be a reduction in the amount of water added to the river below the reservoir. There would be no increase in depletions to the Middle Fork South Platte River under the Proposed Action, however, less water would be released from Montgomery Reservoir to payback Denver Water for substitution releases made for Springs Utilities on the West Slope as described above. A review of Springs Utilities' flow measurements at the outlet of Montgomery Reservoir indicates there would be no impact on the ability to meet the instream flow requirements along the Middle Fork South Platte River below Montgomery Reservoir under the Proposed Action alternative.

Montgomery Reservoir

Refer to Table 3-18 for a summary of monthly average changes in contents in Montgomery Reservoir. In summary, end-of-month contents in Montgomery Reservoir would decrease by a maximum of 271 AF or 24.1% and increase by a maximum of 2,096 AF or 355%. The change in contents would be greater than approximately 400 AF in only one year during the study period. In the driest years and substitution years, average end-of-month contents would decrease by up to 250 AF or 11.1% and increase by up to 218 AF or 6.4%.

Changes in content at Montgomery Reservoir would primarily occur due to differences in the amount of water Springs Utilities would release to payback Denver Water for substitution releases on the West Slope. In substitution years when there is sufficient water in Upper Blue Reservoir to fully payback Springs Utilities' substitution obligation there would be no water released from Montgomery Reservoir for Denver Water under both alternatives. In years, when the contents in Upper Blue Reservoir are not sufficient to fully pack back the substitution obligation, Springs Utilities would release water from Montgomery Reservoir to Elevenmile Canyon Reservoir to payback Denver Water for substitution releases on the West Slope. Under the Proposed Action, Denver Water's substitution releases for Springs Utilities would decrease on average, therefore, Springs Utilities' releases from Montgomery Reservoir to payback Denver Water would also decrease. If less water is released from Montgomery Reservoir to the Middle Fork South Platte River under the Proposed Action, contents would be higher on average from August through March following

Table 3-18
Montgomery Reservoir
Modeled Differences in Content Between No Action and Proposed Action Alternatives (AF)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Maximum Monthly Content Decrease[1]												
No Action Content	3,881	3,534	2,994	2,455	1,876	1,124	N/A	N/A	N/A	N/A	3,568	3,586
Proposed Action Content	3,610	3,263	2,723	2,184	1,604	853	N/A	N/A	N/A	N/A	3,302	3,320
Content Change	-271.1	-271.1	-271	-271.1	-271.1	-271.1	0.0	0.0	0.0	0.0	-266.0	-266.0
Percent Change	-7.0%	-7.7%	0.0%	-11.0%	-14.5%	-24.1%	0.0%	0.0%	0.0%	0.0%	-7.5%	-7.4%
Maximum Monthly Content Increase[1]												
No Action Content	1,144	590	206	206	206	1,119	N/A	N/A	N/A	N/A	2,548	2,190
Proposed Action Content	3,240	2,686	2,113	1,541	1,019	1,525	N/A	N/A	N/A	N/A	4,644	4,286
Content Change	2,096	2,096	1,908	1,335	814	405	0	0	0	0	2,096	2,096
Percent Change	183%	355%	927%	649%	395%	36%	0%	0%	0%	0%	82%	96%
Dry Year Content (Average of 1954, 1966, 1977, 2002, 2004)												
No Action Content	4,145	3,774	3,331	3,056	2,255	1,514	1,004	1,853	3,736	4,154	2,922	2,706
Proposed Action Content	3,895	3,524	3,081	2,806	2,005	1,307	1,004	1,853	3,736	4,154	3,109	2,893
Content Change	-250	-250	-250	-250	-250	-207	0	0	0	0	187	187
Percent Change	-6.0%	-6.6%	-7.5%	-8.2%	-11.1%	-13.6%	0.0%	0.0%	0.0%	0.0%	6.4%	6.9%
Average Content During Substitution Years[2]												
No Action Content	3,822	3,507	3,053	2,642	1,938	1,213	732	1,612	3,822	4,080	3,433	3,399
Proposed Action Content	3,825	3,510	3,042	2,586	1,837	1,056	732	1,612	3,822	4,080	3,651	3,617
Content Change	3	3	-11	-55	-100	-157	0	0	0	0	218	218
Percent Change	0.1%	0.1%	-0.4%	-2.1%	-5.2%	-12.9%	0.0%	0.0%	0.0%	0.0%	6.3%	6.4%

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase
means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004.
N/A: Not applicable.

substitution years. There would likely be no change in contents from April through July since Montgomery Reservoir is typically drawn down to the dead pool by the end of April due to deliveries through the Blue River Pipeline through the winter months. Increased storage under the Proposed Action would likely result in higher deliveries through the Blue River Pipeline to Springs Utilities North Slope reservoirs through the winter months. For the purposes of this analysis it was assumed there would no change in diversions to Montgomery Reservoir from the Middle Fork South Platte

River, particularly since the reservoir's water right is relatively junior and storage contents at the end of April would be similar under both alternatives.

Montgomery Reservoir contents would also decrease slightly in non-substitution years due to a reduction in Hoosier Tunnel deliveries under the Proposed Action. The release of 250 AF each year from Upper Blue Reservoir for West Slope users in the Blue River basin would decrease the amount of water delivered through the Hoosier Tunnel to Montgomery Reservoir by a commensurate amount. Deliveries through the Blue River Pipeline to Springs Utilities' North Slope reservoirs through the winter months would likely decrease by 250 AF due to this reduction in storage contents. There would likely be no change in contents from April through July since Montgomery Reservoir is typically drawn down to the dead pool by the end of April.

Elevenmile Canyon Reservoir

Refer to Table 3-19 for a summary of monthly average changes in contents in Elevenmile Canyon Reservoir. There would likely be no change in Elevenmile Canyon Reservoir contents under the Proposed Action because the reservoir is operated for long-term drought storage and typically remains full during most years. In substitution years when there is sufficient water in Upper Blue Reservoir to fully payback Springs Utilities' substitution obligation there would be no water released from Montgomery Reservoir to Elevenmile Canyon Reservoir under both alternatives. In years when the contents in Upper Blue Reservoir are not sufficient to fully payback Spring Utilities' substitution obligation, water would be released from Montgomery Reservoir to Elevenmile Canyon Reservoir to payback Denver Water for substitution releases made for Springs Utilities. Under the Proposed Action, more water would be released from Springs Utilities' accounts in Wolford Mountain and Homestake Reservoirs in lieu of Denver Water's substitution releases for Springs Utilities from Wolford Mountain Reservoir and/or Williams Fork Reservoir. As a result, the amount of water released from Montgomery Reservoir would decrease under the Proposed Action in eight months during the 56-year study period. Releases from Montgomery Reservoir would likely be passed through Elevenmile Canyon Reservoir since Elevenmile Canyon Reservoir would typically be full.

3.3.3 Cumulative Impacts

Actions that meet all of the following criteria were considered reasonably foreseeable and were included in the cumulative effects analysis:

- The action would occur within the same geographic area.
- The action would affect the same environmental resources and measurably contribute to the total resource impact.
- There is reasonable certainty as to the likelihood of the action occurring; the action is not speculative.
- There is sufficient information available to define the action and conduct a meaningful analysis.

Table 3-19
Elevenmile Canyon Reservoir
Modeled Differences in Content Between No Action and Proposed Action Alternatives (AF)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Maximum Monthly Content Decrease[1]												
No Action Content	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Proposed Action Content	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Content Change	0	0	0	0	0	0	0	0	0	0	0	0
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Maximum Monthly Content Increase[1]												
No Action Content	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Proposed Action Content	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Content Change	0	0	0	0	0	0	0	0	0	0	0	0
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dry Year Content (Average of 1954, 1966, 1977, 2002, 2004)												
No Action Content	95,465	95,377	95,281	95,054	94,929	94,804	94,742	94,689	94,819	95,408	95,614	95,062
Proposed Action Content	95,465	95,377	95,281	95,054	94,929	94,804	94,742	94,689	94,819	95,408	95,614	95,062
Content Change	0	0	0	0	0	0	0	0	0	0	0	0
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Average Content During Substitution Years[2]												
No Action Content	95,155	94,892	94,512	93,724	93,064	92,443	92,038	91,743	91,827	92,334	92,287	91,627
Proposed Action Content	95,155	94,892	94,512	93,724	93,064	92,443	92,038	91,743	91,827	92,334	92,287	91,627
Content Change	0	0	0	0	0	0	0	0	0	0	0	0
Percent Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

[1] A decrease means that the quantity for the Proposed Action is less than the comparable quantity for the No Action alternative, and an increase means that the quantity in the Proposed Action is greater than the comparable quantity for the No Action alternative.
The maximum monthly flow increase and decrease due to the Proposed Action may occur in different years from month to month.
[2]Subsitution years during the 56-year study period include 1954, 1955, 1961, 1963, 1964, 1966, 1977, 1981, 1992, 1994, 2001, 2002, and 2004.
N/A: Not applicable.

Cumulative Effects for the Proposed Action

Cumulative changes in reservoir contents and streamflows, including those segments of the Blue and Colorado rivers potentially eligible for Wild and Scenic Rivers designation, resulting from the Proposed Action would follow a pattern similar to direct effects.

Within the Study Area for this EA, the reasonably foreseeable projects would primarily affect flows along the Colorado River from the confluence with the Williams Fork River downstream. Growth in Summit County and the exchanges applied for in

Case No. 03CW314 would affect flows in the Blue River basin, however, increased water demands and depletions are expected to occur primarily in areas below Dillon Reservoir. It is possible that flows could be reduced below the Continental-Hoosier System in late summer/early fall if Springs Utilities exercises their pending exchange rights. These additional diversions could potentially overlap with flow reductions associated with differences in substitution payback in August under the Proposed Action. However, typically flows are higher in August in years that substitution releases are made from Upper Blue Reservoir. In addition, flows in the Blue River would generally need to be higher than average for exchange potential to exist. While it is difficult to predict the frequency and magnitude that these exchange rights would be exercised, the cumulative effect of Springs Utilities' pending exchange rights is expected to be negligible to minor given the circumstances that must occur for exchange potential to exist. The Homestake Project to Blue River exchange has only been operated once in the past in late July and August in 1966.

The cumulative effects projects discussed above would likely have negligible effect on Springs Utilities' Continental-Hoosier System diversions under the Blue River Decree and their corresponding substitution obligation since that system is located high in the Blue River basin. It is possible that Springs Utilities' substitution obligation may increase slightly in the future if Xcel Energy's Shoshone Power Plant call comes on sooner and/or extends for a longer period in years that Green Mountain Reservoir does not fill.

The potential hydrologic effects associated with reasonably foreseeable actions focused on dry years since the Proposed Action would cause flow changes primarily during substitution years, which coincide with dry years. There would be negligible cumulative effects from the Proposed Action in average and wet years since flow changes in those years would be infrequent and minor and generally a result of differences in reservoir spills. In dry years, the critical low-flow period along the Colorado River that coincides with potential flow reductions under the Proposed Action is August and September. Therefore, the following analysis focuses on potential flow changes associated with reasonably foreseeable actions in dry years during August and September, which would occur in combination with flow reductions associated with the Proposed Action.

There would be no change in flows along the Colorado River in dry years due to the WGFP and Denver Water's Moffat Collection System Project because the Windy Gap Project and Denver Water already divert the maximum amount physically and legally available under their existing water rights without additional storage in their systems in those years.

The expiration of Denver Water's Contract with Big Lake Ditch would result in less depletion and a corresponding increase in flows on average in the Williams Fork River basin. This increase in flow may be translated downstream to the Colorado River depending on whether Denver Water stores additional water in Williams Fork Reservoir when their water rights are in priority.

Increased water use and wastewater discharges associated with urban growth in Grand and Summit counties would result in changes in the quantity and timing of streamflows along the Colorado River. However, cumulative changes in flows in the fall in dry years would be minor since the majority of additional water diverted for indoor use (80% to 90%) would be returned to the river as wastewater effluent. Additional diversions in the fall would also be limited since municipal water providers already typically divert the maximum amount physically and legally available under their existing water rights in dry years similar to Denver Water and the Windy Gap Project.

The reasonably foreseeable action with the greatest potential to effect flows along the Colorado River in dry years would be a reduction of Xcel Energy's Shoshone Power Plant call. Increased in-priority diversions and reduced reservoir releases for exchange and/or substitution under a call reduction would decrease flows in the Colorado River during the relaxation period. However, the Shoshone call relaxation could be invoked between March 14 and May 20, therefore, there would be no impact on flows in the months of August and September from this action.

Increased contract releases from Wolford Mountain Reservoir would increase flows in Muddy Creek below the reservoir and along the Colorado River mainstem in August and September. Since contract demands would likely be out-of-priority in dry years during the fall, contract releases would be made to cover those depletions. This increase in flow in the fall could offset decreases in flow resulting from the Proposed Action.

Reductions in releases from Williams Fork and Wolford Mountain reservoirs to meet USFWS flow recommendations for the 15-Mile Reach would decrease flows along the Colorado River downstream of the confluence of the Williams Fork during the late summer and early fall. Historical releases for fish flow purposes from 2000 through 2006 were reviewed. Typically releases are on the order of 50 to 75 cfs, however, the maximum amount released from Wolford Mountain Reservoir and Williams Fork Reservoir was 140 cfs and 150 cfs, respectively. Typically these releases are offset in terms of timing however, occasionally releases from both reservoirs are made at the same time. While releases from these reservoirs for the agreed upon flow recommendations in the 15-mile reach (i.e., 10,825 AF) would decrease in the future, it is possible a portion of this water would be released from Lake Granby instead. The ongoing 10,825 Study is evaluating options to release a portion of the 10,825 obligation from Lake Granby. This would reduce potential impacts on flows high in the basin associated with reductions in releases from Williams Fork and Wolford Mountain reservoirs.

During August and September, the Proposed Action would result in average monthly flow reductions of up to 0.2 cfs or 0.1% in dry years and 0.6 cfs or 0.2% in substitution years in the Colorado River below the confluence with the Williams Fork River. The reasonably foreseeable projects that reduce flows in August and September include increased water use due to urban growth in Grand and Summit counties and reductions in releases from Williams Fork and Wolford Mountain reservoirs for fish flow purposes. If these actions reduce average monthly flows in August and September by an additional 150 cfs in dry years below the confluence with the Williams Fork River, the incremental effect of the Proposed Action would still be a flow reduction of less than 0.4% on average at that location. A flow reduction of 150 cfs was selected because that is the maximum amount that has been released from Williams Fork Reservoir for fish flow purposes in relation to the agreed upon flow recommendations in the 15-mile reach (i.e., 10,825 AF). In August and September of dry years, the potential cumulative effects on flows along the Colorado River from the confluence with the Williams Fork River downstream to the confluence with the Blue River would primarily be a reduction in the amount of water ***added*** to the river as compared to the No Action alternative since releases for fish flow purposes and substitution payback augment flows in that reach. The Proposed Action does not cause depletions in this reach of the river.

A similar analysis was conducted for the Colorado River near Kremmling gage. The Proposed Action would result in average monthly flow reductions of up to 0.6 cfs or 0.1% in dry years and 0.8 cfs or 0.1% in substitution years in the Colorado River near Kremmling gage. The reasonably foreseeable projects that reduce flows in August and September include increased water use due to urban growth in Grand and Summit counties and reductions in releases from Williams Fork and Wolford Mountain reservoirs for fish flow purposes. If these actions reduce average monthly flows in August and September by an additional 300 cfs in dry years, the incremental effect of the Proposed Action would still be a flow reduction of less than 0.1%. A flow reduction of 300 cfs was selected because that is approximately the maximum amount that has been released from both Williams Fork and Wolford Mountain reservoirs for fish flow purposes in relation to the agreed upon flow recommendations in the 15-mile reach (i.e., 10,825 AF).

The incremental cumulative hydrologic effect of the Proposed Action would be negligible to minor in comparison to other past actions and the reasonably foreseeable actions described above. In general, the reasonably foreseeable actions would result in additional water use in the future, which would cumulatively reduce streamflows and reservoir contents in the Study Area. While the magnitude of hydrologic changes under the Proposed Action would be similar under cumulative effects, the percentage change in flows and reservoir contents under the Proposed Action may be slightly higher under cumulative effects than described for direct effects.

3.4 Hydroelectric Generation

Six hydroelectric facilities occur within the Study Area and were evaluated in this section (refer to Figure 3-1 for the location of these facilities).

1) Dillon Reservoir Power Plant
2) Roberts Tunnel Power Plant
3) Green Mountain Reservoir Power Plant
4) Shoshone Power Plant
5) Mt. Elbert Power Plant
6) Williams Fork Reservoir Power Plant

For the purposes of this analysis, it is assumed all of the power plants have the same generation efficiencies. In other words, if the same volume of water is passed through one hydroelectric facility instead of another hydroelectric facility due to an exchange or substitution, then the same power is generated.

3.4.1 Affected Environment

Dillon Reservoir Power Plant

Two power plants are associated with the Roberts Tunnel Collection System. The first is the Dillon Reservoir Power Plant, owned and operated by Denver Water, which generates power from Dillon Reservoir releases to the Blue River. The outlet works from the Dillon Reservoir are equipped with a hydroelectric generating facility, with a capacity of about 110 cfs. Power releases from Dillon Reservoir are discharged to the power plant through a penstock (pipe or conduit) branching off of the outlets works tunnel. The Dillon Reservoir Power Plant contains a single turbine with a rated capacity of 1,750 kilowatt (Kw). When possible releases from the Dillon Reservoir to the Blue River are maintained between 50 and 110 cfs, the latter being the flow required for full power generation. There is no direct flow right for the hydroelectric operation (CDWR 2007).

Roberts Tunnel Power Plant

The Roberts Tunnel Power Plant associated with the Roberts Tunnel Collection System is owned and operated by Denver Water. The Roberts Tunnel Power Plant generates power from Dillon Reservoir releases through Roberts Tunnel. Power releases from the Roberts Tunnel are conveyed to the Roberts Tunnel Power Plant through a penstock bifurcating off of the tunnel upstream of the outlet works. The power plant consists of a single turbine connected to a generator with a rated capacity of 5.5 megawatts (MW).

Green Mountain Reservoir Power Plant

The Green Mountain Reservoir Power Plant, owned and operated by Reclamation, is a 26 MW facility located at the base of Green Mountain Reservoir Dam. It is one of six power plants - the only one on the West Slope - in the C-BT Project. Green Mountain Reservoir was constructed for the primary purposes of providing replacement storage for transmountain diversions by the C-BT Project and to preserve existing and future water rights and interests on the West Slope. Power generation is a secondary purpose for Green Mountain Reservoir. Releases from the reservoir are made through the Green Mountain Reservoir Power Plant. The Green Mountain Reservoir Power Plant has a decree for 1,726 cfs (CDWR 2007).

Historically, power interference has been administered on a year–to-year basis. Springs Utilities' operations on the Blue River impacts Reclamation's ability to produce hydropower; therefore Springs Utilities is required to replace the power that would have been generated by the water that Springs Utilities diverts under its 1948 water rights. During the months the Blue River System is operated, Springs Utilities provides Reclamation with daily operations data. Reclamation then determines the amount of power interference calculated at a rate of 210 kilowatt-hours per AF of depletion. Since Springs Utilities owns and operates power generation facilities, power interference is typically repaid with power. Springs Utilities coordinates with WAPA to deliver the required amount of replacement power at a time and location determined by WAPA. Springs Utilities may also pay WAPA with cash.

Shoshone Power Plant

The Shoshone Power Plant, owned by Xcel Energy, is a 3 MW facility located on the mainstem of the Colorado River in Glenwood Canyon eight miles upstream of Glenwood Springs. The plant has two identical horizontal turbine-generator units. This facility has water rights to divert 1,408 cfs from the Upper Colorado River.

Water is diverted at the Shoshone Power Plant on a year-round basis, although the plant is often closed during January for maintenance and power production is curtailed in the winter in direct proportion to the decrease in flow in the river. Below 800 cfs, one unit is normally shut down and the full flow is routed through the other unit. Both units are typically operated at full capacity when the flow at Dotsero (eight miles upstream of the power plant) is 1,408 cfs or above. There is no consumptive use associated with the operation of the power plant and all diverted water is returned back to the river at a point located about three miles downstream of the diversion dam. There are no other water rights in the intervening reach of the river (CDWR 2007).

During times when the streamflow at the Dotsero gage is less than 1,408 cfs, the power plant diverts generally all of the river flow, leaving only a small amount of leakage through the diversion dam as the flow in the river throughout the three mile reach. At times when the flow is less than 1,250 or 1,408 cfs, the division engineer strictly enforces the call by the Shoshone Power Plant. The right for 1,250 cfs is senior in comparison with the majority of upstream water rights, so the Shoshone Power Plant is generally the controlling call on the river during the late summer, winter, and early spring. During unusually dry years, the Shoshone call can be enforced throughout the period of late June through mid-April of the following year. During unusually wet years, the call does not go into effect until November or December (CDWR 2007).

Mt. Elbert Power Plant

The Mt. Elbert Power Plant is a 200 MW facility owned and operated by Reclamation near Leadville, Colorado. This facility is a pumped-storage hydroelectric plant, which is a facility with both an upper and lower reservoir for water storage. It operates by releasing water for generation from the upper reservoir to the lower reservoir during periods of high demand and then pumping the water back into the upper reservoir during the evening or other periods of low demand. Pumped-storage plants allow existing off-peak generation to be shifted to peak periods, and thus reduce the need for new generating plants (Renewable Resource Generation Development Areas Task Force 2007).

The Mt. Elbert Power Plant generates hydroelectric power for the Fryingpan-Arkansas Project and supports peak capacity needs of the interconnected power system. The power generated at Mt. Elbert derives from water originally pumped from Twin Lakes Reservoir, which acts as the Mt. Elbert afterbay, and also from supplemental water delivered from Turquoise Reservoir via the Mt. Elbert conduit to the Mt. Elbert forebay. The majority of the power plant structure is below ground on the edge of Twin Lakes Reservoir. Water is stored in the forebay to build up "head" or energy before being dropped down over half a mile in elevation to the hydroelectric Mt. Elbert Plant. Water exiting the Mt. Elbert Power Plant helps to fill Twin Lakes Reservoir.

Williams Fork Reservoir Power Plant

The Williams Fork Reservoir Power Plant is a 3 MW facility on a secondary outlet from the Williams Fork Reservoir and is owned and operated by Denver Water. The primary purpose of Williams Fork Reservoir is to provide replacement water for out-of-priority diversions by Denver Water and to generate power. Power operations generally influence reservoir releases during much of the year. Depending upon the available pressure head in the reservoir and the number of turbines in operation, the flow required for hydroelectric generation ranges from about 100 cfs (1 MW) to 280 cfs (3 MW) (CDWR 2007). Most of the power generated at Williams Fork Reservoir Power Plant is provided to Reclamation as partial payment for power generation interference caused to the Green Mountain Reservoir Power Plant by Denver Water's upstream depletions to the Blue River at Dillon

Reservoir and Roberts Tunnel. The minimum flow for the power plant to function is 105 cfs and the maximum flow is 300 cfs.

3.4.2 Environmental Consequences

3.4.2.1 No Action Alternative

Under the No Action alternative, Springs Utilities would continue to operate according to the Blue River Decree during substitution years. Therefore, hydroelectric power generation would not change as a result of Springs Utilities' substitution operations. Per the Blue River Decree, Springs Utilities would continue to pay Reclamation and WAPA at Green Mountain Reservoir Power Plant on an as-needed basis for lost power generation due to their diversions from the Blue River. As a result, this alternative is expected to have no direct, indirect, or cumulative impacts on hydroelectric power generation.

3.4.2.2 Proposed Action

Under the Proposed Action, a long-term Power Interference Agreement would be formalized with Reclamation and WAPA. Under the agreement, Springs Utilities would compensate Reclamation and WAPA for lost hydropower in substitution years with power generated from their own facilities, at a time and location determined by WAPA. Springs Utilities may pay WAPA in cash or with power.

Model results indicate there would be 13 substitution years during the 56-year study period from 1950 through 2005. In those years, there would be no change in Springs Utilities' *total* substitution obligation between the No Action and Proposed Action alternatives because there would be no difference in the deficit at Green Mountain Reservoir in those years. Springs Utilities would divert the same amount of water under the Proposed Action from the Blue River at their Continental-Hoosier System diversion points. As a result, there would be little to no change in hydropower generation under the Proposed Action. However, even though the Springs Utilities' total substitution obligation would not change under the Proposed Action, the timing and sources of water used for substitution payback would change. Small changes in the timing and amount of releases from Dillon Reservoir, Green Mountain Reservoir, Homestake Reservoir, Wolford Mountain Reservoir, and Williams Fork Reservoir could have a minor impact on hydroelectric power generation.

The biggest difference in the payback of the substitution obligation under the Proposed Action would occur when the substitution obligation is greater than 2,100 AF. The substitution bill is greater than 2,100 AF in approximately seven of the substitution years during the 56-year study period. In those years, contents in the Upper Blue Reservoir would not be sufficient to fully pay back the substitution obligation. Therefore, under the Proposed Action more water would be released from Springs Utilities' accounts in Wolford Mountain and Homestake reservoirs while Denver Water's substitution releases for Springs Utilities from either Wolford Mountain Reservoir or Williams Fork Reservoir would decrease. Changes in hydropower generation at each facility due to changes in the timing and source of water used for substitution payback are discussed below.

Dillon Reservoir Power Plant

Changes in releases from Dillon Reservoir to the Blue River would occur due to small differences in reservoir end-of-month contents when Dillon Reservoir fills and spills. These flow changes would occur in part to the release of 250 AF from Upper Blue Reservoir for West Slope users in the Blue River basin under the Proposed Action. Since this water would be used to extinction it would not be available for storage in Dillon Reservoir, in which case Dillon Reservoir contents would decrease by 250 AF in substitution years under the Proposed Action. Under the No Action alternative, this water would be delivered through the Hoosier Tunnel to Montgomery Reservoir. Differences in Dillon Reservoir contents would carry forward from year to year, which would result in changes in spills in years when the reservoir fills. Since there would be no change in releases from Dillon Reservoir in the 50 cfs to 110 cfs range, there would be no change in hydroelectric power generation at the Dillon Reservoir Power Plant. No impacts are anticipated.

Roberts Tunnel Power Plant

The Roberts Tunnel Power Plant generates power from Dillon Reservoir releases through Roberts Tunnel. Since there would be no difference in the amount of water diverted through Roberts Tunnel under the Proposed Action, there would be no impact on hydropower generation at this facility. Minor changes in inflow to Dillon Reservoir described in Section 3.3.2 would result in changes in storage contents, however, there would be no impact on Roberts Tunnel deliveries since there is always sufficient storage in Dillon Reservoir and water available under the Roberts Tunnel direct flow water right to meet that demand.

Green Mountain Reservoir Power Plant

Springs Utilities would divert the same amount of water under the Proposed Action from the Blue River at their Continental-Hoosier System diversion points. As a result, hydropower generation at the Green Mountain Reservoir Power Plant would not change in substitution years under the Proposed Action. There could be a minor adverse short-term impact on hydropower generation in years that Green Mountain Reservoir fills and spills. There would be a small decrease in spills from Green Mountain Reservoir in some years under the Proposed Action, due primarily to reduced inflow when Dillon Reservoir fills. Reduced spills from Dillon Reservoir would decrease the inflow to Green Mountain Reservoir, and therefore, reduce the amount and possibly timing of spills at Green Mountain Reservoir. This could decrease the amount of water released through the Green Mountain Reservoir Power Plant, however, these changes are expected to be negligible.

Shoshone Power Plant

To evaluate potential changes in hydroelectric power generation at the Shoshone Power Plant, flow changes in the Colorado River near Kremmling were evaluated. Flow changes at this location reflect changes in the amount and timing of substitution releases from Williams Fork Reservoir and Wolford Mountain Reservoir and the amounts stored as these reservoirs refill. These changes in flows are translated downstream. Slight changes in flow may also occur due to the location, amount, and timing of HUP demands and their associated consumptive use and return flows. The maximum increases and decreases in flow would be less than 1% at the Colorado River near Kremmling, therefore, changes in hydropower generation are expected to be minor adverse and short-term.

Mt. Elbert Power Plant

Under the No Action alternative, substitution releases would not be made from Springs Utilities' Homestake Reservoir account. However, under the Proposed Action, substitution releases from Springs Utilities' account in Homestake Reservoir would occur in one year out of the 56-year study period in the amount of 469 AF, as shown in Table 3-1. Due to this substitution release, Springs Utilities' diversions through the Homestake Tunnel would decrease by a comparable amount. This decrease in diversion through the Homestake Tunnel could result in a minor adverse short-term decrease in power generation at the Mt. Elbert Power Plant under the Proposed Action.

Williams Fork Reservoir Power Plant

Changes in releases from Williams Fork Reservoir would occur due to differences in the amount and timing of water released from Williams Fork Reservoir for substitution payback. Under the Proposed Action, substitution releases from Wolford Mountain and Homestake reservoirs would increase, while substitution releases from Williams Fork Reservoir would decrease by a commensurate amount. A reduced substitution release under the Proposed Action would result in higher contents in Williams Fork Reservoir. As a result, less water would be stored in subsequent months depending on storage targets at Williams Fork Reservoir as the reservoir refills. Changes in reservoir releases in some months would also occur due to differences in the timing of substitution releases from Williams Fork Reservoir under the Proposed Action. While the total amount released from Williams Fork Reservoir would essentially be the same under both alternatives, the timing of substitution releases may be offset by a few months. Because there would be little to no change in the total amount released from Williams Fork Reservoir, changes in the total hydroelectric power generation at the Williams Fork Reservoir Power Plant would be negligible. However, there could be minor adverse short-term changes in the timing of hydroelectric power generation in some years.

3.4.3 Cumulative Impacts

The incremental hydrologic effect of the Proposed Action would be negligible to minor in comparison to other past actions and the reasonably foreseeable water-based actions considered in the cumulative effects analysis as described in Section 3.1.3. In general, the reasonably foreseeable actions relevant to this study would result in additional water use in the future, which would reduce streamflows and reservoir contents in the Study Area. While the magnitude of hydrologic changes under the Proposed Action would be similar under cumulative effects, the percentage change in flows and reservoir contents under the Proposed Action may be slightly higher under cumulative effects than described for direct effects. However, hydropower generation operations would be maintained per existing contracts at the facilities described previously. Therefore, there would be no cumulative change to operations at these power plants.

3.5 Water Quality

This section describes the existing water quality in the Study Area per the CDPHE Water Quality Control Commission (WQCC) water quality standards (classifications and designated uses) and qualitatively describes the potential effects of the No Action and Proposed Action alternatives on water quality in streams and reservoirs. Potentially affected river segments and reservoirs in the Study Area are shown in Figure 3-1. It is assumed, for the purposes of this water quality assessment, that any impacts to the existing flow conditions of a water body, may in turn, have the potential to change the existing water quality. This section provides a summary of the water quality standards for each of the affected river basins in the Study Area (river basins are shown on Figure 3-1). Any existing water quality concerns such as Total Maximum Daily Load (TMDL) and/or other use protection designations, area also included in this section.

The TMDL process is designed by the Federal Water Pollution Control Act ("Clean Water Act") to insure that all sources of pollutant loading are accounted for when devising strategies to meet Water Quality Standards. Consistent with the Section 3.3 Hydrology, the water quality assessment was conducted on a watershed/basin basis for those waterbodies identified as potentially affected. In order to be consistent with the structure of water quality standards in Colorado, water quality is evaluated on a broader basin basis for the Upper Colorado River Basin and the South Platte River Basins only; these two basins contain potentially affected stream segments.

Issues raised during scoping that relate to water quality are similar to those identified in Section 3.3 Hydrology. These issues include:

- Effects on Colorado River stream flows below the Windy Gap Project diversion point due to using Williams Fork Reservoir as a source of substitution replacement, and
- Effect of transfers on water temperatures in affected streams

In general, water quality conditions correlate to water quantity and flow conditions and therefore any potentially affected stream segments evaluated in Section 3.3 may impact water quality.

Water Quality Standards and Regulations

The "health" of a water body is measured by whether or not it is maintaining the assigned water quality standards. The Water Quality Standards Program in Colorado is a system based on protection of designated uses, also referred to as classifications. Specific uses (such as aquatic life, agriculture, and recreation) have been established by the WQCC and water quality standards (numeric criteria) have been developed to protect those uses. Different uses and standards may be assigned to different portions or segments of a water body.

In Colorado, water quality standards are set for specific water body segments through the use of statewide adopted Table Value Standards (TVS). TVS are the levels that are protective of the uses under general conditions. Segments may have TVS standards or site-specific standards. Site-specific standards require a great deal more data collection and background information to support their adoption by showing the levels would be protective of the uses of the segment.

In addition to numeric criteria to protect specific uses, WQCC has adopted numeric standards for radionuclides and narrative standards for such parameters as sediment deposition, floating debris, odor, taste, and shore deposits. A summary of the numeric criteria for the Upper Colorado and South Platte River Basins is provided in Appendix C.

Regulation No. 31, the Basic Standards and Methodologies for Surface Water (CDPHE 2008c) defines the use classifications for Recreation, Agriculture, Aquatic Life, and Domestic Water Supply.

3.5.1 Affected Environment

The Study Area encompasses portions of the Upper Colorado River and South Platte River basins. Potentially affected river segments and reservoirs in the Upper Colorado River Basin and South Platte River Basin are discussed in detail in Section 3.3 Hydrology and are presented in Figure 3-1. The existing water quality the Upper Colorado and South Platte River basins are discussed in the following sections.

Upper Colorado River Basin

The potentially affected river segments and reservoirs in the Upper Colorado River Basin are presented in Figures 3-1 and 3-17, and are listed in Table 3-20. Water quality standards for the Upper Colorado River Basin are provided in Regulation No. 33, Upper Colorado River Basin (see Appendix C) (CDPHE 2008d). The water quality appendix provides a summary of the designated uses and criteria for the waterbodies within the Upper Colorado River Basin.

Waterbodies currently not meeting water quality standards are listed on the 303(d) List and are provided on associated TMDL. The WQCC updates the 303(d) List of impaired stream segments every two years. Section 303(d) List Water-Quality Limited Stream Segments Requiring TMDLs is stated in Regulation No. 93 (CDPHE 2008e).

Table 3-20 summarizes the potentially affected stream segments within the Upper Colorado River Basin and are shown on Figure 3-17.

Table 3-20
TMDLs for the Upper Colorado River Basin

Segment/ Waterbody ID	Stream Segment	Portion	Parameters	Priority
COUCEA05a	Eagle River, Belden to Hwy 24 Bridge	All	Cu, Zn*	H
COUCEA05b	Eagle River, Hwy 24 Bridge to Martin Creek	All	Zn*	H
COUCEA05c	Eagle River, Martin Creek to Gore Creek	All	Zn*	H
COUCUC05	Lakes and Reservoirs tributary to the Colorado River from RMNP/ANRA to the Roaring Fork not on National Forest	Wolford Mountain Reservoir	D.O.	L

Source: CDPHE 2008c
Notes:
* - Carryover listings from the 1998 303(d) List; All are high priority

Cd – Cadmium	Mn – Manganese	H - High
Cu – Copper	Pb – Lead	M - Medium
D.O. – Dissolved Oxygen	Trec – Total recoverable	L - Low
Fe – Iron	Zn – Zinc	

Dillon Reservoir

The WQCC has developed a specific regulation which controls both point sources and nonpoint sources of total phosphorus to Dillon Reservoir over the long term. This regulation is based on a state-local partnership in controlling total phosphorus. Regulation No. 71, Dillon Reservoir Control Regulation (CDPHE 2007a). Specific wasteload and load (nonpoint source) allocations have been established for this reservoir. See Regulation No. 71 for specific information regarding the numeric and narrative criteria.

South Platte River Basin

Potentially affected river segments and reservoirs in the South Platte River basin are presented in Figures 3-1. Water quality standards for the South Platte River Basin are stated in Regulation No. 38, Classifications and Numeric Standards for South Platte River Basin (Appendix C) (CDPHE 2008f). There are no affected river segments within the South Platte River Basin that are classified as impaired.

3.5.2 Environmental Consequences

No Action Alternative

As described in Section 3.3.2 Hydrology, the No Action alternative would have no hydrologic impacts. Rather, stream flows and reservoir contents would continually fluctuate as they have historically under the Blue River Decree. Typically, water quality correlates with surface water fluctuations; thus no impacts to water quality are anticipated under the No Action alternative.

Proposed Action

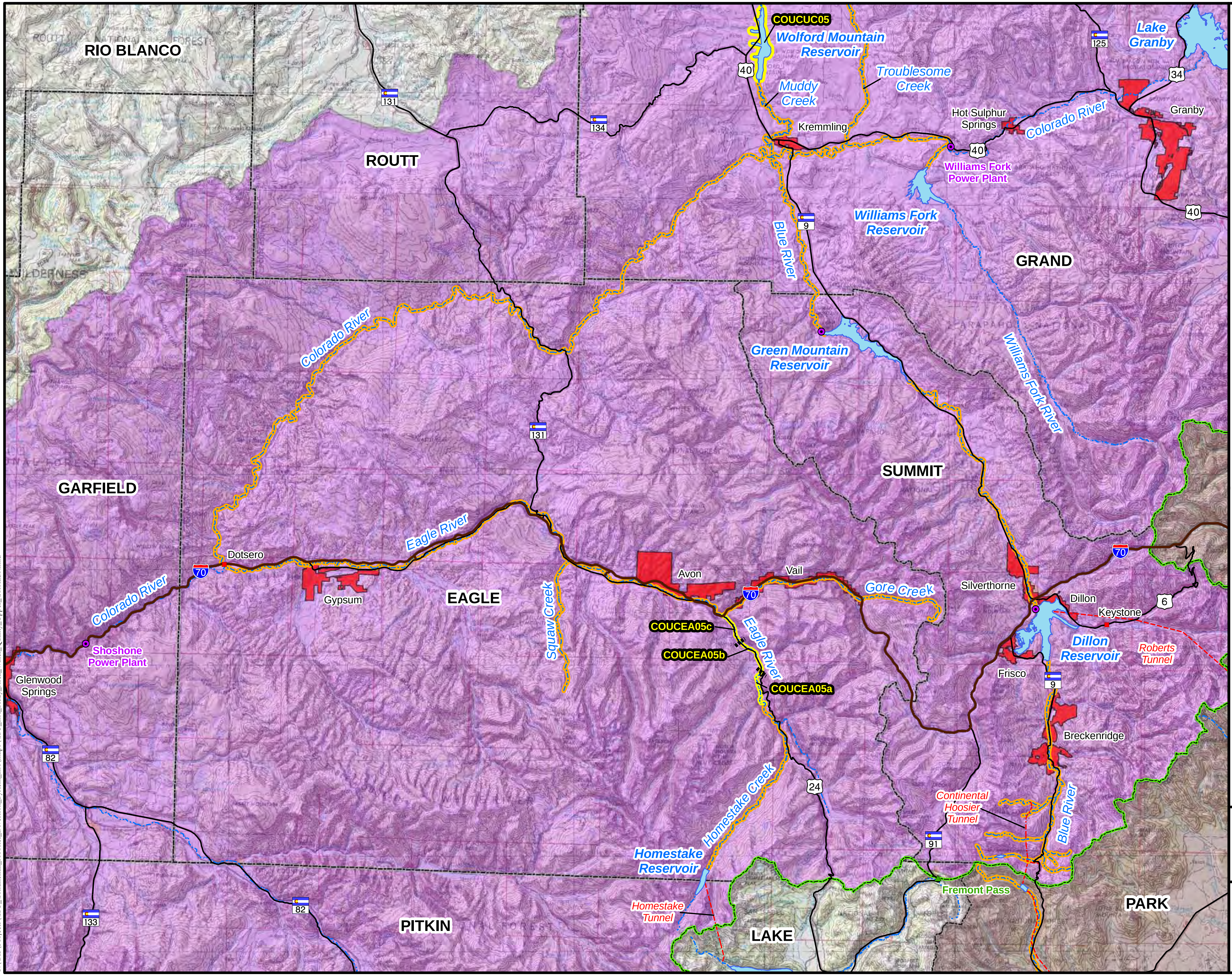
As described in Section 3.3.2 Hydrology, the Proposed Action would create none to minor short-term impacts to surface water resources. Similarly, none to minimal stream flow changes within all segments of the potentially affected rivers segments in the Upper Colorado River and South Platte River basins and fluctuations within all reservoirs in these river basins would occur infrequently during substitution years and are thus not anticipated to degrade water quality in these water bodies within the Study Area. The greatest potential for water quality impacts is for those stream segments listed in the TMDL tables for the Upper Colorado (refer to Table 3-20 and Figure 3-17). It should be noted that the CDPHE WQCC (Regulation No. 93) TMDL list is updated every two years.

Consistent with the conclusions discussed in Section 3.3.1.7, there will be little to no change in flows under the Proposed Action along the Williams Fork River, Muddy Creek, Eagle River, and Colorado River mainstem. Therefore, it is anticipated that there will be negligible water quality and temperature impacts to these river reaches.

The timing and location of the releases from reservoirs (e.g., releasing water from the base of reservoirs where the water is colder) in late summer and early fall could assist in enhancing “environmental” benefits as defined in the Grand County SMP. This management strategy is a type of administrative mitigation measure that can assist with minimizing and/or eliminating any impacts to the existing water quality and temperature in the river reaches included in the Grand County SMP.

3.5.3 Cumulative Impacts

Refer to Section 3.1.3 for a general description of the reasonably foreseeable water-based actions that are considered and to Section 3.3.3 for the cumulative impacts discussion as it relates to hydrology. As a general rule, any changes in the quantity of



Affected River Segments
Impaired Stream Segments
Impaired Reservoirs
Streams
Pipeline
South Platte River Basin
Upper Colorado River Basin
Lakes/Reservoirs
Power Plants
Interstates
Other Highways
Counties
Continental Divide
COUCEA05c Waterbody ID

Reference:
1:250,000-scale quad maps from USGS.
Impaired streams per CDPHE-WQCC Regulation #93.

Notes:
Only portions of each river basin within the study area are shown.

6 0 6 Miles
1:380,160

Green Mountain Reservoir Substitution and Power Interference Agreements EA

Figure 3-17
Upper Colorado River Basin Water Quality

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Y:\GIS\Projects\CSU_Continental_Hoosier_Diversion_System_EA\maps\CSU_EA_Study_Area_Water_Quality_Upper_Colorado.mxd water in a stream or reservoir may have an effect on water quality. The timing of the change in flow, both on a daily basis and seasonal basis, and where the flow is being diverted may affect water quality.

Windy Gap Firming Project

The cumulative effect of the WGFP in reduction of flows in the Colorado River downstream of the Windy Gap diversion may have the potential to impact water quality. The water quality standards and data for the Colorado River Basin are provided in Appendix C.

There are several TMDLs listed for the Upper Colorado River (Table 3-21).

Denver Water Moffat Collection System Project

The additional diversions anticipated to result from this project, primarily from the upper Fraser River and Williams Fork River basins, may affect the water quality of those basins and specifically reduce water quality in the Colorado River, Williams Fork River, and Blue River in average and wet years primarily during runoff.

Other Increased Water Use in Grand and Summit Counties

Any construction-related activities as a result of growth in Grand and Summit counties and within the Study Area river basins have the potential to contribute pollutants to receiving waters. Increased water use and wastewater discharges are also expected to result in changes in the quantity and timing of streamflows and water quality.

Reduction of Xcel Energy's Shoshone Power Plant Call

Reduced flows as a result of any reduction in the call at Shoshone primarily may have an effect on water quality in the Williams Fork River, Muddy Creek, the Blue River, and the Colorado River Mainstem below the Windy Gap diversion and may affect the water quality along the Lower Colorado River below the point of diversion.

Changes in Releases from Williams Fork and Wolford Mountain Reservoirs to Meet USFWS Flow Recommendations for Endangered Fish in the 15-Mile Reach

Water quality standards supporting the uses for these endangered fish exist along this 15-Mile reach of the Colorado River. Any cumulative reduction in flows may affect the water quality standards supporting the designated uses for these species, such as dissolved oxygen, temperature, and increased sediment loads.

Cumulative Effects for the Proposed Action

Any changes in streamflows and reservoir contents due to the Proposed Action under cumulative effects would follow a pattern similar to direct effects. The incremental hydrologic effect of the Proposed Action would be negligible, as would the water quality affects. In general, the reasonably foreseeable actions described above would result in additional water use in the future, which would reduce streamflows and reservoir contents in the Study Area. While the magnitude of hydrologic changes under the Proposed Action would be similar under cumulative effects, the percentage change in water quality conditions under the Proposed Action may be slightly higher under cumulative effects than described for direct effects.

3.6 Aquatic Resources and Special Status Species

This section describes the aquatic resources in the Study Area and the potential environmental consequences of the Proposed Action and No Action alternatives. The alternatives could potentially affect aquatic resources through changes in flow regimes, habitat, and water quality. The aquatic resources described in this section include active river channels and fish populations. Fisheries data, specifically abundance of species locally and throughout the Study Area, was selected as a benchmark for determining the environmental consequences associated with changes to flow regimes due to the availability of historic Colorado Division of Wildlife (CDOW) fish survey data (CDOW 2008a) and detailed literature documentation of fish habitat impacts associated with changes to flow regimes. Aquatic resource evaluations can include a multitude of factors (i.e., benthic macroinvertebrates, habitat quality and water quality); however, for the purposes of this study fish species have been utilized as indicators of potential effects. No other data set encompassing the entire Study Area was as consistently useful or available to compare changes in aquatic habitat characteristics between the Proposed Action and the No Action alternatives without more intensive field evaluation. In addition, site specific resource evaluation was conducted as part of this study. A summary of the fish populations for each basin within the Study Area is provided.

This section also provides an assessment of the potential environmental consequences of the Proposed Action and No Action alternatives to aquatic habitat of special status species. In particular, the impact assessment provides an effect determination in relation to Section 7 of the Endangered Species Act (ESA) for the four endangered fish in the 15-mile reach of the Colorado River. The effect determination is included in Section 3.6.2.2 for the special status fish species and is indicated by parentheses [( )].

3.6.1 Affected Environment

The CDPHE WQCD provides a classification system for surface waters, which establishes beneficial use categories (CDPHE 2008). Waters are classified according to the uses for which they are presently suitable or intended to become suitable. Classifications may be established for any state surface waters, except water in ditches and other manmade conveyance structures. Waters assessed within the Study Area are defined as Class l – Cold Water Aquatic Life. These are waters that (1) currently are capable of sustaining a wide variety of cold water biota, including sensitive species, or (2) could sustain such biota but for correctable water quality conditions. Waters shall be considered capable of sustaining such biota where physical habitat, water flows or levels, and water quality conditions result in no substantial impairment of the abundance and diversity of species. In addition, several of the waters within the Study Area are designated Gold Medal Waters by the Colorado Wildlife Commission. Gold Medal Waters are defined as lakes or streams that support a trout standing stock of at least 60 pounds per acre, and contains an average of at least 12 quality trout (any trout 14 inches or longer) per acre (CWC 2008). Potentially affected aquatic resources include active channels within sections of the Blue River, Williams Fork River, Muddy Creek, Colorado River, Homestake Creek, Eagle River, Middle Fork South Platte

River, and South Platte River (refer to Figure 3-1).

A desktop review of available CDOW fisheries survey data was utilized to provide an understanding of fish species distribution throughout the Study Area (CDOW 2008a). Data provided by the CDOW for each basin was collected using one of three methods (1) mark – recapture; (2) multi-pass removal; (3) presence – absence surveys. The CDOW surveys represent data recorded from 70 sample station locations within the Study Area between 1985 and 2007. Information presented in this section has not been field verified for accuracy.

Whirling disease was introduced to Colorado in 1987 and has spread throughout the state. Whirling disease is caused by a parasite that affects fish in the trout and salmon family. By damaging cartilage, whirling disease can kill young fish directly, or cause infected fish to swim in an uncontrolled whirling motion. This can make it impossible for them to escape predators or to effectively seek food, ultimately decimating trout populations before they have an opportunity to mature. Fish less than 13 centimeters (cm) are most at risk to whirling disease. Larger fish are less susceptible to the disease and are not affected, but may be vectors. There are also differences in the susceptibility of different trout species to the parasite, although rainbow trout and cutthroat trout are particularly susceptible. The parasite that causes the disease, *Myxobolus cerebralis*, has two hosts during its life cycle: trout and tubificid worms. All watersheds within the Study Area have tested positive for whirling disease, although particular streams within these watersheds may still be negative. Whirling disease has greatly reduced the population of rainbow trout within the Study Area basins as well as throughout Colorado. Over five hundred miles of five major trout streams (Cache La Poudre, Colorado, Gunnison, South Platte and Rio Grande rivers) are showing partial to complete loss of wild rainbow trout recruitment (CDOW 2008b).

3.6.1.1 Blue River Basin

Portions of the Blue River in the Study Area are classified as Aquatic Life Cold Class 1. The Blue River downstream of Dillon Reservoir to the confluence with the Colorado River is designated Gold Medal Waters by CDOW.

Fish population survey data at 30 separate sampling locations on the Blue River was reviewed for sampling years 1985 – 1997 (CDOW 2008a). Fish species and subspecies collected during these sampling periods are shown in Table 3-21. Dominant trout species upstream of the Green Mountain Reservoir include brook trout, rainbow trout and brown trout. Dominant species downstream of the Green Mountain Reservoir are primarily rainbow trout and brown trout.

The section of the Blue River between Dillon Reservoir and Green Mountain Reservoir is stocked annually by CDOW with small (6 inches or less) rainbow trout. CDOW also annually stocks Dillon and Green Mountain reservoirs with species that may include rainbow trout, Snake River cutthroat trout, and kokanee salmon in any given year. These fish may also move into the section of the Blue River between these two reservoirs.

3.6.1.2 Williams Fork River Basin

The Surface Water classification for the Williams Fork River downstream of Williams Fork Reservoir is Aquatic Life Cold Class 1.

Fish population survey data at 2 separate sampling locations on the Williams Fork River was reviewed for sampling years 1993-2003 (CDOW 2008a). Fish species and subspecies collected during these sampling periods are shown in Table 3-21. Brown trout, followed by rainbow trout, represent the most abundant fish species within the Williams Fork River Basin.

3.6.1.3 Muddy Creek Basin

The Surface Water classification for Muddy Creek downstream of Wolford Mountain Reservoir is Aquatic Life Cold Class 1.

Fish population survey data at 2 separate sampling locations within Muddy Creek was reviewed for sampling years 1993 and 2000 (CDOW 2008a). Fish species and subspecies collected during these sampling periods are shown in Table 3-21.

Rainbow trout represent the most abundant fish species within the Muddy Creek Basin (407 recorded in 2000), followed by brook trout (59 recorded in 2000). Kokanee salmon are also strongly represented in the September 27, 2000 sampling data at Sample Station CR 0397. These individuals probably represent species collected during a spawning run, and do not necessarily represent species living permanently within Muddy Creek.

3.6.1.4 Colorado River Basin

The surface water classification for the Colorado River below the confluence with the Williams Fork River downstream to the confluence with the Eagle River is Aquatic Life Cold Class 1. The reach of the Colorado River between Windy Gap and the confluence with Troublesome Creek is designated Gold Medal Waters by the CDOW. This section of the Colorado River is stocked annually by CDOW with small (6 inches or less) rainbow trout.

Fish population survey data at 4 separate sampling locations along the Colorado River between the confluence with the Williams Fork River and the confluence with the Eagle River was reviewed for sampling years 1993, 2003, and 2004 (CDOW 2008a). Local diversity of fish species within the Colorado River can vary temporally and spatially based on a variety of factors. Fish species and subspecies collected during these sampling periods are shown in Table 3-21. Rainbow trout and brown trout are the most abundant trout species within this reach of the Colorado River.

Special Status Fish Species in the Colorado River Basin

Water depletions to West Slope tributaries of the Colorado River may affect four endangered fish species where they occur downstream in the Colorado River. These species include bonytail chub, Colorado pike minnow, humpback chub, and razorback sucker. Critical habitat for endangered Colorado River fish extends from Rifle, Colorado downstream to Lake Powell.

The decline of these fish species throughout the Colorado Basin is a result of extensive loss, fragmentation, modification of habitat, and barriers to fish movement associated with dam construction and operations. In addition, loss of stream flows due to upstream depletions in the watershed is a major factor that has contributed to the decline of the endangered fish species. Each of these endangered fish species is discussed in more detail below.

<u>Bonytail Chub</u>

Bonytail chubs were historically found throughout the Colorado River drainage.

Wild adult bonytail have been captured in Powell, Mohave, and Havasu lakes, and in rivers within the Upper Colorado River Basin, including the Green River in Colorado and Utah and in the Colorado River, west of Grand Junction near the Colorado-Utah border. Since 1977, only 11 wild adults have been reported from the upper basin. Currently, no self-sustaining populations of bonytail chub exist in the wild (USFWS 2002a). CDOW has been stocking some bonytail chub in the river near Grand Junction.

Colorado Pikeminnow

Currently, Colorado pikeminnow occur primarily in the Green River below the confluence with the Yampa River, the lower Duchesne River in Utah, the Yampa River below the town of Craig in Colorado, the White River from Taylor Draw Dam near the town of Rangely downstream to the confluence with the Green River, the Gunnison River in Colorado, and the Colorado River from Palisade, Colorado, downstream to Lake Powell (USFWS 2002b).

Humpback Chub

Historically, humpback chubs occurred in Colorado, Green, Yampa, White and Little Colorado Rivers. Currently humpback chub populations are found in canyon portions of the Colorado River near the Colorado-Utah border at Westwater Canyon in Utah and Black Rocks in Colorado. Smaller populations inhabit the Yampa and Green rivers in Dinosaur National Monument in Colorado, Desolation and Gray canyons on the Green River in Utah, Cataract Canyon on the Colorado River in Utah and the Colorado River and Little Colorado River in the Grand Canyon in Arizona.

Razorback Sucker

In the upper Colorado River Basin, reproducing razorback suckers are currently only found in the upper Green River in Utah and in an off-channel pond of the Colorado River near Grand Junction. Razorback suckers also occur in the lower Yampa River in Colorado and Lake Powell at the mouths of the Dirty Devil, San Juan and Colorado rivers. Approximately 500 wild razorback suckers are thought to occur in the upper Colorado River basin. Most of these individuals are adults likely more than 25 years old, and are reproducing, but few young are surviving. Razorback suckers are being stocked in the Green, Colorado, Gunnison and San Juan rivers to develop and augment adult populations (CDOW 2006b).

3.6.1.5 Eagle River Basin

The surface water classification for Homestake Creek and the Eagle River below the confluence with the Homestake Creek downstream to the confluence with the Colorado River is Aquatic Life Cold Class 1.

Fish population survey data at 15 separate sampling locations within the Eagle River Basin was reviewed for sampling years 1991-2005 (CDOW 2008a). Fish species and subspecies collected during these sampling are shown in Table 3-21. Species diversity and abundance can vary greatly based on timing and location of sampling efforts. Brown trout, followed by rainbow trout and brook trout are the most abundant trout species within the Eagle River Basin. Colorado River cutthroat trout, though not the most abundant species, also appear regularly throughout sampling efforts.

3.6.1.6 South Platte River Basin

The surface water classification for the Middle Fork South Platte River and South Platte River downstream to Elevenmile Canyon Reservoir is Aquatic Life Cold Class 1 by CDPHE. The Middle Fork South Platte River downstream from the Highway 9 Bridge is designated Gold Medal Waters by the CDOW.

Fish population survey data at nine sampling locations within the South Platte River was reviewed for sampling years 1993–2005 (CDOW 2008a). Fish species and subspecies collected during these sampling periods are shown in Table 3-21. Brown trout are the most abundant species in the South Platte River Basin, followed by rainbow trout. Brook trout do not constitute a significant population (4 individuals in 1995).

Table 3-21
Fish Species Identified within Study Area Stream Reaches

Fish Species	Blue River Basin	Williams Fork River Basin	Muddy Creek Basin	Colorado River Basin	Eagle River Basin	South Platte River Basin
Brook Trout	✓		✓		✓	✓
Brown Trout	✓	✓	✓	✓	✓	✓
Rainbow Trout	✓	✓	✓	✓	✓	✓
Colorado River Rainbow Trout	✓					
Colorado River Cutthroat Trout					✓	
Kamloop Form Rainbow Trout	✓					
Emerald Lake Rainbow Trout	✓					
Rainbow Trout x Natural Hybrid	✓		✓		✓	
Steelhead Form Rainbow Trout	✓					
Snake River Cutthroat Trout	✓					✓
Kokanee (Sockeye) Salmon	✓		✓			
Cutthroat Trout	✓					
Cutthroat Trout S.U.*					✓	
Bluehead Sucker	✓			✓	✓	
Flannelmouth Sucker	✓			✓	✓	
Longnose Sucker	✓	✓		✓	✓	✓
White Sucker	✓	✓	✓	✓		✓
Creek Chub	✓		✓			
Mottled Sculpin	✓	✓	✓		✓	
Speckled Dace	✓	✓	✓	✓		
Northern Pike		✓				✓
Longnose Dace		✓		✓		✓
Chub S.U.*			✓			
Dace S.U.*			✓			
Paiute Sculpin			✓			
Sucker S.U.*			✓			
Red Shiner				✓		
Sand Shiner				✓		

Table 3-21
Fish Species Identified within Study Area Stream Reaches

Fish Species	Blue River Basin	Williams Fork River Basin	Muddy Creek Basin	Colorado River Basin	Eagle River Basin	South Platte River Basin
Roundtail Chub				✓		
Channel Catfish				✓		
Common Carp				✓		
Fathead Minnow				✓	✓	
Yellow Bullhead				✓		
Mountain Whitefish					✓	
Trout S.U*					✓	

S.U.* = Species unidentified
✓ = Species identified in CDOW samples within basin
[green box] = Species identified as a dominant species within basin

3.6.2 Environmental Consequences

The CDOW has collected routine fish population census data for each Study Area basin. Trout were selected as a reference species because of the availability of survey data throughout each Study Area basin and potential sensitivity to flow change. Within all river Study Area basins, 34 species or subspecies of fish have been documented by the CDOW. Three species, brown trout, rainbow trout and brook trout, represent over 50% of the total number of fish counted in CDOW surveys. When different trout species occur in the same high gradient river systems, they tend to occupy the suitable trout habitat in a longitudinally stratified manner from headwater areas downstream. Typically, brook or cutthroat trout tend to occupy the colder, swifter, less fertile headwater region; rainbow trout the mid-region of the river system with intermediate habitat conditions; and brown trout the deeper, lower velocity, warmer, more fertile downstream region. Although trout species can utilize different habitat during critical periods of the year, all trout require food, shelter, breeding, migratory and over-wintering habitat that could potentially be affected by flow changes.

Brown trout are the only species of fish documented at all CDOW sample stations and within all river Study Area basins. In addition, the areas potentially affected by changes in flow are primarily characterized by lower velocity, warmer downstream habitat, which is optimal habitat for brown trout, and mid-region intermediate habitat, which is optimal habitat for rainbow trout. Consistent with these habitats, brown trout represent approximately 33% of all the fish observed in the survey, followed by rainbow trout (12%). No other species accounts for more than 10% of the fish surveyed. Based on the abundance of brown and rainbow trout utilizing relatively similar habitat types, brown trout habitat requirements, as outlined by Raleigh et al., (1986) in *Habitat Suitability Index Models and Instream Flow Suitability Curves: Brown Trout*, were assessed to evaluate the effects of changes in flow between the No Action alternative and the Proposed Action.

Optimal brown trout riverine habitat is characterized by clear, cool to cold water; a relatively silt-free rocky substrate in riffle-run areas; a 50% to 70% pool to 30% to 50% riffle –run combination with areas of slow deep water; well-vegetated, stable stream banks; abundant instream cover; and relatively stable annual water flow and temperature regimes. Fundamental habitat requirements potentially affected by changes in flow are described on a life stage basis: embryo, fry, juvenile and adult.

The embryo stage includes egg incubation and fry development up to emergence from gravel. Redds are shallow depressions in the gravel substrate of a stream channel, in which spawning fish deposit eggs and sperm. When the process is complete, the female covers the redd with gravel to protect the embryos until fry emerge from the gravel. Brown trout construct well-defined redds. Waters (1976) set the optimal water depth for brown trout redd construction at 0.80 feet to 1.5 feet, with a suitable range of 0.40 feet to 2.9 feet. A range of water velocity between 1.75 feet per second (ft/s) and 2.25 ft/s is believed to be optimal, with 0.498 ft/s to 2.9 ft/s considered suitable.

A critical period for brown trout is the time between egg deposition in late summer and fall and fry emergence the following spring. Although flows must be adequate to meet the needs of the developing embryos and yolk sac fry in the gravel, abnormally low or high flows can be destructive. Generally low flow periods are most critical to adult trout. Prolonged periods of shallow water can increase temperatures and reduce the amount of dissolved oxygen, negatively affecting trout throughout all portions of their life stages.

The fry stage extends from emergence from the redd until the end of the first year of life. Dispersal of fry takes place immediately after emergence. Fry are often found in shallow, smooth bottomed stream reaches where older trout are absent. Brown trout fry are often found along the margins of rivers, in sections with water depths between 0.66 feet and 0.98 feet (Lindroth 1955; Raleigh 1986).

The juvenile stage is the second year of life. Juvenile brown trout occur at shallower depths and lower velocities than adults. Both fry and juvenile brown trout prefer velocities of less than 0.492 ft/s (Wesche 1980). As growth progresses, depths greater than 0.492 feet are preferred (Wesche 1980).

The adult stage begins when the individual reaches sexual maturity after its second year. Water depths greater than 0.492 feet and a focal point velocity of less than 0.492 ft/s are recommended for optimal adult brown trout resting and feeding habitat (Raleigh et al. 1986; Wesche 1980). During the winter, brown trout exhibit strong hiding or cover behavior. Adult brown trout tend to move into deep, low-velocity water (Bjornn 1971).

Changes in flow were evaluated to determine changes in channel characteristics potentially affecting aquatic resources within each Study Area basin. Three flow parameters were selected for evaluation: (1) depth (feet); (2) wetted perimeter (feet); and (3) velocity (ft/s).

The effects of large changes in flow parameters could significantly affect the feeding, breeding, sheltering, migratory and overwintering habitats associated with trout life histories. For instance:

- a dramatic increase in water depth could upset predator-prey interactions occurring within trout microhabitat such as pool-riffle-run areas;

- a dramatic increase in flow velocity could disrupt preferred sheltering habitat for juvenile and adult trout;
- a dramatic decrease in water depth could expose optimal spawning habitat, exposing shallow gravel areas and leaving mature fish with no potential redds;
- a dramatic decrease in flow velocity could decrease dissolved oxygen content and increase temperatures; and
- a dramatic decrease in wetted area could reduce the usable habitat available for overwintering habitat, subjecting all species to additional predator-prey related stress.

The following critical guideline thresholds were established to determine if a change in flow would effect trout and therefore the aquatic resource.

- Depths utilized by trout generally range from 0.2 feet to 5.5 feet. A water depth of greater than 0.5 feet is recommended for optimal adult brown trout resting and feeding habitat. Depths below 0.2 feet are considered critical and unusable to brown trout. Flow changes which result in water depths less than 0.4 feet are considered a potential effect. Flow change fluctuations of greater than 0.5 feet for a monthly average are also considered a potential effect. Flow changes which do not result in water depths less than 0.4 feet or fluctuations greater than 0.5 feet are considered negligible and are not expected to have discernable effects on aquatic resources.
- Wetted perimeter is the perimeter of the cross sectional area of a channel or river that is "wet". In theory, if the wetted perimeter of a river decreases, less water is available and additional substrate is exposed. Conversely, if wetted perimeter increases, more water is available in the river to aquatic resources. In regards to trout habitat, significant decreases in wetted perimeter could expose adult, embryo and young trout resulting in a potential effect. For the purpose of this EA, a conservative estimate of a 5 feet decrease or increase in wetted perimeter is considered a potential effect. Flow changes resulting in less than a 5 feet change in wetted perimeter are considered negligible and are not expected to have a discernable effect on aquatic resources.
- Velocity preferences of adult brown trout range from 0 to 0.7 ft/s for resting and 0.5 to 1.5 ft/s for feeding. A velocity of 0.5 ft/s is recommended for optimal adult brown trout resting and feeding habitat. For the purpose of this analysis, velocity below 0.5 ft/s is considered a potential effect. Monthly average changes in velocity greater than 0.5 ft/s are also considered a potential effect. Flow changes that do not result in velocities below 0.5 ft/s and fluctuations of more than 0.5 ft/s are considered negligible and not expected to have discernable effects on aquatic resources.

Differences in flow between the No Action and Proposed Action alternatives described in Section 3.2.2 Hydrology were utilized as the basis for determining potential effects to aquatic resources along affected river segments, which are described in the following sections. The hydrology comparison tables (Tables 3.1 through 3.19) were reviewed to determine the maximum *percentage* decrease and increase in average monthly flow in any month at each location. The corresponding maximum changes in flow were evaluated to determine changes in flow parameters (water depth, wetted perimeter and velocity). Channel characteristics, including average channel width, slope and cross-section shape, at key locations in the Study Area were used to calculate water depth, wetted perimeter and velocity for a given flow rate. Modeled flow parameters were then compared to the critical guideline thresholds, which were established for water depth, wetted perimeter and velocity.

Differences in reservoir contents between the No Action and Proposed Action alternatives described in Section 3.3.2 Hydrology were utilized as the basis for determining potential effects to aquatic resources in reservoirs. The Proposed Action and No Action alternatives storage contents and water levels within the reservoirs encompassed in the Study Area are very similar. Average monthly changes in content in the driest years and all substitution years are less than 1% at all reservoirs except Montgomery Reservoir. At Montgomery Reservoir, dry year average monthly contents decrease by up to 13.6% in March, as shown in Table 3-18. However, Montgomery Reservoir functions as a regulating reservoir for deliveries from the Continental-Hoosier System. The reservoir is filled each summer and then is typically drawn down to less than 1,000 AF by the end of April. Given that Montgomery Reservoir is operated as a regulating facility, it is intended to have fluctuating contents and water levels. The fluctuations in contents and levels that would occur at Montgomery Reservoir under the Proposed Action would be well within the normal range of fluctuations that have historically occurred.

Based on the magnitude and frequency of changes in reservoir contents and water levels that would occur under the Proposed Action, there would be no measurable, discernable effects on aquatic resources in the affected reservoirs.

3.6.2.1 No Action Alternative

Under the No Action alternative, Springs Utilities would continue to operate according to the Blue River Decree during substitution years. Therefore, river flows and reservoir contents would continue to fluctuate as they have historically as a result of Springs Utilities substitution operations. The No Action alternative is expected to have no direct, indirect or cumulative impacts on aquatic resources or on threatened and endangered fish species (no effect).

3.6.2.2 Proposed Action

Blue River Basin

Refer to the flow changes expected along the Blue River as described in Section 3.3.2 Hydrology. The maximum changes in flow shown in Tables 3-2 through 3-4 were used to estimate changes in water depth, wetted perimeter and velocity.

Refer to Tables 3-22 and 3-23 for the changes in water depth, wetted perimeter, and velocity expected for the No Action and Proposed Action along the Blue River. In summary, expected changes in flows along the Blue River downstream of the Continental-Hoosier System, Dillon Reservoir and the Green Mountain Reservoir under the Proposed Action would result in minimal change in flow parameters (less than: 0.04 feet change in water depth, 0.2 feet change in wetted perimeter and 0.2 ft/s change in velocity) within the aquatic environment. Flow changes of this magnitude under the Proposed Action would have no discernable effect on aquatic resources. In addition, critical threshold guidelines established for this EA as described in Section 3.6.2 would not be exceeded.

Williams Fork River Basin

Refer to the flow changes expected along the William Fork River as described in the Section 3.3.2 Hydrology. The maximum changes in flow shown in Table 3-8 were used to estimate changes in water depth, wetted perimeter and velocity.

Refer to Tables 3-22 and 3-23 for the changes in water depth, wetted perimeter, and velocity expected for the No Action and Proposed Action alternatives along the Williams Fork River. In summary, expected changes in flows along the Williams Fork River downstream of Williams Fork Reservoir would result in minimal change in flow parameters (less than: 0.03 feet change in water depth, 0.1 feet change in wetted perimeter and 0.2 ft/s change in velocity) within the aquatic environment. Flow changes of this magnitude under the Proposed Action would have no discernable effect on aquatic resources. In addition, critical threshold guidelines established for this analysis would not be exceeded.

Muddy Creek Basin

Refer to the flow changes expected along Muddy Creek as described in Section 3.3 Hydrology. The maximum changes in flow shown in Table 3-10 were used to estimate changes in water depth, wetted perimeter and velocity.

Refer to Tables 3-22 and 3-23 for the changes in water depth, wetted perimeter, and velocity expected for the No Action and Proposed Action alternatives along Muddy Creek. In summary, expected changes in flows along Muddy Creek downstream of Wolford Mountain Reservoir would result in minimal change in flow parameters (less than: 0.03 feet reduction in water depth, 0.1 feet reduction in wetted perimeter and no measurable change in velocity) within the aquatic environment. Flow changes of this magnitude under the Proposed Action would have no discernable effect on aquatic resources. In addition, critical threshold guidelines established for this analysis would not be exceeded.

Colorado River Basin

Refer to the flow changes expected along the Colorado River as described in Section 3.3.2 Hydrology. The maximum changes in flow shown in Tables 3-12, 3-13, and 3-14 were used to estimate changes in water depth, wetted perimeter and velocity.

Refer to Tables 3-22 and 3-23 for the changes in water depth, wetted perimeter, and velocity expected for the No Action and Proposed Action alternatives along the Colorado River. In summary, expected changes in flows along the Colorado River would result in minimal change in flow parameters (less than: 0.02 feet reduction in water depth, 0.1 feet reduction in wetted perimeter, and 0.1 ft/s reduction in velocity) within the aquatic environment. Flow changes of this magnitude under the Proposed Action would have no discernable effect on aquatic resources. In addition, critical threshold guidelines established for this analysis would not be exceeded.

<u>Special Status Fish Species in the Colorado River Basin</u>

Consultation with USFWS is required under Section 7 of the ESA prior to authorization of any federal action that may adversely modify critical habitat, which includes alteration of flow volume or timing (i.e., depletion). Flow depletions adversely affect the listed species by reducing peak spring and base flows that limit access to and the extent of off-channel waters such as backwaters, eddies, and oxbows, which are necessary as rearing areas for young fish. To evaluate potential depletions to the Colorado River under the Proposed Action, flows in the Colorado River downstream of the confluence with the Eagle River were evaluated.

Downstream of the Eagle River there would be no change in the average annual flow in the Colorado River under the Proposed Action since diversions at Springs Utilities' Continental-Hoosier System and the total substitution payback by Springs Utilities and Denver Water would not change. However, there would be infrequent, minor changes in the timing of flows due primarily to changes in the timing of substitution releases from Williams Fork, Wolford Mountain, and Homestake reservoirs, reservoir spills, and the additional 250 AF that would be used by West Slope users in the Blue River basin.

Monthly average flows in the Colorado River downstream of the confluence with the Eagle River would decrease by a maximum of 8.1 cfs or 0.1% in June and increase by a maximum of 4.6 cfs or 0.5% in October, as shown in Table 3-14. These changes in flow would be translated downstream along the Colorado River, but changes would be smaller relative to the total stream, which is growing. These changes in flow would not alter the water depth, wetted perimeter, or velocity by any measurable amount within the aquatic environment. In addition, critical threshold guidelines established for this analysis would not be exceeded. Flow changes of this magnitude under the Proposed Action would have no adverse effect on the endangered fish species along the Colorado River (no effect).

Eagle River Basin

Refer to the flow changes expected along Homestake Creek as described in Section 3.3.2 Hydrology. The maximum changes in flow shown in Table 3-15 were used to estimate changes in water depth, wetted perimeter and velocity.

Refer to Tables 3-22 and 3-23 for the changes in water depth, wetted perimeter, and velocity expected for the No Action and Proposed Action alternatives along Homestake Creek. In summary, expected changes in flow along Homestake Creek downstream of the Homestake Project would result in minimal change in flow parameters (less than: 0.09 feet increase in water depth, 0.5 feet increase in wetted perimeter and 0.2 ft/s increase in velocity) within the aquatic environment. Flow changes of this magnitude under the Proposed Action would have no discernable effect on aquatic resources. In addition, critical threshold guidelines established for this analysis would not be exceeded.

South Platte River Basin

Refer to the flow changes expected along the Middle Fork South Platte River as described in Section 3.3.2 Hydrology. The maximum changes in flow shown in Table 3-17 were used to estimate changes in water depth, wetted perimeter and velocity.

Refer to Tables 3-22 and 3-23 for the changes in water depth, wetted perimeter, and velocity expected for the No Action and Proposed Action alternatives along the Middle Fork South Platte River. In summary, the maximum decrease in flow would result in a reduction in water depth of 0.37 feet, a reduction in wetted perimeter of 2.0 feet and a reduction in velocity of 0.8 ft/s. The maximum

Table 3-22
Summary of Maximum Average Monthly Flow Decreases and Associated Changes in Water Depth, Wetted Perimeter, and Velocity

Location Description	Channel Parameters		Max Avg Monthly Flow Decrease			No Action Flow Parameters				Proposed Action Flow Parameters				Change in Flow Parameters		
	Average Bottom Width	Average Slope	Month	Change in Flow	% Change in Flow	Flow	Depth	Wetted Perimeter	Velocity	Flow	Depth	Wetted Perimeter	Velocity	Change in Depth	Change in Wetted Perimeter	Change in Velocity
	(ft)	(%)			(%)	(cfs)	(ft)	(ft)	(ft/s)	(cfs)	(ft)	(ft)	(ft/s)	(ft)	(ft)	(ft/s)
Blue River below the Continental-Hoosier System	27	1.93%	August	-4.6	-8.9%	51.0	0.58	30.1	3.1	46.5	0.55	30.0	3.0	-0.03	-0.10	-0.10
Blue River below Dillon Reservoir	83	0.82%	June	-4.1	-3.4%	121.1	0.64	86.5	2.2	117.0	0.63	86.4	2.2	-0.01	-0.10	0.00
Blue River below Green Mountain Reservoir	105	1.05%	August	-4.7	-0.6%	841.1	1.66	114.0	4.6	836.4	1.66	114.0	4.6	0.00	0.00	0.00
Williams Fork River below Williams Fork Reservoir	47	2.14%	March	-8.3	-11.5%	72.1	0.5	49.7	3.0	63.8	0.47	49.5	2.8	-0.03	-0.20	-0.20
Muddy Creek below Wolford Mountain Reservoir	67	0.41%	June	-5.7	-4.3%	132.9	0.96	72.1	2.0	127.2	0.93	72.0	2.0	-0.03	-0.10	0.00
Colorado River below the Confluence with the Williams Fork River	108	0.35%	March	-6.3	-3.7%	169.1	0.87	112.7	1.8	162.8	0.85	112.6	1.7	-0.02	-0.10	-0.10
Colorado River near Kremmling	317	0.59%	March	-5.9	-1.4%	411.3	0.67	320.6	1.9	405.3	0.66	320.6	1.9	-0.01	0.00	0.00
Colorado River below the confluence with the Eagle River	194	0.10%	March	-5.9	-0.9%	626.7	1.96	204.5	1.6	620.7	1.94	204.5	1.6	-0.02	0.00	0.00
Homestake Creek below Homestake Project	17	0.83%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Middle Fork South Platte River below Montgomery Reservoir	21	1.03%	August	-34.1	-61.6%	55.3	0.85	25.6	2.8	21.2	0.48	23.6	2.0	-0.37	-2.00	-0.80

Table 3-23
Summary of Maximum Average Monthly Flow Increases and Associated Changes in Water Depth, Wetted Perimeter, and Velocity

Location Description	Channel Parameters		Max Avg Monthly Flow Increase			No Action Flow Parameters				Proposed Action Flow Parameters				Change in Flow Parameters		
	Average Bottom Width	Average Slope	Month	Change in Flow	% Change in Flow	Flow	Depth	Wetted Perimeter	Velocity	Flow	Depth	Wetted Perimeter	Velocity	Change in Depth	Change in Wetted Perimeter	Change in Velocity
	(ft)	(%)			(%)	(cfs)	(ft)	(ft)	(ft/s)	(cfs)	(ft)	(ft)	(ft/s)	(ft)	(ft)	(ft/s)
Blue River below the Continental-Hoosier System	27	1.93%	November	4.2	21.8%	19.3	0.33	28.8	2.1	23.5	0.37	29.0	2.3	0.04	0.20	0.20
Blue River below Dillon Reservoir	83	0.82%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Blue River below Green Mountain Reservoir	105	1.05%	October	1.2	0.5%	241.8	0.79	109.3	2.9	243.0	0.79	109.3	2.9	0.00	0.00	0.00
Williams Fork River below Williams Fork Reservoir	47	2.14%	June	3.4	2.5%	134.1	0.72	50.9	3.8	137.4	0.73	51.0	3.8	0.01	0.10	0.00
Muddy Creek below Wolford Mountain Reservoir	67	0.41%	October	6.1	4.4%	137.2	0.97	72.2	2.0	143.3	1.00	72.4	2.1	0.03	0.20	0.10
Colorado River below the Confluence with the Williams Fork River	108	0.35%	October	1.4	0.9%	158.9	0.84	112.5	1.7	160.4	0.84	112.5	1.7	0.00	0.00	0.00
Colorado River near Kremmling	317	0.59%	October	4.6	0.7%	636.4	0.87	321.7	2.3	641.0	0.87	321.7	2.3	0.00	0.00	0.00
Colorado River below the confluence with the Eagle River	194	0.10%	October	4.6	0.5%	858.8	2.36	206.7	1.8	863.4	2.36	206.7	1.8	0.00	0.00	0.00
Homestake Creek below Homestake Project	17	0.83%	August	7.6	18.1%	42.1	0.87	21.7	2.5	49.8	0.96	22.2	2.7	0.09	0.50	0.20
Middle Fork South Platte River below Montgomery Reservoir	21	1.03%	August	4.3	14.6%	29.6	0.59	24.2	2.2	33.9	0.64	24.4	2.4	0.05	0.20	0.20

increase in flow would result in an increase in water depth of 0.05 feet, an increase in wetted perimeter of 0.2 feet and an increase of velocity of 0.2 ft/s (Table 3-23).

In summary, the changes in flow along the Middle Fork of the South Platte River downstream of Montgomery Reservoir would result in minimal change in flow parameters (less than: 0.37 feet change in water depth, 2.0 feet change in wetted perimeter and 0.2 ft/s change in velocity) within the aquatic environment. Flow changes of this magnitude under the Proposed Action would have no discernable effect on aquatic resources. In addition, critical threshold guidelines established for this analysis would not be exceeded.

3.6.3 Cumulative Impacts

Cumulative impacts of reasonably foreseeable water-based actions are summarized in Section 3.3.3. Reasonably foreseeable projects would likely result in cumulative changes in flow that could have a potential effect on aquatic resources.

In general, reasonably foreseeable actions would result in additional water use in the future, which would reduce streamflows and reservoir contents and levels in the Study Area. While the magnitude of hydrologic changes caused by the Proposed Action would be similar under cumulative effects, the percentage change in flows and reservoir contents under the Proposed Action may be slightly higher under cumulative effects than described for direct effects. This could result in a slightly greater effect on aquatic resources in the Study Area. The analysis of potential flow changes in dry years due to reasonably foreseeable actions described in Section 3.3.3 showed that the incremental cumulative hydrologic effect of the Proposed Action would be negligible to minor in combination with other past actions and the reasonably foreseeable actions described in Section 3.1.3. Because the Proposed Action would have no discernable effect on aquatic resources under direct effects it is likely that the incremental effect of the Proposed Action on aquatic resources under cumulative effects would be negligible to minor in combination with the reasonably foreseeable actions..

3.7 Wetland and Riparian Resources and Special Status Species

This section describes the existing wetland and riparian resources in the Study Area and the effects of the Proposed Action and No Action alternatives on these resources. An evaluation of special status species associated with wetland and riparian areas within the Study Area is also provided in this section. The effect determination is included in Section 3.7.2.2 for the special status species and is indicated by parentheses [( )].

Wetland and riparian resources generally occur along streams and reservoir perimeters and other locations where surface or groundwater is sufficient to support the vegetation types. The Study Area basins associated with this EA provide suitable conditions for wetland and riparian resources that could potentially be affected by the Proposed Action.

Wetlands

Wetlands are valuable biological resources that perform many functions including groundwater recharge, flood flow attenuation, erosion control, and water quality improvement. They also provide habitat for many plants and animals.

Wetlands have three general diagnostic characteristics; hydrophytic vegetation, hydric soils, and wetland hydrology.

Riparian Areas

Riparian areas generally serve as transitional zones between active river channels and uplands. They are vegetated corridors that border creeks, rivers, or other bodies of water.

Because of their proximity to water, topographic relief, and high degree of vegetative cover, these areas provide a unique and important habitat for many plant and animal species. From a watershed perspective, riparian areas occupy only a small percentage of the land; however, they represent an extremely important component of the overall landscape by performing many of the same functions as wetlands such as trapping sediment and pollutants, absorbing excess nutrients from runoff, attenuating flood flow, moderating water temperature, and providing habitat for wildlife.

Riparian habitats are often viewed as an element of wetlands as a result of their hydrologic similarities; however, they differ in that riparian areas are generally linear, more terrestrial, and are often dependent on the varying flow regimes of rivers (Naiman and Latterell 2005). Riparian areas are not typically classified as wetland because they often do not meet the general diagnostic characteristics established by the USACE and U.S. Environmental Protection Agency (EPA).

Wetland and Riparian Resource Assessment

A qualitative assessment of wetland and riparian resources was used to describe the affected environment within the Study Area, which included documentation of existing wetland/riparian resources and the general magnitude of these habitat types within the Study Area. The wetland information included in this assessment was derived from 44 National Wetland Inventory (NWI) Maps produced by the USFWS (USFWS 1983; USFWA 1984). Review of the CDOW Natural Diversity Information Source (NDIS) digital riparian vegetation mapping was also conducted to further identify wetland and riparian resources within the Study Area.

NWI Maps were developed by the USFWS as topical overlays to the USGS Quadrangle (Quad) Maps. The data represents the extent, approximate location, and type of wetlands and deepwater habitats; however it is in no way intended as a formal wetland delineation or federal jurisdictional determination.

The methodology used to assess the wetland and riparian resources in the Study Area included a visual review of NWI maps to determine the type of wetlands and river habitats located within each Study Area basin. The percent cover of wetland and river type was then visually estimated and compiled for each length of potentially affected river segment. The data collected from the NWI maps was compiled to determine a relative coverage estimate for the length of the river basin within the Study Area (Table 3-24). The following sections provide a description of the wetland types present (as defined by the Cowardin et al. wetland classification system) within the Study Area basins.

Riverine

Riverine Systems are all wetlands and deepwater habitats contained within a channel except those wetlands which (1) are dominated by trees, shrubs, persistent emergents, emergent mosses or lichens and (2) which have habitats with ocean derived salinities in excess of 0.5 parts per thousand (ppt) (Cowardin 1979).

Within the Riverine classification, stream systems can be further categorized as Upper Perennial (R3) and Lower Perennial (R2).

Palustrine

Palustrine Systems are all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens and all such tidal wetlands where ocean derived salinities are below 0.5 ppt. This category also includes wetlands lacking such hydric vegetation but with all of the following characteristics: (1) area less than 20 acres, (2) lacking an active wave formed or bedrock boundary, (3) water depth in the deepest part of the basin is less than 6.6 feet at low water and (4) ocean derived salinities less than 0.5 ppt (Cowardin 1979).

Within the Palustrine classification, wetlands can be further categorized into Emergent (PEM), Scrub-Shrub (PSS), Forested (PFO), and Aquatic Bed (AB) Subsystems.

Additional qualifiers exist for both Riverine and Palustrine Systems with regard to substrate type (Class and Subclass). However, the level of detail required for this assessment did not necessitate the utilization of these additional qualifiers.

Review of the CDOW riparian vegetation mapping was also conducted to further qualitatively identify riparian resources within each Study Area basin. This review documented the type and relative coverage of riparian resources depicted by the CDOW riparian vegetation mapping within the Study Area basins. The CDOW riparian mapping was incomplete for some basins and not available in other basins. Mapping was not available for review in the Muddy Creek Basin.

3.7.1 Affected Environment

Potentially affected wetland and riparian resources include areas immediately adjacent to or within sections of the Blue River, Williams Fork River, Muddy Creek, Colorado River, Homestake Creek, Eagle River, Middle Fork South Platte River, and South Platte River. The data provided in this section is based on visual relative estimates of the type of habitat and is intended to provide an understanding of magnitude and composition of wetland and riparian resources within the Study Area basins (Table 3-24). The information presented in this section has not been investigated on the ground for accuracy.

Table 3-24
Dominant Riparian and Wetland Classifications in the Study Area

	Cowardin Classification System							**Colorado Division of Wildlife**
	Riverine		**Palustrine**					
	Upper Perennial (R2)	***Lower Perennial (R3)***	***Emergent (PEM)***	***Scrub-Shrub (PSS)***	***Forested (PFO)***	***Aquatic Bed (PAB)***	***Total Wetland Cover***	***Dominant Vegetation Classification***
Blue River Basin	N/A	74%	17%	9%	<1%	N/A	100%	riparian herbaceous, riparian shrub
Muddy Creek Basin	N/A	77%	15%	7%	1%	N/A	100%	N/A
Colorado River Basin	N/A	75%	10%	10%	≈ 2.5%	≈ 2.5%	100%	riparian herbaceous, riparian shrub
South Platte River Basin	20%	40%	30%	10%	<1%	N/A	100%	riparian herbaceous
Eagle River Basin	N/A	70%	15%	10%	≈2.5%	≈2.5%	100%	riparian deciduous, riparian herbaceous
Williams Fork River Basin	N/A	75%	≈ 12.5%	≈12.5%	N/A	N/A	100%	riparian evergreen, riparian shrub

Blue River Basin

Approximately 63 miles of the Blue River was assessed. The river type through the length of the basin is classified as R3, with an approximate average cover of 74%. The dominant wetland type is PEM, with an approximate average cover of 17%, followed by PSS wetland with an approximate average cover of 9%. Areas of PFO wetland were noted along the river; however cover was negligible at approximately 1%. Wetlands adjacent to the Blue River were minimal throughout the Study Area. The total average cover for wetlands adjacent to the Blue River is approximately 27% (Table 3-24).

CDOW riparian vegetation mapping is incomplete within the Blue River Basin. Based on a review of available CDOW riparian vegetation mapping for the affected river reach, the dominant vegetation types along the river consist of riparian herbaceous – both general and sedges/rushes/mesic grasses and riparian shrub – willow.

Williams Fork River Basin

Approximately 2.1 miles of the Williams Fork River was assessed. NWI Maps were not available for the potentially affected reach below Williams Fork Reservoir; therefore percent cover estimates of wetlands along this reach were not completed. Because of relatively similar geographic characteristics, wetland and riparian resources are assumed to be similar to that of the Blue River and the Muddy Creek Basins. For the purpose of this assessment, the river type through the length of the system is assumed classified as R3, with an approximate average cover of 75%.

The remaining dominant wetland type is assumed a mix of PSS, PEM, and PFO with an approximate average cover of 25% (Table 3-24). Based on a review of available CDOW riparian vegetation mapping for the affected river reach, the dominant vegetation types along the river consist of riparian evergreen and riparian shrub – willow.

Muddy Creek Basin

Approximately 10.5 miles of Muddy Creek was assessed. The river type through this reach is classified as R3, with an approximate average cover of 77%. The dominant wetland cover type is PEM, with an approximate average cover of 15%, followed by PSS wetland with an approximate average cover of 7%. Areas of PFO wetland were noted along the river; however cover was negligible at approximately 1% (Table 3-24). Wetlands adjacent to the Muddy Creek were minimal throughout the Study Area. The total average cover for wetlands adjacent to the Muddy Creek is approximately 23%. CDOW riparian vegetation mapping was not available for review within the Muddy Creek Basin.

Colorado River Basin

Approximately 84.5 miles of the Colorado River was assessed. The dominant river type through the system is R3, with an approximate average cover of 75%. The dominant wetland cover types are PEM with an approximate average cover of 10% and PSS with an approximate average cover of 10%. Areas of PFO and PAB wetland were noted along the river; however cover was negligible at approximately 5% (Table 3-24). The majority of the Study Area basin had minimal wetland complexes located adjacent to the river. The total average cover for wetlands adjacent to the Colorado River is approximately 25%.

Based on review of available data CDOW riparian vegetation mapping for this affected river reach, the dominant vegetation types along the river consist of riparian herbaceous – both general and sedges/rushes/mesic grasses and riparian shrub – willow. Long sections of the river were noted where no riparian vegetation was mapped. These areas appear to be sections where the river has steep banks and is deeply incised.

Eagle River Basin

Approximately 63.8 total miles of river was assessed, including 13.45 miles of Homestake Creek and 50.3 miles of Eagle River.

The entire length of affected river is categorized as R3, with an approximate average cover of 70%. Wetland habitat through this reach of the Eagle River is dominated by PSS (average cover of 15%), followed by PEM (average cover of 10%). Areas of PFO and PAB wetland were noted along the river; however cover was minimal at less than 5% (Table 3-24). Large sections of the Eagle River were observed to be highly channelized, resulting in minimal wetland complex development adjacent to the river channel.

CDOW riparian vegetation mapping is incomplete within the Eagle River Basin. Based on review of available data for the affected river reach, the dominant vegetation types consists of riparian deciduous cottonwood trees and riparian herbaceous consisting of sedges, rushes and mesic grasses.

South Platte River Basin

The area assessed in the Upper South Platte River basin includes approximately 52.4 miles of river. The upper reach of the river is characterized as R3 (with an average cover of 40%) and the lower reach is characterized as R2 (with an average cover of 20%). Wetland habitat was dominated by PEM wetlands, with an average of approximately 30% cover. PSS cover along the river was approximately 10%; areas of PFO and PAB wetland were noted along the river, however cover was negligible (Table 3-26). The river is characterized by a meandering pattern, resulting in the existence of large wetland complexes adjacent to the channel along the length of the reach assessed.

Based on review of available CDOW riparian vegetation mapping for this river reach, the dominant vegetation type in the basin is riparian herbaceous – both general and sedges/rushes/mesic grasses. The river is highly meandering and the majority of the section assessed had mapped riparian vegetation along the banks.

Special Status Species Associated with Wetland and Riparian Areas

Special status species include federal and state listed threatened, endangered, and candidate species. Federally-listed species are protected under the ESA and Bald and Golden Eagle Protection Act while state listed species are protected under Colorado State law. Bald eagle (*Haliaeetus leucocephalus),* boreal toad (*Bufo boreas boreas),* and river otter (*Lontra Canadensis)* have been documented to occur, or have the potential to occur within the Study Area.

Bald eagles mainly subsist on fish, waterfowl, and carrion but are also opportunistic feeders and often rely on rabbits and ground squirrels (Griffin et al. 1982). In Colorado, nest trees are located in various forest types from old-growth ponderosa pine to linear groups of riparian woodland. Nests and roosts are usually located in tall trees near water in areas free of human activity and development. Roost sites are trees that provide diurnal and/or nocturnal perches for less than 15 wintering bald eagles and includes a ¼-mile buffer zone (NDIS 2005). An active bald eagle nest is located just west of the western end of the Colorado River segment, west of the town of Parshall. This segment of the Colorado River is used by bald eagles during winter foraging and the western end of the segment is a foraging area in summer (NDIS 2005). Two inactive nests and several bald eagle roost sites are located along the Blue River. Inactive nests are defined as nests in which neither courtship, breeding, or brooding activity has been observed at any time during the last 5 years (NDIS 2005).

River otters inhabit high-quality, perennial rivers that support abundant fish or crustaceans within many habitats ranging from semi-desert shrublands to montane and subalpine forests. Other habitat features that may be important include the presence of ice-free reaches of stream in winter, water depth, stream width, and suitable access to shoreline (Fitzgerald et al. 1994). An approximately 0.5-mile reach of the Colorado River, two miles east of the town of Hot Sulphur Springs is a river otter concentration area. Concentration areas are where otter sightings and signs of otter activity are higher than in the overall range (NDIS 2006). River otters have also been documented in the Blue River between the Town of Silverthorne and Green Mountain Reservoir (McKinney 2001; Taylor Young 2000). CDOW has identified only a small area of river otter range several miles north of the town of Silverthorne (NDIS 2006).

Historic records indicate boreal toads were present along the Williams Fork River (CDOW 2005). Areas of potential habitat include shallow, abandoned, or active beaver ponds and other areas of still, shallow water. The Colorado Natural Heritage Program (CNHP) monitors and surveys boreal toads in Colorado; non-breeding boreal toads were surveyed in Williams Fork River in 2005 (CNHP 2005). Boreal toads have also been recorded from the Blue River watershed (Keinath and McGee 2005), however, the habitat conditions along the river in the Study Area are only marginally suitable to support the species.

3.7.2 Environmental Consequences

Over 75% of the potentially affected river Study Area basins are classified as R3. This river type is typically lined with cobbles or gravel and has very little floodplain development due to rapidly moving water (Cowardin 1979). Wetland or riparian areas along these river types are typically narrow and less developed if at all present. However, water typically moves through these systems throughout the year. One basin section, the Middle Fork of the South Platte River in its lower reaches, was characterized as R2. This type of river system typically has flowing water throughout the year and a substrate that consists mainly of sand and mud. The gradient is lower than the R3 system, which allows for a relatively more developed floodplain. Thus, wetland or riparian areas along this type of river are typically larger and more complex.

The correlation between in-channel river flows and adjacent wetland/riparian habitat is very site specific and not easily determined for an entire river basin without more intensive field evaluation. Wetlands and riparian areas may be directly connected to flows of a river system, with sustaining hydrology provided by in-channel flows. Other wetland and riparian areas may be directly connected to inflows from other sources draining towards the river and not directly connected to in-channel flows. As a general theoretic rule, the less water available within a river system, the less water will be available for wetland and riparian resources. As in-channel flows increase and water depths become higher more water is available to adjacent wetland and riparian resources. As in-channel flows decrease depths become lower and less water is available to adjacent wetland and riparian resources. In addition, as in-channel flows decrease, groundwater hydrologic gradient can increase, creating additional drainage of adjacent wetland and riparian resources.

Differences in flow between the No Action and Proposed Action alternatives described in Section 3.3 were utilized as the basis for determining potential effects to wetland and riparian resources. The hydrology comparison tables (Tables 3.2 through 3.19) were reviewed to determine the maximum percentage increase and decrease in average monthly flow in any month at each location. The corresponding maximum changes in flow were evaluated to determine changes in flow parameters (water depth and wetted perimeter). Changes in flow parameters were calculated using average channel width, slope and cross-section shape at each location.

Two flow parameters were selected as they related to this resource, including depth (feet) and wetted perimeter (feet). These flow parameters were selected as part of this analysis as indicators of potential effects to wetland and riparian resources immediately adjacent to the river channels. Large changes in these flow parameters under the Proposed Action could be considered an effect to the resources. Modeled flow parameters were compared to critical guideline thresholds, which were established for water depth and wetted perimeter.

The following critical guideline thresholds were established to determine if changes in flow could potentially affect wetland and riparian resources:

- Depth: Wetlands and riparian resources are typically adapted to tolerate seasonal relatively short duration increases and decreases in stream flows (i.e., flooding and drying). However, for the purposes of this study, flow changes which result in a monthly average fluctuation in water depth of more than 0.5 feet are considered a potential effect. Flow changes that result in water depth fluctuations of less than 0.5 feet are considered negligible and expected to have no discernable effect on the resource.
- Wetted Perimeter: Wetted Perimeter is the perimeter of the cross sectional area of a channel or river that is "wet". In theory, if the wetted perimeter of a river decreases, less water is available to the adjacent wetland and riparian resources. Conversely, if wetted perimeter increases, more water is available in the river to the adjacent wetland and riparian resources. For the purpose of this study a conservative estimate of a 5 feet decrease or increase in the wetted perimeter is considered a potential effect. Flow changes resulting in a change in wetted perimeter less than 5 feet are considered negligible and expected to have no discernable effect on the resource.

3.7.2.1 No Action Alternative

Under the No Action alternative, Springs Utilities would continue to operate according to the Blue River Decree during substitution years. Therefore, river flows and reservoir contents would continue to fluctuate as they have historically as a result of Springs Utilities' substitution operations. This alternative is expected to have no direct, indirect or cumulative impacts on streamflows or reservoirs. Therefore, the No Action alternative is expected to have no direct, indirect or cumulative impacts on wetland or riparian resources within the Study Area. Likewise, there are no anticipated impacts (no effect) to special status species associated with wetland and riparian areas under the No Action alternative.

3.7.2.2 Proposed Action

Blue River Basin

Refer to Section 3.6.2.2 for a discussion of maximum flow increases and decreases and the associated changes in water depth and wetted perimeter along the Blue River downstream of the Continental-Hoosier System, Dillon Reservoir and the Green Mountain Reservoir. Flow changes of this magnitude and frequency would have no effect on the adjacent wetland and riparian resources. In addition, the critical threshold guidelines established for this study would not be exceeded.

Williams Fork River Basin

Flow changes along the Williams Fork River would likely occur under the Proposed Action as described in the Section 3.3.2 Hydrology.

Refer to Section 3.6.2.2 for a discussion of maximum flow increases and decreases and the associated changes in water depth and wetted perimeter along the Williams Fork River. Flow changes of this magnitude and frequency would have no effect on the adjacent wetland and riparian resources. In addition, the critical threshold guidelines established for this study would not be exceeded.

Muddy Creek Basin

Flow changes along Muddy Creek would likely occur under the Proposed Action as described in the Section 3.3.2 Hydrology.

Refer to Section 3.6.2.2 for a discussion of maximum flow increases and decreases and the associated changes in water depth and wetted perimeter along Muddy Creek. Flow changes of this magnitude and frequency would have no effect on the adjacent wetland and riparian resources. In addition, the critical threshold guidelines established for this study would not be exceeded.

Colorado River Basin

Flow changes along the Colorado River would likely occur under the Proposed Action as described in the Section 3.3.2 Hydrology.

Refer to Section 3.6.2.2 for a discussion of maximum flow increases and decreases and the associated changes in water depth and wetted perimeter along the Colorado River. Flow changes of this magnitude and frequency are expected to have no effect on the adjacent wetland and riparian resources. In addition, the critical threshold guidelines established for this study would not be exceeded.

Eagle River Basin

Flow changes along Homestake Creek and the Eagle River would likely occur under the Proposed Action as described in the Section 3.3.2 Hydrology.

Refer to Section 3.6.2.2 for a discussion of maximum flow increases and decreases and the associated changes in water depth and wetted perimeter along Homestake Creek. Flow changes of this magnitude and frequency would have no effect on the adjacent wetland and riparian resources. In addition, the critical threshold guidelines established for this analysis would not be exceeded.

South Platte River Basin

Flow changes along the Middle Fork South Platte River and South Platte River would likely occur under the Proposed Action as described in the Section 3.3.2 Hydrology.

Refer to Section 3.6.2.2 for a discussion of maximum flow increases and decreases and the associated changes in water depth and wetted perimeter along the Middle Fork South Platte River. While changes in flow along the Middle Fork of the South Platte River downstream of Montgomery Reservoir indicate some of the largest flow parameter changes calculated as part of the assessment, the changes still indicate relative insignificant effect on wetland and riparian resources. Flow changes of this magnitude as part of the Proposed Action would have no effect on the adjacent wetland and riparian resource. In addition, critical threshold guidelines established for this analysis would not be exceeded.

Special Status Species Associated with Wetland and Riparian Areas

No ground disturbing activities associated with the Proposed Action would occur in the Study Area that would directly impact special status species' habitat. Thus, potential impacts to special status species were assessed in relation to the changes in hydrology described in Section 3.3. Habitat for bald eagles, river otters and boreal toads occur along the Colorado and Blue rivers. As previously described, flow changes associated with the Proposed Action would have no impact (no effect) on the adjacent riparian/wetland habitats that sustain these special status species in the Study Area.

3.7.3 Cumulative Impacts

Cumulative impacts of reasonably foreseeable water-based actions are summarized in Section 3.3.3. These projects would likely result in changes in flow that could have a potential effect on wetland and riparian resources.

In general, reasonably foreseeable actions would result in additional water use in the future, which would reduce streamflows and reservoir contents in the Study Area. While the magnitude of hydrologic changes caused by the Proposed Action would be similar under cumulative effects, the percentage change in flows and reservoir contents under the Proposed Action may be slightly higher under cumulative effects than described for direct effects. This could result in a slightly greater effect on wetland and riparian resources in the Study Area. The analysis of potential flow reductions in dry years due to reasonably foreseeable actions described in Section 3.3.3 showed that the incremental cumulative hydrologic effect of the Proposed Action would be negligible to minor in combination with other past actions and the reasonably foreseeable actions described in Section 3.1.3. Because the Proposed Action would have no effect on wetland and riparian resources under direct effects it is likely that the incremental effect of the Proposed Action on wetland and riparian resources under cumulative effects would be negligible to minor in combination with the reasonably foreseeable actions previously described.

3.8 Recreation

This section provides an overview of existing recreational resources within the Study Area and evaluates the potential effects of the No Action and Proposed Action alternatives.

During scoping for this project, the following comments were recorded that were considered for this recreational analysis (URS 2008):

- Effect of implementing the 2003 MOAs on stream flow variations including, effect on recreational uses, in particular the Blue River (kayaking and fishing)
- Effects of changes in streamflow and reservoir contents on fish habitat and subsequently fishing opportunities
- The effect of streamflow changes on stream reaches deemed eligible for BLM Wild and Scenic River designation

3.8.1 Affected Environment

Numerous recreational opportunities exist in the potentially affected reaches of streams and reservoirs within the Study Area. The primary recreational opportunities in the streams include fishing, rafting, and kayaking. Fishing can occur on all public sections of the streams and with landowner permission, on many of the private land parcels. One of the higher use areas for fishing along the Blue River is the 10 miles of public access from the Dillon Reservoir Dam to Green Mountain Reservoir. The Breckenridge Kayak Park is located on the Blue River within the Study Area. Indirect recreational uses also come from streams within the Study Area including snowmaking for ski areas in Breckenridge and Vail and irrigation for golf courses.

Several reservoirs are located within the Study Area. The recreational opportunities within each reservoir and on the surrounding property of each reservoir are described below.

Dillon Reservoir provides boating, canoeing, kayaking, sailboarding, fishing, and wildlife viewing within the reservoir. Other recreational opportunities on the property include camping, hiking, and biking in the summer; and cross-country skiing and ice fishing in the winter. Green Mountain Reservoir is used for boating and fishing. Recreational activities in the area include hiking, biking, off-highway vehicle (OHV) riding, snowmobiling, wildlife viewing, and camping. Several rental cabins are located at the south end of the reservoir.

Wolford Mountain Reservoir is used for boating, canoeing, kayaking, fishing, and water sports such as jet skiing. Recreational activities in the area include camping, picnicking, hiking, biking, and volleyball. Recreational opportunities in and around Williams Fork Reservoir include fishing, ice fishing, boating, sailboarding, canoeing, kayaking, camping, picnicking, wildlife viewing, and big game hunting.

Elevenmile Canyon Reservoir is contained within Eleven Mile State Park. Recreational activities within this park include biking; wildlife viewing; boating, including winter ice boating; canoeing; kayaking; sailboarding; camping, including backcountry camping and winter camping; cross-country skiing; educational programs; fishing, including ice fishing; big game, small game, and water fowl hunting; ice skating; OHV riding; and picnicking.

Upper Blue Reservoir and Montgomery Reservoir are used for fishing. Hiking trails exist in the areas surrounding these reservoirs. Homestake Reservoir is used for boating and fishing. Recreational opportunities around the reservoir include hiking and biking.

Gold Medal waters are the highest quality cold water habitats and have the capability to produce many quality size (14 inches or longer) trout (Colorado Wildlife Commission 2008). Several waters within the Study Area are designated Gold Medal waters:

- Below the Dillon Reservoir dam (Denver Water no date).
- The Middle Fork South Platte River from the confluence of the Middle Fork and South Fork downstream to Spinney Mountain Reservoir (CDOW 2008).
- Spinney Mountain Reservoir (CDOW 2008).
- The South Platte River at the outlet of Spinney Mountain Reservoir downstream to the inlet of Elevenmile Reservoir (CDOW 2008).
- The Colorado River between Windy Gap and the confluence with Troublesome Creek (CDOW 2008). This section is partially within the project Study Area.

As described in Section 3.3.1.7, Grand County is currently developing a SMP for the County. Some of stream reaches evaluated in the SMP overlap portions of the Colorado and Blue rivers that were evaluated in the EA. Appendix D of the Phase 2 SMP defines water users flow recommendations for maintaining recreational activities including kayaking, rafting and angling in these reaches (Grand County 2008). The table below summarizes minimal and optimal flows for recreational activities in the Colorado River from the confluence with the Williams Fork River downstream and Blue River downstream of Green Mountain Reservoir as defined in Phase 2 of the SMP.

Colorado River		
Recreational Activity	**Range of Optimum Flows (cfs)**	**Range of Minimum Flows (cfs)**
Kayaking	600 - 1,400	500 - 700
Rafting	800 - 1,300	700 - 800
Angling	200 - 1,000	60 - 450
Blue River		
Recreational Activity	**Range of Optimum Flows (cfs)**	**Range of Minimum Flows (cfs)**
Kayaking	600 - 1,000	400
Rafting	700 - 1,400	550
Angling	200 - 1,200	100

An independent review of the SMP recreational flow recommendations has not been conducted, and the recommendations are currently being evaluated by basin stakeholders as to their validity and applicability, however, they were recognized in the impact analysis.

Wild and Scenic Rivers Designation

As described in Section 3.3.1.4, the BLM is in the process of identifying eligible river segments in Colorado for Wild and Scenic River designations. Three segments of the Blue River have been preliminarily classified as recreational and wild for purpose of being deemed eligible for Wild and Scenic River status. The BLM also has an established fishing access and boat take-out at the downstream end of this segment. ORVs for these segments that may make them eligible for designation include high quality fishing and floatboating, wildlife habitat, and high biodiversity.

3.8.2 Environmental Consequences

3.8.2.1 No Action Alternative

Under the No Action alternative, Springs Utilities would operate according to the Blue River Decree during substitution years. River flows and reservoir contents would fluctuate as they have in the past. Therefore, no changes in stream flow or reservoir contents are expected, and there would be no direct, indirect, or cumulative impacts on recreational resources.

3.8.2.2 Proposed Action

The potential for impacts to recreation are related to changes in stream flow or reservoir content that could impact the quality of recreational activities, especially fishing, rafting/kayaking, and boating. The Proposed Action would change how Springs Utilities pays back their substitution obligation based on the 2003 MOAs. To put the potential for impact into context, it is important to consider that for the historical period evaluated by the hydrologic model, there were 13 substitution years during the 56-year study period. Additionally, changes in how Springs Utilities pays back their substitution obligation would only occur when the substitution obligation is greater than about 2,100 AF or the contents in Upper Blue Reservoir, which would occur in 7 of the 13 substitution years during the hydrologic modeling study period. This trend indicates that potential changes in stream flow caused by the Proposed Action would occur infrequently. The total substitution obligation would not change, and there would be very minimal change in the total amount of water flowing down rivers in the Study Area, but the timing and sources of substitution releases would change.

Based on the results of the hydrologic modeling presented in Section 3.3 Hydrology, the Blue River below the Continental-Hoosier System, and the Middle Fork South Platte River would experience the greatest change in average monthly flow during substitution years (4.5 % decrease in flow in August, and a 24.8% increase in flow in November). Average monthly flows in August would decrease from 56.6 cfs to 54.1 cfs. The minimum change in flow is not enough of a change to have any noticeable impact to water-based recreation activities. The increase in flow during November occurs when there is little on-water recreation use. The Breckenridge Ski Area is usually involved in snowmaking operations in November – the increase of water in the river would not have an adverse impact on their operations. On the Middle Fork South Platte River, the average monthly flow during substitution years would decrease by 14.3% in August, changing flow from 26.8 cfs to 23 cfs. The primary recreational activity on this river reach is fishing. The estimated change in flow would not have an impact on fish, or the quality of fishing opportunities.

All of the other river segments potentially affected by flow changes would experience substantially less changes than those described above for the Blue River and the Middle Fork South Platte River, and would not experience noticeable effects to water-based recreation. The aquatic ecosystem analysis, presented in Section 3.6 Aquatic Resources and Special Status Species, predicts no impact to fish habitat or populations, and therefore the quality or quantity of fish available to anglers would not be impacted.

Montgomery Reservoir and the Upper Blue Reservoir would be the only reservoirs that could experience a noticeable change in average content during substitution years (a 5.2% and a 12.9% decrease in average content during the months of February and March, respectively). This level of change during winter months at these high mountain reservoirs would not impact recreation. During the months of August and September, there would be an average increase in contents of 6.3 % and 6.4 %, respectively. This small increase in contents would not have a noticeable effect on fish or fishing opportunities. In the month of August, the contents of the Upper Blue Reservoir could increase by an average of 38.5%. Except for June and July, which would experience an increase in content of less than 1%, August is the only month where a noticeable change in content is predicted. The additional water content of the reservoir should slightly improve conditions for fish and fishing.

The river segments in the Study Area that have been deemed eligible by BLM for Wild and Scenic Rivers designation would not experience noticeable changes in stream flow; the important values associated with those river segments should not be affected by the Proposed Action.

To summarize, because of the infrequent occurrence of substitution-related changes in stream flow, and the generally modest changes predicted to occur during those infrequent events, recreation is anticipated to experience adverse negligible short-term impacts.

As discussed in Section 3.8.1, Phase 2 of the Grand County SMP identified recreational flows recommendations to support activities such as kayaking, rafting, and angling. Flow reductions under the Proposed Action in the Blue and Colorado rivers would be infrequent and negligible (see Section 3.3.2.2) and would have no noticeable effects to the minimum and optimum flows for recreational activities in the Study Area.

3.8.3 Cumulative Impacts

Several reasonably foreseeable water projects, described in Section 3.1.3, could affect streams and reservoirs in the project Study Area. The Proposed Action would have a negligible to minor incremental hydrological effect, and therefore would have a corresponding minor cumulative effect on recreation resources.

3.9 Socioeconomics

This section provides a brief overview of existing socioeconomic conditions and evaluates potential socioeconomic effects of the No Action and Proposed Action alternatives.

None of the issues, questions or comments received during public scoping identified socioeconomic concerns associated with the Proposed Action. One scoping commenter did identify potential effects on recreational uses (e.g., fishing and kayaking) on the Blue River as an issue to be examined; recreational impacts on the Blue River are described in Section 3.8.

This socioeconomic evaluation focuses on Summit County. Three of the signatories to the 2003 MOA that describes the Proposed Action are Summit County entities: Summit County; Vail Summit Resorts, Inc., and; the Town of Breckenridge. The county encompasses the Blue River Basin from the headwaters of the Blue River near Hoosier Pass, and from the headwaters of Ten Mile Creek near Fremont Pass, to the boundary with Grand County below Green Mountain Reservoir. Several of the water storage facilities that would be affected by the Proposed Action are located in Summit County, including Upper Blue Reservoir, Dillon Reservoir, and Green Mountain Reservoir.

3.9.1 Affected Environment

Summit County was home to nearly 28,000 permanent residents in 2006. Fifty-eight percent of the county's residents lived in unincorporated areas, with approximately 36% of permanent residents living in Silverthorne, Breckenridge, and Frisco, the three largest municipalities in the county (SDO 2008a). Throughout most of the past four decades, the county has been one of the fastest growing areas in Colorado. From 1970 through 2005, Summit County's population increased by an average of 6.5% per year (Headwaters Economics 2007). In general, Summit County has a relatively young, fairly affluent and predominantly non-minority population (Census 2000b).

Summit County is home to four major ski resorts – Breckenridge, Keystone, Copper Mountain and Arapahoe Basin. Due in part to proximity to these resorts, as well as relatively easy access to the Denver Metropolitan Area via Interstate 70, Summit County also has a large population of part-time residents and second home owners. With a large number of second homes, a substantial hotel bed base and many day use visitors, the effective peak population in Summit County on weekends and holidays can be several times the number of permanent residents.

The attractiveness of Summit County real estate has some negative consequences for county residents. In general, housing affordability in Summit County has declined between 1990 and 2000 where the median family income is not enough to buy the median value home (Headwaters Economics 2007a; Headwaters Economics 2007b).

While Summit County was founded during Colorado's mining boom in the 1800s, tourism, broadly defined, is now the primary source of employment in the county. The four Summit County ski resorts received over 4.2 million skier visits during the 2006-2007 season and accounted for just over one-third of all skier visits in Colorado (CSCUSA 2008). Fishing is another example of tourism in Summit County. Preliminary estimates developed for the CDOW indicate that fishing activity generated $37 million in Summit County economic output in 2007 (BBC 2008).

There were 23,850 jobs in Summit County in 2006 (SDO 2008b). The high number of jobs relative to the size of the population reflects both the prevalence of multiple job holding that is common in Colorado resort communities and extensive in-commuting by workers that live in nearby counties. The Colorado State Demography Office estimates that almost two-thirds of Summit County's economic base is tied to tourism, generally in the accommodations and food services industry (Headwaters Economics 2007a; SDO 2008c). Consistent with the emerging, broader definition of "tourism" that includes second home-related activity, 22% of Summit County jobs are in construction and real estate (Headwaters Economics 2007a).

3.9.2 Environmental Consequences

3.9.2.1 No Action Alternative

Under the No Action alternative, Springs Utilities would continue to operate according to the Blue River Decree during substitution years. River flows and reservoir contents would continue to fluctuate as they have historically as a result of Springs Utilities substitution operations. The No Action alternative is expected to have no direct, indirect or cumulative impacts on streamflows or reservoirs and would have no effect on available water supplies in Summit County. Consequently, there would be no socioeconomic effects as a result of the No Action alternative.

3.9.2.2 Proposed Action

Under the Proposed Action, there would be minimal changes to the flow in the Blue River and to the contents and levels of Summit County reservoirs (e.g., Upper Blue, Dillon and Green Mountain). However, these changes are expected to have little or no noticeable impact on recreation opportunities. Fish populations are not expected to be affected. Consequently, the economic benefits to Summit County from river and lake-related recreation activity are not anticipated to be affected by the Proposed Action.

Under the Proposed Action, Springs Utilities would make 250 AF of water available from Upper Blue Reservoir each year to a West Slope Account for use by the River District's marketing program and its contractees in exchange for a like amount of water stored by the River District in Wolford Mountain Reservoir. The River District, in turn, intends to enter into contracts with the Summit County entities. It is anticipated that Summit County would contract for 100 AF of this new supply, Vail Summit Resorts would contract for 100 AF and the Town of Breckenridge would contract for 50 AF.

Exactly how this new water supply would be used has not been specified or documented. However, Summit County is generally in need of additional water supplies to meet anticipated growth in demands. The Statewide Water Supply Initiative (SWSI) identified a gap between identified supplies for Summit County and anticipated demands by 2030 of 1,900 AF. This gap reflects a number of anticipated water needs, including a projected need for 505 AF for development in unincorporated portions of the county (SWSI 2004). Snowmaking demands are projected to grow from 1,500 AF in 2000 to 3,700 AF by 2030 (SWSI 2004).

Precisely quantifying the economic value of the 250 AF of new supply available to Summit County entities under the Proposed Action is not possible. A minimum estimate of the economic value can be estimated, however, based on the prices charged under the River District's marketing program. Under the current marketing policy for contracts issued after July 2006, the River District charges $1,301.25 per AF for Blue River supplies (River District 2008). Under these terms, the Summit County entities would pay a total of approximately $325,000 per year to contract for the 250 AF made available under the Proposed Action. The willingness of the Summit County entities to enter into contracts for this water at the specified price indicates that the benefits from this new supply would likely be greater than the contract price.

3.9.3 Cumulative Impacts

Several reasonably foreseeable actions were identified for cumulative impact assessment in Section 3.1.3. Among these actions, the most relevant in terms of socioeconomic effects are:

- Other increased water use in Grand and Summit counties, and
- Increases in Wolford Mountain Reservoir Contract Demands.

Ongoing urban growth in Summit County will continue to increase the demand for water for municipal, domestic and commercial purposes. Given the limited supply available to the area, the value of the 250 AF made available to the Summit County entities would likely continue to increase in the future.

Increases in Wolford Mountain Reservoir Contract Demands would add to the value of the water that the River District stores in that reservoir on behalf of Springs Utilities in exchange for the supply that Springs Utilities makes available to the River District (and the Summit County entities) from Upper Blue Reservoir. This activity would somewhat reduce the net economic benefit of the new supply provided to the Summit County entities because the "cost" of that supply to the River District would increase. However, the amount of water that the River District will hold for Springs Utilities in Wolford Mountain is capped at 1,750 AF (MOA, May 15, 2003). This cap would limit the offsetting cost of the water to the River District.

3.10 Summary of Impacts

Detailed discussions of the impact analyses for affected resources in the Study Area are presented in Sections 3.3 through 3.9. Table 3-25 presents a summary of impacts to resources evaluated as a result of the Proposed Action and provides a comparison of the potential effects for each resource. In general, the Proposed Action would either result in no impacts, or minor short-term adverse impacts to the affected environment.

Under the No Action alternative, for all resources, Springs Utilities would continue to operate according to the Blue River Decree during substitution years. River flows and reservoir contents would continue to fluctuate as they have historically as a result of Springs Utilities substitution operations. The No Action alternative is expected to have no direct, indirect, or cumulative impacts on streamflows or reservoirs and would have no effect on available water supplies in Summit County. Consequently, there would be no effects to resources evaluated as a result of the No Action alternative.

Table 3-25
Summary of Impacts from the Proposed Action

Affected Resources	Proposed Action
Hydrology	
Blue River	Average monthly flows in the Blue River downstream of the Continental-Hoosier System and upstream of Dillon Reservoir would decrease by up to 4.6 cfs or 8.9% in August and increase by up to 4.2 cfs or 21.5% in November. Flows below Dillon Reservoir would decrease by up to 7.8 cfs or 3.5% in May. Flows below Green Mountain Reservoir, would decrease by up to 8.1 cfs or 0.4% in June and increase by up to 1.2 cfs or 0.5% in October.
Williams Fork River	Monthly average flows in the Williams Fork River would decrease by a maximum of 8.3 cfs or 11.5% in March and increase by a maximum of 3.4 cfs or 2.5% in June.
Muddy Creek	Average monthly flows would decrease by a maximum of 5.7 cfs or 4.3% in June and increase by a maximum of 6.1 cfs or 4.4% in October.
Colorado River	Average monthly flows in the Colorado River downstream of the confluence with the Williams Fork River would decrease up to 6.3 cfs or 3.7% in March and increase by up to 4.1 cfs or 0.2% in June. Average monthly flows in the Colorado River near Kremmling would decrease by up to 8.1 cfs or 0.1% in June and increase by up to 4.6 cfs or 0.7% in October. Average monthly flows in the Colorado River downstream of the Eagle River would decrease by up to 8.1 cfs or 0.1% in June and increase by up to 4.6 cfs or 0.5% in October.
Eagle River	Average monthly flows in Homestake Creek would increase by a maximum of 7.6 cfs or 18.1% in August. In substitution years, average monthly flows would increase by up to 0.6 cfs or 2.3%.
South Platte River	Average monthly flows in the Middle Fork South Platte River would decrease by 34.1 cfs or 61.6% and increase by 4.3 cfs or 14.6% in August.
Upper Blue Reservoir	End-of-month contents in Upper Blue Reservoir would increase by up to 250 AF in August, September and October.
Dillon Reservoir	End-of-month contents in Dillon Reservoir would increase by up to 113 AF or 0.1% in all months and decrease by up to 522 AF or 0.3% in August.
Green Mountain Reservoir	End-of-month contents in Green Mountain Reservoir would increase by up to 414 AF or 0.3% in August and decrease by up to 479 AF or 0.6% in May.
Williams Fork Reservoir	End-of-month contents in Williams Fork Reservoir would increase by up to 564 AF or 2.8% in March and decrease by up to 37 AF or 0.1% in January through May.
Wolford Mountain Reservoir	End-of-month contents in Wolford Mountain Reservoir would increase by a maximum of 280 AF or 1.3% in December, January and February and decrease by a maximum of 343 AF or 1.7% in January and February.
Homestake Reservoir	End-of-month contents in Homestake Reservoir would decrease in seven months during the 56-year study period by up to 469 AF or 18.9% in August.
Montgomery Reservoir	End-of-month contents in Montgomery Reservoir would decrease by a maximum of 271 AF or 24.1% from October through March and increase by a maximum of 2,096 AF or 355% from August through November.
Elevenmile Canyon Reservoir	There would likely be no change in Elevenmile Canyon Reservoir contents.

Table 3-25
Summary of Impacts from the Proposed Action

Affected Resources	Proposed Action
Hydroelectric Generation	
Hydroelectric generation at power plants	• Flow changes would result in none to negligible changes in hydroelectric power generation at the following facilities: Dillon Reservoir Power Plant, Roberts Tunnel Power Plant, and Green Mountain Reservoir Power Plant. • Flow changes in the Colorado River near Kremmling could result in minor adverse short-term impacts to hydropower generation at the Shoshone Power Plant. • Changes in the diversions through Homestake Tunnel could result in minor adverse short-term impacts to hydropower generation at the Mt. Elbert Power Plant. • Changes in the timing of substitution releases from the Williams Fork Reservoir may result in minor adverse short-term impacts to hydropower generation at the Williams Fork Reservoir Power Plant.
Water Quality	
River basins: Upper Colorado River and South Platte River	Flow changes would have negligible effect on water quality in the Upper Colorado River Basin or the South Platte River Basin.
Aquatic Resources and Special Status Species	
River basins: Blue River, Williams Fork River, Muddy Creek, Colorado River, Eagle River, and South Platte River	Flow changes would have negligible effect on aquatic resources.
Special status fish species in the Colorado River Basin	Flow changes in the Colorado River downstream of the confluence with the Eagle River would have no adverse effect on the endangered fish species along the Colorado River (no effect).
Wetlands and Riparian Resources and Special Status Species	
River basins: Blue River, Williams Fork River, Muddy Creek, Colorado River, Eagle River, and South Platte River	Flow changes would have negligable effect on wetlands and riparian resources.
Special status species associated with wetland and riparian areas	Flow changes would have no impact (no effect) on the adjacent riparian/wetland habitats that sustain special status species in the Study Area.
Recreation	
Recreational activities, including: fishing, rafting, kayaking, and boating	Because of the infrequent occurrence of substitution-related changes in stream flow, and the generally modest changes predicted to occur during those infrequent events, impacts to recreation are anticipated to be negligible.

Table 3-25
Summary of Impacts from the Proposed Action

Affected Resources	Proposed Action
Socioeconomics	
Economic benefits related to recreational opportunities and economic value of available water supply	Minimal flow changes would have no discernable effect on recreation opportunities, such as fishing. Consequently, the economic benefits to Summit County from river and lake-related recreation activity are not anticipated to be affected. The new water supply (250 AF of water from Upper Blue Reservoir each year to a West Slope Account for use by the River District's marketing program and its contractees) in Summit County would satisfy a portion of the needed supply to meet anticipated growth in demands. The benefits from this new supply would likely be greater than the contract price.

4.0 Consultation and Coordination

4.1 Scoping Process

Reclamation used several methods to inform the public and interested agencies of the proposed project and to solicit their input, including: scoping announcements, agency scoping interviews, and a public scoping meeting.

Public notices were published on February 20 and 27, 2008 in *The Summit Daily News*. A postcard, "Notice of Public Open House," was mailed to all individuals on Reclamation's project mailing list, totaling over 50 people.

Reclamation issued a press release on February 29, 2008. The press release was electronically mailed to approximately 130 people on Reclamation's project-specific mailing list. The press release announced the scoping meeting and provided an overview of the project, the dates of the scoping comment period, and a contact for more information.

A scoping newsletter was provided at the Public Scoping Meeting (described below) and to agencies as part of the agency scoping interview process. The newsletter described the project purpose and need, proposed alternatives, and the NEPA process.

Agency scoping was conducted through individual stakeholder telephone interviews. These interviews were conducted in March and April 2008 and included representatives from four federal agencies, three state agencies, five municipal and regional agencies, and one county agency. A summary of the agency scoping process is described in the *Scoping Summary Report* (URS 2008).

A public scoping meeting was held by Reclamation on March 6, 2008 at the Silverthorne Library in Silverthorne, Colorado. A total of eight attendees signed-in. The scoping newsletter, described above, was provided at the meeting. The meeting was an open house format with eight display boards.

The public comment period extended 30 days between March 6 and April 4, 2008. Two written comments were submitted by the CDPHE and the Municipal Subdistrict regarding the project and may be found in the *Scoping Summary Report* (URS 2008).

As a result of this scoping process Reclamation received written or oral feedback on the project. The comments are summarized below, and have been considered in the development of the EA.

- Effect of implementing the 2003 MOAs on stream flow variations including:
    - Fluctuations related to timing and amount of flow
    - Effect on aquatic biological resources in the Colorado River and Blue River
    - Effect on recreational uses, in particular the Blue River (kayaking and fishing)
- Effects on Colorado River stream flows below the Windy Gap Project diversion point from utilizing water from the Williams Fork Reservoir as a substitute supply.
- Effects of water transfers on water temperature and subsequently fish.
- What is Reclamation's power right and how is it administered?

- How does the Historic Users Pool (HUP) operate and would the HUP be affected by stream flow variations as a result of implementing the 2003 MOAs?
- Would the Green Mountain Reservoir Pumpback project (also known as the Blue River Pumpback) considered by Denver Water be affected by implementation of the 2003 MOAs?
- The effect of Springs Utilities' re-use and conservation programs on the water substitution agreement.
  - Is Springs Utilities maximizing their efforts to reuse transbasin water to extinction under their existing conservation program?
- The effect of BLM's Wild and Scenic River designations on stream reaches within the study area of this project.
- Will additional water be diverted from the West Slope to the East Slope as part of the project?

4.2 Comments on the Draft EA

A Draft EA was prepared and made available for comment during a 2-week comment period between September 30 through October 14, 2008. An electronic copy of the Draft EA, as well as other project-related information, is available at Reclamation's website at: http://www.usbr.gov/gp/nepa/quarterly.cfm. A hardcopy of the Draft EA was available for public review at the following repositories:

Summit County Library North Branch
651 Center Circle
Silverthorne, CO 80498

Summit County Library South Branch
504 Airport Road
Breckenridge, CO 80424

A postcard notification of the availability of the EA was distributed to the project mailing list, attendees at the scoping meeting, and agencies.

Comments on the Draft EA were received by: Colorado Department of Public Health and the Environment, Water Quality Control Division; Bureau of Land Management; Trout Unlimited; Petros and White, LLC on behalf of the Board of Commissioners, Summit County, Colorado, and; White and Jankowski, L.L.P. on behalf of the Board of County Commissioners, Grand County, Colorado. A summary of the comments contained in these letters as well as responses can be found in Appendix D.

4.3 Preparers

URS Corporation (URS), a third-party contractor, prepared the Green Mountain Reservoir Substitution Agreement and Power Interference Agreement EA working under the direction of and in cooperation with the lead agency for the project, Reclamation. The following subcontractors assisted Reclamation and URS with the preparation of the EA: Ecological Resource Consultants, Inc. (ERC) assisted conducted hydrologic analysis and modeling, surface water resources, aquatic resources, and special status species associated with aquatic resources; BBC Research & Consulting conducted socioeconomic analysis, and; Seamless Composition, LLC assisted with the public involvement process for the project. Table 4-1 provides the names of the individuals who were principally involved with preparing the EA.

Table 4-1
List of Preparers

Name	Title	Contribution
Bureau of Reclamation		
Carlie Ronca	Project Manager	Project management for environmental compliance and document production
Kara Lamb	Public Involvement Specialist	Public and agency involvement and notification
Ron Thomasson	Hydraulic Engineer	Water scheduling consideration, hydrologic analysis, and document review
URS Corporation		
Paula Daukas	Project Manager (Nov 2007 – May 2008)	Project management for environmental compliance and document production
Andrea Parker	Project Manager (May 2008 - present) Assistant Project Manager (Nov 2007 – May 2008)	Project management, environmental compliance, and document production
Rachel Badger	Environmental Planner	Technical report writing and document production
Angie Fowler	Water Resources Engineer	Water quality
Sarah Jensen	Environmental Planner	Recreation
David Jones	Senior Environmental Planner	Recreation
John Sikora, P.E.	Senior Water Resources Engineer	Water resources, hydroelectric generation
Ecological Resource Consultants, Inc.		
David Blauch	Ecologist	Floodplains, aquatic resources, wetland and riparian resources
Heather Thompson, P.E.	Water Resource Engineer	Surface water, hydrology and modeling
Troy Thompson, P.E.	Water Resource Engineer	Floodplains, aquatic resources, wetland and riparian resources
BBC Research & Consulting		
Doug Jeavons	Economist	Social and economic analysis
Seamless Composition, LLC		
Lisa Pine	Public Involvement Specialist	Public and agency involvement and notification

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_____. Mount Powell, Colorado.
_____. King Creek, Colorado.
_____. Kremmling, Colorado.
_____. Hinman Reservoir, Colorado.
_____. Dotsero, Colorado.
_____. Gypsum, Colorado.
_____. Eagle, Colorado.
_____. Wolcott, Colorado.
_____. Edwards, Colorado.
_____. Minturn, Colorado.
_____. Redcliff, Colorado.
_____. Pando, Colorado.
_____. Homestake Reservoir, Colorado.
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Glossary

Acre-foot – A uniform volume of water that will cover one acre (43,560 square feet) to a depth of one foot (often averaged to 326,000 gallons).

Appropriation – The diversion of water and the placing of it to a beneficial use, also may refer to the amount of water a user has the legal right to withdraw from a water source.

Call – Demand for administration of water rights.

Consumptive use – Water use that permanently withdraws water from its source; water that is no longer available because it has evaporated, been transpired by plants, incorporated into products or crops, consumed by people or livestock, or otherwise removed from the immediate water environment.

Denver Water's Platte and Colorado Simulation Model (PACSM) – PACSM is a water allocation and accounting model that was developed by Denver Water to model the operations of raw water supply systems belonging to Denver Water and others within portions of the Colorado and Platte River basins. The water supply system is represented as a system of linked nodes. The diversion structures, reservoirs, water rights, operations, instream flow requirements, demands and stream gages included in the PACSM model are very similar to the CDSS Model for the Colorado River Basin.

Diversion – An alteration in the natural course of a stream for the purpose of water supply, usually causing some of the water to leave the natural channel. In Colorado Springs this includes taking water through a ditch, tunnel, pipe or other conduit.

Drought – A water supply shortage that is caused by natural conditions such as an extended period of below-normal precipitation.

Historic User's Pool (HUP) – The HUP in Green Mountain Reservoir is 66,000 acre-feet. When the administration of water under the priority system would result in curtailment in whole or in part of a water right for irrigation or domestic uses within western Colorado, which was perfected by use on or before October 15, 1977, releases are made from the HUP pool to the extent necessary to permit diversions to the full amount of said decrees.

Hydroelectric Power – Electric current produced from water power.

Hydroelectric Power Plant – A building in which turbines are operated, to drive generators, by the energy of natural or artificial waterfalls.

Priority (in & out) – The right to divert or store water, based on the Doctrine of Prior Appropriation. In Colorado this is regulated by the Division of Water Resources, and is based on the date of the water right, i.e., "First in time, first in right."

Pumped-Storage Hydroelectric Plant – A plant that usually generates electric energy during peak-load periods by using water previously pumped into an elevated storage reservoir during off-peak periods when excess generating capacity is available to do so. When additional generating capacity is needed, the water can be released from the reservoir through a conduit to turbine generators located in a power plant at a lower level.

Reusable Water – Water with the legal characteristic of being able to be used, reused, and subsequently used to extinction. Sources typically are transbasin water, nontributary (e.g. Denver Basin) groundwater, and agricultural consumptive use water.

Riparian Areas – Those plant communities adjacent to and affected by surface or groundwater of perennial or ephemeral water bodies such as rivers, streams, lakes, ponds, playas, or drainage ways. These areas have distinctly different vegetation than adjacent areas or have species similar to surrounding areas that exhibit a more vigorous or robust growth form. (CDOW 2006a).

State of Colorado's Colorado Decision Support System Model (CDSS Model) – The CDSS Model is a surface water allocation model of the Upper Colorado River Basin. The model covers the entire Colorado River drainage, except the Gunnison River, from the headwaters to the Colorado-Utah state line. The water supply system is represented as a system of nodes, which correspond with features such as diversion structures, reservoirs, instream flow requirements, demands, or stream gages.

Transmountain diversion – A water project that diverts water from one river basin to another. For Colorado Springs, this typically is a project to divert water from the Colorado River Basin to the Arkansas River Basin.

Transmountain water (Transbasin water) – Water produced by a transmountain diversion (e.g. water diverted from the western slope of the continental divide for use on the eastern slope). See also Reusable Water.

Water right – A property right created by the diversion of water and the placing of it to a beneficial use (appropriation). Water rights become officially recognized and administrable when documented in a decree of the State water court (adjudicated).

Wetlands – As defined by the USACE and EPA, wetlands are: those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. (EPA 2006; USACE 2007)

MODEL SELECTION AND PARAMETERS

Ecological Resource Consultants, Inc.

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Technical Memorandum

Date: August 20, 2008

To: Andrea Parker, URS Corporation, Carlie Ronca, U.S. Bureau of Reclamation

From: Heather Thompson, Ecological Resource Consultants

Project: Green Mountain Reservoir Substitution and Power Interference Agreements EA

Re: Model Selection and Parameters

The following memorandum describes the model selected for the Environmental Assessment (EA) and the model parameters associated with the No Action and Proposed Action alternatives.

1.0 MODEL SELECTION

Alternatives that will be evaluated for the EA will have hydrologic effects due to differences in the manner in which Springs Utilities repays its substitution obligation to Green Mountain Reservoir. These impacts could increase or reduce flows or change reservoir operations and water levels resulting in impacts to water rights, instream flows, and diversions. A tool is needed to evaluate these and other hydrologic effects and assess mitigation measures, if any. Two models were reviewed to assess their suitability for accomplishing the modeling objectives of this EA. These models include the State's Upper Colorado Water Resource Planning Model from the Colorado Decision Support System (CDSS Model) and Denver Water's Platte and Colorado Simulation Model (PACSM). A brief overview of each model is provided below.

CDSS Model Overview

The State of Colorado has invested significantly in the development of the CDSS Model to provide an integrated system of databases and model of the Upper Colorado River that is available to the public. The CDSS Model is widely known and has been used for analysis of historical and future water management policies in the Upper Colorado River basin. It covers the entire Colorado River drainage, except the Gunnison River, from the headwaters to the Colorado-Utah state line. The water supply system is represented as a system of links and nodes, which correspond with features such as diversion structures, reservoirs, instream flow requirements, demands, or stream gages. In general, the model allocates water to a node based on available flow, water rights, diversion or storage capacity and water demand. The physical system represented in the model is constrained by Colorado's water rights laws and numerous contractual and operating agreements. The model is extremely detailed, containing more than 400 diversions nodes, 30 reservoirs, and 80 USGS gages. The model includes operating rules for all major reservoirs, including complex and unique operations. Physical features, times series inputs, and operating criteria can be directly edited in the CDSS Model input files.

PACSM Overview

PACSM is a water allocation and accounting model that was developed by Denver Water to model the operations of raw water supply systems belonging to Denver Water and others within portions of the Colorado and Platte River basins. Similar to the CDSS Model, the water supply system is represented as a system of linked nodes. The diversion structures, reservoirs, water rights, operations, instream flow requirements, demands and stream gages included in the PACSM model are very similar to the CDSS Model for the Colorado River Basin. In addition, both PACSM and the CDSS Model use direction solution algorithms to assure that water is allocated according to physical, hydrological, and institutional parameters.
The primary difference between PACSM and the CDSS Model is the model study areas. The area modeled in PACSM extends from the headwaters of the Colorado River downstream to the 15-Mile Reach (excluding the Gunnison River) and the headwaters of the South Platte River downstream to the Kersey gage, whereas the CDSS Model does not include the South Platte River basin.

Criteria and Decision

The three basic criteria considered in the selection of the model include:

1. Required functionality: The model must be capable of representing the hydrology and operations to which the Colorado River system is subject.
2. Ease of Modification: The user must be able to customize and modify the model to reflect operations specific to this EA.
3. Accessibility: The model must be readily accessible for use on this EA in a timely manner.

Based on a review of these models it was determined that both models have similar functionality, although PACSM has the slight benefit of including the South Platte River basin. The majority of the EA study area is located in the Upper Colorado River Basin with a small portion in the upper South Platte River Basin. PACSM offers a slight benefit over the CDSS Model because it could be used to evaluate hydrologic effects in the South Platte River basin. Both models can be modified to incorporate the changes needed to model the No Action and Proposed Action alternatives. Regarding accessibility, CDSS is owned by and available to the public whereas because Denver Water owns and operates the PACSM model, its availability for use in the EA is less certain. Therefore, after reviewing the two potential models, ERC selected the CDSS Model for assessing hydrologic effects in the Colorado River Basin.

While the majority of the study area for the EA is located in the upper Colorado River basin, a small portion is located in the upper South Platte River basin, including Springs Utilities' Montgomery Reservoir, Denver Water's Elevenmile Canyon Reservoir and the Middle Fork South Platte River from the headwaters to Elevenmile Canyon Reservoir. The CDSS model does not include the South Platte River basin, therefore, potential hydrologic effects in that portion of the study area will be based on an assessment of USGS gage data, historical reservoir end-of-month contents for those reservoirs, and data provided by Denver Water from PACSM, which includes the South Platte River basin.

2.0 MODEL PARAMETERS

2.1 Study Period and Time Step

The recommended model study period extends from 1950 through 2005. A study period should be long enough to include a variety of hydrologic conditions, including average, wet and dry years. At the same time, it should not be so long that many streamflows or reservoir contents must be synthesized to fill in missing data. The selected study period contains a balance of dry years (1954, 1966, 1977, 1981, and 2002), wet years (1957, 1983, 1984, 1995, and 1996), and average years. Of particular concern for this EA was the inclusion of several dry years, since hydrologic effects associated with the Proposed Action would occur primarily in substitution years, which typically correspond with dry years. Starting the model a few years prior to the 1950's drought period minimizes the influence of initial conditions, including reservoir contents, on model results for those years. The study period ends in 2005 because the CDSS Model data sets currently available extends through 2005.

The CDSS Model is available in both a daily and monthly time step format. Based on the magnitude and timing of hydrologic effects anticipated under the Proposed Action alternative a monthly time step was determined to be adequate for the purposes of this EA.

2.2 Model Scenarios

The CDSS Model Baseline Data Set was selected as the basis for representing the No Action and Proposed Action alternatives. The Baseline Data Set is used to simulate current conditions and operations imposed on historical hydrology to understand and evaluate the hydrologic effects of the No Action and Proposed Action alternatives.

A detailed description of the entire CDSS Model and the associated datasets is provided in the following reports: Upper Colorado River Basin Information (CWCB 2007a) and Upper Colorado River Basin Water Resources Planning Model User's

Manual (CWCB 2007b). The specific facilities and operations that would be affected under the Proposed Action alternative include Springs Utilities' Continental-Hoosier System and Homestake Project, and Blue River Decree operations, including substitution replacement at Upper Blue Reservoir, Dillon Reservoir, Williams Fork Reservoir and Wolford Mountain Reservoir. The manner in which these facilities and operations are reflected in the CDSS Model is summarized below.

Continental-Hoosier System Operations

The Continental-Hoosier System diverts water from several tributaries at the headwaters of the Blue River and delivers it through the Continental-Hoosier Tunnel (Hoosier Tunnel) into Montgomery Reservoir in the headwaters of the Middle Fork of the South Platte River. The system has been in operation since 1953.

The Continental-Hoosier System has several direct flow water rights to divert water from East Hoosier Creek, Hoosier Creek, Bemrose Creek, Crystal Creek, Spruce Creek, McCullough Gulch, and Monte Cristo Creek through Hoosier Tunnel. The capacity of the Hoosier Tunnel is 500 cfs. In addition, water can be stored in Upper Blue Reservoir under a storage right. The capacity of Upper Blue Reservoir is approximately 2,100 AF. The water rights associated with the Continental-Hoosier System that are included in the CDSS Model are summarized in **Table 1**.

Table 1. Summary of Continental Hoosier System Absolute Water Rights

Name	Decreed Amount	Appropriation Date
1929 Water Rights		
East Hoosier Creek	40 cfs	Aug 5, 1929
Hoosier Creek	20 cfs	Aug 5, 1929
Bemrose Creek (Silver Ck)	17 cfs	Aug 5, 1929
Subtotal	**77 cfs**	
1948 Water Rights		
Upper Blue Reservoir	2,140 AF	May 13, 1948
East Hoosier Creek	50 cfs	May 13, 1948
Hoosier Creek	40 cfs	May 13, 1948
Bemrose Creek (Silver Ck)	20 cfs	May 13, 1948
Crystal Creek	40 cfs	May 13, 1948
Spruce Creek	60 cfs	May 13, 1948
McCullough Gulch	60 cfs	May 13, 1948
Monte Cristo Creek	200 cfs	May 13, 1948
Interceptor Ditch (to Tunnel)	50 cfs	May 13, 1948
Tunnel Seepage	20 cfs	May 13, 1948
Subtotal[1]	**540 cfs**	

[1] The maximum diversion under the 1948 decrees is limited to 400 cfs.

The 1929 water rights are senior to Green Mountain Reservoir's water rights and Denver Water's rights at Dillon Reservoir and Roberts Tunnel. Therefore, diversions under the 1929 water rights are generally controlled by an administrative call from the Shoshone Power plant water right and the physical water supply at the headgates. The 1948 water rights are junior to the Green Mountain Reservoir senior storage right, therefore, diversions under these water rights are subject to the Blue River Decree, which is explained in the following section on Blue River Decree operations.

The 1929 water rights are decreed for diversion from three relatively small tributaries to the Blue River near the top of the basin. The tributary drainage area available to these rights is about 2 square miles, which is about 14 percent of the total drainage basin tributary to the entire collection system (approximately 14.3 square miles (CWCB, 2007b). Therefore, in the CDSS model, 14 percent of the natural flow is placed above one node that represents all the 1929 rights and the remaining 86 percent is placed above one node that represents all the 1948 water rights and a node for Upper Blue Reservoir.

Historical deliveries through the Hoosier Tunnel are shown in **Table 2**. The average annual flow through the tunnel was approximately 8,540 acre-feet (AF). Deliveries occur from April through October, with the majority in May through September. Diversions from the Blue River and its tributaries through the tunnel and into storage are limited by the water right to the period of May through September. However, flow through the Hoosier Tunnel also includes releases of previously stored water from Upper Blue Reservoir. In accordance with the Blue River Decree, the total diversions at the Continental-Hoosier System "... shall not exceed in any calendar year, ten percent of the natural flow of the Blue River near Dillon below its confluence with the Snake River and Ten Mile Creek." This requirement is generally not a limiting factor with respect to Continental-Hoosier System diversions based on an evaluation of streamflow data and conversations with Springs Utilities staff. Therefore, this requirement is not incorporated in the CDSS Model.

Historical end-of-month (EOM) contents for Upper Blue Reservoir are shown in **Table 3**. Water is stored in Upper Blue Reservoir during runoff and the reservoir generally fills by the end of June. As shown in **Table 3**, Upper Blue Reservoir filled in all but seven years (1977, 1980, 1981, 1985, 1989, 2002, and 2004). Water is typically released from August through October to meet Springs Utilities' substitution obligation or for delivery through Hoosier Tunnel as needed to supplement direct diversions. The reservoir was emptied by the end of October in all years. The operating rules in the CDSS Model for Upper Blue Reservoir reflect these historical operations. End-of-month reservoir targets equal to historical contents were included for the seven years the reservoir did not fill historically since the EOM contents are indicative of the physical supply in those years. The EOM reservoir targets prevent the reservoir from storing above the target but do not force the reservoir to release to those targets.

Since the Continental Hoosier System is a core component of Springs Utilities' water supply system and diversions are typically limited by the physical water supply, the demand placed at the Hoosier Tunnel was set equal to historical tunnel diversions from 1953 through 2005. From 1950 through 1952 the demand at Hoosier Tunnel was estimated as follows. Each of those years was classified as average, wet or dry based on total natural flow from April through September at the USGS gage Colorado River near Kremmling (#09058000). Natural flows are defined as gaged flows plus adjustments for reservoir releases and filling, diversions, gaged inflows, transbasin imports, and irrigation or other returns to the river. It reflects the hydrology that existed prior to the development of water supply systems, or the hydrology that would exist if the effects of water diversions, reservoirs and return flows were removed. The Kremmling gage was used as an indicator gage of hydrologic conditions because it is centrally located in the study area and could be used for multiple locations. Average, wet and dry monthly diversions were developed based on the historical diversion data shown in **Table 2**. Wet diversions were assumed to be the average of the five wettest years, dry diversions the average of the five driest years, and average diversions the average of the remaining years. For example, 1952 which was classified as a wet year, therefore, it was filled with the monthly averages of the five wettest years. Hoosier Tunnel demands may be underestimated in September and October from 1953 through 1966 in average and wet years prior to Upper Blue Reservoir coming on-line in 1967. Since the years in which Green Mountain Reservoir does not fill are typically dry years, this would not affect Springs Utilities' substitution obligation or the manner in which their substitution releases are made. In addition, Upper Blue Reservoir is emptied every year, therefore, potential differences in reservoir EOM contents would not be carried forward from year to year. Because Hoosier Tunnel diversions in average and wet years are not anticipated to cause hydrologic effects under the Proposed Action alternative, September and October diversions attributable to Upper Blue Reservoir releases were not estimated for the period from 1953 through 1966. The modeled demand at the Hoosier Tunnel is shown in **Table 4.** In the CDSS Model, direct diversions and releases from Upper Blue Reservoir are made to meet the total demand at Hoosier Tunnel.

Homestake Project Operations

The Homestake Project is a transmountain diversion project that diverts water from the Eagle River basin for municipal use by Springs Utilities and Aurora. The Homestake Project has facilities located in both the Eagle and Arkansas River basins, however, this section describes the facilities in the Eagle River Basin since they are the focus of the EA. Facilities in the Eagle River basin include the Missouri Tunnel, Homestake Reservoir, and the Homestake Tunnel.

The Homestake Project has several direct flow water rights to divert water from the East Fork and Middle Fork of Homestake Creek, French Creek, Fancy Creek, Missouri Creek and Sopris Creek. Water diverted from French Creek, Fancy Creek, Missouri Creek and Sopris Creek is conveyed through the Missouri Tunnel to Homestake Reservoir. The capacity of Homestake Reservoir is approximately 43,000 AF. All flows diverted into Homestake Reservoir, which is located on the Middle Fork of Homestake Creek, can be stored under a storage right. From Homestake Reservoir, water is delivered via Homestake Tunnel under the Continental Divide to Turquoise Lake, which is located in the Arkansas River Basin. The capacity of Homestake Tunnel is 300 cfs. The water rights associated with the Homestake Project that are included in the CDSS Model are summarized in **Table 5**.

Table 5. Summary of Homestake Project (Eagle River Basin) Absolute Water Rights

Name	Decreed Amount	Appropriation Date
East Fork Homestake Creek	70.8	Sep 22, 1952
French Creek	60.1	Sep 22, 1952
Fancy Creek	38.6	Sep 22, 1952
Missouri Creek	39.8	Sep 22, 1952
Sopris Creek	41.3	Sep 22, 1952
Subtotal	**250.6**	**Sep 22, 1952**
Missouri Tunnel	179.8	Sep 22, 1952
Homestake Project Tunnel[1]	300.0	Sep 22, 1952
Homestake Reservoir	43504.7 AF	Sep 22, 1952

[1] Absolute decree amount of 300 cfs for Homestake Project Tunnel may include storable inflows from Middle Fork Homestake Creek in addition to the 250.6 cfs from the collection system.

Historical diversions through the Homestake Tunnel are shown in **Table 6**. The average annual diversion was approximately 23,970 AF. Based on more recent operations (since approximately 1992), deliveries through Homestake Tunnel typically occur from March through August with occasional releases in September, October and November. Deliveries through the tunnel are greatest in March and April as water is released from Homestake Reservoir to make space available to store water during runoff.

Historical EOM contents for Homestake Reservoir are shown in **Table 7**. Water is stored in Homestake Reservoir during runoff and the reservoir generally fills by the end of June in average and wet years. Water is released to Homestake Tunnel primarily in March and April and in summer months to a lesser degree to supplement direct diversions. The operating rules in the CDSS Model for Homestake Reservoir reflect these historical operations.

Since the Homestake Project is a core component of Springs Utilities' water supply system, the demand placed at Homestake Tunnel was assumed to equal historical diversions from 1992 through 2005. Prior to 1992, operations were clearly different with diversions through Homestake Tunnel occurring throughout the year. From 1950 through 1991 the demand at Homestake Tunnel was estimated as follows. Each of those years was classified as average, wet or dry based on total natural flow from April through September at the USGS gage Colorado River near

Kremmling (#09058000). Average, wet and dry monthly diversions were developed based on historical diversion data from 1992 through 2007. Wet diversions were assumed to be the average of the five wettest years, dry diversions the average of the five driest years, and average diversions the average of the remaining years. Therefore, 1952 which was classified as a wet year was filled with the monthly averages of the five wettest years. The modeled demand at the Homestake Tunnel is shown in **Table 8.** In the CDSS Model, direct diversions and releases from Homestake Reservoir are made to meet the total demand at Homestake Tunnel.

Blue River Decree Operations

In the Blue River Decree (Consolidated Case Nos. 2782, 5016, and 5017), the relative priorities of the storage and hydroelectric rights for Green Mountain Reservoir and the upstream rights at Dillon Reservoir and the Continental-Hoosier System were specified as follows:

Continental-Hoosier System	77 cfs	August 5, 1929
Green Mountain Reservoir	154,645 AF	August 1, 1935
Green Mountain Hydro	1726 cfs	August 1, 1935
Green Mountain Senior Refill	6,315 AF	August 1, 1935
Roberts Tunnel	788 cfs	June 24, 1946
Dillon Reservoir	252,578 AF	June 24, 1946
Continental-Hoosier System[1]	400 cfs	May 13, 1948
Upper Blue Reservoir	2,140 AF	May 13, 1848

[1] The maximum diversion under the 1948 decrees is limited to 400 cfs.
Source: (CWCB, 2007b).

Under the Blue River Decree, Springs Utilities and Denver Water can divert and store water at their facilities which are upstream of Green Mountain Reservoir, on an out-of-priority basis against Green Mountain Reservoir's senior first fill storage right. The Blue River Decree also provides for replacement of power to mitigate impacts to Reclamation's operations resulting from Springs Utilities' exercising their 1948 water rights. The representation of Green Mountain Reservoir power and fill operations in the CDSS Model per the Blue River Decree is discussed below.

<u>Green Mountain Reservoir Power Operations</u>

Hydropower diversions at Green Mountain Reservoir are made under the direct flow hydropower right. The CDSS model also reflects Elliot Creek Feeder Canal diversions to demands at Green Mountain Reservoir for power generation. Baseline power demands are based on average use from 1975 through 1991. There would be no difference in hydropower diversions at Green Mountain Reservoir between the No Action and Proposed Action alternatives. Springs Utilities has historically provided replacement power year-to-year by mutual agreement with the Western Area Power Authority (WAPA) at a time and location requested by WAPA. The only difference in power interference substitution would be the formalization of a long-term Power Interference Agreement with Reclamation and WAPA.

Green Mountain Reservoir Fill Operations

The CDSS Model is configured to represent the Interim Policy, which was adopted by the State Engineer and is the current administration of the Blue River Decree. The Blue River Decree has been administered under the Interim Policy since 2003. The State Engineer does not intend that the Interim Policy create any precedent binding on the U.S. Bureau of Reclamation or any other water user in the future. The U.S. Bureau of Reclamation does not endorse the administrative and accounting principles included in the Interim Policy.

The Interim Policy defines the administrative and accounting principles concerning Green Mountain Reservoir and specifically outlines the paper fill of Green Mountain Reservoir under its senior storage right. The paper fill is met when 154,645 acre-feet is equal to the sum of:

- Initial storage in Green Mountain Reservoir at the beginning of the administrative year, which is April 1st for modeling purposes,
- Stored water in Green Mountain Reservoir after the beginning of the administrative year,
- Bypassed water in excess of 60 cfs or the demand of a downstream call senior to August 1, 1935,
- Out-of-priority depletions from Historic User's Pool and Green Mountain Reservoir contract beneficiaries upstream of Green Mountain Reservoir, (this in not explicitly modeled in the CDSS Model because it is minor), and
- Out-of-priority diversions and storage made by Denver Water and Springs Utilities.

After the paper fill has been met Green Mountain's 1935 storage right is satisfied and can no longer place a call. Green Mountain Reservoir can continue to store under an October 5, 1955 priority date up to the amount of water stored and diverted out-of-priority to its 1935 right by Denver Water and Springs Utilities. When the amount stored under the October 5, 1955 priority date equals the out-of-priority diversions/storage by both entities, there is no substitution required.

The CDSS Model tracks Springs Utilities' direct diversions through the Hoosier Tunnel and water stored in Upper Blue Reservoir, which is out-of-priority to Green Mountain's senior storage right. As water is stored in Green Mountain Reservoir under the October 5, 1955 priority date, the out-of-priority obligation owed by Springs Utilities and Denver Water is reduced proportional to their out-of-priority diversions/storage. On August 1, the remaining out-of-priority obligation owed by Springs Utilities equals their substitution bill. Denver Water's substitution bill is calculated in a similar manner. The date of August 1st is assumed for modeling purposes, and represents a proxy for the date that the senior Shoshone water right calls out Green Mountain Reservoir, thus ending its fill season and allowing for calculation of any fill deficit.

The only difference between the No Action and Proposed Action alternatives is the manner in which Springs Utilities substitution obligation is paid back. The model assumptions related to substitution payback that are specific to each alternative are summarized in Chapter 2 of the Environmental Assessment.

3.0 REFERENCES

Colorado Water Conservation Board. 2007a. Upper Colorado River Basin Information

Colorado Water Conservation Board, 2007b. Upper Colorado River Basin Water Resources Planning Model User's Manuel

Table 2
Historical Continental-Hoosier Tunnel Diversions (AF)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1953	0	0	0	0	294	2,315	1,496	646	85	0	0	0	4,835
1954	0	0	0	0	1,060	1,404	1,048	42	0	0	0	0	3,554
1955	0	0	0	0	688	1,777	2,110	1,870	1,113	0	0	0	7,559
1956	0	0	0	0	2,205	4,760	1,843	492	0	0	0	0	9,300
1957	0	0	0	0	374	4,657	2,080	0	0	0	0	0	7,111
1958	0	0	0	0	3,042	2,126	1,249	0	0	0	0	0	6,417
1959	0	0	0	0	489	5,040	2,471	496	0	0	0	0	8,496
1960	0	0	0	0	901	4,608	2,386	315	0	0	0	0	8,210
1961	0	0	0	0	1,180	3,836	428	0	751	432	41	0	6,669
1962	0	0	0	0	1,524	4,998	3,087	1,393	87	0	0	0	11,088
1963	0	0	0	49	2,293	3,257	98	2,983	1,257	311	0	0	10,246
1964	0	0	0	0	1,839	3,452	2,542	1,429	0	0	0	0	9,263
1965	0	0	0	0	651	4,891	615	1,053	842	325	38	0	8,415
1966	0	0	0	0	1,311	2,404	2,732	1,009	0	0	0	0	7,456
1967	0	0	0	100	1,074	3,265	3,457	1,224	968	0	0	0	10,087
1968	0	0	0	0	644	5,099	2,473	898	1,148	1,108	0	0	11,369
1969	0	0	0	73	2,590	735	1,396	609	1,470	688	0	0	7,562
1970	0	0	0	0	1,542	743	131	1,584	1,433	1,880	0	0	7,313
1971	0	0	0	0	780	4,906	1,856	1,936	1,729	1,495	0	0	12,703
1972	0	0	0	0	1,422	3,448	1,626	1,609	973	0	0	0	9,079
1973	0	0	0	0	370	1,581	849	1,083	1,846	472	0	0	5,201
1974	0	0	0	0	1,202	4,033	2,074	1,222	1,855	0	0	0	10,386
1975	0	0	0	0	378	3,133	2,092	1,296	1,584	491	0	0	8,974
1976	0	0	0	0	1,013	4,566	1,993	1,598	1,282	0	0	0	10,452
1977	0	0	0	27	158	1,915	410	0	18	0	0	0	2,527
1978	0	0	0	49	684	4,762	1,088	1,241	1,822	0	0	0	9,646
1979	0	0	0	0	1,064	3,863	1,653	1,510	1,782	202	0	0	10,074
1980	0	0	0	0	188	1,678	1,595	2,068	0	0	0	0	5,528
1981	0	0	0	38	757	3,135	734	785	258	0	0	0	5,707
1982	0	0	0	0	803	4,236	3,370	1,263	1,230	892	0	0	11,593
1983	0	0	0	0	274	3,238	414	874	538	1,874	0	0	7,212
1984	0	0	0	0	968	1,763	741	739	1,373	1,065	0	0	6,850
1985	0	0	0	0	865	2,279	1,141	970	1,227	61	0	0	6,544
1986	0	0	0	0	989	5,625	2,541	1,809	1,818	1,059	0	0	13,842
1987	0	0	0	167	2,404	2,098	720	1,450	979	0	0	0	7,819
1988	0	0	0	14	1,212	5,470	1,691	781	1,205	0	0	0	10,353
1989	0	0	0	80	1,807	3,516	3,973	1,320	0	0	130	0	10,825
1990	0	0	0	7	996	5,148	2,851	2,102	26	0	0	0	11,130
1991	0	0	0	0	1,299	4,559	3,353	1,768	1,158	12	0	0	12,150
1992	0	0	0	86	2,318	3,827	3,425	1,958	158	0	0	0	11,571
1993	0	0	0	0	1,386	4,814	2,599	1,965	422	1,758	0	0	12,944
1994	0	0	0	103	1,652	4,272	148	15	1,241	831	0	0	8,262
1995	0	0	0	0	0	2,643	26	704	329	1,265	864	0	5,831
1996	0	0	0	0	482	5,823	1,422	1,004	1,382	333	0	0	10,426
1997	0	0	0	0	631	4,082	791	412	1,016	1,311	0	0	8,242
1998	0	0	0	0	876	1,489	3,570	775	1,898	295	0	0	8,703
1999	0	0	0	3	950	3,610	1,727	1,745	1,687	1,077	0	0	10,800
2000	0	0	0	0	2,232	3,893	1,686	1,451	0	0	0	0	9,062
2001	0	0	0	5	2,122	1,403	207	147	1,020	1,039	0	0	5,944
2002	0	0	0	49	756	1,549	0	0	0	0	0	0	2,354
2003	0	0	0	23	2,088	3,126	812	79	978	935	108	0	8,129
2004	0	0	0	119	1,334	2,525	1,180	48	19	0	0	0	5,224
2005	0	0	0	107	1,861	3,669	2,641	1,148	719	1,208	0	0	11,152
2006	0	0	0	235	2,213	4,698	2,781	1,447	852	4	95	0	12,125
2007	0	0	0	187	2,048	1,227	1,944	395	131	0	0	0	5,931
Average	**0**	**0**	**0**	**28**	**1,193**	**3,392**	**1,688**	**1,032**	**791**	**408**	**23**	**0**	**8,564**
Min	**0**	**0**	**0**	**0**	**0**	**735**	**0**	**0**	**0**	**0**	**0**	**0**	**2,354**
Max	**0**	**0**	**0**	**235**	**3,042**	**5,823**	**3,973**	**2,983**	**1,898**	**1,880**	**864**	**0**	**13,842**

Source: Data provided by Colorado Springs Utilities.

Table 3
Upper Blue Reservoir Historical End-of-Month Contents (AF)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	172	1,334	2,219	1,018	0	0	0	0
1968	0	0	0	0	0	1,783	2,282	2,282	1,268	0	0	0
1969	0	0	0	77	776	1,857	2,282	2,282	788	0	0	0
1970	0	0	0	0	414	2,062	2,119	2,119	1,818	0	0	0
1971	0	0	0	0	0	1,496	2,119	2,119	1,414	0	0	0
1972	0	0	0	0	0	1,621	2,119	1,001	0	0	0	0
1973	0	0	0	0	0	1,374	2,119	2,008	575	0	0	0
1974	0	0	0	0	0	1,931	2,119	1,850	0	0	0	0
1975	0	0	0	0	0	788	2,119	2,119	572	0	0	0
1976	0	0	0	0	0	910	2,119	1,498	0	0	0	0
1977	0	0	0	0	246	1,042	614	614	0	0	0	0
1978	0	0	0	0	162	1,840	2,119	1,796	0	0	0	0
1979	0	0	0	0	332	1,664	2,119	1,978	295	0	0	0
1980	0	0	0	0	0	1,751	1,621	0	0	0	0	0
1981	0	0	0	28	176	573	870	219	0	0	0	0
1982	0	0	0	0	0	1,253	2,119	2,119	946	0	0	0
1983	0	0	0	0	0	1,111	2,119	2,119	2,073	0	0	0
1984	0	0	0	0	0	1,376	2,119	2,119	1,281	0	0	0
1985	0	0	0	0	0	1,432	1,377	1,078	111	0	0	0
1986	0	0	0	0	80	1,990	2,119	2,095	1,178	0	0	0
1987	0	0	0	0	200	1,623	2,013	1,292	0	0	0	0
1988	0	0	0	0	0	2,119	2,119	1,596	330	0	0	0
1989	0	0	0	36	508	1,638	974	0	0	0	0	0
1990	0	0	0	0	298	2,095	2,119	144	0	0	0	0
1991	0	0	0	0	325	1,751	2,119	1,176	95	0	0	0
1992	0	0	0	0	614	1,734	2,119	310	0	0	0	0
1993	0	0	0	0	89	1,251	2,119	2,119	1,824	0	0	0
1994	0	0	0	0	480	2,119	2,119	2,119	958	0	0	0
1995	0	0	0	0	0	1,324	2,119	2,119	2,119	968	0	0
1996	0	0	0	0	109	2,119	2,119	1,725	523	0	0	0
1997	0	0	0	0	130	1,886	2,119	2,119	1,416	0	0	0
1998	0	0	0	0	212	1,158	2,119	2,119	404	0	0	0
1999	0	0	0	0	121	1,973	2,119	2,119	1,195	0	0	0
2000	0	0	0	0	661	2,010	1,621	0	0	0	0	0
2001	0	0	0	0	488	2,001	2,119	2,119	1,221	146	0	0
2002	0	0	0	22	321	961	961	961	961	508	0	0
2003	0	0	0	0	577	2,124	2,124	2,124	1,194	304	0	0
2004	0	0	0	70	422	1,457	1,891	1,891	1,875	557	0	0
2005	0	0	0	27	528	1,701	2,124	2,124	1,443	216	0	0
2006	0	0	0	0	557	2,124	2,122	1,233	326	292	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0
Average	**0**	**0**	**0**	**5**	**189**	**1,369**	**1,661**	**1,316**	**600**	**64**	**0**	**0**
Min	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Max	**0**	**0**	**0**	**77**	**776**	**2,124**	**2,282**	**2,282**	**2,119**	**968**	**0**	**0**

Source: Data provided by Colorado Springs Utilities. Data were not available from 1962 through 1966.

Table 4
Hoosier Tunnel Demands (AF)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Yr Type
1950	0	0	0	24	1,231	3,383	1,691	1,048	1,017	516	0	0	8,525	Avg
1951	0	0	0	24	1,231	3,383	1,691	1,048	1,017	516	0	0	8,525	Avg
1952	0	0	0	47	1,334	4,920	2,628	1,785	1,156	888	0	0	12,753	Wet
1953	0	0	0	0	294	2,316	1,496	646	85	0	0	0	4,836	
1954	0	0	0	0	1,060	1,404	1,048	42	0	0	0	0	3,554	
1955	0	0	0	0	688	1,777	2,110	1,670	1,113	0	0	0	6,446	
1956	0	0	0	0	2,205	4,760	1,643	492	0	0	0	0	9,300	
1957	0	0	0	0	374	4,657	2,080	0	0	0	0	0	7,111	
1958	0	0	0	0	3,042	2,126	1,249	0	0	0	0	0	6,417	
1959	0	0	0	0	489	5,040	2,471	496	0	0	0	0	8,496	
1960	0	0	0	0	901	4,606	2,388	316	0	0	0	0	8,210	
1961	0	0	0	0	1,180	3,838	428	0	761	432	41	0	6,685	
1962	0	0	0	0	1,624	4,998	3,087	1,393	87	0	0	0	11,088	
1963	0	0	0	49	2,293	3,257	98	2,983	1,257	311	0	0	10,246	
1964	0	0	0	0	1,839	3,452	2,542	1,429	0	0	0	0	9,263	
1965	0	0	0	0	851	4,891	615	1,053	842	325	38	0	8,415	
1966	0	0	0	0	1,311	2,404	2,732	1,009	0	0	0	0	7,456	
1967	0	0	0	100	1,074	3,265	3,457	1,224	968	0	0	0	10,087	
1968	0	0	0	0	644	5,099	2,473	898	1,148	1,108	0	0	11,369	
1969	0	0	0	73	2,590	735	1,396	609	1,470	688	0	0	7,582	
1970	0	0	0	0	1,542	743	131	1,584	1,433	1,880	0	0	7,313	
1971	0	0	0	0	780	4,906	1,856	1,938	1,729	1,495	0	0	12,703	
1972	0	0	0	0	1,422	3,448	1,626	1,609	973	0	0	0	9,079	
1973	0	0	0	0	370	1,581	849	1,083	1,846	472	0	0	6,201	
1974	0	0	0	0	1,202	4,033	2,074	1,222	1,855	0	0	0	10,388	
1975	0	0	0	0	378	3,133	2,092	1,296	1,684	491	0	0	8,974	
1976	0	0	0	0	1,013	4,566	1,993	1,698	1,282	0	0	0	10,452	
1977	0	0	0	27	158	1,915	410	0	18	0	0	0	2,527	
1978	0	0	0	49	684	4,762	1,088	1,241	1,822	0	0	0	9,646	
1979	0	0	0	0	1,064	3,663	1,653	1,510	1,782	202	0	0	10,074	
1980	0	0	0	0	188	1,678	1,595	2,068	0	0	0	0	5.528	
1981	0	0	0	38	757	3,135	734	785	258	0	0	0	5,707	
1982	0	0	0	0	805	4,236	3,370	1,263	1,230	892	0	0	11,593	
1983	0	0	0	0	274	3,238	414	874	538	1,874	0	0	7,212	
1984	0	0	0	0	968	1,763	741	739	1,373	1,065	0	0	6,650	
1985	0	0	0	0	865	2,279	1,141	970	1,227	61	0	0	6,544	
1986	0	0	0	0	989	5,625	2,641	1,809	1,618	1,059	0	0	13,042	
1987	0	0	0	167	2,404	2,098	720	1,450	979	0	0	0	7,819	
1988	0	0	0	14	1,212	5,470	1,691	761	1,205	0	0	0	10,353	
1989	0	0	0	80	1,807	3,516	3,973	1,320	0	0	130	0	10,825	
1990	0	0	0	7	996	6,148	2,851	2,102	26	0	0	0	11,130	
1991	0	0	0	0	1,299	4,559	3,353	1,768	1,158	12	0	0	12,150	
1992	0	0	0	86	2,316	3,627	3,425	1,958	156	0	0	0	11,571	
1993	0	0	0	0	1,388	4,814	2,599	1,965	422	1,758	0	0	12,944	
1994	0	0	0	103	1,852	4,272	148	15	1,241	831	0	0	8,262	
1995	0	0	0	0	0	2,843	26	704	329	1,265	864	0	6,831	
1996	0	0	0	0	462	5,823	1,422	1,004	1,382	333	0	0	10,426	
1997	0	0	0	0	531	4,082	791	412	1,016	1,311	0	0	8,242	
1998	0	0	0	0	876	1,489	3,670	775	1,898	295	0	0	8,703	
1999	0	0	0	3	950	3,610	1,727	1,745	1,687	1,077	0	0	10,800	
2000	0	0	0	0	2,232	3,693	1,686	1,451	0	0	0	0	9,062	
2001	0	0	0	5	2,122	1,403	207	147	1,020	1,039	0	0	5,944	
2002	0	0	0	49	756	1,549	0	0	0	0	0	0	2,354	
2003	0	0	0	23	2,068	3,126	812	79	978	935	108	0	8,129	
2004	0	0	0	119	1,334	2,525	1,180	48	19	0	0	0	5,224	
2005	0	0	0	107	1,661	3,669	2,641	1,148	719	1,208	0	0	11,152	
Average	**0**	**0**	**0**	**21**	**1,164**	**3,434**	**1,690**	**1,050**	**820**	**434**	**21**	**0**	**8,602**	

Notes:
Values from 1950 through 1952 were estimated because the Continental-Hoosier System did not come on-line until 1953.

Table 6
Historical Homestake Tunnel Diversions (AF)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1967	0	0	0	0	0	0	0	1,035	756	52	0	0	1,842
1968	0	0	0	2,801	7,841	0	0	0	1,171	2,647	2,570	2,412	19,441
1969	4,511	4,784	5,677	4,298	0	0	0	2,365	1,850	163	1,490	3,017	28,135
1970	1,555	1,372	3,073	3,159	0	0	856	3,202	2,592	4,659	4,357	1,220	26,044
1971	772	3,996	4,957	4,630	0	0	0	4,042	2,277	3,171	2,905	965	27,714
1972	899	2,567	3,870	3,615	0	0	0	290	261	143	1,094	2,731	15,470
1973	3,858	3,034	2,038	4,803	5,460	2,359	1,483	0	0	0	0	906	23,941
1974	955	3,092	8,683	5,165	4,987	2,726	767	0	0	0	0	0	24,394
1975	0	0	0	7,460	14,417	7,712	8,108	12,770	9,963	0	0	0	60,430
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	2,594	10,891	6,194	6,046	5,594	0	0	0	0	0	31,318
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	17,634	13,381	0	0	0	0	0	0	0	4,536	35,560
1980	7,281	7,696	2,361	6,157	5,677	0	0	0	0	430	0	300	30,303
1981	6,634	6,166	10,141	155	0	0	0	0	0	0	45	3,683	27,024
1982	4,711	4,209	4,617	2,247	0	0	0	0	0	0	0	0	15,784
1983	6,522	6,960	7,663	1,605	0	0	0	0	0	0	776	0	23,526
1984	0	0	2,729	0	1,678	3,132	4,229	12,684	2,533	0	0	1,246	28,232
1985	0	0	2,426	887	0	1,310	2,343	1,793	148	0	0	0	8,907
1986	0	0	0	0	7,714	4,348	3,011	1,732	95	0	0	3,468	20,368
1987	3,558	3,291	3,546	6,667	0	0	0	0	0	0	0	0	17,063
1988	7,689	7,666	0	0	0	0	0	2,482	4,896	5,442	4,737	0	32,913
1989	0	0	0	1,700	3,820	1,484	2,648	3,701	3,538	1,206	0	0	18,097
1990	0	0	0	0	0	0	5,394	5,513	15,065	203	0	0	26,176
1991	0	0	0	0	0	0	119	152	38	2,753	4,293	0	7,354
1992	0	0	5,056	5,326	0	0	0	2,339	5,596	303	0	0	18,620
1993	0	0	9,024	7,616	0	2,114	8,190	1,048	22	0	0	0	28,014
1994	0	0	8,535	10,462	0	2,928	0	0	2,331	11,390	0	0	35,645
1995	0	0	312	15,250	0	1	4,414	3,687	0	0	0	0	23,664
1996	0	0	7,255	14,852	1,730	7,237	6,372	1,131	0	0	0	0	38,577
1997	0	0	9,795	14,712	0	4,146	5,981	2,612	0	409	0	0	37,855
1998	0	0	6,148	725	951	6,702	6,897	1,084	0	0	0	0	24,505
1999	0	0	6,445	14,760	3,302	0	3,218	1,304	275	0	0	0	31,303
2000	0	0	4,453	9,510	0	7,530	780	382	392	0	0	0	23,046
2001	0	0	8,933	16,977	6,997	0	0	509	0	1,093	3,735	0	40,244
2002	0	0	5,312	10,584	0	0	0	3,006	2,589	0	0	0	21,491
2003	0	0	0	0	0	9,843	0	0	0	14,010	0	0	23,853
2004	0	0	212	8,713	0	0	0	0	0	0	0	0	8,925
2005	0	0	8,036	14,926	431	0	0	0	0	0	0	0	23,394
2006	0	9,031	9,309	6,208	7,607	0	0	0	10	0	0	0	32,163
2007	0	0	9,677	2,564	8,552	0	0	4	0	0	851	0	21,648
Average	**1,194**	**1,562**	**4,451**	**5,679**	**2,184**	**1,698**	**1,717**	**1,580**	**1,378**	**1,173**	**655**	**402**	**23,970**
Min	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Max	**7,689**	**9,031**	**17,634**	**16,977**	**14,417**	**9,843**	**8,190**	**12,770**	**15,065**	**14,010**	**4,737**	**4,536**	**60,430**

Source: Data provided by Colorado Springs Utilities.

Table 7
Homestake Historical End-of-Month Contents (AF)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1966	0	0	0	0	0	0	0	1,259	1,259	1,078	1,069	1,069
1967	1,069	1,069	1,069	1,069	9,493	22,020	26,038	25,003	24,247	24,196	24,196	24,196
1968	24,196	24,196	24,196	21,395	13,554	28,529	31,782	34,825	33,654	31,008	28,438	26,027
1969	21,515	16,751	11,075	8,776	16,710	27,643	32,175	29,811	27,961	27,798	28,308	23,291
1970	21,736	20,363	17,291	14,132	24,218	42,145	41,289	38,087	35,496	30,836	26,480	25,260
1971	24,488	20,492	15,536	10,906	13,985	23,176	28,890	22,848	20,571	17,400	14,495	13,530
1972	12,631	10,064	6,194	2,579	6,709	25,480	29,485	29,175	28,914	28,771	27,577	24,946
1973	20,948	17,651	15,452	10,817	8,095	22,432	32,407	33,489	33,303	32,906	32,664	31,567
1974	30,605	27,708	20,875	15,591	19,766	32,591	35,244	35,274	34,705	34,445	34,127	33,788
1975	33,414	33,022	32,694	25,555	13,201	18,293	24,353	11,811	76	76	76	78
1976	76	78	76	76	7,968	19,574	23,387	23,429	23,132	23,122	22,832	22,822
1977	22,822	22,822	20,828	9,701	8,305	6,324	76	76	78	76	76	76
1978	76	76	76	194	5,825	25,741	38,345	39,059	38,842	38,609	38,355	38,347
1979	38,347	38,347	21,314	7,332	13.167	27,296	38,678	39,255	39,255	39,003	38,994	34,653
1980	27,411	19,281	18,594	10,953	7,640	25,798	32,139	32,288	32,288	31,858	31,843	31,743
1981	25,134	18,965	9,025	8,585	13,270	23,863	24,379	24,379	24,379	24,379	24,379	20,602
1982	15,892	11,681	7,082	4,667	7,409	24,812	35,458	37,093	37,093	37,093	37,093	37,093
1983	30,822	23,852	16,193	14,343	15,298	32,402	43,368	43,334	43,334	43,334	42,557	42,557
1984	42,557	42,557	39,828	39,828	39,828	42,652	40,307	29,245	26,214	26,214	26,166	24,822
1985	24,822	24,822	22,474	21,509	33,764	42,683	43,647	42,007	41.799	41,799	41,799	41,799
1986	41,799	41,799	41,799	41,799	34,379	43,539	43,539	39,472	39,232	39,232	39,232	35,880
1987	32,326	29,031	25,483	19,139	28,823	38,499	39,459	39,009	38,815	38,297	38,003	37,993
1988	30,582	22,637	14,632	14,632	17,973	33,717	35,176	32,736	28,730	23,735	17,182	16,964
1989	16,964	16,964	16,964	15,160	19,323	27,013	25,268	21,100	17,247	15,681	15,681	15,681
1990	15,681	15,681	16,681	15,786	21,003	35,643	31,872	25,772	9,843	9,112	9,112	9,112
1991	9,113	9,113	9,113	9,113	16,605	31,761	35,893	35,912	35,795	32,989	28,600	28,800
1992	28,560	28,560	22,927	18,228	29,160	38,785	41,852	39,273	33,625	33,511	33,502	33,491
1993	33,491	33,491	24,427	16,785	24,980	39,557	42,547	42,557	42,480	42,447	42,447	42,447
1994	42,447	42,447	33,885	23,534	32,933	42,824	42,734	42,641	40,281	28,875	28,875	28,875
1995	28,875	28,875	28,563	13,309	15,328	33,288	42,881	42,881	42,881	42,881	42,881	42,881
1996	42,881	42,881	35,624	20,772	28,986	41,782	41,915	40,893	40,893	40,893	40,893	40,893
1997	40,893	40,581	30,784	18,071	24,862	42,314	42,814	42,614	42,814	42,471	42,471	42,471
1998	42,471	42,186	34,025	33,300	39,816	42,881	41,650	41,817	41,617	41,617	41,817	41,538
1999	41,247	41,214	32,769	18,009	21,278	39,041	42,280	42,447	42,172	42,172	42,172	42,172
2000	42,172	42,172	37,384	28,210	40,893	42,180	42,903	42,521	42,129	42,129	42,129	42,129
2001	42,129	42,129	33,196	18,219	19,400	31,443	32,928	32,419	32,419	31,326	27,591	27,403
2002	27,185	27,185	21,873	11,289	19,288	22,987	22,987	19,643	17,054	17,055	17,055	17,055
2003	17,055	17,055	17,055	17,322	27,699	33,189	35,986	35,988	35,978	21,811	21,811	21,814
2004	21,911	21,959	21,599	13,549	23,284	32,844	34,989	34,989	34,989	34,928	34,989	34,848
2005	34,783	35,034	26,998	12,337	20,171	34,035	38,721	39,202	39,108	39,589	39,589	39,460
2006	39,686	30,688	21,436	18,396	20,772	35,862	40,909	41,122	41,254	41,188	41,254	41,024
2007	40,958	41,057	31.412	29,737	32,227	42,747	42,848	42,548	42.414	42,747	41,948	41,948
Average	**26,946**	**25,394**	**20,840**	**15,398**	**19,886**	**31,409**	**34,323**	**33,069**	**31,625**	**30,445**	**29,730**	**29,118**
Min	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**76**	**76**	**76**	**76**	**76**
Max	**42,881**	**42,881**	**41,799**	**41,799**	**40,893**	**43,539**	**43,647**	**43,334**	**43,334**	**43,334**	**42,881**	**42,881**

Source: Data provided by Colorado Springs Utilities.

Table 8
Homestake Tunnel Demands (AF)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Yr Type
1950	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1951	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1952	0	1,806	8,765	12,642	3,667	2,862	2,471	850	468	2,578	747	0	36,857	Wet
1953	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1954	0	0	4,942	7,339	1,710	1,506	156	1,146	1,715	61	170	0	18,746	Dry
1955	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1956	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1957	0	1,806	8,765	12,642	3,667	2,862	2,471	850	468	2,578	747	0	36,857	Wet
1958	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1959	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1960	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1961	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1962	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1963	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1964	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1965	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1966	0	0	4,942	7,339	1,710	1,506	156	1,146	1,715	61	170	0	18,746	Dry
1967	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1968	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1969	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1970	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1971	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1972	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1973	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1974	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1975	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1976	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1977	0	0	4,942	7,339	1,710	1,506	156	1,146	1,715	61	170	0	18,746	Dry
1978	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1979	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1980	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1981	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1982	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1983	0	1,806	8,765	12,642	3,667	2,862	2,471	850	468	2,578	747	0	36,857	Wet
1984	0	1,806	8,765	12,642	3,667	2,862	2,471	850	468	2,578	747	0	36,857	Wet
1985	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1986	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1987	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1988	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1989	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1990	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg
1991	0	0	5,661	8,880	781	3,110	3,786	1,187	49	2,335	0	0	25,789	Avg

Table 8
Homestake Tunnel Demands (AF)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Yr Type
1992	0	0	5,056	5,326	0	0	0	2,339	5,596	303	0	0	18,620	
1993	0	0	9,024	7,616	0	2,114	8,190	1,048	22	0	0	0	28,014	
1994	0	0	8,535	10,462	0	2,928	0	0	2,331	11,390	0	0	35,645	
1995	0	0	312	15,250	0	1	4,414	3,687	0	0	0	0	23,664	
1996	0	0	7,255	14,852	1,730	7,237	6,372	1,131	0	0	0	0	38,577	
1997	0	0	9,795	14,712	0	4,146	5,981	2,612	0	409	0	0	37,655	
1998	0	0	8,146	725	951	6,702	6,897	1,084	0	0	0	0	24,505	
1999	0	0	8,445	14,760	3,302	0	3,218	1,304	275	0	0	0	31,303	
2000	0	0	4,453	9,510	0	7,530	780	382	392	0	0	0	23,048	
2001	0	0	8,933	16,977	8,997	0	0	509	0	1,093	3,735	0	40,244	
2002	0	0	5,312	10,584	0	0	0	3,006	2,589	0	0	0	21,491	
2003	0	0	0	0	0	9,843	0	0	0	14,010	0	0	23,853	
2004	0	0	212	8,713	0	0	0	0	0	0	0	0	8,925	
2005	0	0	8,036	14,926	431	0	0	0	0	0	0	0	23,394	
Average	**0**	**129**	**5,920**	**9,425**	**1,117**	**2,952**	**3,191**	**1,170**	**356**	**2,133**	**129**	**0**	**26,522**	

Notes:

Values from 1950 through 1991 were estimated because operations of the Homestake Project prior to 1992 were different than current operations.

MODEL OUTPUT

NO ACTION ALTERNATIVE

Reservoir Data

Simulated End-of-Month Contents

- Homestake Reservoir
- Wolford Mountain Reservoir
- Williams Fork Reservoir
- Dillon Reservoir
- Upper Blue Reservoir
- Green Mountain Reservoir
- Montgomery Reservoir
- Elevenmile Canyon Reservoir

Diversions

Simulated Deliveries

- Homestake Tunnel
- Hoosier Tunnel

Substitution Summary

Streamflows

Simulated Flows

- Homestake Creek below Homestake Project at USGS Gage 09064000
- Blue River below Green Mountain Reservoir
- Blue River below Dillon Reservoir at USGS Gage 09050700
- Blue River below Continental-Hoosier Project
- Muddy Creek below Wolford Mountain Reservoir
- Williams Fork River below Williams Fork Reservoir
- Colorado River Below the Confluence with the Eagle River
- Colorado River Above the Confluence with the Eagle River
- Colorado River near Kremmling at USGS Gage 09058000
- Colorado River below the Confluence with the Williams Fork River

- Middle Fork South Platte River below Montgomery Reservoir

PROPOSED ACTION ALTERNATIVE

Reservoir Data

Simulated End-of-Month Contents

- Homestake Reservoir
- Wolford Mountain Reservoir
- Williams Fork Reservoir
- Dillon Reservoir
- Upper Blue Reservoir
- Green Mountain Reservoir
- Montgomery Reservoir
- Elevenmile Canyon Reservoir

Diversions

Simulated Deliveries

- Homestake Tunnel
- Hoosier Tunnel

Substitution Summary

Streamflows

Simulated Flows

- Homestake Creek below Homestake Project at USGS Gage 09064000
- Blue River below Green Mountain Reservoir
- Blue River below Dillon Reservoir at USGS Gage 09050700
- Blue River below Continental-Hoosier Project
- Muddy Creek below Wolford Mountain Reservoir
- Williams Fork River below Williams Fork Reservoir
- Colorado River Below the Confluence with the Eagle River
- Colorado River Above the Confluence with the Eagle River
- Colorado River near Kremmling at USGS Gage 09058000
- Colorado River below the Confluence with the Williams Fork River
- Middle Fork South Platte River below Montgomery Reservoir

NO ACTION ALTERNATIVE

Reservoir Data

Homestake Reservoir Simulated End-Of-Month Contents
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1950	30,020	30,014	30,040	30,068	30,073	24,393	15,996	21,283	32,506	32,299	31,028	30,911
1951	28,540	28,534	28,559	28,586	28,592	22,913	13,995	20,713	34,485	42,008	42,328	42,199
1952	39,822	39,816	39,845	39,877	38,077	29,291	17,172	18,893	36,503	40,700	42,075	41,528
1953	38,908	38,155	38,183	38,215	38,221	32,539	23,613	27,995	41,473	42,951	42,704	42,575
1954	40,197	40,191	40,220	40,252	40,259	35,295	27,907	34,330	32,702	32,424	31,194	29,412
1955	29,315	29,139	29,164	29,191	29,197	23,518	14,600	18,444	23,833	19,947	18,696	18,594
1956	16,232	16,227	16,246	16,267	16,271	10,596	2,731	12,478	21,007	18,236	16,987	16,888
1957	14,527	14,523	14,540	14,560	12,758	3,982	189	418	16,690	31,578	33,932	33,392
1958	30,777	30,024	30,049	30,077	30,083	24,403	15,485	23,807	31,845	29,765	28,498	28,384
1959	26,014	26,009	26,032	26,058	26,064	20,386	11,471	15,497	26,520	25,305	24,045	23,935
1960	21,569	21,564	21,585	21,609	21,614	15,937	8,269	11,883	22,003	21,825	20,570	20,466
1961	18,102	18,098	18,118	18,139	18,143	12,468	3,563	8,384	13,097	9,236	8,001	10,451
1962	10,239	10,235	10,251	10,268	10,272	4,600	185	5,349	14,517	17,614	16,834	16,735
1963	14,374	14,370	14,388	14,407	14,411	8,738	175	6,165	9,974	6,122	4,895	4,814
1964	2,464	2,462	2,471	2,482	2,484	172	169	5,640	10,991	8,118	6,886	6,801
1965	4,448	4,445	4,457	4,470	4,472	169	166	5,052	17,401	26,629	29,055	30,490
1966	28,681	28,675	28,700	28,727	28,733	23,772	16,395	19,945	22,297	22,040	20,826	19,057
1967	18,967	18,793	18,813	18,835	18,839	13,164	4,911	12,029	20,561	20,589	19,336	19,234
1968	16,871	16,867	16,886	16,907	16,911	11,236	2,333	3,209	15,359	15,001	17,529	17,429
1969	15,067	15,063	15,081	15,101	15,105	9,431	1,530	10,446	17,151	17,882	16,634	16,535
1970	14,174	14,170	14,187	14,207	14,211	8,537	179	11,225	25,243	26,170	25,209	25,217
1971	23,408	23,403	23,425	23,450	23,454	17,777	9,669	13,064	20,915	20,962	19,709	19,606
1972	17,243	17,238	17,257	17,279	17,283	11,608	2,703	6,997	21,231	21,258	20,176	20,315
1973	17,951	17,947	17,966	17,988	17,992	12,317	3,412	7,730	20,897	27,171	27,998	27,884
1974	25,515	25,509	25,533	25,558	25,564	19,886	11,382	19,438	29,568	29,641	28,477	28,363
1975	25,993	25,988	26,011	26,037	26,043	20,365	11,450	13,759	23,129	32,719	32,966	32,847
1976	30,474	30,469	30,494	30,522	30,528	24,848	15,929	22,754	30,075	30,320	29,658	29,543
1977	27,172	27,167	27,191	27,218	27,223	22,263	14,887	15,634	17,200	16,955	15,750	13,987
1978	13,901	13,727	13,744	13,763	13,767	8,094	186	5,706	24,159	31,068	29,799	29,683
1979	27,313	27,308	27,332	27,358	27,364	21,685	12,769	19,526	30,970	36,865	37,300	37,176

Homestake Reservoir Simulated End-Of-Month Contents
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1980	34,801	34,795	34,823	34,853	34,859	29,178	20,255	24,418	38,883	40,761	39,481	39,355
1981	36,979	36,973	37,001	37,032	37,038	31,356	22,431	26,515	33,230	29,324	28,058	27,944
1982	25,575	25,569	25,593	25,618	25,624	19,946	11,031	14,398	26,964	32,399	34,364	34,243
1983	31,869	31,864	31,890	31,918	30,118	21,335	8,659	7,242	21,753	32,459	36,927	36,385
1984	33,767	33,015	33,041	33,070	31,270	22,487	9,810	16,699	31,391	40,810	42,996	43,011
1985	41,257	40,504	40,533	40,565	40,572	34,889	26,778	37,629	42,959	42,951	42,268	42,140
1986	40,832	40,825	40,855	40,887	40,894	35,211	27,680	33,287	42,963	42,952	41,705	41,687
1987	39,310	39,304	39,333	39,365	39,371	33,688	25,940	34,353	40,277	38,928	37,650	37,525
1988	35,150	35,144	35,172	35,202	35,208	29,527	21,453	25,406	36,079	34,386	33,113	32,993
1989	30,621	30,615	30,640	30,669	30,674	24,995	17,479	24,763	29,909	28,483	27,218	27,105
1990	24,736	24,731	24,754	24,779	24,784	19,107	10,193	14,778	25,300	23,819	22,560	22,453
1991	20,088	20,084	20,104	20,127	20,131	14,455	5,547	13,212	24,038	24,686	23,426	23,318
1992	20,952	20,948	20,968	20,992	20,996	15,330	9,972	19,951	28,473	28,358	25,942	20,288
1993	19,955	19,951	19,971	19,993	19,998	10,960	3,319	13,699	28,202	29,931	30,327	30,238
1994	30,201	30,196	30,221	30,249	30,254	21,701	11,204	20,936	28,933	28,817	28,738	26,342
1995	14,923	14,919	14,936	14,956	14,960	14,634	186	3,202	24,469	38,551	40,698	40,668
1996	40,626	40,619	40,648	40,681	40,687	33,411	19,244	29,025	40,997	40,828	39,889	39,811
1997	39,770	39,763	39,792	39,824	39,831	30,015	15,909	25,862	42,970	42,951	42,994	43,012
1998	42,560	42,553	42,583	42,616	42,623	34,455	34,140	40,791	42,957	42,952	42,995	42,915
1999	42,872	42,865	42,895	42,928	42,935	34,468	19,663	23,202	39,423	42,570	42,995	42,752
2000	42,709	42,702	42,732	42,766	42,772	38,296	29,989	42,994	42,955	42,951	42,472	42,001
2001	41,958	41,951	41,981	42,014	42,021	33,066	16,046	18,598	29,206	29,090	28,502	28,437
2002	27,309	23,568	23,591	23,616	23,620	18,292	7,676	7,626	7,562	7,496	4,449	1,834
2003	1,822	1,820	1,828	1,837	1,839	1,833	1,817	12,972	16,582	19,632	19,567	19,514
2004	5,480	5,478	5,490	5,504	5,507	5,285	184	8,710	16,858	16,770	16,710	16,660
2005	16,633	16,629	16,647	16,668	16,672	8,623	172	8,559	20,588	25,076	25,002	24,940
AVERAGE:	25,911	25,777	25,800	25,825	25,701	19,838	11,432	17,261	26,933	28,595	28,217	27,893
MINIMUM:	1,822	1,820	1,828	1,837	1,839	169	166	418	7,562	6,122	4,449	1,834
MAXIMUM:	42,872	42,865	42,895	42,928	42,935	38,296	34,140	42,994	42,970	42,952	42,996	43,012

Wolford Mountain Reservoir Simulated End-Of-Month Contents
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1950	58,828	58,785	58,857	58,928	58,914	58,828	58,578	65,613	65,444	65,490	59,773	58,214
1951	52,888	52,808	52,818	52,884	52,836	52,706	52,471	65,625	65,444	65,490	65,090	60,900
1952	56,677	56,595	56,608	56,631	56,596	56,462	65,750	65,598	65,444	65,490	65,090	65,646
1953	56,811	56,720	56,790	56,817	56,761	56,627	56,325	65,618	65,444	65,490	65,090	53,558
1954	53,369	53,329	53,339	53,406	53,351	53,220	52,927	63,439	62,912	62,433	47,240	45,423
1955	28,995	28,354	27,851	27,616	27,351	26,905	26,697	40,478	45,605	45,228	39,937	34,433
1956	34,302	34,225	34,214	34,218	34,167	34,061	33,833	65,675	65,443	64,950	59,236	53,090
1957	52,902	52,813	52,823	52,890	52,835	52,704	52,412	65,625	65,444	65,490	65,583	65,244
1958	64,905	64,810	64,829	64,863	64,805	64,664	64,340	65,601	65,444	64,951	59,236	52,650
1959	52,464	52,375	52,384	52,408	52,352	52,273	51,982	65,626	65,444	65,490	61,628	53,221
1960	52,909	52,820	52,830	52,897	52,841	52,711	65,754	65,585	65,444	65,490	59,752	53,632
1961	53,443	53,354	53,421	53,488	53,475	53,344	53,050	65,624	65,444	64,951	53,683	54,305
1962	63,550	63,456	63,474	62,973	62,385	57,006	65,749	65,598	65,444	65,490	65,090	56,228
1963	53,377	53,337	53,404	53,428	53,373	53,242	52,949	65,624	65,444	59,597	51,053	48,233
1964	33,135	31,398	30,873	30,311	29,790	26,701	26,494	43,339	50,859	50,445	45,286	38,423
1965	38,279	38,249	38,243	38,251	38,199	38,088	37,845	65,664	65,443	65,490	65,174	64,837
1966	65,769	65,674	65,694	65,728	65,671	65,528	65,203	65,599	65,444	64,951	45,850	39,742
1967	39,470	39,439	39,434	39,444	39,391	39,278	40,705	61,512	65,456	65,490	61,625	53,803
1968	51,974	51,885	51,894	51,917	51,862	51,733	51,443	64,464	65,447	65,490	65,583	59,112
1969	53,824	53,735	53,745	53,770	53,714	53,633	61,514	65,607	65,444	65,490	62,196	53,230
1970	53,042	52,953	52,963	52,986	52,931	52,801	52,508	65,625	65,444	65,490	59,773	59,456
1971	59,254	59,162	59,177	59,206	59,149	59,013	65,746	65,598	65,444	65,490	65,090	64,752
1972	64,414	64,369	64,388	64,421	64,363	64,222	63,979	65,602	65,444	65,490	57,826	55,629
1973	55,436	55,345	55,414	55,398	55,384	55,252	54,953	65,620	65,444	65,490	65,135	59,099
1974	52,850	52,761	52,771	52,753	52,739	52,659	56,110	65,618	65,444	65,490	59,773	53,630
1975	53,318	53,229	53,296	53,278	53,265	53,184	52,970	65,624	65,444	65,490	65,090	53,638
1976	53,450	53,360	53,428	53,410	53,396	53,266	53,051	65,624	65,444	65,490	59,773	53,218
1977	53,030	52,941	53,008	53,074	53,061	52,981	52,688	52,355	51,890	46,123	40,170	39,864
1978	20,914	20,844	20,821	20,812	20,763	20,673	22,136	51,363	65,485	65,490	59,770	52,455
1979	52,269	52,180	52,189	52,212	52,199	52,070	51,858	65,626	65,444	65,490	65,090	53,226

Wolford Mountain Reservoir Simulated End-Of-Month Contents
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1980	53,038	52,998	53,008	53,032	52,976	52,846	52,633	65,625	65,444	65,490	59,773	53,217
1981	53,030	52,941	53,007	53,074	53,061	52,931	52,638	65,625	65,444	62,972	48,380	46,444
1982	31,415	31,340	31,327	31,327	31,276	31,174	30,957	59,605	65,462	65,490	65,090	64,752
1983	64,538	64,443	64,462	64,496	64,438	64,297	63,975	65,602	65,444	65,490	65,583	62,952
1984	62,618	62,574	62,591	62,623	62,566	62,476	62,238	65,606	65,444	65,490	65,583	65,244
1985	65,769	65,939	65,985	65,985	65,970	65,877	65,737	65,598	65,444	65,490	65,090	64,752
1986	65,429	65,939	65,959	65,985	65,970	65,892	65,737	65,598	65,444	65,490	65,090	64,752
1987	65,755	65,939	65,959	65,985	65,928	65,785	65,737	65,598	65,444	65,202	64,803	53,433
1988	53,245	53,156	53,166	53,190	53,134	53,004	54,638	65,621	65,444	65,490	59,773	53,630
1989	53,441	53,352	53,419	53,487	53,431	53,300	64,120	65,594	65,444	64,951	54,177	53,098
1990	52,911	52,822	52,831	52,898	52,843	52,713	52,421	64,714	65,446	64,953	53,373	51,747
1991	51,439	51,351	51,416	51,481	51,468	51,340	51,052	65,629	65,444	65,490	59,773	53,629
1992	53,441	53,351	53,362	53,386	53,330	53,200	52,985	65,624	65,444	64,951	50,849	46,666
1993	45,405	45,320	45,322	45,338	45,284	45,164	44,977	65,646	65,444	65,490	65,090	64,340
1994	64,003	63,909	63,927	63,960	63,903	63,762	63,520	65,603	65,444	59,647	49,162	48,886
1995	48,615	48,531	48,582	48,597	48,550	48,425	48,211	65,637	65,444	65,490	65,090	64,752
1996	64,442	64,356	64,376	64,405	64,354	64,213	65,739	65,598	65,444	65,490	59,773	59,456
1997	59,158	59,075	59,090	59,115	59,065	58,958	64,813	65,600	65,444	65,490	65,090	64,752
1998	64,999	65,330	65,364	65,409	65,352	65,209	65,738	65,598	65,444	65,490	65,090	59,466
1999	59,169	59,086	59,158	59,182	59,133	58,997	58,704	65,613	65,444	65,490	65,090	64,280
2000	54,952	54,871	54,939	54,961	54,912	54,780	55,693	65,619	65,444	64,951	53,171	52,024
2001	51,839	51,759	51,768	51,787	51,739	51,610	51,378	65,628	65,444	64,951	54,183	47,212
2002	46,947	46,871	46,874	46,887	46,837	46,715	46,523	46,224	45,807	39,507	29,043	27,665
2003	19,790	19,724	19,699	19,684	19,639	19,551	19,386	48,920	65,495	65,002	59,044	52,632
2004	52,445	52,365	52,375	52,394	52,346	52,245	51,969	59,728	63,639	63,156	47,168	46,430
2005	29,760	29,694	29,680	29,675	29,632	29,531	29,374	57,516	65,467	65,490	65,090	58,353
AVERAGE:	52,204	52,113	52,118	52,121	52,055	51,783	52,909	63,127	64,162	63,598	58,573	54,526
MINIMUM:	19,790	19,724	19,699	19,684	19,639	19,551	19,386	40,478	45,605	39,507	29,043	27,665
MAXIMUM:	65,769	65,939	65,985	65,985	65,970	65,892	65,754	65,675	65,495	65,490	65,583	65,646

Williams Fork Reservoir Simulated End-Of-Month Contents
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1950	66,230	61,473	59,007	58,061	56,473	54,174	59,260	68,579	86,429	90,030	73,597	66,382
1951	61,460	58,237	56,028	54,784	53,948	51,500	50,874	66,035	96,052	96,303	89,843	72,487
1952	62,937	58,921	55,994	53,371	51,689	49,386	57,503	82,436	96,289	96,302	89,842	79,610
1953	72,660	68,402	64,261	60,058	58,428	56,518	55,835	65,976	87,680	91,515	83,922	77,315
1954	71,991	67,956	64,038	60,058	59,434	57,595	56,718	60,661	63,080	59,818	53,045	47,623
1955	31,759	28,592	26,430	24,588	23,516	22,038	27,090	34,373	43,012	45,767	40,682	30,764
1956	24,874	20,956	18,580	16,797	15,016	12,650	18,516	33,887	43,618	45,617	37,495	32,617
1957	27,720	24,605	23,270	21,693	20,219	18,915	18,664	30,274	70,295	96,360	89,890	83,586
1958	72,530	68,315	64,218	60,058	57,917	55,640	55,210	82,436	96,069	96,303	80,310	73,830
1959	68,867	65,875	62,996	60,057	58,529	56,341	55,694	63,247	72,184	73,314	66,954	60,012
1960	56,450	51,262	46,402	43,953	41,843	39,863	49,419	63,666	91,097	95,961	86,484	80,628
1961	75,280	70,148	65,135	60,058	59,048	57,985	54,879	63,197	80,052	77,057	65,626	64,238
1962	63,014	61,394	56,942	54,709	53,188	51,415	66,434	92,205	96,099	96,303	88,551	82,519
1963	76,701	71,095	65,609	60,058	58,571	56,236	55,926	56,258	57,961	54,409	53,358	43,400
1964	29,389	26,709	25,182	23,721	22,211	19,930	16,057	26,229	32,254	32,168	28,783	23,165
1965	19,686	16,423	13,747	11,356	9,228	7,021	11,309	20,056	50,163	66,660	65,236	63,928
1966	62,782	61,036	56,941	54,849	53,607	51,253	50,735	55,217	58,677	59,878	42,551	37,579
1967	33,293	30,854	29,483	28,310	27,062	24,951	29,155	34,394	51,615	57,891	48,543	41,459
1968	36,292	32,885	31,049	29,500	27,688	25,588	21,489	26,139	38,706	43,038	45,531	29,598
1969	21,555	17,775	15,039	12,342	10,337	7,748	14,130	27,849	55,299	64,177	57,831	48,157
1970	49,748	47,717	46,084	43,241	40,942	38,310	37,972	62,658	96,182	96,303	89,842	83,548
1971	77,466	71,604	65,863	60,058	57,133	53,599	62,280	76,916	96,049	96,303	88,852	79,758
1972	71,136	67,112	63,615	60,057	57,766	53,966	58,120	62,602	71,934	72,080	55,015	50,257
1973	48,491	45,252	42,496	40,441	38,901	37,286	36,826	52,726	86,198	96,326	89,267	80,738
1974	75,363	70,203	65,162	60,058	58,418	56,201	61,638	82,209	96,016	96,303	83,411	76,044
1975	69,150	65,479	61,995	60,057	58,207	55,872	55,200	59,191	69,310	83,859	76,012	66,031
1976	60,679	57,089	54,572	52,412	50,413	47,704	51,416	57,569	65,612	68,964	62,236	55,050
1977	47,016	43,208	41,322	40,196	38,940	37,092	36,522	37,790	42,149	33,067	15,849	11,186
1978	3,042	1,479	1,145	1,043	941	831	5,929	13,760	31,247	35,092	30,574	23,356
1979	19,976	17,144	14,700	11,833	9,494	6,309	10,439	22,377	49,540	60,199	54,529	48,680

Williams Fork Reservoir Simulated End-Of-Month Contents
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1980	43,654	40,421	37,588	34,085	31,068	29,388	29,750	43,117	64,424	67,635	61,115	51,982
1981	46,010	42,978	40,855	39,521	38,289	36,600	31,028	35,587	43,181	41,611	24,277	13,414
1982	8,552	5,914	4,017	2,091	761	651	642	7,977	31,192	43,271	40,479	40,557
1983	40,239	36,407	32,125	29,510	26,154	24,852	19,647	31,556	95,107	96,305	89,844	80,869
1984	73,252	68,796	63,824	59,887	57,760	53,651	52,950	90,996	96,267	96,302	89,842	83,548
1985	77,466	71,604	65,863	60,058	58,166	55,099	65,494	88,839	96,273	96,302	89,412	81,975
1986	76,289	70,820	65,471	60,058	59,466	63,499	70,808	87,296	96,210	96,302	89,842	83,548
1987	77,466	71,604	65,863	60,058	57,260	54,631	59,608	70,530	84,110	86,390	77,305	71,431
1988	66,479	63,026	59,771	55,928	52,872	51,171	57,682	71,697	96,089	96,303	76,271	69,720
1989	65,001	61,721	59,349	57,566	55,711	52,958	58,874	66,970	72,130	68,901	66,823	59,199
1990	54,694	51,129	47,881	45,542	43,376	40,201	39,593	45,797	52,460	53,807	35,776	26,562
1991	17,941	13,502	10,684	8,441	6,864	4,294	3,779	20,255	43,875	46,193	43,169	39,774
1992	34,434	29,602	26,430	23,885	21,115	16,765	21,665	36,591	48,980	53,931	28,741	18,573
1993	6,856	2,245	1,265	1,163	1,061	950	938	28,058	64,108	78,288	74,891	64,502
1994	56,070	52,068	48,681	45,555	43,076	39,836	43,734	58,240	69,754	66,721	55,560	45,804
1995	40,427	37,127	34,613	32,464	29,736	26,075	19,526	28,177	69,051	96,363	89,892	74,980
1996	67,435	63,137	58,650	53,607	49,558	45,392	53,128	84,229	96,091	96,303	89,108	79,043
1997	70,586	64,512	59,331	54,847	50,182	46,059	51,503	78,448	96,148	96,303	89,842	83,548
1998	77,466	71,604	65,863	60,058	56,272	52,283	55,973	65,502	74,095	83,622	79,319	63,558
1999	55,003	49,916	46,885	43,289	40,232	35,407	34,760	43,602	61,972	69,439	67,544	51,351
2000	42,884	38,934	35,146	31,202	27,657	23,439	29,112	52,083	67,151	70,807	51,279	38,472
2001	31,224	27,556	23,539	20,340	17,563	13,797	13,379	27,336	37,825	43,441	19,238	7,747
2002	1,422	1,321	1,225	1,124	1,022	911	899	4,561	5,499	912	892	742
2003	734	634	536	433	331	224	220	33,075	70,763	76,719	67,872	54,659
2004	47,995	44,111	41,104	38,305	35,546	31,498	30,918	40,891	46,375	49,333	26,825	17,922
2005	10,018	6,403	4,288	1,690	1,059	948	8,323	29,940	51,315	59,668	54,090	47,737
AVERAGE:	49,056	45,291	42,110	39,259	37,344	35,080	37,414	50,933	67,881	71,581	62,731	54,728
MINIMUM:	734	634	536	433	331	224	220	4,561	5,499	912	892	742
MAXIMUM:	77,466	71,604	65,863	60,058	59,466	63,499	70,808	92,205	96,289	96,363	89,892	83,586

Dillon Reservoir Simulated End-Of-Month Contents
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1950	224,767	221,933	215,493	211,963	208,859	201,987	193,145	207,430	255,969	255,968	229,238	209,214
1951	191,575	185,278	178,652	173,050	166,179	161,068	160,907	190,082	256,006	255,968	255,546	241,566
1952	233,784	228,119	221,002	216,059	211,400	206,901	212,208	256,257	255,871	255,969	256,162	236,564
1953	221,102	213,985	208,513	206,004	202,410	194,486	186,797	200,889	255,983	255,968	255,624	229,777
1954	208,947	201,080	193,604	188,931	181,917	175,666	151,882	152,589	146,591	126,052	112,858	102,028
1955	96,663	91,937	88,255	82,605	78,542	73,113	73,481	90,754	118,424	114,114	112,951	112,350
1956	106,429	102,675	98,523	89,594	83,748	76,914	77,925	120,303	171,495	168,051	141,849	115,776
1957	103,232	95,029	87,523	77,484	71,291	64,175	63,535	94,470	192,616	256,087	255,698	255,827
1958	255,929	255,473	253,474	249,843	247,162	246,420	246,027	256,208	255,871	255,969	236,525	216,087
1959	201,314	196,177	191,130	188,132	184,990	181,598	183,383	205,164	255,974	255,968	235,793	217,463
1960	216,941	214,780	209,907	204,381	199,282	197,805	201,526	228,282	255,928	255,969	228,347	202,909
1961	191,288	187,837	183,058	177,916	172,864	167,722	160,278	179,388	219,151	224,544	218,041	230,075
1962	242,135	240,249	239,921	239,969	239,892	238,681	251,687	256,200	255,871	255,969	238,477	213,451
1963	197,757	191,984	186,064	179,811	175,304	170,864	156,668	151,039	148,555	121,678	107,508	98,021
1964	89,787	87,478	83,271	80,575	77,336	73,569	71,101	92,718	120,297	118,116	101,300	90,561
1965	83,669	79,568	76,145	69,665	65,741	60,385	61,745	93,825	193,244	256,085	255,610	255,739
1966	255,996	255,541	254,343	253,941	251,308	250,712	246,078	252,702	255,878	233,546	213,935	196,865
1967	186,807	180,816	172,885	166,575	160,565	152,352	143,301	165,445	214,182	231,183	220,282	219,581
1968	213,140	207,752	199,367	192,318	186,202	180,802	181,445	193,810	251,014	255,978	255,950	243,589
1969	235,574	229,494	223,679	220,495	214,493	209,089	203,083	241,877	255,900	255,969	243,989	238,550
1970	238,876	238,426	238,198	237,482	234,772	233,820	235,862	256,223	255,871	255,969	255,468	246,407
1971	246,878	246,426	243,264	241,482	240,196	239,301	245,664	256,209	255,871	255,969	245,465	242,245
1972	238,548	235,272	230,999	228,823	225,372	223,223	220,929	245,172	255,894	255,969	237,119	221,944
1973	207,589	202,065	196,140	189,405	181,714	174,268	174,494	202,119	255,981	255,968	254,277	241,352
1974	237,240	233,861	230,625	229,404	228,654	228,440	231,773	256,229	255,871	255,969	237,983	218,619
1975	211,138	204,077	196,490	191,614	188,366	185,118	185,507	202,765	255,979	255,968	250,282	230,827
1976	215,522	212,332	208,338	205,561	202,662	201,146	193,236	214,392	239,443	241,477	229,771	221,155
1977	219,931	215,611	208,045	200,824	194,140	189,714	196,192	204,115	211,003	184,847	166,489	146,726
1978	137,872	134,006	128,644	121,697	118,315	113,587	112,108	135,754	224,425	244,137	219,232	190,675
1979	174,158	167,500	160,015	151,453	147,432	145,820	149,464	181,026	256,026	255,968	255,652	235,037

Dillon Reservoir Simulated End-Of-Month Contents
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1980	220,524	215,757	211,476	211,420	210,973	210,771	213,471	244,776	255,894	255,969	231,348	213,124
1981	198,052	194,231	189,428	184,253	178,836	176,245	169,514	169,457	178,232	167,840	155,891	142,785
1982	134,664	130,949	126,819	124,275	120,406	115,275	112,363	135,890	202,413	235,097	248,591	250,949
1983	250,597	248,410	245,821	245,123	244,875	244,650	247,598	256,170	255,871	255,969	256,118	256,244
1984	255,659	255,204	254,508	253,404	250,011	249,782	254,495	256,196	255,871	255,969	255,989	256,116
1985	256,372	256,726	256,508	256,565	254,192	253,960	256,486	256,193	255,871	255,969	251,898	243,857
1986	243,772	243,577	242,399	241,338	239,228	234,039	241,276	256,215	255,871	255,969	248,732	234,808
1987	234,349	230,878	226,537	224,373	223,713	223,502	229,769	256,232	255,871	255,969	238,440	220,458
1988	209,492	206,843	202,820	202,030	201,762	201,567	206,940	231,156	255,922	255,969	248,994	227,017
1989	212,258	204,638	198,794	193,991	189,955	189,768	186,176	215,501	255,953	255,969	239,017	219,856
1990	205,678	198,107	190,129	184,154	179,401	173,430	177,861	197,711	249,834	255,980	249,728	234,517
1991	232,679	228,751	221,359	214,939	208,697	201,508	196,768	226,945	255,930	255,969	249,346	230,031
1992	219,314	216,154	211,664	208,194	205,279	204,003	200,522	228,912	253,875	252,955	244,316	233,610
1993	228,746	226,867	221,761	216,991	212,888	208,069	211,171	253,580	255,877	255,969	254,182	245,073
1994	237,195	233,190	228,940	226,079	222,868	220,449	217,463	245,536	255,893	238,772	226,177	216,180
1995	211,067	207,971	204,179	200,544	198,220	195,997	198,969	215,270	255,954	255,969	256,162	251,706
1996	251,129	250,675	248,896	248,159	247,150	246,372	255,876	256,194	255,871	255,969	245,795	237,743
1997	236,668	236,220	235,127	233,824	233,430	233,212	240,214	256,217	255,871	255,969	256,162	249,229
1998	243,977	241,770	238,056	235,346	232,950	231,194	229,656	254,263	255,875	255,969	254,173	240,983
1999	235,318	232,390	227,319	224,455	221,332	219,798	218,201	244,088	255,896	255,969	256,162	245,137
2000	238,990	234,929	230,609	228,088	225,454	223,322	227,199	256,235	255,871	255,969	248,027	235,569
2001	226,787	222,461	218,818	216,005	213,096	211,235	208,492	241,475	255,901	253,804	245,723	235,667
2002	225,981	219,516	212,890	207,797	202,856	197,126	193,674	198,097	193,713	171,747	131,006	113,703
2003	102,089	95,649	88,579	83,080	77,805	71,532	71,946	118,491	189,471	205,009	187,146	174,746
2004	165,376	161,282	156,602	153,365	150,444	148,891	143,895	152,988	157,508	141,497	128,444	115,733
2005	107,744	103,410	97,314	93,339	88,063	81,785	81,832	109,056	150,738	161,154	143,427	127,082
AVERAGE:	204,805	200,952	196,302	192,468	188,839	185,468	185,058	205,648	231,840	233,049	222,829	210,230
MINIMUM:	83,669	79,568	76,145	69,665	65,741	60,385	61,745	90,754	118,424	114,114	101,300	90,561
MAXIMUM:	256,372	256,726	256,508	256,565	254,192	253,960	256,486	256,257	256,026	256,087	256,162	256,244

Upper Blue Reservoir Simulated End-Of-Month Contents
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1950	0	0	0	0	0	0	0	592	2,066	2,046	1,221	188
1951	0	0	0	0	0	0	0	592	2,066	2,046	2,059	1,008
1952	0	0	0	0	0	0	0	592	2,066	2,046	2,059	1,056
1953	0	0	0	0	0	0	0	592	2,066	2,046	2,059	1,930
1954	0	0	0	0	0	0	0	592	2,053	1,269	0	0
1955	0	0	0	0	0	0	0	592	2,066	2,046	2,059	913
1956	0	0	0	0	0	0	0	592	2,066	2,046	1,762	1,723
1957	0	0	0	0	0	0	0	592	2,066	2,046	2,059	2,067
1958	0	0	0	0	0	0	0	592	2,066	2,046	1,993	1,949
1959	0	0	0	0	0	0	0	592	2,066	2,046	2,059	2,014
1960	0	0	0	0	0	0	0	592	2,066	2,046	1,935	1,893
1961	0	0	0	0	0	0	0	592	2,066	2,046	0	2,090
1962	0	0	0	0	0	0	0	592	2,066	2,046	2,059	2,000
1963	0	0	0	0	0	0	0	592	1,290	2,059	0	0
1964	0	0	0	0	0	0	0	592	2,066	2,046	319	312
1965	0	0	0	0	0	0	0	592	2,066	2,046	2,059	2,067
1966	0	0	0	0	0	0	0	592	2,066	2,046	0	0
1967	0	0	0	0	0	0	0	170	1,308	2,058	1,125	322
1968	0	0	0	0	0	0	0	0	1,752	2,051	2,059	1,084
1969	0	0	0	0	0	0	76	765	1,811	2,050	1,722	230
1970	0	0	0	0	0	0	0	409	2,019	2,047	2,059	2,067
1971	0	0	0	0	0	0	0	0	1,470	2,056	2,059	493
1972	0	0	0	0	0	0	0	0	1,593	2,054	649	0
1973	0	0	0	0	0	0	0	0	1,350	2,058	2,059	188
1974	0	0	0	0	0	0	0	0	1,897	2,049	2,059	179
1975	0	0	0	0	0	0	0	0	774	2,067	2,059	642
1976	0	0	0	0	0	0	0	0	894	2,065	2,059	745
1977	0	0	0	0	0	0	0	243	1,020	832	0	0
1978	0	0	0	0	0	0	0	160	1,805	2,050	2,059	212
1979	0	0	0	0	0	0	0	328	1,629	2,053	2,059	251

Upper Blue Reservoir Simulated End-Of-Month Contents
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1980	0	0	0	0	0	0	0	0	1,720	1,665	0	0
1981	0	0	0	0	0	0	0	174	560	847	0	0
1982	0	0	0	0	0	0	0	0	1,231	2,059	2,059	2,067
1983	0	0	0	0	0	0	0	0	1,092	2,062	2,059	2,067
1984	0	0	0	0	0	0	0	0	1,352	2,058	2,059	2,067
1985	0	0	0	0	0	0	0	0	1,407	1,362	1,327	342
1986	0	0	0	0	0	0	0	79	1,954	2,048	2,059	2,067
1987	0	0	0	0	0	0	0	198	1,591	1,955	760	0
1988	0	0	0	0	0	0	0	0	2,076	2,046	1,559	333
1989	0	0	0	0	0	0	36	501	1,601	1,549	530	518
1990	0	0	0	0	0	0	0	294	2,053	2,046	0	0
1991	0	0	0	0	0	0	0	321	1,715	2,052	744	0
1992	0	0	0	0	0	0	0	606	1,693	2,052	0	0
1993	0	0	0	0	0	0	0	68	1,228	2,060	2,059	1,799
1994	0	0	0	0	0	0	0	474	2,068	2,046	1,855	587
1995	0	0	0	0	0	0	0	0	1,301	2,058	2,059	2,013
1996	0	0	0	0	0	0	0	108	2,074	2,046	2,059	869
1997	0	0	0	0	0	0	0	128	1,851	2,050	2,059	2,067
1998	0	0	0	0	0	0	0	209	1,134	2,061	2,059	353
1999	0	0	0	0	0	0	0	119	1,936	2,048	2,059	345
2000	0	0	0	0	0	0	0	544	1,965	1,902	643	629
2001	0	0	0	0	0	0	0	482	1,958	2,048	1,610	566
2002	0	0	0	0	0	0	22	317	939	909	0	0
2003	0	0	0	0	0	0	0	570	2,066	2,046	1,994	1,189
2004	0	0	0	0	0	0	69	416	1,424	1,838	0	0
2005	0	0	0	0	0	0	27	519	1,662	2,053	1,166	429
AVERAGE:	0	0	0	0	0	0	4	326	1,702	1,937	1,402	856
MINIMUM:	0	0	0	0	0	0	0	0	560	832	0	0
MAXIMUM:	0	0	0	0	0	0	76	765	2,076	2,067	2,059	2,090

Green Mountain Reservoir Simulated End-Of-Month Contents
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1950	103,699	93,313	87,557	81,774	75,873	69,926	78,823	111,439	153,974	153,965	130,399	119,934
1951	94,171	87,293	80,538	73,756	66,866	59,933	56,099	93,613	154,012	153,965	154,093	140,197
1952	114,777	103,771	92,906	82,008	70,991	59,932	68,927	104,551	153,988	153,965	154,093	140,911
1953	115,403	105,271	95,282	85,260	75,116	64,928	60,713	85,104	154,030	153,965	152,807	140,524
1954	115,050	105,989	97,071	88,121	79,046	69,925	66,043	89,460	93,965	77,201	76,866	75,603
1955	74,492	73,556	72,729	71,880	70,927	69,928	75,878	100,003	123,247	120,612	119,703	111,501
1956	86,108	81,845	77,699	73,529	69,252	64,930	70,550	131,540	153,938	140,766	126,978	117,008
1957	91,561	85,206	78,972	72,711	66,343	59,933	57,587	66,456	131,262	153,999	154,093	140,911
1958	127,987	115,335	102,835	90,299	77,635	64,927	61,545	154,244	153,902	151,743	121,678	113,190
1959	87,361	82,847	78,452	74,031	69,503	64,930	58,615	80,383	142,228	153,983	138,066	127,204
1960	103,534	95,780	88,158	80,508	72,740	64,929	75,123	94,618	154,009	153,965	136,849	126,877
1961	101,490	95,146	88,933	82,691	76,332	69,926	63,234	87,022	116,111	100,820	100,000	93,947
1962	88,084	82,425	76,885	71,319	65,647	59,934	78,475	150,073	153,908	153,965	149,755	122,003
1963	96,615	91,247	86,007	80,739	75,356	69,926	72,996	88,105	106,641	80,969	80,214	78,464
1964	76,872	75,459	74,157	72,833	71,404	69,928	64,574	85,782	107,138	120,951	112,092	104,281
1965	82,245	77,756	73,380	68,980	64,478	59,934	64,474	86,563	137,742	153,990	154,093	141,624
1966	129,413	117,475	105,692	93,873	81,922	69,924	75,031	95,141	116,317	102,887	90,014	86,126
1967	78,329	75,624	73,030	70,414	67,695	64,931	69,260	86,907	124,080	144,369	120,945	107,961
1968	84,841	80,832	76,939	73,022	68,998	64,931	56,027	67,332	111,791	129,697	145,304	133,394
1969	107,962	99,321	90,816	82,281	73,627	64,929	71,125	88,304	151,149	153,969	138,773	127,095
1970	115,658	104,475	93,434	82,360	71,167	59,932	63,448	134,799	153,933	153,965	138,843	127,155
1971	115,708	104,515	93,464	82,380	71,177	59,932	71,130	108,445	153,980	153,965	147,168	121,567
1972	97,956	91,319	84,811	78,274	71,624	64,929	72,022	90,115	154,019	153,965	134,122	123,831
1973	113,775	103,969	94,305	84,608	74,791	64,928	56,238	80,212	140,425	153,985	154,093	123,850
1974	97,843	90,229	82,742	75,226	67,601	59,933	66,701	128,520	153,943	153,965	143,386	131,754
1975	106,319	98,007	89,830	81,623	73,298	64,929	67,563	82,741	125,504	154,008	154,093	133,866
1976	108,366	100,644	93,059	85,445	77,708	69,925	75,260	92,668	125,704	146,565	135,844	126,017
1977	100,631	94,458	88,417	82,347	76,160	69,926	56,147	61,866	77,307	70,061	69,750	68,096
1978	66,584	65,232	63,980	62,709	61,343	59,935	65,247	78,081	133,183	153,996	143,684	131,295
1979	105,573	96,410	87,381	78,322	69,148	59,932	65,340	90,813	146,782	153,976	150,469	137,811

Green Mountain Reservoir Simulated End-Of-Month Contents
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1980	112,319	102,805	93,431	84,026	74,499	64,928	68,704	89,851	154,020	153,965	135,676	125,874.
1981	100,436	94,302	88,300	82,269	76,121	69,926	57,467	68,109	91,801	86,067	85,701	82,440
1982	76,519	74,177	71,944	69,690	67,333	64,931	58,030	78,320	120,346	154,016	154,093	140,197
1983	126,560	113,194	99,978	86,726	73,349	59,931	51,767	81,884	154,037	153,965	154,093	116,303
1984	90,885	84,665	78,566	72,440	66,208	59,934	63,304	154,241	153,902	153,965	154,093	140,197
1985	126,560	113,194	99,978	86,726	73,349	59,931	80,978	154,212	153,902	153,965	151,401	137,894
1986	124,644	111,662	98,828	85,959	72,966	59,931	70,986	115,888	153,964	153,965	154,093	141,624
1987	129,413	117,475	105,692	93,873	81,922	69,924	76,751	112,939	153,970	153,965	145,895	101,853
1988	86,224	81,937	77,769	73,576	69,275	64,930	72,138	96,510	154,005	153,965	126,748	118,239
1989	92,237	87,746	83,379	78,986	74,480	69,926	79,918	96,981	125,793	133,293	124,669	116,460
1990	90,996	86,753	82,634	78,489	74,231	69,927	59,153	71,171	104,542	117,623	103,981	98,063
1991	79,587	76,630	73,786	70,918	67,947	64,931	59,533	84,097	154,032	153,965	129,544	120,629
1992	95,200	90,115	85,157	80,173	75,073	69,926	75,607	98,970	115,243	108,557	108,113	100,881
1993	82,726	78,140	73,669	69,173	64,574	59,934	56,661	91,336	154,016	153,965	145,325	134,126
1994	123,174	112,485	101,947	91,374	80,673	69,924	75,470	101,148	138,825	116,904	94,295	89,071
1995	81,566	77,213	72,973	68,708	64,342	59,934	50,164	64,851	154,075	153,965	154,093	140,197
1996	126,560	113,194	99,978	86,726	73,349	59,931	69,456	154,231	153,902	153,965	110,987	103,337
1997	95,894	88,671	81,572	74,446	67,211	59,933	67,957	135,846	153,931	153,965	154,093	140,911
1998	127,987	115,335	102,835	90,299	77,635	64,927	70,901	94,207	151,936	153,968	147,389	115,148
1999	89,754	84,760	79,888	74,990	69,982	64,930	68,409	83,482	154,033	153,965	154,093	140,911
2000	115,583	105,415	95,390	85,332	75,152	64,928	71,907	133,674	153,935	148,883	128,925	118,673
2001	93,176	86,497	79,941	73,358	66,666	59,933	57,536	86,255	125,264	113,150	109,864	103,804
2002	79,631	77,665	75,813	73,938	71,956	69,927	58,507	67,163	56,896	54,937	75,348	73,593
2003	65,071	64,490	64,021	63,523	63,007	63,115	70,506	108,895	151,435	143,170	116,455	109,438
2004	83,191	80,512	77,950	75,364	72,669	69,927	70,485	88,396	104,876	89,882	89,459	85,652
2005	80,089	77,032	74,087	71,119	68,047	64,931	72,765	98,476	133,397	152,975	141,360	130,021
AVERAGE:	99,364	92,336	85,517	78,670	71,710	64,718	66,772	98,322	136,327	138,092	129,965	117,849
MINIMUM:	65,071	64,490	63,980	62,709	61,343	59,931	50,164	61,866	56,896	54,937	69,750	68,096
MAXIMUM:	129,413	117,475	105,692	93,873	81,922	69,928	80,978	154,244	154,075	154,016	154,093	141,624

Montgomery Reservoir Simulated End-Of-Month Contents
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1950	4,186	3,840	3,300	2,760	2,181	1,429	662	1,382	4,155	4,545	4,444	4,369
1951	4,186	3,840	3,300	2,760	2,181	1,429	662	1,382	4,155	4,545	4,444	4,369
1952	4,186	3,840	3,300	2,760	2,181	1,429	662	1,382	4,155	4,545	4,444	4,369
1953	4,186	3,840	3,300	2,760	2,181	1,429	662	1,382	4,155	4,545	4,444	4,369
1954	4,186	3,840	3,300	2,760	2,181	1,429	662	1,382	4,155	4,545	2,859	2,784
1955	2,601	2,254	1,714	1,175	662	662	662	1,382	4,155	4,545	4,444	4,369
1956	4,186	3,840	3,300	2,760	2,181	1,429	662	1,382	4,155	4,545	4,444	4,369
1957	4,186	3,840	3,300	2,760	2,181	1,429	662	1,382	4,155	4,545	4,444	4,369
1958	4,186	3,840	3,300	2,760	2,181	1,429	662	1,382	4,155	4,545	4,444	4,369
1959	4,186	3,840	3,300	2,760	2,181	1,429	662	1,382	4,155	4,545	4,444	4,369
1960	4,186	3,840	3,300	2,760	2,181	1,429	662	1,382	4,155	4,545	4,444	4,369
1961	4,186	3,840	3,300	2,760	2,181	1,429	662	1,382	4,155	4,545	4,138	4,064
1962	3,881	3,534	2,994	2,455	1,876	1,124	662	1,382	4,155	4,545	4,444	4,369
1963	3,182	2,630	2,060	1,573	1,142	665	243	1,085	2,968	3,066	2,548	2,190
1964	1,144	590	206	206	206	206	206	1,673	3,791	4,388	4,604	4,421
1965	4,230	4,044	3,853	3,658	2,793	1,547	352	82	3,284	4,574	4,227	4,641
1966	3,230	2,491	1,954	3,848	3,494	2,743	2,223	3,032	3,330	4,355	3,318	2,272
1967	1,996	1,737	1,488	1,241	1,032	942	161	435	2,366	4,628	4,206	3,637
1968	3,189	2,590	2,100	1,679	1,229	672	307	155	4,145	4,901	4,852	4,353
1969	4,756	3,795	3,342	2,994	2,585	1,476	334	3,799	4,851	4,826	4,031	4,718
1970	4,927	4,754	3,859	2,333	1,315	961	629	2,072	4,739	4,742	4,739	4,584
1971	4,807	3,743	2,828	2,027	1,538	1,058	515	1,190	4,555	4,640	4,644	4,690
1972	4,466	3,926	3,350	2,427	1,776	866	164	1,421	4,264	4,423	4,263	4,379
1973	3,815	3,595	3,047	2,427	1,843	1,218	665	1,845	4,842	4,713	4,286	4,446
1974	3,706	3,274	2,754	2,174	1,881	1,344	944	1,967	4,906	4,653	4,198	4,213
1975	3,024	2,571	2,128	1,675	1,232	550	233	395	3,870	4,524	4,368	4,392
1976	4,072	3,565	3,058	2,581	2,143	1,691	920	1,683	4,374	4,534	4,668	4,306
1977	3,516	2,685	2,210	1,862	1,566	1,249	961	1,553	3,777	4,190	3,568	3,586
1978	3,153	2,690	2,210	1,731	1,124	725	725	1,016	4,815	4,948	4,542	4,737
1979	3,797	3,175	2,288	1,913	1,548	1,045	556	1,049	4,803	4,730	4,826	4,758

Montgomery Reservoir Simulated End-Of-Month Contents
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1980	4,430	3,810	3,196	2,523	1,817	1,286	626	1,087	4,643	4,423	3,299	3,407
1981	3,147	3,007	2,758	2,514	1,957	1,370	1,320	1,962	4,354	4,227	2,637	2,269
1982	2,074	1,508	757	443	443	443	443	309	2,986	4,731	4,322	4,230
1983	4,112	3,526	2,596	2,293	2,033	1,737	751	959	4,780	4,854	4,956	3,828
1984	3,969	3,051	2,080	1,537	1,101	829	611	2,140	4,499	4,805	4,856	4,584
1985	4,682	4,477	3,722	2,932	2,654	2,019	997	1,478	4,822	4,865	4,155	4,237
1986	2,914	2,361	1,858	1,678	1,479	1,248	993	366	4,222	4,947	4,811	4,742
1987	4,788	4,031	3,590	3,041	2,557	1,838	953	3,238	4,824	4,901	4,655	4,815
1988	4,416	4,178	3,347	2,585	2,104	1,505	208	1,031	4,694	4,592	4,840	4,907
1989	4,777	4,531	3,765	2,687	1,742	1,132	516	1,035	2,281	4,407	4,945	4,879
1990	4,805	4,631	3,618	2,952	2,420	1,869	1,347	783	3,258	4,398	4,805	4,513
1991	4,354	4,213	3,258	2,569	2,288	1,980	546	736	3,397	4,741	4,814	4,861
1992	4,787	4,685	3,839	2,959	2,177	1,353	449	1,397	4,695	4,540	4,936	4,980
1993	4,899	4,770	4,286	3,796	3,346	2,051	307	1,289	4,914	4,671	4,617	4,954
1994	5,030	4,825	4,295	3,747	2,877	1,699	573	1,276	4,414	4,159	3,715	4,405
1995	4,871	4,802	4,504	4,213	3,632	1,800	408	202	4,870	5,069	4,851	3,847
1996	4,041	4,949	4,783	4,610	4,449	2,847	815	502	4,907	4,976	4,196	4,993
1997	4,898	3,978	2,978	2,821	2,041	1,209	744	752	4,965	4,910	4,888	4,465
1998	4,819	4,772	4,673	3,801	2,861	1,815	829	1,582	2,458	4,889	4,386	4,463
1999	4,612	4,520	3,835	2,925	2,046	1,082	389	788	4,733	4,893	4,903	4,778
2000	4,991	4,991	4,929	4,086	3,183	2,133	1,327	2,600	4,827	4,733	4,884	4,884
2001	4,882	4,882	4,863	4,123	2,711	814	387	1,532	2,481	2,794	2,998	3,961
2002	4,918	4,909	4,827	3,890	2,800	1,585	644	1,321	2,971	2,966	1,050	1,050
2003	1,045	1,045	965	965	965	965	965	2,732	4,801	4,727	4,726	4,697
2004	4,873	4,949	4,363	2,923	1,236	562	529	1,978	4,447	4,714	3,817	3,835
2005	3,832	3,813	3,713	3,253	2,895	1,119	669	1,882	4,737	4,686	4,092	2,935
AVERAGE:	4,009	3,662	3,127	2,611	2,050	1,335	662	1,382	4,155	4,545	4,266	4,192
MINIMUM:	1,045	590	206	206	206	206	161	82	2,281	2,794	1,050	1,050
MAXIMUM:	5,030	4,991	4,929	4,610	4,449	2,847	2,223	3,799	4,965	5,069	4,956	4,993

Elevenmile Canyon Reservoir Simulated End-Of-Month Contents
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1950	96,676	96,674	96,680	96,679	96,679	96,679	96,679	96,656	96,661	96,699	96,702	96,682
1951	96,664	96,559	96,579	96,492	96,666	96,673	96,673	96,631	96,249	96,689	96,699	96,624
1952	96,673	96,670	96,674	96,626	96,673	96,673	96,678	96,680	97,193	97,156	96,710	96,679
1953	96,666	96,685	96,674	96,644	96,673	96,673	96,677	96,612	96,663	96,716	96,705	96,628
1954	96,673	96,673	96,675	96,647	96,673	96,673	96,666	96,639	96,621	96,626	96,356	94,422
1955	92,192	90,217	87,030	80,783	75,210	70,279	66,691	64,262	63,941	61,373	57,776	56,192
1956	53,976	51,725	49,308	43,660	40,945	37,425	35,700	34,596	34,444	34,276	34,148	33,677
1957	32,724	31,757	30,446	29,500	29,109	29,020	29,016	29,013	35,121	72,539	97,710	97,619
1958	96,534	96,715	96,668	96,522	96,668	96,679	96,679	96,669	97,128	97,056	96,701	96,651
1959	96,579	96,646	96,663	96,527	96,656	96,672	96,676	96,626	96,636	96,702	96,704	96,668
1960	96,687	96,672	96,669	96,627	96,668	96,672	96,459	96,632	96,920	96,638	96,663	96,626
1961	96,670	96,658	96,665	96,596	96,669	96,674	96,674	96,618	96,590	96,720	96,732	96,697
1962	96,673	96,672	96,677	96,643	96,675	96,679	96,679	96,655	96,714	96,756	96,693	96,659
1963	96,670	96,678	96,680	96,665	96,669	96,672	96,671	96,641	96,642	96,624	96,591	96,641
1964	96,577	96,192	95,642	94,565	93,049	91,446	90,532	89,774	89,544	91,144	91,294	87,802
1965	82,919	76,848	75,797	70,514	66,484	63,105	61,737	61,541	63,213	86,657	96,834	96,691
1966	96,668	96,674	96,680	96,679	96,679	96,677	96,672	96,640	96,641	96,556	96,655	96,457
1967	95,679	95,428	95,467	95,068	95,491	96,229	96,651	96,633	96,609	96,702	96,707	96,685
1968	96,681	96,664	96,669	96,609	96,668	96,668	96,677	96,640	96,631	96,694	96,712	96,690
1969	96,674	96,666	96,669	96,591	96,668	96,668	96,672	96,650	97,237	97,709	96,668	96,680
1970	96,683	96,667	96,679	96,679	96,679	96,679	96,679	96,682	97,413	97,039	96,725	96,690
1971	96,673	96,676	96,675	96,679	96,679	96,679	96,676	96,808	96,809	96,725	96,708	96,613
1972	96,679	96,675	96,680	96,679	96,679	96,679	96,679	96,654	96,679	96,696	96,704	96,692
1973	96,675	96,669	96,680	96,679	96,679	96,679	96,677	96,700	97,364	97,307	96,991	96,683
1974	96,673	96,672	96,680	96,679	96,679	96,679	96,662	96,464	96,585	96,715	96,700	96,682
1975	96,675	96,672	96,680	96,679	96,679	96,679	96,679	96,655	96,782	96,733	96,711	96,685
1976	96,675	96,678	96,680	96,679	96,679	96,679	96,679	96,661	96,669	96,710	96,713	96,709
1977	96,684	96,674	96,680	96,679	96,679	96,679	96,679	96,648	96,639	96,674	96,659	96,515
1978	96,192	96,555	96,676	96,666	96,666	96,666	96,364	95,834	96,356	96,682	96,692	96,601
1979	96,518	96,636	96,649	94,033	93,009	92,682	94,172	96,327	96,919	97,439	96,711	96,684
1980	96,674	96,672	96,673	96,650	96,670	96,671	96,673	96,689	97,394	97,362	96,710	96,672
1981	96,626	96,674	96,676	96,634	96,670	96,677	96,679	96,650	96,654	96,655	96,659	96,646
1982	96,613	96,649	96,666	96,480	96,668	96,667	96,663	96,659	96,666	96,694	96,706	96,698

Elevenmile Canyon Reservoir Simulated End-Of-Month Contents
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1983	96,674	96,673	96,674	96,634	96,669	96,675	96,661	96,605	96,817	97,630	97,201	96,652
1984	96,650	96,674	96,679	96,679	96,679	96,679	96,679	96,649	97,067	97,517	96,875	96,689
1985	96,696	96,666	96,596	96,658	96,679	96,679	96,679	96,679	97,215	97,050	96,695	96,692
1986	96,670	96,683	96,680	96,679	96,679	96,679	96,625	96,581	96,663	96,933	96,723	96,687
1987	96,679	96,688	96,680	96,679	96,679	96,679	96,675	96,680	97,276	97,366	96,716	96,681
1988	96,663	96,676	96,680	96,679	96,679	96,679	96,679	96,654	96,665	96,785	96,715	96,686
1989	96,667	96,675	96,680	96,679	96,679	96,679	96,679	96,652	96,687	96,710	96,709	96,687
1990	96,665	96,672	96,680	96,679	96,679	96,679	96,676	96,653	96,659	96,719	96,715	96,690
1991	96,673	96,674	96,680	96,679	96,679	96,679	96,679	96,666	96,687	96,728	96,735	96,689
1992	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
1993	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
1994	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
1995	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
1996	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
1997	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
1998	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
1999	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
2000	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
2001	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
2002	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
2003	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
2004	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
2005	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
AVERAGE:	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
MINIMUM:	32,724	31,757	30,446	29,500	29,109	29,020	29,016	29,013	34,444	34,276	34,148	33,677
MAXIMUM:	96,696	96,715	96,680	96,679	96,679	96,679	96,679	96,700	97,413	97,709	97,710	97,619

Source: Elevenmile Reservoir end-of-month contents from Denver Water's PACSM model for the Existing System Existing Demand simulation (Base285). Data from PACSM from 1950 through 1991. EOM contents from 1992 through 2005 were assumed to be the average of 1950 through 1991.

NO ACTION ALTERNATIVE

Diversions

Simulated Homestake Tunnel Deliveries
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1951	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1952	2,335	0	0	0	1,806	8,765	12,642	3,667	2,862	2,471	850	468	35,866
1953	2,578	747	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	26,779
1954	2,335	0	0	0	0	4,942	7,339	1,710	1,506	156	1,146	1,715	20,849
1955	61	170	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	23,685
1956	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1957	2,335	0	0	0	1,806	8,765	3,782	3,667	2,862	2,471	850	468	27,006
1958	2,578	747	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	26,779
1959	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1960	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1961	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1962	2,335	0	0	0	0	5,661	6,162	781	3,110	3,786	1,187	49	23,071
1963	2,335	0	0	0	0	5,661	8,547	781	3,110	3,786	1,187	49	25,456
1964	2,335	0	0	0	0	2,308	0	781	3,110	3,786	1,187	49	13,556
1965	2,335	0	0	0	0	4,299	0	781	3,110	3,786	1,187	49	15,547
1966	2,335	0	0	0	0	4,942	7,339	1,710	1,506	156	1,146	1,715	20,849
1967	61	170	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	23,685
1968	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1969	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1970	2,335	0	0	0	0	5,661	8,343	781	3,110	3,786	1,187	49	25,252
1971	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1972	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1973	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1974	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1975	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1976	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1977	2,335	0	0	0	0	4,942	7,339	1,710	1,506	156	1,146	1,715	20,849
1978	61	170	0	0	0	5,661	8,697	781	3,110	3,786	1,187	49	23,502
1979	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1980	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1981	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1982	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789

Simulated Homestake Tunnel Deliveries
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1983	2,335	0	0	0	1,806	8,765	12,642	3,667	2,862	2,471	850	468	35,866
1984	2,578	747	0	0	1,806	8,765	12,642	3,667	2,862	2,471	850	468	36,856
1985	2,578	747	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	26,779
1986	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1987	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1988	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1989	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1990	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1991	2,335	0	0	0	0	5,661	8,880	781	3,110	3,786	1,187	49	25,789
1992	2,335	0	0	0	0	5,651	5,326	0	0	0	2,339	5,596	21,247
1993	303	0	0	0	0	9,024	7,616	0	2,114	8,190	1,048	22	28,317
1994	0	0	0	0	0	8,535	10,462	0	2,928	0	0	2,331	24,256
1995	11,390	0	0	0	0	312	14,431	0	1	4,414	3,687	0	34,235
1996	0	0	0	0	0	7,255	14,852	1,730	7,237	6,372	1,131	0	38,577
1997	0	0	0	0	0	9,795	14,712	0	4,146	5,981	2,612	0	37,246
1998	409	0	0	0	0	8,146	725	951	6,702	6,897	1,084	0	24,914
1999	0	0	0	0	0	8,445	14,760	3,302	0	3,218	1,304	275	31,304
2000	0	0	0	0	0	4,453	9,510	0	7,530	780	382	392	23,047
2001	0	0	0	0	0	8,933	16,977	8,997	0	0	509	0	35,416
2002	1,093	3,735	0	0	0	5,312	10,584	0	0	0	3,006	2,589	26,319
2003	0	0	0	0	0	0	0	0	9,843	0	0	0	9,843
2004	14,010	0	0	0	0	212	5,088	0	0	0	0	0	19,310
2005	0	0	0	0	0	8,036	9,488	431	0	0	0	0	17,955
AVERAGE:	2,174	129	0	0	129	5,847	8,706	1,117	2,952	3,191	1,169	356	25,771
MINIMUM:	0	0	0	0	0	0	0	0	0	0	0	0	9,843
MAXIMUM:	14,010	3,735	0	0	1,806	9,795	16,977	8,997	9,843	8,190	3,687	5,596	38,577

Simulated Hoosier Tunnel Deliveries
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	264	0	0	0	0	0	24	1,231	3,383	1,691	1,046	1,017	8,656
1951	188	0	0	0	0	0	24	1,231	3,383	1,691	1,046	1,017	8,580
1952	1,008	0	0	0	0	0	47	1,334	4,920	2,626	1,785	1,156	12,876
1953	1,056	0	0	0	0	0	0	294	2,315	1,496	646	85	5,892
1954	1,930	0	0	0	0	0	0	1,060	1,404	1,048	0	0	5,442
1955	0	0	0	0	0	0	0	688	1,777	2,110	1,870	1,113	7,558
1956	913	0	0	0	0	0	0	2,205	4,760	1,843	492	0	10,213
1957	1,723	0	0	0	0	0	0	374	4,657	2,080	0	0	8,834
1958	2,067	0	0	0	0	0	0	3,042	2,126	1,249	0	0	8,484
1959	1,949	0	0	0	0	0	0	489	5,040	2,471	496	0	10,445
1960	2,014	0	0	0	0	0	0	901	4,608	2,386	315	0	10,224
1961	1,893	0	0	0	0	0	0	1,180	3,836	428	0	751	8,088
1962	2,090	0	0	0	0	0	0	1,524	4,998	3,087	1,393	87	13,179
1963	2,000	0	0	0	0	0	49	2,293	3,257	98	224	0	7,921
1964	0	0	0	0	0	0	0	1,839	3,452	2,542	1,429	0	9,262
1965	312	0	0	0	0	0	0	651	4,891	615	1,053	842	8,364
1966	2,067	0	0	0	0	0	0	1,311	2,404	2,732	201	0	8,715
1967	0	0	0	0	0	0	100	1,074	3,265	3,457	1,224	968	10,088
1968	322	0	0	0	0	0	0	644	5,099	2,473	898	1,148	10,584
1969	1,084	0	0	0	0	0	73	2,590	735	1,396	609	1,470	7,957
1970	230	0	0	0	0	0	0	1,542	743	131	1,584	1,433	5,663
1971	2,067	0	0	0	0	0	0	780	4,906	1,856	1,936	1,729	13,274
1972	493	0	0	0	0	0	0	1,422	3,448	1,626	1,609	848	9,446
1973	0	0	0	0	0	0	0	370	1,581	849	1,083	1,846	5,729
1974	188	0	0	0	0	0	0	1,202	4,033	2,074	1,222	1,855	10,574
1975	179	0	0	0	0	0	0	378	3,133	2,092	1,296	1,584	8,662
1976	642	0	0	0	0	0	0	1,013	4,566	1,993	1,598	1,282	11,094
1977	745	0	0	0	0	0	27	158	1,915	410	0	0	3,255
1978	0	0	0	0	0	0	49	684	4,762	1,088	1,241	1,822	9,646
1979	212	0	0	0	0	0	0	1,064	3,863	1,653	1,510	1,782	10,084
1980	251	0	0	0	0	0	0	188	1,678	1,595	2,068	0	5,780
1981	0	0	0	0	0	0	38	757	3,135	734	0	0	4,664
1982	0	0	0	0	0	0	0	603	4,236	3,370	1,263	1,230	10,702

Simulated Hoosier Tunnel Deliveries
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1983	2,067	0	0	0	0	0	0	274	3,238	414	874	538	7,405
1984	2,067	0	0	0	0	0	0	968	1,763	741	739	1,373	7,651
1985	2,067	0	0	0	0	0	0	865	2,279	1,141	970	1,227	8,549
1986	342	0	0	0	0	0	0	989	5,625	2,541	1,809	1,818	13,124
1987	2,067	0	0	0	0	0	167	2,404	2,098	720	1,450	919	9,825
1988	0	0	0	0	0	0	14	1,212	5,470	1,691	761	1,205	10,353
1989	333	0	0	0	0	0	80	1,807	3,516	3,973	1,320	0	11,029
1990	518	0	0	0	0	0	7	996	5,148	2,851	2,046	0	11,566
1991	0	0	0	0	0	0	0	1,299	4,559	3,353	1,768	972	11,951
1992	0	0	0	0	0	0	86	2,318	3,627	3,425	1,303	0	10,759
1993	0	0	0	0	0	0	0	1,386	4,814	2,599	1,965	422	11,186
1994	1,799	0	0	0	0	0	103	1,652	4,272	148	15	1,241	9,230
1995	587	0	0	0	0	0	0	0	2,643	26	704	329	4,289
1996	2,013	0	0	0	0	0	0	462	5,823	1,422	1,004	1,382	12,106
1997	869	0	0	0	0	0	0	631	4,082	791	412	1,016	7,801
1998	2,067	0	0	0	0	0	0	676	1,489	3,570	775	1,898	10,475
1999	353	0	0	0	0	0	3	950	3,610	1,727	1,745	1,687	10,075
2000	345	0	0	0	0	0	0	2,232	3,693	1,686	1,451	0	9,407
2001	629	0	0	0	0	0	5	2,122	1,403	207	147	1,020	5,533
2002	566	0	0	0	0	0	49	756	1,549	0	0	0	2,920
2003	0	0	0	0	0	0	23	2,068	3,126	812	79	978	7,086
2004	1,189	0	0	0	0	0	119	1,334	2,525	1,180	0	0	6,347
2005	0	0	0	0	0	0	107	1,661	3,669	2,641	1,148	719	9,945
AVERAGE:	853	0	0	0	0	0	21	1,164	3,434	1,690	958	782	8,903
MINIMUM:	0	0	0	0	0	0	0	0	735	0	0	0	2,920
MAXIMUM:	2,090	0	0	0	0	0	167	3,042	5,823	3,973	2,068	1,898	13,274

NO ACTION ALTERNATIVE

Substitution Summary

Simulated Springs Utilities Total Substitution Bill Repayment
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	0	0	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0	0	0	2,759	0	2,759
1955	0	0	0	0	0	0	0	0	0	0	724	0	724
1956	0	0	0	0	0	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	2,333	0	2,333
1962	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	4,319	0	4,319
1964	0	0	0	0	0	0	0	0	0	0	621	0	621
1965	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	2,318	0	2,318
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	1,606	0	1,606
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	2,397	0	2,397

Simulated Springs Utilities Total Substitution Bill Repayment
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	750	0	750
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	139	0	139
1995	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	390	0	390
2002	0	0	0	0	0	0	0	0	0	0	2,709	0	2,709
2003	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	2,730	0	2,730
2005	0	0	0	0	0	0	0	0	0	0	0	0	0
AVERAGE:	0	0	0	0	0	0	0	0	0	0	425	0	425
MINIMUM:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAXIMUM:	0	0	0	0	0	0	0	0	0	0	4,319	0	4,319

NO ACTION ALTERNATIVE

Streamflows

Simulated Flows at Homestake Creek below Homestake Project at USGS Gage 09064000
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	1,242	833	738	615	444	430	703	2,375	5,588	1,432	719	624	15,743
1951	353	309	332	228	194	277	750	2,927	6,575	4,428	1,380	523	18,278
1952	676	369	338	277	230	215	218	2,112	7,965	2,632	1,476	1,321	17,829
1953	398	249	228	240	205	231	658	2,029	7,546	2,432	1,215	392	15,823
1954	242	286	234	230	194	207	1,903	3,183	7,997	2,402	754	690	18,322
1955	1,012	521	413	292	215	262	1,209	1,816	3,326	4,739	2,408	556	16,769
1956	314	415	408	346	300	405	402	4,092	4,537	2,242	1,181	275	14,917
1957	230	237	211	216	205	278	738	1,511	7,423	6,757	1,272	1,153	20,231
1958	541	517	436	367	309	321	627	3,551	4,356	706	1,032	414	13,177
1959	223	224	187	204	168	199	642	1,884	5,506	1,036	1,253	480	12,006
1960	1,306	716	330	271	232	423	482	1,722	5,153	1,434	1,517	485	14,071
1961	327	308	205	184	171	218	487	2,186	3,056	2,301	1,456	983	11,882
1962	829	1,153	857	493	458	533	680	2,309	4,778	2,697	1,476	584	16,847
1963	403	239	168	180	191	344	1,132	2,631	2,702	2,426	2,591	1,307	14,314
1964	461	381	233	282	236	256	602	2,429	3,299	5,100	2,547	741	16,567
1965	394	360	356	340	266	284	1,032	2,202	6,010	5,074	1,428	600	18,346
1966	1,476	649	489	363	283	422	1,129	2,072	1,537	2,201	3,256	567	14,444
1967	552	247	212	235	223	508	255	3,091	4,560	1,520	1,906	1,355	14,864
1968	738	467	298	271	240	329	490	658	5,960	1,366	1,468	1,681	13,966
1969	1,176	765	730	501	392	444	390	3,787	3,848	1,792	1,402	835	16,062
1970	967	559	422	380	313	368	741	4,611	6,698	1,876	1,476	1,296	19,705
1971	1,476	983	720	412	367	521	313	1,646	4,296	1,528	1,292	922	14,476
1972	599	405	472	389	369	536	911	1,989	6,776	1,522	1,259	1,428	16,655
1973	1,458	824	655	206	20	309	718	2,001	6,360	3,954	813	652	17,970
1974	235	275	176	328	496	233	160	3,462	5,189	1,546	1,412	98	13,610
1975	333	188	124	19	362	158	908	1,225	4,888	5,247	592	687	14,731
1976	602	344	146	103	109	177	633	2,986	4,098	1,612	1,476	749	13,035
1977	838	50	217	232	193	680	881	2,171	5,891	1,542	881	568	14,144
1978	814	548	433	295	249	329	313	2,460	8,416	4,203	2,829	692	21,581
1979	428	232	375	359	381	1,039	147	2,956	5,702	3,814	667	836	16,936
1980	303	410	491	286	16	293	1,358	1,953	6,880	2,256	1,310	775	16,331
1981	580	450	552	313	212	423	368	1,924	3,865	2,611	994	1,175	13,467
1982	748	615	473	229	307	293	468	1,636	6,133	3,632	1,259	1,728	17,521
1983	1,194	773	634	620	274	320	122	895	6,786	5,168	2,103	1,343	20,232
1984	1,125	816	677	538	488	605	786	4,129	6,865	4,874	2,908	1,080	24,691
1985	1,101	704	441	405	376	613	318	4,561	9,268	4,768	1,155	899	24,609
1986	416	911	826	640	567	715	544	2,519	12,750	8,651	14	1,427	29,980
1987	1,405	808	767	544	406	544	460	3,611	3,562	1,000	1,217	473	14,797

Simulated Flows at Homestake Creek below Homestake Project at USGS Gage 09064000
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1988	218	242	434	659	140	325	331	1,872	5,404	863	924	1,461	12,873
1989	869	287	48	224	245	781	546	3,166	3,253	1,476	1,025	300	12,220
1990	58	265	199	155	151	308	1,136	2,110	5,338	1,476	357	97	11,650
1991	503	912	280	243	229	318	497	3,306	5,455	1,766	1,635	1,130	16,274
1992	500	418	309	195	206	321	1,845	3,906	3,355	5,531	1,590	1,164	19,340
1993	1,092	845	599	525	498	513	703	4,056	6,499	3,902	1,476	1,473	22,181
1994	880	761	465	377	349	435	1,088	3,811	4,288	2,207	942	852	16,455
1995	642	465	240	192	221	405	611	1,181	8,300	10,434	2,305	1,428	26,424
1996	1,300	658	671	631	544	532	283	4,507	7,518	2,466	1,476	1,081	21,667
1997	828	545	420	377	52	543	252	3,899	10,796	3,511	2,277	1,463	24,963
1998	1,332	642	344	237	191	307	179	2,996	5,130	3,560	1,789	804	17,511
1999	698	502	314	145	268	461	890	2,689	6,354	2,528	1,695	1,428	17,972
2000	929	485	286	247	270	310	487	5,906	8,886	3,217	1,068	1,091	23,182
2001	714	415	295	265	211	263	1,193	4,518	4,165	3,389	1,707	769	17,904
2002	455	334	34	190	189	321	1,508	10,452	6,051	884	508	867	21,793
2003	1,289	805	297	185	166	281	1,330	4,355	5,263	1,476	1,276	1,437	18,160
2004	437	295	304	251	208	433	1,936	3,327	3,198	3,809	908	676	15,782
2005	684	549	288	344	546	402	409	3,441	4,708	1,785	1,689	397	15,242
AVERAGE:	731	510	390	319	274	393	713	2,943	5,716	3,011	1,429	898	17,327
MINIMUM:	58	50	34	19	16	158	122	658	1,537	706	14	97	11,650
MAXIMUM:	1,476	1,153	857	659	567	1,039	1,936	10,452	12,750	10,434	3,256	1,728	29,980

Simulated Flows at Homestake Creek below Homestake Project at USGS Gage 09064000
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	20	14	12	10	8	7	12	39	94	23	12	10	22
1951	6	5	5	4	3	5	13	48	110	72	22	9	25
1952	11	6	5	5	4	3	4	34	134	43	24	22	25
1953	6	4	4	4	4	4	11	33	127	40	20	7	22
1954	4	5	4	4	3	3	32	52	134	39	12	12	25
1955	16	9	7	5	4	4	20	30	56	77	39	9	23
1956	5	7	7	6	5	7	7	67	76	36	19	5	21
1957	4	4	3	4	4	5	12	25	125	110	21	19	28
1958	9	9	7	6	6	5	11	58	73	11	17	7	18
1959	4	4	3	3	3	3	11	31	93	17	20	8	17
1960	21	12	5	4	4	7	8	28	87	23	25	8	19
1961	5	5	3	3	3	4	8	36	51	37	24	17	16
1962	13	19	14	8	8	9	11	38	80	44	24	10	23
1963	7	4	3	3	3	6	19	43	45	39	42	22	20
1964	7	6	4	5	4	4	10	40	55	83	41	12	23
1965	6	6	6	6	5	5	17	36	101	83	23	10	25
1966	24	11	8	6	5	7	19	34	26	36	53	10	20
1967	9	4	3	4	4	8	4	50	77	25	31	23	20
1968	12	8	5	4	4	5	8	11	100	22	24	28	19
1969	19	13	12	8	7	7	7	62	65	29	23	14	22
1970	16	9	7	6	6	6	12	75	113	31	24	22	27
1971	24	17	12	7	7	8	5	27	72	25	21	15	20
1972	10	7	8	6	7	9	15	32	114	25	20	24	23
1973	24	14	11	3	0	5	12	33	107	64	13	11	25
1974	4	5	3	5	9	4	3	56	87	25	23	2	19
1975	5	3	2	0	7	3	15	20	82	85	10	12	20
1976	10	6	2	2	2	3	11	49	69	26	24	13	18
1977	14	1	4	4	3	11	15	35	99	25	14	10	20
1978	13	9	7	5	4	5	5	40	141	68	46	12	30
1979	7	4	6	6	7	17	2	48	96	62	11	14	23
1980	5	7	8	5	0	5	23	32	116	37	21	13	23
1981	9	8	9	5	4	7	6	31	65	42	16	20	19
1982	12	10	8	4	6	5	8	27	103	59	20	29	24
1983	19	13	10	10	5	5	2	15	114	84	34	23	28
1984	18	14	11	9	9	10	13	67	115	76	47	18	34
1985	18	12	7	7	7	10	5	74	156	78	19	15	34
1986	7	15	13	10	10	12	9	41	214	141	0	24	41
1987	23	14	12	9	7	9	8	59	60	16	20	8	20

Simulated Flows at Homestake Creek below Homestake Project at USGS Gage 09064000
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1988	4	4	7	11	3	5	6	30	91	14	15	25	18
1989	14	5	1	4	4	13	9	51	55	24	17	5	17
1990	1	4	3	3	3	5	19	34	90	24	6	2	16
1991	8	15	5	4	4	5	8	54	92	29	27	19	22
1992	8	7	5	3	4	5	31	64	56	90	26	20	27
1993	18	14	10	9	9	8	12	66	109	63	24	25	31
1994	14	13	8	6	6	7	18	62	72	36	15	14	23
1995	10	8	4	3	4	7	10	19	139	170	37	24	36
1996	21	11	11	10	10	9	5	73	126	40	24	18	30
1997	13	9	7	6	1	9	4	63	181	57	37	25	34
1998	22	11	6	4	3	5	3	49	86	58	29	14	24
1999	11	8	5	2	5	7	15	44	107	41	28	24	25
2000	15	8	5	4	5	5	8	96	149	52	17	18	32
2001	12	7	5	4	4	4	20	73	70	55	28	13	25
2002	7	6	1	3	3	5	25	170	102	14	8	15	30
2003	21	14	5	3	3	5	22	71	88	24	21	24	25
2004	7	5	5	4	4	7	33	54	54	62	15	11	22
2005	11	9	5	6	10	7	7	56	79	29	27	7	21
AVERAGE:	12	9	6	5	5	6	12	48	96	49	23	15	24
MINIMUM:	1	1	1	0	0	3	2	11	26	11	0	2	16
MAXIMUM:	24	19	14	11	10	17	33	170	214	170	53	29	41

Simulated Flows at Blue River below Green Mountain Reservoir
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	554	278	171	163	205	211	92	61	509	567	595	310	311
1951	515	229	198	196	208	196	226	113	525	1,762	598	397	433
1952	552	315	301	292	311	286	90	134	2,311	982	411	384	530
1953	522	276	261	272	284	296	241	67	347	767	324	337	334
1954	523	264	256	427	172	257	254	70	240	699	185	178	295
1955	152	132	110	99	101	115	92	61	173	411	500	292	187
1956	505	192	183	175	183	187	90	120	568	539	610	312	306
1957	513	219	221	213	209	208	202	76	64	1,179	937	498	381
1958	378	360	325	298	330	323	210	166	2,055	524	683	292	494
1959	507	171	166	177	175	173	279	67	142	366	689	361	274
1960	635	272	216	216	244	263	90	91	583	663	631	303	352
1961	516	222	206	192	211	218	269	65	169	634	545	402	305
1962	327	340	205	221	242	260	90	151	1,936	1,082	341	588	481
1963	584	194	272	190	202	210	93	64	171	833	493	229	297
1964	138	137	123	124	126	139	242	88	152	178	613	246	193
1965	440	191	182	181	181	179	93	85	138	840	977	605	343
1966	456	357	307	306	337	338	100	61	164	672	511	207	319
1967	242	165	147	141	144	173	90	61	124	178	748	396	218
1968	474	184	165	159	160	154	259	62	144	178	156	353	204
1969	516	242	241	242	251	237	90	225	157	847	620	351	337
1970	358	362	329	284	297	283	102	150	2,150	1,283	552	412	546
1971	364	360	302	286	308	319	90	94	1,586	1,067	350	586	475
1972	504	244	240	226	245	265	94	93	822	511	570	377	350
1973	318	297	275	270	285	276	293	87	176	1,130	243	629	357
1974	531	255	225	233	240	257	90	93	1,312	629	393	337	383
1975	534	259	238	248	258	250	120	61	98	1,240	299	462	341
1976	485	246	223	216	245	234	94	151	107	176	447	371	250
1977	562	190	187	184	197	203	412	133	166	499	216	146	259
1978	199	169	168	154	155	178	91	140	169	362	550	405	229
1979	511	230	237	235	249	244	92	119	118	1,215	438	374	341
1980	515	264	254	257	283	293	92	61	1,351	1,020	634	319	446
1981	481	212	200	189	203	208	400	123	162	414	156	209	247
1982	190	150	139	143	142	183	276	86	130	182	370	498	207
1983	393	329	294	301	325	366	266	62	1,828	2,330	1,029	1,039	715
1984	585	286	239	208	229	219	104	581	3,306	2,391	1,393	845	868
1985	632	490	453	398	398	403	90	204	2,339	1,139	358	444	611

Simulated Flows at Blue River below Green Mountain Reservoir
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1986	443	396	337	331	372	414	90	103	1,695	1,279	274	427	513
1987	385	371	299	282	308	317	90	61	547	339	504	874	364
1988	374	177	157	155	163	195	90	61	547	606	628	248	285
1989	522	204	173	179	188	211	90	150	142	341	629	301	262
1990	548	186	161	153	162	171	344	93	165	342	424	246	251
1991	443	209	179	176	169	152	247	151	191	667	826	443	323
1992	508	201	172	170	177	181	95	121	168	420	158	255	220
1993	377	185	202	200	222	248	214	128	1,283	1,273	408	355	425
1994	305	296	271	271	291	292	100	61	181	696	521	222	293
1995	235	191	165	161	179	202	317	84	907	2,655	701	418	521
1996	393	361	330	328	359	338	90	728	2,929	1,132	999	324	693
1997	292	277	240	233	247	267	91	141	2,995	1,227	554	473	585
1998	381	353	310	326	344	345	90	61	173	760	358	668	348
1999	553	211	173	175	187	213	95	137	873	1,176	351	360	377
2000	533	292	265	265	287	279	90	61	1,137	532	494	317	379
2001	499	233	216	216	229	238	225	61	213	652	279	276	279
2002	520	203	175	169	164	195	357	97	508	293	191	199	256
2003	308	181	149	141	140	177	101	75	173	495	841	298	258
2004	537	185	166	162	169	192	175	61	190	681	162	214	242
2005	253	186	159	159	184	192	90	87	136	172	602	343	214
AVERAGE:	440	250	224	221	230	240	160	119	744	808	519	389	363
MINIMUM:	138	132	110	99	101	115	90	61	64	172	156	146	187
MAXIMUM:	635	490	453	427	398	414	412	728	3,306	2,655	1,393	1,039	868

Simulated Flows at Blue River below Green Mountain Reservoir
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	34,047	16,549	10,497	10,045	11,397	12,984	5,489	3,761	30,277	34,838	36,580	18,447	224,911
1951	31,645	13,611	12,177	12,047	11,574	12,039	13,425	6,937	31,234	108,339	36,800	23,630	313,458
1952	33,939	18,718	18,514	17,941	17,297	17,580	5,382	8,265	137,518	60,383	25,251	22,839	383,627
1953	32,096	16,412	16,023	16,712	15,773	18,204	14,344	4,123	20,668	47,192	19,900	20,063	241,510
1954	32,132	15,702	15,718	26,277	9,561	15,789	15,111	4,321	14,279	42,950	11,374	10,616	213,830
1955	9,350	7,857	6,770	6,110	5,636	7,100	5,485	3,760	10,286	25,268	30,749	17,361	135,732
1956	31,043	11,422	11,248	10,736	10,162	11,490	5,382	7,405	33,795	33,114	37,515	18,556	221,868
1957	31,537	13,010	13,567	13,090	11,608	12,787	12,005	4,701	3,786	72,518	57,606	29,605	275,820
1958	23,232	21,417	19,974	18,349	18,351	19,857	12,479	10,210	122,258	32,208	41,978	17,391	357,704
1959	31,194	10,190	10,355	10,864	9,739	10,645	16,597	4,096	8,420	22,488	42,364	21,506	198,458
1960	39,074	16,181	13,285	13,269	13,550	16,174	5,382	5,574	34,681	40,773	38,769	18,044	254,756
1961	31,719	13,185	12,691	11,784	11,713	13,404	16,010	3,967	10,042	38,981	33,528	23,892	220,916
1962	20,100	20,207	12,616	13,574	13,438	15,997	5,382	9,309	115,183	66,540	20,945	34,976	348,267
1963	35,880	11,567	16,727	11,699	11,217	12,895	5,562	3,919	10,156	51,194	30,329	13,656	214,801
1964	8,456	8,127	7,545	7,646	6,987	8,572	14,381	5,394	9,060	10,938	37,687	14,610	139,403
1965	27,084	11,392	11,161	11,131	10,061	11,014	5,563	5,224	8,200	51,646	60,066	35,971	248,513
1966	28,028	21,255	18,905	18,840	18,723	20,758	5,968	3,780	9,758	41,316	31,400	12,326	231,037
1967	14,868	9,798	9,056	8,897	7,983	10,632	5,382	3,760	7,386	10,938	45,993	23,541	158,034
1968	29,172	10,960	10,149	9,801	8,893	9,440	15,418	3,784	8,594	10,938	9,563	21,017	147,729
1969	31,732	14,387	14,797	14,854	13,947	14,589	5,382	13,855	9,368	52,062	38,102	20,916	243,991
1970	22,017	21,516	20,238	17,466	16,468	17,419	6,073	9,205	127,911	78,863	33,937	24,537	395,650
1971	22,354	21,437	18,550	17,606	17,101	19,616	5,382	5,757	94,346	65,632	21,492	34,852	344,125
1972	30,990	14,509	14,729	13,909	13,630	16,283	5,584	5,727	48,893	31,418	35,063	22,421	253,156
1973	19,551	17,682	16,909	16,608	15,812	16,985	17,422	5,377	10,496	69,460	14,918	37,456	258,656
1974	32,668	15,151	13,827	14,319	13,315	15,804	5,382	5,717	78,077	38,665	24,183	20,059	277,167
1975	32,832	15,413	14,664	15,258	14,323	15,357	7,138	3,760	5,831	76,265	18,364	27,512	246,717
1976	29,818	14,662	13,688	13,255	13,600	14,411	5,581	9,255	6,353	10,803	27,497	22,064	180,987
1977	34,535	11,329	11,489	11,331	10,936	12,471	24,537	8,162	9,698	30,654	13,278	8,705	187,325
1978	12,222	10,031	10,319	9,477	8,617	10,973	5,401	8,600	10,036	22,284	33,811	24,087	165,858
1979	31,429	13,695	14,582	14,450	13,856	14,996	5,460	7,346	7,051	74,719	26,954	22,234	246,772
1980	31,658	15,737	15,631	15,806	15,718	18,041	5,460	3,760	80,418	62,748	39,002	18,995	322,974
1981	29,551	12,636	12,319	11,605	11,265	12,770	23,787	7,585	9,636	25,438	9,599	12,466	178,657
1982	11,707	8,911	8,520	8,784	7,878	11,270	16,438	5,291	7,730	11,172	22,761	29,662	150,124
1983	24,170	19,566	18,080	18,518	18,049	22,519	15,818	3,784	108,782	143,243	63,274	61,843	517,646
1984	35,982	17,152	14,716	12,761	12,695	13,481	6,218	35,710	196,697	147,048	85,666	50,277	628,403
1985	38,839	29,145	27,830	24,448	22,094	24,787	5,382	12,516	139,186	70,022	22,004	26,441	442,694

Simulated Flows at Blue River below Green Mountain Reservoir
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1986	27,232	23,562	20,723	20,365	20,673	25,452	5,382	6,352	100,840	78,648	16,842	25,395	371,466
1987	23,650	22,087	18,384	17,366	17,122	19,504	5,382	3,760	32,546	20,868	31,019	52,023	263,713
1988	22,983	10,562	9,644	9,532	9,044	11,963	5,382	3,760	32,557	37,266	38,636	14,773	206,102
1989	32,099	12,126	10,630	10,988	10,458	12,991	5,382	9,241	8,459	20,938	38,684	17,915	189,911
1990	33,716	11,065	9,899	9,412	6,977	10,534	20,497	5,698	9,844	21,002	26,087	14,643	181,374
1991	27,215	12,447	11,004	10,839	9,369	9,352	14,709	9,261	11,382	40,997	50,762	26,353	233,690
1992	31,253	11,932	10,579	10,434	9,819	11,100	5,680	7,455	9,996	25,845	9,739	15,194	159,026
1993	23,209	11,012	12,442	12,310	12,354	15,224	12,726	7,855	76,368	78,265	25,072	21,154	307,991
1994	18,756	17,614	16,636	16,693	16,150	17,978	5,964	3,760	10,742	42,799	32,038	13,233	212,363
1995	14,479	11,375	10,134	9,874	9,932	12,421	18,877	5,153	53,988	163,267	43,093	24,872	377,465
1996	24,154	21,494	20,320	20,170	19,928	20,799	5,382	44,736	174,295	69,633	61,422	19,282	501,615
1997	17,981	16,511	14,740	14,305	13,732	16,399	5,401	8,657	178,188	75,467	34,082	28,141	423,804
1998	23,440	21,026	19,050	20,027	19,122	21,191	5,382	3,760	10,268	46,708	22,034	39,746	251,754
1999	34,002	12,553	10,623	10,760	10,370	13,071	5,638	8,421	51,965	72,332	21,582	21,418	272,735
2000	32,790	17,347	16,300	16,303	15,937	17,145	5,382	3,760	67,661	32,717	30,389	18,835	274,566
2001	30,689	13,857	13,303	13,257	12,730	14,611	13,372	3,761	12,678	40,085	17,138	16,399	201,880
2002	31,949	12,096	10,749	10,385	9,123	11,981	21,245	5,992	30,249	18,029	11,720	11,843	185,361
2003	18,910	10,788	9,140	8,644	7,803	10,864	6,008	4,592	10,272	30,452	51,719	17,707	186,899
2004	33,047	11,020	10,235	9,991	9,410	11,790	10,438	3,760	11,306	41,845	9,981	12,734	175,557
2005	15,574	11,093	9,795	9,798	10,194	11,810	5,382	5,376	8,094	10,560	36,987	20,438	155,101
AVERAGE:	27,032	14,858	13,789	13,581	12,772	14,738	9,550	7,300	44,250	49,657	31,917	23,119	262,562
MINIMUM:	8,456	7,657	6,770	6,110	5,636	7,100	5,382	3,760	3,786	10,560	9,563	8,705	135,732
MAXIMUM:	39,074	29,145	27,830	26,277	22,094	25,452	24,537	44,736	196,697	163,267	85,666	61,843	628,403

Simulated Flows at Blue River below Dillon Reservoir at USGS Gage 09050700
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	50	50	50	68	50	50	50	50	311	155	50	50	82
1951	50	50	50	59	71	50	50	50	564	924	289	50	189
1952	50	50	50	50	50	50	50	126	1,940	467	110	50	252
1953	50	50	50	50	50	50	50	50	496	345	79	50	114
1954	50	50	50	50	68	50	50	50	50	246	50	50	68
1955	50	50	50	52	55	62	50	50	50	50	249	50	68
1956	50	50	50	50	50	62	50	50	50	50	218	50	65
1957	50	50	50	50	50	50	50	50	50	391	594	156	134
1958	80	84	50	50	50	50	50	694	1,228	243	50	50	223
1959	50	50	50	50	50	50	50	50	274	222	214	50	97
1960	122	50	50	50	50	50	50	50	735	339	195	50	149
1961	50	50	50	50	50	50	50	50	50	155	288	50	79
1962	50	142	50	61	66	80	50	729	1,145	446	50	50	244
1963	50	50	50	50	50	50	50	50	50	204	244	50	80
1964	50	50	50	50	50	62	50	50	50	50	287	50	71
1965	50	50	50	50	50	62	50	50	50	134	559	234	117
1966	140	77	50	50	50	50	50	50	159	186	154	50	89
1967	50	50	50	50	50	62	50	50	50	50	197	65	65
1968	50	50	50	50	50	50	50	50	50	93	175	50	64
1969	50	50	50	50	50	50	50	50	657	456	233	50	150
1970	81	88	86	50	50	50	50	681	1,497	717	69	50	290
1971	79	82	50	50	50	50	50	378	1,373	517	50	50	231
1972	50	50	50	50	50	50	50	50	953	145	50	50	132
1973	50	50	50	50	50	50	50	50	394	705	50	50	134
1974	50	50	50	50	50	62	50	416	870	203	50	50	162
1975	50	50	50	50	50	50	50	50	179	912	50	50	134
1976	50	50	50	50	50	50	50	50	50	50	50	50	50
1977	58	50	50	51	50	50	50	50	50	200	50	50	63
1978	113	76	80	73	70	90	50	50	50	50	114	50	72
1979	50	53	50	50	52	50	50	50	121	657	126	50	114
1980	50	50	50	50	50	71	50	50	1,511	551	174	50	225
1981	50	50	50	50	50	50	50	50	50	50	50	50	50
1982	50	50	50	50	53	84	50	50	50	50	50	113	58
1983	93	50	50	63	68	118	50	226	1,711	1,209	460	185	358
1984	83	87	50	50	50	53	50	1,061	1,929	1,338	840	323	495

Simulated Flows at Blue River below Dillon Reservoir at USGS Gage 09050700
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1985	228	117	101	82	50	61	167	755	1,283	516	50	50	289
1986	77	62	50	50	50	74	50	374	1,430	678	50	50	250
1987	67	61	50	50	50	60	50	258	823	162	220	50	158
1988	50	50	50	50	50	73	50	50	697	304	50	50	127
1989	50	50	50	50	50	56	50	50	131	114	245	50	79
1990	50	50	50	52	50	50	50	50	50	220	50	50	65
1991	50	50	50	50	50	50	50	50	597	301	245	155	141
1992	50	50	50	50	50	50	50	50	50	50	50	50	50
1993	50	50	82	80	94	123	50	50	1,385	616	50	50	223
1994	50	50	50	50	50	50	50	50	336	186	50	50	85
1995	50	50	50	50	50	62	50	50	1,349	1,615	326	50	314
1996	62	57	50	50	50	50	50	1,357	1,824	598	160	50	364
1997	50	58	50	50	50	54	50	582	2,111	651	219	50	331
1998	50	50	50	50	50	50	50	50	654	351	50	50	125
1999	50	50	50	50	50	50	50	50	1,372	705	124	50	221
2000	50	50	50	50	50	50	50	485	851	189	50	50	165
2001	50	50	50	50	50	50	50	50	347	165	50	50	84
2002	68	107	92	89	82	101	50	50	50	136	455	99	116
2003	104	95	79	75	75	100	50	50	50	50	248	50	86
2004	50	50	50	50	50	50	50	50	50	159	50	50	59
2005	50	50	50	50	71	81	50	50	50	50	224	50	69
AVERAGE:	63	59	54	54	54	60	52	183	612	364	170	67	149
MINIMUM:	50	50	50	50	50	50	50	50	50	50	50	50	50
MAXIMUM:	228	142	101	89	94	123	167	1,357	2,111	1,615	840	323	495

Simulated Flows at Blue River below Dillon Reservoir at USGS Gage 09050700
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	3,074	2,975	3,074	4,190	2,777	3,074	2,975	3,074	18,481	9,534	3,074	2,975	59,277
1951	3,074	2,975	3,074	3,645	3,935	3,074	2,975	3,074	33,538	56,844	17,764	2,975	136,947
1952	3,074	2,975	3,074	3,074	2,777	3,074	2,975	7,734	115,426	28,726	6,763	2,975	182,647
1953	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	29,530	21,237	4,833	2,975	82,672
1954	3,074	2,975	3,074	3,074	3,787	3,074	2,975	3,074	2,975	15,131	3,074	2,975	49,262
1955	3,074	2,975	3,074	3,192	3,036	3,824	2,975	3,074	2,975	3,074	15,341	2,975	49,589
1956	3,074	2,975	3,074	3,074	2,777	3,825	2,975	3,074	2,975	3,074	13,408	2,975	47,280
1957	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	24,027	36,522	9,261	96,882
1958	4,916	4,992	3,074	3,074	2,777	3,074	2,975	42,703	73,096	14,962	3,074	2,975	161,692
1959	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	16,276	13,639	13,161	2,975	70,148
1960	7,504	2,975	3,074	3,074	2,777	3,074	2,975	3,074	43,733	20,870	11,981	2,975	108,086
1961	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	9,553	17,711	2,975	57,311
1962	3,074	8,459	3,074	3,738	3,640	4,924	2,975	44,850	68,118	27,403	3,074	2,975	176,304
1963	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	12,562	14,990	2,975	57,599
1964	3,074	2,975	3,074	3,074	2,777	3,824	2,975	3,074	2,975	3,074	17,642	2,975	51,513
1965	3,074	2,975	3,074	3,074	2,777	3,824	2,975	3,074	2,975	8,241	34,390	13,897	84,350
1966	8,578	4,556	3,074	3,074	2,777	3,074	2,975	3,074	9,484	11,434	9,441	2,975	64,516
1967	3,074	2,975	3,074	3,074	2,777	3,825	2,975	3,074	2,975	3,074	12,116	3,889	46,902
1968	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	5,718	10,748	2,975	46,513
1969	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	39,071	28,030	14,334	2,975	108,507
1970	4,964	5,262	5,314	3,074	2,777	3,074	2,975	41,894	89,102	44,112	4,216	2,975	209,739
1971	4,829	4,879	3,074	3,074	2,777	3,074	2,975	23,214	81,681	31,796	3,074	2,975	167,422
1972	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	56,691	8,924	3,074	2,975	95,761
1973	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	23,441	43,370	3,074	2,975	96,957
1974	3,074	2,975	3,074	3,074	2,777	3,785	2,975	25,572	51,779	12,476	3,074	2,975	117,610
1975	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	10,634	56,103	3,074	2,975	96,883
1976	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	3,074	3,074	2,975	36,195
1977	3,542	2,975	3,074	3,153	2,777	3,074	2,975	3,074	2,975	12,287	3,074	2,975	45,955
1978	6,962	4,494	4,913	4,495	3,866	5,558	2,975	3,074	2,975	3,074	7,036	2,975	52,397
1979	3,074	3,135	3,074	3,074	2,913	3,074	2,975	3,074	7,207	40,417	7,749	2,975	82,741
1980	3,074	2,975	3,074	3,074	2,777	4,356	2,975	3,074	89,905	33,910	10,698	2,975	162,867
1981	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	3,074	3,074	2,975	36,195
1982	3,074	2,975	3,074	3,074	2,939	5,154	2,975	3,074	2,975	3,074	3,074	6,700	42,162
1983	5,688	2,975	3,074	3,897	3,749	7,258	2,975	13,870	101,820	74,359	28,254	10,980	258,899
1984	5,108	5,198	3,074	3,074	2,777	3,274	2,975	65,247	114,759	82,259	51,626	19,216	358,587

Simulated Flows at Blue River below Dillon Reservoir at USGS Gage 09050700
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1985	14,024	6,983	6,241	5,066	2,777	3,723	9,962	46,404	76,342	31,733	3,074	2,975	209,304
1986	4,710	3,698	3,074	3,074	2,777	4,575	2,975	23,008	85,071	41,681	3,074	2,975	180,692
1987	4,136	3,629	3,074	3,074	2,777	3,679	2,975	15,881	48,946	9,949	13,547	2,975	114,642
1988	3,074	2,975	3,074	3,074	2,777	4,504	2,975	3,074	41,469	18,678	3,074	2,975	91,723
1989	3,074	2,975	3,074	3,074	2,777	3,420	2,975	3,074	7,789	6,995	15,043	2,975	57,245
1990	3,074	2,975	3,074	3,210	2,777	3,074	2,975	3,074	2,975	13,508	3,074	2,975	46,765
1991	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	35,527	18,499	15,038	9,196	102,357
1992	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	3,074	3,074	2,975	36,195
1993	3,074	2,975	5,057	4,934	5,243	7,551	2,975	3,074	82,411	37,896	3,074	2,975	161,239
1994	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	19,993	11,425	3,074	2,975	61,564
1995	3,074	2,975	3,074	3,074	2,777	3,825	2,975	3,074	80,278	99,295	20,025	2,975	227,421
1996	3,806	3,409	3,074	3,074	2,777	3,074	2,975	83,456	108,538	36,773	9,854	2,975	263,785
1997	3,074	3,426	3,074	3,074	2,777	3,307	2,975	35,764	125,597	40,018	13,471	2,975	239,532
1998	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	38,934	21,577	3,074	2,975	90,657
1999	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	81,621	43,373	7,610	2,975	159,676
2000	3,074	2,975	3,074	3,074	2,777	3,074	2,975	29,849	50,662	11,641	3,074	2,975	119,224
2001	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	20,652	10,151	3,074	2,975	60,949
2002	4,176	6,394	5,684	5,457	4,539	6,228	2,975	3,074	2,975	8,350	27,958	5,899	83,709
2003	6,376	5,638	4,855	4,599	4,146	6,157	2,975	3,074	2,975	3,074	15,251	2,975	62,095
2004	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	9,755	3,074	2,975	42,876
2005	3,074	2,975	3,074	3,074	3,930	4,963	2,975	3,074	2,975	3,074	13,787	2,975	49,950
AVERAGE:	3,846	3,502	3,317	3,301	2,998	3,693	3,100	11,224	36,430	22,376	10,466	3,961	108,214
MINIMUM:	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	3,074	3,074	2,975	36,195
MAXIMUM:	14,024	8,459	6,241	5,457	5,243	7,551	9,962	83,456	125,597	99,295	51,626	19,216	358,587

Simulated Flows at Blue River below Continental-Hoosier Project
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	35	22	16	11	12	13	26	74	171	82	40	33	45
1951	24	16	13	11	12	13	19	117	239	203	77	43	66
1952	29	20	14	11	12	10	35	125	216	67	37	29	50
1953	26	17	15	13	12	12	16	83	250	97	47	24	51
1954	18	14	13	12	12	11	22	39	28	47	45	26	24
1955	27	17	15	12	11	11	28	58	66	44	54	47	33
1956	24	20	16	15	13	13	20	150	128	44	39	27	43
1957	17	17	16	15	15	11	18	67	219	237	125	50	68
1958	30	23	17	15	12	12	15	137	184	51	45	33	48
1959	21	16	14	15	15	12	15	67	135	56	44	35	37
1960	27	19	16	13	12	12	30	48	103	59	38	26	34
1961	21	16	13	12	10	10	13	37	56	61	94	20	30
1962	42	25	17	15	15	13	39	105	92	72	17	11	39
1963	15	15	14	12	11	12	19	9	9	31	67	38	21
1964	18	16	13	12	11	10	12	43	46	37	63	14	25
1965	13	15	13	13	11	10	15	84	234	244	117	27	67
1966	33	20	18	15	14	12	19	35	29	19	63	21	25
1967	15	15	12	11	10	11	17	30	64	25	50	28	24
1968	17	17	15	13	12	10	13	36	102	56	81	32	34
1969	31	19	16	13	12	11	20	58	127	86	49	51	41
1970	23	21	17	14	13	13	15	153	248	164	45	19	62
1971	33	23	19	16	14	13	30	84	157	103	29	30	46
1972	32	16	17	14	13	14	23	62	150	50	36	31	38
1973	16	17	16	13	12	12	13	78	180	124	38	22	45
1974	18	17	15	14	13	13	16	112	97	73	29	25	37
1975	23	18	14	11	12	12	14	61	115	129	51	31	41
1976	24	18	16	14	13	12	19	65	75	51	33	32	31
1977	30	17	14	11	11	11	21	56	49	37	43	21	27
1978	16	12	11	10	9	10	20	75	203	135	32	25	47
1979	21	17	15	12	12	12	18	66	172	132	50	31	47
1980	25	23	18	14	12	12	15	98	252	117	42	34	55
1981	25	22	18	14	12	13	19	27	47	39	51	38	27
1982	25	20	18	17	16	15	19	70	137	86	68	30	44
1983	38	27	21	18	19	17	16	61	299	238	109	70	78
1984	46	36	28	21	18	16	19	167	276	192	121	44	82
1985	51	39	26	19	16	15	41	166	186	109	45	41	63
1986	36	26	18	15	14	15	27	78	101	88	24	7	38
1987	28	21	16	14	11	13	24	78	120	59	44	25	38

Simulated Flows at Blue River below Continental-Hoosier Project
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1988	19	17	14	15	16	14	25	65	104	72	48	31	37
1989	26	23	18	15	15	13	33	94	101	36	49	31	38
1990	26	20	14	12	12	11	24	52	93	38	42	38	32
1991	43	25	20	17	16	17	23	100	122	39	50	36	42
1992	26	16	13	10	9	10	22	77	68	35	65	36	33
1993	22	16	12	9	10	11	16	105	162	90	27	32	43
1994	18	18	17	13	11	11	31	67	70	54	40	31	32
1995	22	17	12	9	10	9	16	68	314	331	116	51	82
1996	36	20	21	18	17	13	32	233	203	115	36	35	65
1997	32	25	20	17	14	15	30	147	290	145	96	35	72
1998	31	23	16	13	12	13	16	60	82	47	48	34	33
1999	29	22	20	15	14	12	18	80	199	121	42	38	51
2000	25	17	15	13	12	16	27	118	87	43	34	35	37
2001	22	16	15	12	11	11	23	102	141	102	55	38	46
2002	24	18	14	12	11	10	18	23	17	25	35	17	19
2003	18	13	13	11	10	10	20	118	183	92	50	32	48
2004	22	15	15	12	12	13	18	25	20	29	59	22	22
2005	21	18	16	12	10	11	17	50	74	34	46	23	28
AVERAGE:	26	19	16	13	13	12	21	81	137	89	54	32	43
MINIMUM:	13	12	11	9	9	9	12	9	9	19	17	7	19
MAXIMUM:	51	39	28	21	19	17	41	233	314	331	125	70	82

Simulated Flows at Blue River below Continental-Hoosier Project
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	2,129	1,316	983	696	657	809	1,566	4,543	10,156	5,046	2,439	1,980	32,320
1951	1,465	931	816	706	687	800	1,156	7,210	14,224	12,468	4,720	2,546	47,729
1952	1,798	1,185	886	660	642	613	2,089	7,695	12,836	4,117	2,305	1,737	36,543
1953	1,615	1,038	896	805	645	744	942	5,115	14,884	5,988	2,901	1,423	36,996
1954	1,111	851	797	715	675	702	1,332	2,390	1,655	2,888	2,791	1,538	17,445
1955	1,665	1,008	914	754	637	696	1,667	3,554	3,952	2,683	3,296	2,803	23,629
1956	1,469	1,198	987	937	730	826	1,186	9,229	7,605	2,713	2,374	1,619	30,873
1957	1,029	1,015	956	905	827	686	1,086	4,145	13,054	14,589	7,666	2,979	48,937
1958	1,861	1,353	1,045	922	685	749	883	8,423	10,960	3,120	2,743	1,971	34,715
1959	1,284	941	891	893	825	756	891	4,127	8,029	3,465	2,726	2,059	26,887
1960	1,668	1,149	968	779	655	747	1,784	2,956	6,154	3,802	2,347	1,523	24,332
1961	1,278	947	828	713	575	623	744	2,287	3,339	3,732	5,772	1,166	22,004
1962	2,609	1,465	1,065	929	817	794	2,342	6,487	5,455	4,457	1,074	679	28,173
1963	913	914	862	723	627	747	1,110	527	564	1,934	4,121	2,282	15,324
1964	1,129	978	771	708	636	642	719	2,638	2,766	2,300	3,902	862	18,051
1965	800	895	823	780	632	624	910	5,176	13,920	14,995	7,194	1,597	48,346
1966	1,999	1,163	1,089	907	758	765	1,139	2,149	1,743	1,160	3,900	1,241	18,013
1967	910	879	767	686	581	699	1,004	1,836	3,816	1,567	3,069	1,679	17,493
1968	1,074	1,006	934	793	650	645	748	2,242	6,085	3,438	5,010	1,928	24,553
1969	1,930	1,150	994	770	646	701	1,186	3,556	7,576	5,281	3,042	3,048	29,880
1970	1,387	1,270	1,020	881	744	615	864	9,433	14,783	10,060	2,795	1,101	45,153
1971	2,037	1,341	1,189	972	788	787	1,772	5,135	9,335	8,324	1,797	1,778	33,255
1972	1,983	976	1,029	888	721	831	1,368	3,791	8,940	3,063	2,211	1,840	27,641
1973	980	997	977	816	670	725	744	4,780	10,724	7,630	2,322	1,329	32,694
1974	1,120	1,032	912	835	724	816	949	6,889	5,767	4,485	1,757	1,467	26,753
1975	1,425	1,070	843	691	639	758	833	3,751	6,859	7,919	3,150	1,827	29,765
1976	1,500	1,058	995	870	719	732	1,146	3,968	4,440	3,147	2,050	1,899	22,524
1977	1,838	997	833	686	596	656	1,235	3,462	2,901	2,292	2,635	1,239	19,370
1978	992	740	702	638	527	614	1,187	4,592	12,087	8,277	1,939	1,511	33,806
1979	1,296	1,041	913	748	645	712	1,050	4,083	10,253	8,089	3,058	1,827	33,715
1980	1,521	1,375	1,130	860	686	720	922	6,028	14,987	7,212	2,612	2,005	40,058
1981	1,566	1,313	1,095	855	679	795	1,152	1,637	2,782	2,388	3,137	2,271	19,670
1982	1,560	1,191	1,121	1,050	880	934	1,108	4,314	8,138	5,269	4,173	1,810	31,548
1983	2,330	1,618	1,281	1,101	1,051	1,055	977	3,745	17,805	14,664	6,728	4,149	56,504
1984	2,819	2,125	1,741	1,301	997	962	1,116	10,266	16,410	11,823	7,413	2,596	59,569
1985	3,160	2,314	1,611	1,151	869	895	2,437	10,213	11,083	8,682	2,780	2,417	45,612
1986	2,226	1,525	1,105	916	789	893	1,610	4,810	5,996	5,409	1,474	413	27,166
1987	1,704	1,278	1,013	833	630	780	1,404	4,785	7,137	3,644	2,676	1,475	27,359

Simulated Flows at Blue River below Continental-Hoosier Project
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1988	1,192	1,030	869	947	880	883	1,472	3,971	6,199	4,449	2,971	1,832	26,695
1989	1,608	1,346	1,108	950	844	780	1,980	5,780	5,999	2,218	3,024	1,874	27,511
1990	1,599	1,176	850	765	639	673	1,440	3,204	5,509	2,352	2,573	2,266	23,046
1991	2,649	1,478	1,227	1,044	877	1,038	1,346	6,164	7,257	2,416	3,096	2,115	30,707
1992	1,615	954	818	620	525	598	1,322	4,743	4,050	2,123	4,007	2,157	23,532
1993	1,361	959	709	554	545	696	926	6,479	9,634	5,552	1,685	1,897	30,997
1994	1,096	1,042	1,025	829	638	661	1,827	4,119	4,174	3,316	2,490	1,864	23,081
1995	1,357	1,021	724	553	545	560	931	4,151	18,684	20,340	7,123	3,050	59,039
1996	2,216	1,203	1,300	1,090	963	830	1,885	14,350	12,060	7,051	2,212	2,086	47,246
1997	1,942	1,487	1,213	1,022	771	953	1,813	9,011	17,245	8,910	5,931	2,054	52,352
1998	1,936	1,356	997	612	693	804	939	3,708	4,860	2,874	2,964	2,027	23,970
1999	1,799	1,305	1,201	920	800	736	1,084	4,945	11,870	7,437	2,590	2,261	36,948
2000	1,543	1,013	894	780	689	962	1,626	7,231	5,187	2,673	2,071	2,095	26,764
2001	1,325	943	932	757	604	646	1,351	6,302	8,391	6,291	3,378	2,245	33,165
2002	1,457	1,059	882	725	629	623	1,099	1,391	1,034	1,529	2,166	1,007	13,601
2003	1,078	792	824	663	541	594	1,190	7,232	10,887	5,661	3,063	1,923	34,448
2004	1,371	912	895	748	655	782	1,073	1,538	1,203	1,784	3,635	1,289	15,885
2005	1,276	1,096	955	767	563	674	995	3,059	4,422	2,101	2,804	1,387	20,099
AVERAGE:	1,600	1,157	986	829	703	756	1,262	4,988	8,176	5,482	3,319	1,876	31,134
MINIMUM:	800	740	702	553	525	560	719	527	564	1,160	1,074	413	13,601
MAXIMUM:	3,160	2,314	1,741	1,301	1,051	1,055	2,437	14,350	18,684	20,340	7,666	4,149	59,569

Simulated Flows at Muddy Creek below Wolford Mountain Reservoir
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	91	10	10	7	9	15	130	147	320	56	104	33	77
1951	96	12	14	8	12	18	77	245	396	122	25	77	92
1952	79	16	14	8	14	17	60	614	606	87	26	119	139
1953	171	35	28	27	15	29	77	132	388	68	21	198	99
1954	11	20	11	12	9	17	90	57	139	49	256	33	59
1955	275	26	22	16	13	20	122	57	82	73	100	96	76
1956	13	19	16	12	9	24	150	89	297	60	108	104	75
1957	11	20	15	14	12	19	77	195	682	225	35	21	110
1958	23	30	20	16	16	26	78	603	304	58	109	128	118
1959	11	25	20	15	11	14	73	102	355	63	74	145	75
1960	20	22	13	15	14	72	69	469	307	67	105	105	107
1961	13	23	17	18	9	19	56	152	208	66	198	24	67
1962	13	57	39	40	37	130	461	747	378	125	31	157	185
1963	59	26	21	17	14	29	89	74	211	145	156	55	75
1964	252	54	24	22	15	60	53	56	81	82	103	121	77
1965	9	21	20	18	12	15	116	67	559	145	31	19	85
1966	25	37	26	22	11	37	90	333	182	59	320	104	105
1967	9	13	17	16	9	34	80	57	166	93	85	141	60
1968	39	27	20	16	12	14	58	57	398	79	33	115	72
1969	94	24	22	20	12	19	13	954	245	100	79	158	147
1970	18	39	30	25	13	26	88	434	363	89	113	14	105
1971	20	29	21	17	17	50	121	469	474	111	28	17	115
1972	15	25	22	17	23	55	124	637	361	53	136	49	127
1973	18	26	21	18	15	25	65	499	343	134	33	109	109
1974	115	27	20	17	16	46	76	812	294	82	107	105	144
1975	15	24	16	16	17	27	70	153	386	126	30	200	90
1976	17	26	19	19	18	35	88	527	276	66	102	116	110
1977	16	17	13	12	10	11	99	300	88	140	103	10	69
1978	316	15	10	12	9	24	133	44	320	111	107	129	103
1979	11	19	23	16	9	23	107	391	495	95	24	206	118
1980	10	23	19	15	20	25	92	287	499	73	111	115	107
1981	13	21	12	12	7	13	78	318	211	96	249	35	90
1982	252	25	17	13	10	23	60	37	446	109	25	23	87
1983	21	21	18	15	16	24	64	366	767	261	44	54	139
1984	17	20	24	23	24	27	82	856	660	180	36	22	165

Simulated Flows at Muddy Creek below Wolford Mountain Reservoir
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1985	25	24	25	24	25	47	241	765	302	76	17	12	132
1986	13	23	31	25	41	88	302	739	388	118	23	19	151
1987	15	21	17	16	21	30	201	339	172	64	17	199	93
1988	8	12	12	13	15	32	183	356	334	65	101	107	103
1989	13	22	17	16	16	82	13	307	198	72	193	29	82
1990	11	14	9	8	11	25	130	39	173	109	234	34	67
1991	12	17	8	6	8	32	86	187	393	82	104	108	87
1992	8	13	9	8	11	25	100	66	139	63	239	73	63
1993	27	13	9	11	14	28	74	185	426	90	21	21	77
1994	24	16	13	10	13	27	121	338	163	136	176	7	88
1995	11	11	8	11	14	20	54	41	607	119	23	22	78
1996	25	18	13	18	27	37	178	699	448	83	105	18	140
1997	22	21	17	17	20	68	46	780	622	90	22	9	145
1998	21	13	18	21	24	65	86	332	218	89	22	99	84
1999	19	18	12	14	18	47	87	293	445	86	25	21	90
2000	163	18	11	14	19	26	148	395	190	68	203	27	108
2001	9	17	15	10	14	25	81	88	174	69	188	124	68
2002	12	15	11	10	10	18	69	129	64	151	174	28	58
2003	137	11	6	7	8	20	129	50	133	79	115	123	68
2004	9	22	9	11	12	49	99	68	49	68	270	20	58
2005	280	15	8	18	12	18	138	38	155	76	20	118	75
AVERAGE:	54	22	17	16	15	33	106	314	323	96	99	78	98
MINIMUM:	8	10	6	6	7	11	13	37	49	49	17	7	58
MAXIMUM:	316	57	39	40	41	130	461	954	767	261	320	206	185

Simulated Flows at Muddy Creek below Wolford Mountain Reservoir
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	5,614	573	596	407	474	913	7,706	9,038	19,059	3,421	6,370	1,934	56,105
1951	5,873	731	838	484	652	1,087	4,578	15,066	23,571	7,532	1,520	4,595	66,527
1952	4,831	925	856	500	767	1,048	3,593	37,724	36,048	5,319	1,600	7,094	100,305
1953	10,491	2,086	1,728	1,655	806	1,605	4,602	8,109	23,116	4,151	1,267	11,775	71,591
1954	664	1,179	704	748	494	1,032	5,343	3,505	8,262	3,033	15,753	1,969	42,686
1955	16,931	1,554	1,370	968	715	1,213	7,286	3,505	4,886	4,486	6,144	5,726	54,764
1956	777	1,101	954	751	485	1,460	8,914	5,493	17,683	3,701	6,618	6,190	54,127
1957	649	1,206	915	875	650	1,185	4,591	11,984	40,607	13,816	2,136	1,223	79,837
1958	1,397	1,799	1,207	998	896	1,586	4,647	37,062	18,074	3,552	6,685	7,631	85,534
1959	667	1,501	1,213	900	606	840	4,356	6,249	21,139	3,887	4,563	8,629	54,550
1960	1,223	1,312	787	951	751	4,426	4,100	28,828	18,249	4,143	6,441	6,250	77,461
1961	785	1,397	1,031	1,128	515	1,155	3,314	9,364	12,378	4,068	12,166	1,427	48,728
1962	799	3,419	2,426	2,436	2,046	8,009	27,433	45,926	22,521	7,670	1,877	9,358	133,920
1963	3,626	1,529	1,265	1,054	768	1,762	5,291	4,521	12,529	8,905	9,615	3,297	54,162
1964	15,472	3,243	1,470	1,360	847	3,686	3,182	3,431	4,835	5,019	6,349	7,180	56,074
1965	555	1,251	1,217	1,130	646	914	6,909	4,089	33,269	8,895	1,861	1,131	61,887
1966	1,518	2,181	1,615	1,376	634	2,296	5,347	20,495	10,822	3,640	19,656	6,185	75,765
1967	533	772	1,063	998	490	2,062	4,782	3,505	9,860	5,734	5,198	8,419	43,416
1968	2,396	1,624	1,258	989	664	849	3,466	3,505	23,706	4,882	2,051	6,835	52,225
1969	5,785	1,422	1,355	1,241	661	1,180	774	58,681	14,606	6,145	4,828	9,399	106,077
1970	1,084	2,350	1,830	1,536	698	1,584	5,217	26,673	21,603	5,480	6,958	816	75,829
1971	1,216	1,738	1,305	1,024	955	3,082	7,182	28,849	28,190	6,819	1,737	1,000	83,097
1972	934	1,516	1,377	1,046	1,269	3,377	7,407	39,145	21,470	3,260	8,347	2,938	92,086
1973	1,078	1,532	1,293	1,106	831	1,536	3,842	30,713	20,383	8,229	2,002	6,507	79,052
1974	7,050	1,628	1,221	1,032	909	2,848	4,532	49,915	17,506	5,052	6,595	6,263	104,551
1975	945	1,439	983	977	953	1,646	4,150	9,438	22,950	7,755	1,872	11,892	65,000
1976	1,017	1,569	1,152	1,144	973	2,134	5,237	32,432	16,440	4,050	6,290	6,912	79,350
1977	975	1,007	821	755	565	703	5,905	18,436	5,226	8,595	6,359	584	49,931
1978	19,441	899	614	731	489	1,501	7,939	2,717	19,013	6,821	6,589	7,698	74,452
1979	666	1,157	1,393	987	500	1,408	6,366	24,032	29,447	5,833	1,474	12,247	85,510
1980	636	1,386	1,150	933	1,113	1,565	5,445	17,634	29,708	4,467	6,813	6,818	77,668
1981	771	1,222	726	768	413	828	4,615	19,579	12,582	5,923	15,295	2,079	64,801
1982	15,502	1,517	1,052	812	528	1,442	3,543	2,253	26,549	6,705	1,528	1,343	62,774
1983	1,318	1,247	1,067	953	910	1,461	3,829	22,515	45,612	16,037	2,680	3,218	100,867
1984	1,055	1,163	1,486	1,438	1,322	1,633	4,881	52,618	39,295	11,056	2,186	1,303	119,436

Simulated Flows at Muddy Creek below Wolford Mountain Reservoir
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1985	1,552	1,418	1,522	1,463	1,367	2,874	14,319	47,008	17,967	4,694	1,027	692	95,903
1986	799	1,361	1,893	1,521	2,303	5,419	17,941	45,427	23,085	7,272	1,386	1,118	109,525
1987	915	1,279	1,039	970	1,157	1,835	11,951	20,870	10,247	3,923	1,026	11,819	67,031
1988	466	743	718	771	809	1,945	10,864	21,877	19,889	4,015	6,235	6,390	74,722
1989	817	1,286	1,044	971	873	5,029	774	18,884	11,811	4,427	11,839	1,732	59,487
1990	696	840	579	494	619	1,556	7,754	2,383	10,300	6,685	14,383	2,022	48,311
1991	722	1,022	472	374	465	1,968	5,129	11,489	23,414	5,018	6,423	6,441	82,937
1992	466	786	562	495	600	1,512	6,937	4,046	8,300	3,881	14,675	4,372	45,632
1993	1,836	773	536	681	789	1,739	4,397	11,403	25,337	5,556	1,311	1,241	55,399
1994	1,472	949	777	618	708	1,681	7,206	20,779	9,685	8,337	10,843	418	63,473
1995	689	671	513	678	770	1,200	3,188	2,521	36,136	7,338	1,431	1,306	56,441
1996	1,558	1,076	822	1,078	1,508	2,284	10,592	43,007	26,677	5,075	6,449	1,049	101,177
1997	1,330	1,268	1,074	1,076	1,115	4,196	2,754	47,973	37,010	5,509	1,329	529	105,163
1998	1,270	774	1,122	1,276	1,332	3,984	5,115	20,413	12,949	5,501	1,348	5,885	60,969
1999	1,150	1,089	743	851	988	2,875	5,198	18,002	26,478	5,307	1,543	1,236	65,460
2000	10,039	1,097	695	838	1,033	1,619	8,806	24,263	11,312	4,201	12,478	1,581	77,962
2001	582	984	927	596	763	1,553	4,837	5,398	10,339	4,267	11,590	7,392	49,228
2002	734	903	671	599	580	1,118	4,084	7,916	3,810	9,285	10,721	1,657	42,078
2003	8,436	649	379	439	433	1,221	7,695	3,101	7,909	4,861	7,056	7,295	49,474
2004	559	1,288	568	656	652	2,989	5,866	4,157	2,915	4,163	16,625	1,191	41,629
2005	17,242	891	522	1,089	647	1,130	8,220	2,320	9,222	4,646	1,257	7,012	54,198
AVERAGE:	3,347	1,309	1,045	959	830	2,053	6,302	19,290	19,214	5,929	6,079	4,647	71,006
MINIMUM:	466	573	379	374	413	703	774	2,253	2,915	3,033	1,026	418	41,629
MAXIMUM:	19,441	3,419	2,426	2,436	2,303	8,009	27,433	58,681	45,612	16,037	19,656	12,247	133,920

Simulated Flows at Williams Fork River below Williams Fork Reservoir
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	204	136	78	63	77	97	15	29	247	55	321	159	124
1951	133	116	92	76	59	86	102	48	186	422	232	356	160
1952	208	127	102	96	84	88	15	54	799	273	256	256	196
1953	176	140	108	132	75	79	76	26	180	62	235	154	120
1954	128	134	112	102	52	73	90	34	37	106	142	110	94
1955	309	107	76	76	60	64	15	32	93	44	182	201	105
1956	119	125	89	71	79	85	15	78	237	46	186	104	103
1957	110	104	65	71	68	68	76	21	162	273	275	184	124
1958	250	138	123	115	86	89	79	79	398	70	287	142	155
1959	128	103	97	90	63	73	79	35	203	65	145	149	102
1960	140	157	127	85	85	99	27	38	164	63	183	125	108
1961	128	135	118	114	57	63	121	24	107	116	252	158	116
1962	186	121	137	87	71	81	21	99	657	336	203	131	178
1963	144	144	132	126	69	93	98	40	51	103	58	179	103
1964	264	94	64	59	63	72	132	28	127	55	104	118	98
1965	88	111	96	88	79	74	15	26	166	118	186	97	96
1966	93	86	119	77	52	98	103	49	68	34	316	109	101
1967	124	93	69	60	61	91	15	36	102	70	197	157	90
1968	145	117	82	70	77	80	136	15	264	63	19	301	113
1969	172	114	92	93	76	75	15	61	40	61	149	210	97
1970	41	81	57	94	83	82	83	73	134	222	162	161	106
1971	171	177	154	149	99	128	15	39	499	343	203	226	184
1972	199	132	117	107	93	129	27	45	257	59	317	130	135
1973	88	109	100	78	72	71	84	28	100	205	196	183	110
1974	134	150	131	129	71	94	15	69	441	183	267	163	154
1975	165	117	106	77	76	83	96	22	180	125	192	204	120
1976	145	100	86	76	77	84	33	37	140	69	159	175	98
1977	184	121	81	62	63	70	86	28	50	206	319	95	114
1978	190	80	49	44	43	54	15	46	214	101	112	146	91
1979	97	98	87	88	78	91	15	43	143	73	164	122	92
1980	114	115	101	105	95	67	84	27	130	73	145	179	103
1981	140	105	87	59	58	69	159	21	155	117	311	207	124
1982	131	98	60	80	64	48	60	18	121	120	132	65	83
1983	64	120	126	89	108	72	162	15	26	841	326	211	181
1984	186	154	147	114	94	116	90	79	1,009	542	331	210	256

Simulated Flows at Williams Fork River below Williams Fork Reservoir
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1985	231	176	148	154	87	108	15	69	456	137	163	172	160
1986	180	169	149	139	70	21	15	58	566	257	152	181	163
1987	173	167	144	137	102	93	15	57	78	32	171	115	107
1988	120	106	106	114	105	78	15	59	237	76	351	132	125
1989	109	113	95	84	85	104	15	56	131	125	72	163	96
1990	112	109	96	81	83	107	81	32	229	46	315	194	124
1991	196	129	89	75	72	90	94	48	199	62	121	102	106
1992	126	145	99	87	96	124	15	65	89	47	448	230	131
1993	246	141	71	49	48	56	70	15	168	112	126	244	112
1994	207	132	109	99	91	114	31	60	99	115	205	183	121
1995	132	107	85	75	86	107	165	15	221	280	272	322	155
1996	209	135	129	142	126	114	15	137	643	228	140	222	186
1997	208	171	140	80	253	80	15	64	664	284	215	167	194
1998	170	162	145	145	115	136	15	31	83	56	138	277	123
1999	204	149	98	107	103	146	98	31	105	43	120	317	126
2000	201	123	114	115	111	126	15	76	109	21	352	260	136
2001	167	122	123	101	97	116	92	52	90	30	446	221	138
2002	149	63	52	45	42	53	75	17	42	107	23	30	58
2003	46	59	49	44	40	47	109	18	223	59	214	293	100
2004	161	133	108	102	101	142	122	37	79	22	415	191	135
2005	215	135	96	97	59	52	15	46	155	50	168	153	104
AVERAGE:	158	123	102	92	81	88	60	44	224	141	212	179	126
MINIMUM:	41	59	49	44	40	21	15	15	26	21	19	30	58
MAXIMUM:	309	177	154	154	253	146	165	137	1,009	841	448	356	256

Simulated Flows at Williams Fork River below Williams Fork Reservoir
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	12,555	8,093	4,797	3,844	4,293	5,970	893	1,778	14,705	3,352	19,718	9,462	89,460
1951	8,187	6,924	5,682	4,686	3,270	5,305	6,055	2,928	11,079	25,965	14,279	21,203	115,563
1952	12,766	7,544	6,247	5,911	4,640	5,384	893	3,335	47,536	16,800	15,749	15,256	142,061
1953	10,844	8,324	6,621	8,127	4,148	4,838	4,535	1,589	10,731	3,798	14,421	9,155	87,131
1954	7,843	7,957	6,901	6,290	2,895	4,473	5,376	2,064	2,212	6,516	8,745	6,559	67,831
1955	18,992	6,353	4,648	4,651	3,308	3,948	893	1,957	5,557	2,724	11,173	11,955	76,159
1956	7,339	7,413	5,497	4,349	4,366	5,224	893	4,797	14,104	2,823	11,445	6,211	74,461
1957	6,769	6,196	4,014	4,366	3,775	4,169	4,552	1,285	9,653	16,817	16,924	10,975	89,495
1958	15,358	8,186	7,588	7,041	4,753	5,494	4,722	4,887	23,706	4,302	17,674	8,422	112,133
1959	7,852	6,119	5,934	5,544	3,523	4,480	4,708	2,139	12,055	3,988	8,910	8,847	74,099
1960	8,601	9,316	7,810	5,212	4,731	6,068	1,630	2,313	9,786	3,854	11,233	7,412	77,966
1961	7,848	8,049	7,244	7,036	3,150	3,893	7,174	1,475	6,365	7,124	15,504	9,389	84,251
1962	11,448	7,175	8,411	5,359	3,950	4,972	1,254	6,102	39,092	20,654	12,497	7,778	128,692
1963	8,855	8,563	8,126	7,765	3,813	5,712	5,806	2,462	3,022	6,326	3,558	10,668	74,676
1964	16,231	5,591	3,907	3,598	3,487	4,433	7,861	1,750	7,576	3,378	6,412	6,994	71,218
1965	5,424	6,595	5,880	5,414	4,415	4,575	893	1,624	9,896	7,278	11,452	5,755	69,201
1966	5,740	5,105	7,335	4,728	2,909	6,031	6,108	2,997	4,041	2,066	19,415	6,491	72,966
1967	7,597	5,525	4,238	3,698	3,412	5,569	893	2,185	6,048	4,295	12,125	9,332	64,917
1968	8,922	6,981	5,054	4,317	4,263	4,901	8,111	922	15,696	3,885	1,170	17,907	82,129
1969	10,578	6,783	5,640	5,691	4,234	4,613	893	3,744	2,381	3,755	9,137	12,503	69,952
1970	2,495	4,810	3,535	5,758	4,611	5,034	4,947	4,477	7,977	13,670	9,951	9,584	76,849
1971	10,531	10,506	9,499	9,169	5,497	7,848	893	2,398	29,706	21,099	12,460	13,446	133,052
1972	12,247	7,884	7,164	6,590	5,191	7,944	1,617	2,776	15,313	3,623	19,484	7,732	97,565
1973	5,381	6,504	6,129	4,784	3,988	4,338	4,978	1,739	5,933	12,612	12,026	10,910	79,322
1974	8,255	8,948	8,072	7,950	3,920	5,799	893	4,219	26,261	11,273	16,407	9,713	111,710
1975	10,139	6,952	6,547	4,705	4,243	5,125	5,705	1,373	10,701	7,690	11,792	12,118	87,090
1976	8,886	5,931	5,292	4,684	4,268	5,178	1,936	2,263	8,317	4,236	9,803	10,414	71,208
1977	11,306	7,185	4,962	3,840	3,514	4,324	5,096	1,716	2,988	12,640	19,610	5,670	82,851
1978	11,674	4,739	2,989	2,711	2,413	3,313	893	2,847	12,718	6,184	6,865	8,662	66,008
1979	5,942	5,826	5,326	5,409	4,322	5,595	893	2,855	8,496	4,481	10,056	7,259	66,260
1980	6,979	6,854	6,228	6,463	5,302	4,150	4,992	1,687	7,712	4,465	6,926	10,625	74,383
1981	8,618	6,273	5,322	3,801	3,200	4,232	9,486	1,294	9,216	7,201	19,114	12,327	89,884
1982	8,063	5,617	3,682	4,895	3,574	2,924	3,556	1,118	7,219	7,359	8,117	3,879	60,203
1983	3,941	7,169	7,718	5,447	5,988	4,409	9,650	922	1,556	51,726	20,053	12,582	131,161
1984	11,412	9,168	9,066	7,033	5,244	7,113	5,374	4,832	60,035	33,344	20,359	12,506	185,506

Simulated Flows at Williams Fork River below Williams Fork Reservoir
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1985	14,221	10,458	9,095	9,484	4,850	6,660	893	4,239	27,125	8,452	10,037	10,264	115,778
1986	11,091	10,031	9,138	8,546	3,882	1,280	893	3,596	33,665	15,793	9,351	10,771	118,037
1987	10,626	9,937	8,885	8,446	5,641	5,727	893	3,488	4,624	1,994	10,502	6,844	77,607
1988	7,394	6,323	6,501	6,993	5,820	4,816	893	3,636	14,094	4,688	21,571	7,865	90,594
1989	6,694	6,728	5,853	5,152	4,741	6,404	893	3,444	7,809	7,715	4,434	9,676	69,543
1990	6,909	6,485	5,932	4,983	4,624	6,610	4,824	1,967	13,641	2,834	19,356	11,551	89,716
1991	12,034	7,666	5,446	4,611	3,972	5,527	5,620	2,959	11,849	3,836	7,438	6,083	77,041
1992	7,769	8,641	6,083	5,357	5,354	7,648	893	4,009	5,293	2,863	27,571	13,698	95,179
1993	15,128	8,398	4,392	3,029	2,659	3,422	4,164	922	10,019	6,905	7,753	14,547	81,336
1994	12,719	7,877	6,725	6,085	5,044	6,986	1,852	3,711	5,873	7,073	12,586	10,906	87,437
1995	8,101	6,346	5,202	4,595	4,757	6,554	9,792	922	13,136	17,204	16,736	19,160	112,505
1996	12,881	8,019	7,928	8,701	6,994	7,008	921	8,417	38,235	13,990	8,630	13,186	134,910
1997	12,812	10,192	8,636	4,933	14,041	4,915	893	3,934	39,528	17,445	13,232	9,963	140,524
1998	10,435	9,613	8,910	8,934	6,411	8,374	893	1,929	4,951	3,450	8,479	16,491	88,870
1999	12,530	8,859	6,023	6,594	5,697	8,991	5,827	1,876	6,267	2,629	7,349	18,877	91,519
2000	12,350	7,346	7,007	7,084	6,189	7,776	893	4,675	6,502	1,320	21,636	15,471	98,249
2001	10,250	7,249	7,579	6,236	5,372	7,114	5,503	3,180	5,370	1,827	27,434	13,131	100,245
2002	9,157	3,736	3,200	2,764	2,353	3,246	4,462	1,029	2,523	6,606	1,391	1,782	42,249
2003	2,849	3,495	2,986	2,676	2,201	2,907	6,463	1,117	13,296	3,603	13,183	17,427	72,203
2004	9,926	7,914	6,621	6,258	5,612	8,758	7,252	2,275	4,724	1,376	25,504	11,347	97,567
2005	13,203	8,053	5,916	5,957	3,284	3,209	893	2,829	9,227	3,093	10,356	9,111	75,131
AVERAGE:	9,727	7,335	6,271	5,680	4,502	5,381	3,583	2,729	13,342	8,679	13,055	10,676	90,958
MINIMUM:	2,495	3,495	2,986	2,676	2,201	1,280	893	922	1,556	1,320	1,170	1,782	42,249
MAXIMUM:	18,992	10,506	9,499	9,484	14,041	8,991	9,792	8,417	60,035	51,726	27,571	21,203	185,506

Simulated Flows at Colorado River Below the Confluence with the Eagle River
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	1,242	860	599	552	655	694	1,265	1,914	4,241	1,523	1,317	968	1,319
1951	1,154	860	815	720	771	772	1,136	2,378	4,226	3,893	1,486	1,366	1,636
1952	1,379	1,055	912	872	851	838	1,383	4,668	10,579	2,962	1,785	1,883	2,429
1953	1,283	1,008	965	974	861	955	1,097	1,548	4,625	2,063	1,264	1,058	1,475
1954	1,002	983	844	898	698	769	1,092	1,196	1,159	1,199	951	710	960
1955	1,199	741	595	562	563	632	1,141	1,786	2,081	1,172	1,291	1,006	1,066
1956	951	840	777	687	671	840	1,196	3,207	3,636	1,209	1,470	824	1,362
1957	902	836	743	707	749	783	1,099	2,745	8,767	6,612	2,383	1,278	2,305
1958	1,164	1,187	1,057	887	956	964	1,100	5,085	6,746	1,218	1,395	926	1,891
1959	963	802	763	725	708	686	1,118	2,086	4,000	1,300	1,378	1,067	1,300
1960	1,479	1,119	850	713	765	1,145	1,445	2,446	4,383	1,520	1,313	901	1,508
1961	1,047	962	765	733	720	766	1,023	1,680	2,176	1,215	1,427	1,404	1,161
1962	1,589	1,243	926	844	959	1,070	3,009	5,971	8,810	4,335	1,277	1,232	2,608
1963	1,228	972	795	752	811	902	1,087	1,580	1,492	1,489	1,331	1,097	1,130
1964	979	763	556	566	549	627	1,061	1,992	2,582	1,187	1,422	870	1,098
1965	872	778	725	692	656	655	1,167	2,400	5,350	3,367	2,359	1,404	1,705
1966	1,264	1,099	990	880	861	1,072	1,050	2,015	1,469	1,241	1,491	752	1,186
1967	911	752	627	610	612	914	1,220	1,465	3,076	1,493	1,441	1,197	1,194
1968	1,041	694	1,068	628	668	625	1,105	1,829	4,716	1,526	1,270	1,209	1,365
1969	1,291	1,070	891	883	810	803	1,395	2,906	3,342	2,574	1,365	1,161	1,545
1970	1,244	982	969	917	848	906	1,040	5,385	7,230	3,390	1,515	1,420	2,159
1971	1,400	1,216	908	893	972	1,061	1,567	3,249	8,558	3,923	1,327	1,418	2,207
1972	1,275	1,138	888	825	887	1,090	1,065	2,386	5,210	1,346	1,427	1,211	1,561
1973	1,196	1,065	858	863	853	809	1,113	3,267	5,913	4,802	1,312	1,356	1,955
1974	1,308	1,029	931	918	856	1,056	1,227	5,127	6,143	2,250	1,420	999	1,943
1975	1,248	978	855	847	907	854	1,016	1,956	4,982	4,457	1,383	1,329	1,737
1976	1,229	1,013	869	857	889	933	1,157	2,410	2,899	1,357	1,404	1,190	1,352
1977	1,334	824	676	597	639	662	1,148	1,149	1,175	1,380	1,119	562	941
1978	1,143	794	744	652	638	796	1,202	2,541	5,765	2,428	1,398	1,082	1,600
1979	1,084	968	839	808	774	852	1,230	3,781	6,047	3,610	1,397	1,027	1,872
1980	1,056	984	915	958	924	902	1,120	3,022	6,606	2,928	1,470	1,102	1,833
1981	1,080	903	788	663	670	686	1,174	1,318	2,707	1,321	1,074	879	1,105
1982	1,131	855	696	704	648	734	1,060	2,198	4,654	2,620	1,321	1,225	1,489
1983	1,159	1,107	1,014	883	930	957	1,115	2,355	10,747	8,949	3,222	1,854	2,864
1984	1,412	1,178	1,089	873	934	858	1,036	8,598	15,098	8,058	3,698	2,167	3,761
1985	2,004	1,505	1,244	1,130	1,074	1,205	1,875	5,532	8,657	3,350	1,218	1,221	2,504
1986	1,479	1,449	1,183	1,086	1,177	1,295	2,124	4,752	9,541	4,750	1,292	1,356	2,625
1987	1,428	1,301	1,041	939	953	1,005	1,380	2,863	2,842	1,204	1,184	1,438	1,466
1988	882	993	829	811	825	841	1,175	2,329	4,144	1,448	1,440	834	1,379
1989	934	948	750	753	758	1,065	1,149	2,393	2,200	1,281	1,354	749	1,197

Simulated Flows at Colorado River Below the Confluence with the Eagle River
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1990	997	803	738	668	652	810	1,240	1,223	2,858	1,261	1,272	799	1,110
1991	1,164	887	696	672	690	746	1,078	2,377	3,780	1,857	1,569	1,137	1,390
1992	1,068	1,018	759	691	730	867	1,078	2,465	2,044	1,309	1,346	905	1,193
1993	940	880	722	735	747	858	1,108	3,948	6,942	3,587	1,254	1,167	1,910
1994	1,176	1,106	858	783	604	1,047	1,175	2,394	2,093	1,372	1,271	798	1,243
1995	834	828	693	639	711	876	1,115	1,622	7,810	7,683	2,159	1,291	2,194
1996	1,248	1,212	925	913	971	1,027	1,465	6,677	9,180	2,941	1,732	1,121	2,454
1997	1,130	1,121	988	886	965	1,155	1,165	6,050	12,031	3,791	2,093	1,420	2,736
1998	1,338	1,275	985	1,024	985	1,232	1,191	2,937	2,875	2,314	1,201	1,395	1,566
1999	1,438	1,087	709	810	831	1,071	1,106	2,427	4,913	2,750	1,282	1,190	1,638
2000	1,393	1,024	821	881	922	945	1,223	3,876	3,751	1,237	1,479	1,130	1,560
2001	1,011	1,027	867	791	804	871	1,067	2,651	2,235	1,291	1,344	1,046	1,253
2002	1,070	830	639	617	610	736	1,097	1,206	1,109	749	515	554	812
2003	859	714	601	584	583	760	1,124	2,933	3,985	1,251	1,655	1,239	1,359
2004	1,024	887	728	663	687	1,047	1,103	1,703	1,634	1,282	1,243	956	1,082
2005	1,395	924	696	692	655	705	1,098	2,572	3,593	1,448	1,235	1,010	1,337
AVERAGE:	1,179	991	835	784	793	890	1,225	2,939	4,989	2,573	1,483	1,141	1,654
MINIMUM:	834	694	556	552	549	625	1,016	1,149	1,109	749	515	554	812
MAXIMUM:	2,004	1,505	1,244	1,130	1,177	1,295	3,009	8,598	15,098	8,949	3,698	2,167	3,761

Simulated Flows at Colorado River Below the Confluence with the Eagle River
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	76,376	51,167	36,804	33,941	36,377	42,680	75,302	117,712	252,374	93,636	80,975	57,581	954,925
1951	70,951	51,163	50,098	44,298	42,829	47,485	67,618	146,212	251,497	239,400	91,349	81,259	1,184,159
1952	84,779	62,750	56,069	53,628	47,287	51,528	82,286	287,054	829,494	182,130	109,761	112,027	1,758,791
1953	78,908	59,964	59,327	59,877	47,812	58,714	65,260	95,192	275,183	126,830	77,706	62,962	1,067,735
1954	61,614	58,513	51,903	55,205	38,766	47,254	64,969	73,549	68,961	73,742	58,490	42,260	695,226
1955	73,738	44,101	36,579	34,565	31,250	38,886	67,882	109,810	123,838	72,063	79,387	59,864	771,963
1956	58,496	49,859	47,758	42,265	37,240	51,678	71,194	197,167	216,354	74,345	90,363	49,044	985,863
1957	55,482	49,765	45,692	43,457	41,605	48,127	65,373	188,774	521,705	406,545	146,532	76,025	1,669,082
1958	71,558	70,646	64,975	54,521	53,067	59,288	65,444	312,647	401,399	74,921	85,765	55,130	1,369,359
1959	59,217	47,708	46,930	44,565	39,311	42,173	66,548	128,252	238,039	79,945	84,702	63,520	940,908
1960	90,913	66,565	52,245	43,844	42,489	70,391	85,976	150,411	260,784	93,459	80,713	53,633	1,091,423
1961	64,400	57,238	47,037	45,069	40,013	47,117	60,882	103,281	129,483	74,730	87,749	83,533	840,532
1962	97,726	73,946	56,963	51,883	53,272	65,765	179,022	387,129	524,247	266,522	78,536	73,293	1,888,304
1963	75,531	57,857	48,900	46,253	45,046	55,450	64,706	97,155	88,762	91,541	81,832	65,275	818,308
1964	60,180	45,375	34,204	34,811	30,487	38,532	63,148	122,488	153,647	73,013	87,459	51,752	795,106
1965	53,632	46,277	44,553	42,574	36,423	40,265	89,465	147,555	318,357	207,043	145,023	83,549	1,234,716
1966	77,701	65,409	60,852	54,127	47,826	65,919	62,461	123,880	87,436	76,327	91,660	44,727	858,325
1967	56,034	44,769	38,564	37,514	34,006	56,184	72,573	90,098	183,022	91,774	88,581	71,254	864,373
1968	64,037	41,290	85,671	38,805	37,125	38,428	65,771	112,481	280,603	93,830	78,090	71,940	987,871
1969	79,368	63,688	54,784	54,280	44,965	49,360	83,038	178,658	198,882	158,246	83,908	69,084	1,118,241
1970	76,487	58,432	59,567	56,404	47,088	55,690	61,886	331,120	430,222	208,432	93,128	84,526	1,562,982
1971	86,106	72,373	55,837	54,882	53,964	65,233	93,217	199,794	509,229	241,210	81,598	84,367	1,597,810
1972	78,382	67,728	54,632	50,746	49,263	67,051	63,375	146,739	310,000	82,739	87,740	72,031	1,130,426
1973	73,545	63,388	52,743	53,072	47,374	49,754	66,210	200,867	351,880	295,280	80,700	80,701	1,415,514
1974	80,415	61,242	57,220	56,426	47,546	64,933	72,990	315,237	365,539	138,352	87,318	59,433	1,406,651
1975	76,761	58,204	52,551	52,101	50,368	52,498	60,475	120,247	296,436	274,078	85,039	79,057	1,257,815
1976	75,546	60,285	53,407	52,677	49,349	57,378	68,646	148,198	172,501	83,430	86,330	70,814	978,761
1977	82,010	49,014	41,536	38,729	35,469	40,687	68,333	70,624	69,905	84,867	68,790	33,459	681,423
1978	70,277	47,245	45,776	40,085	35,443	48,960	71,523	156,261	343,030	149,292	85,978	64,408	1,158,278
1979	66,630	57,627	51,617	49,673	42,986	52,402	73,175	232,493	359,801	221,999	85,881	61,102	1,355,386
1980	64,943	58,563	56,272	58,894	51,317	55,450	66,671	185,816	393,103	180,067	90,382	65,598	1,327,076
1981	66,423	53,714	48,436	40,791	37,210	42,203	69,862	81,049	161,064	81,201	66,020	52,316	800,289
1982	69,558	50,849	42,779	43,283	35,979	45,116	63,066	135,165	276,961	161,111	81,223	72,923	1,078,013
1983	71,271	65,851	62,326	54,311	51,644	58,846	66,346	144,807	639,488	550,264	198,089	110,311	2,073,554
1984	86,845	70,114	66,971	53,688	51,853	52,781	81,675	528,662	898,409	495,457	227,369	128,923	2,722,747
1985	123,243	69,527	76,522	69,471	59,644	74,065	111,567	340,173	515,121	205,962	74,917	72,626	1,812,838
1986	90,913	86,230	72,726	66,762	65,390	79,655	126,366	292,185	567,757	292,068	79,445	80,718	1,900,211
1987	87,785	77,397	63,984	57,742	52,944	61,767	82,123	176,012	169,115	74,008	72,784	85,558	1,061,219
1988	54,229	59,105	51,002	49,856	45,811	51,734	69,931	143,184	246,587	89,050	88,522	49,622	998,633
1989	57,453	56,411	46,090	46,311	42,097	65,500	68,342	147,134	130,896	78,797	83,235	44,577	866,843

Simulated Flows at Colorado River Below the Confluence with the Eagle River
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1990	61,307	47,757	45,387	40,952	36,234	49,830	73,807	75,185	170,085	77,513	78,214	47,561	803,832
1991	71,588	52,784	42,800	41,348	38,347	45,887	64,134	146,145	224,941	114,177	96,497	67,637	1,006,285
1992	65,680	60,594	46,642	42,460	40,519	53,290	64,121	151,574	121,633	80,471	82,775	53,864	663,623
1993	57,798	52,356	44,373	45,202	41,490	52,781	65,961	242,754	413,057	220,547	77,086	69,457	1,382,862
1994	72,327	65,615	52,611	48,132	44,666	64,360	69,931	147,226	124,566	84,389	78,150	47,512	899,685
1995	51,259	49,143	42,622	39,314	39,515	53,849	66,339	99,764	464,717	472,413	132,738	78,813	1,588,486
1996	76,711	72,133	56,850	56,137	53,929	63,173	87,169	410,528	546,234	180,850	106,475	66,700	1,776,889
1997	69,489	66,716	60,774	54,503	54,678	71,019	69,321	372,011	715,930	233,112	128,676	84,488	1,980,717
1998	82,241	75,872	60,577	62,948	54,702	75,747	70,851	180,591	171,101	142,298	73,845	83,005	1,133,778
1999	88,290	64,699	43,584	49,624	46,164	65,661	65,795	149,259	292,336	169,089	78,851	70,810	1,184,562
2000	85,626	60,909	50,477	54,185	51,232	58,118	72,756	238,313	223,205	76,081	90,972	67,238	1,129,112
2001	62,195	61,110	53,305	48,652	44,671	53,541	63,511	162,979	132,997	79,407	82,628	62,242	907,236
2002	65,772	49,402	39,312	37,913	33,884	45,236	65,273	74,162	65,982	46,062	31,681	32,987	587,666
2003	52,804	42,505	36,976	35,920	32,355	46,748	66,894	180,347	237,143	76,904	101,734	73,742	984,072
2004	62,957	52,803	44,771	40,769	38,169	64,358	65,624	104,729	97,217	78,858	76,451	56,891	783,597
2005	85,798	54,955	42,789	42,571	36,390	43,344	65,238	158,154	213,808	89,036	75,957	60,119	968,159
AVERAGE:	72,523	58,946	51,353	48,215	44,051	54,715	72,886	180,696	296,894	158,195	91,175	67,890	1,197,540
MINIMUM:	51,259	41,290	34,204	33,941	30,487	38,428	60,475	70,624	65,982	46,062	31,681	32,987	587,666
MAXIMUM:	123,243	89,527	76,522	69,471	65,390	79,655	179,022	528,662	898,409	550,264	227,369	128,923	2,722,747

Simulated Flows at Colorado River Above the Confluence with the Eagle River
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	960	598	402	383	480	518	873	884	1,896	846	1,102	719	805
1951	924	626	607	535	595	585	859	1,172	1,988	2,445	978	1,105	1,037
1952	1,116	800	702	675	669	659	839	2,946	6,957	1,966	1,144	1,501	1,663
1953	1,062	766	726	753	675	753	858	773	2,040	1,253	855	851	947
1954	825	733	648	722	536	619	809	484	469	891	745	493	666
1955	941	519	417	404	417	477	808	837	913	596	929	797	672
1956	797	610	576	513	499	630	820	1,302	1,738	748	1,203	652	842
1957	768	630	565	535	582	608	843	1,819	5,149	3,832	1,648	885	1,492
1958	888	888	807	677	745	768	853	3,026	4,434	803	1,196	709	1,317
1959	802	585	569	548	544	532	869	1,206	1,489	659	1,095	844	813
1960	1,142	843	660	541	593	900	917	1,331	2,020	863	1,062	690	965
1961	860	731	569	565	561	604	832	827	856	832	1,137	816	767
1962	1,086	912	689	639	730	851	2,189	4,164	6,133	2,983	882	989	1,856
1963	967	712	602	564	630	727	829	790	673	1,136	969	806	785
1964	826	561	396	414	400	485	861	957	1,095	462	1,037	638	679
1965	705	586	551	525	503	514	864	1,347	2,527	1,535	1,584	986	1,021
1966	888	841	778	699	687	863	730	895	562	830	1,235	544	798
1967	692	552	455	452	459	718	658	725	1,198	638	1,201	939	725
1968	945	649	548	489	546	548	910	1,022	2,134	652	629	997	838
1969	1,069	791	640	658	619	625	764	1,585	1,954	1,599	1,052	925	1,024
1970	789	896	702	731	711	743	887	3,116	5,038	2,300	1,134	813	1,490
1971	913	886	742	727	734	825	936	2,279	5,674	2,748	922	1,045	1,536
1972	1,034	671	716	640	685	900	847	1,457	2,851	878	1,248	777	1,059
1973	777	803	674	650	646	680	1,005	1,936	3,264	3,403	983	1,123	1,332
1974	1,061	767	718	705	666	838	897	2,937	3,864	1,480	1,083	762	1,317
1975	1,010	742	668	668	742	680	795	1,267	2,496	2,549	982	1,082	1,142
1976	964	771	673	672	692	748	914	1,381	1,179	532	1,012	920	872
1977	1,058	630	513	447	496	513	934	642	339	1,156	944	388	674
1978	942	599	560	492	494	616	833	1,487	2,551	1,009	990	839	952
1979	863	734	612	613	598	656	912	2,433	2,738	2,029	940	784	1,162
1980	841	750	697	772	715	687	835	1,992	3,981	2,042	1,177	869	1,281
1981	864	672	582	493	514	550	920	725	1,418	847	860	632	757
1982	870	628	507	523	488	568	827	1,185	1,926	994	812	814	846
1983	809	845	805	696	763	786	938	1,557	6,890	6,411	2,319	1,523	2,033
1984	1,098	872	812	627	708	646	762	5,989	11,067	5,609	2,585	1,533	2,699
1985	1,499	1,118	971	905	862	956	1,257	3,532	5,734	2,255	808	871	1,732
1986	1,056	1,113	932	864	924	997	1,555	3,342	6,699	3,324	852	955	1,885
1987	1,043	991	814	742	770	817	985	1,493	1,391	719	885	1,249	992

Simulated Flows at Colorado River Above the Confluence with the Eagle River
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1988	725	751	637	647	640	657	861	1,343	2,305	1,016	1,230	625	954
1989	787	731	566	578	590	857	713	1,269	904	742	1,082	603	787
1990	812	616	575	521	517	661	988	549	1,050	710	1,115	647	731
1991	936	677	524	508	538	590	876	1,150	1,498	1,094	1,243	846	875
1992	865	776	800	542	595	712	696	971	683	642	1,026	636	730
1993	756	662	546	571	596	679	830	1,927	3,566	1,960	752	812	1,139
1994	907	863	673	612	644	864	805	1,103	663	1,041	1,073	584	822
1995	608	622	524	492	548	676	893	906	4,197	4,793	1,342	927	1,381
1996	887	939	727	705	764	798	988	4,202	6,181	1,948	1,415	822	1,700
1997	811	814	744	665	769	869	783	4,150	8,284	2,702	1,485	1,021	1,925
1998	952	978	759	806	781	989	915	1,784	1,332	1,341	709	1,110	1,039
1999	1,147	806	509	619	644	823	781	1,363	2,621	1,826	749	864	1,064
2000	1,143	791	633	687	722	757	838	1,918	1,968	752	1,220	861	1,026
2001	787	795	667	608	634	695	749	1,125	768	801	1,002	822	789
2002	878	639	460	443	452	573	747	444	455	556	386	364	534
2003	666	542	461	442	453	617	794	1,296	1,668	697	1,380	957	832
2004	842	698	572	521	530	814	702	590	494	767	1,013	747	693
2005	1,160	711	531	523	492	529	785	1,162	1,506	627	911	794	812
AVERAGE:	918	747	631	603	618	703	889	1,680	2,776	1,605	1,096	856	1,095
MINIMUM:	608	519	396	383	400	477	658	444	339	462	386	364	534
MAXIMUM:	1,499	1,118	971	905	924	997	2,189	5,989	11,067	6,411	2,585	1,533	2,699

Simulated Flows at Colorado River Below the Confluence with the Eagle River
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	59,012	35,557	24,707	23,526	26,680	31,826	51,972	54,329	112,816	52,022	67,789	42,782	583,018
1951	56,795	37,267	37,334	32,870	33,039	35,985	51,135	72,045	118,173	150,324	60,166	65,743	750,876
1952	68,543	47,600	43,136	41,513	37,146	40,492	49,912	181,134	413,954	120,880	70,332	89,322	1,203,964
1953	65,316	45,603	44,621	46,290	37,484	46,306	51,068	47,506	121,404	77,044	52,551	50,652	685,845
1954	50,746	43,618	39,830	44,407	29,788	38,064	48,161	29,739	27,900	54,780	45,788	29,341	482,162
1955	57,837	30,887	25,610	24,818	23,157	29,351	48,054	51,440	54,351	36,621	57,125	47,455	486,706
1956	49,037	36,271	35,399	31,527	27,700	38,715	48,822	80,051	103,423	45,966	73,951	38,807	609,669
1957	47,216	37,468	34,730	32,911	32,306	37,403	50,184	111,874	306,403	235,623	101,325	52,657	1,080,100
1958	54,616	52,831	49,636	41,607	41,389	47,236	50,787	186,040	263,871	49,358	73,539	42,217	953,127
1959	49,326	34,817	35,004	33,723	30,200	32,717	51,710	74,156	88,616	40,533	67,349	50,250	588,401
1960	70,211	50,170	40,569	33,288	32,956	55,335	54,557	81,827	120,174	53,094	65,299	41,075	698,555
1961	52,875	43,472	34,988	34,737	31,136	37,119	49,493	50,825	50,921	51,158	69,891	48,539	555,154
1962	66,796	54,265	42,347	39,319	40,560	52,297	130,245	256,053	364,942	183,446	54,222	58,879	1,343,391
1963	59,433	42,345	37,012	34,707	34,981	44,731	49,314	48,581	40,042	69,838	59,577	47,970	568,531
1964	50,761	33,369	24,379	25,444	22,198	29,813	51,216	58,854	65,184	28,387	63,734	37,939	491,278
1965	43,328	34,871	33,872	32,287	27,908	31,629	51,395	82,844	150,388	94,373	97,406	58,669	738,970
1966	54,605	50,042	47,819	42,964	38,157	53,041	43,441	55,031	33,444	51,021	75,951	32,359	577,875
1967	42,526	32,821	27,981	27,814	25,482	44,159	39,169	44,549	71,300	39,259	73,837	55,884	524,781
1968	58,092	38,632	33,682	30,058	30,308	33,704	54,178	62,840	126,982	40,082	38,675	59,342	606,575
1969	65,738	47,081	39,355	40,446	34,387	38,408	45,438	96,253	116,265	98,344	64,676	55,039	741,430
1970	48,536	53,327	43,168	44,947	39,496	45,669	52,810	191,590	299,778	141,451	69,739	48,406	1,078,917
1971	56,169	52,730	45,649	44,698	40,770	50,720	55,703	140,105	337,632	168,969	56,715	62,192	1,112,052
1972	63,570	39,951	44,009	39,351	36,031	55,361	50,373	89,619	169,641	53,967	76,726	46,239	766,838
1973	47,746	47,804	41,441	39,995	35,850	41,835	59,802	119,017	194,248	209,233	60,419	66,841	964,231
1974	65,242	45,653	44,139	43,325	36,989	51,557	53,364	180,579	229,951	90,991	66,565	45,343	953,698
1975	62,112	44,127	41,103	41,069	41,184	41,821	47,315	77,901	148,547	156,706	60,375	64,398	826,658
1976	59,262	45,895	41,374	41,293	38,447	45,987	54,410	84,945	70,144	32,694	62,203	54,752	631,406
1977	65,076	37,506	31,545	27,455	27,569	31,566	55,566	39,460	20,191	71,064	58,070	23,110	488,178
1978	57,934	35,628	34,404	30,237	27,445	37,865	49,546	91,405	151,807	62,031	60,898	49,951	689,151
1979	53,077	43,661	37,608	37,669	33,186	40,317	54,260	149,609	162,935	124,779	57,815	46,623	841,539
1980	51,736	44,636	42,847	47,475	39,668	42,232	49,664	122,496	236,869	125,590	72,374	51,723	927,330
1981	53,155	39,992	35,757	30,302	28,521	33,791	54,768	44,572	84,359	52,055	52,907	37,596	547,775
1982	53,489	37,345	31,199	32,172	27,129	34,951	49,215	72,885	114,613	61,149	49,957	48,456	612,540
1983	49,760	50,263	49,475	42,782	42,353	48,309	55,832	95,737	409,970	394,210	142,598	90,605	1,471,894
1984	67,486	51,912	49,959	38,576	39,346	39,747	45,343	368,234	658,537	344,872	158,964	91,203	1,954,179
1985	92,159	66,555	59,688	55,670	47,867	58,770	74,811	217,163	341,209	138,639	49,703	51,846	1,254,080
1986	64,911	66,253	57,286	53,113	51,340	61,293	92,545	205,469	398,647	204,369	52,393	56,808	1,364,427
1987	64,102	58,953	60,077	45,634	42,737	50,264	58,600	91,806	82,773	44,204	54,434	74,294	717,878

Simulated Flows at Colorado River Below the Confluence with the Eagle River
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1988	44,555	44,674	39,180	39,770	35,538	40,387	51,260	82,550	137,172	62,477	75,627	37,179	690,369
1989	48,368	43,504	34,820	35,559	32,789	52,668	42,430	78,027	53,803	45,645	66,513	35,891	570,017
1990	49,913	36,669	35,348	32,063	28,739	40,618	58,774	33,786	62,462	43,662	68,560	38,526	529,120
1991	57,524	40,285	32,240	31,234	29,854	36,271	52,120	70,722	89,143	67,270	76,406	50,347	633,416
1992	53,210	46,176	36,901	33,317	33,042	43,800	41,408	59,677	40,653	39,499	63,098	37,843	528,624
1993	46,467	39,375	33,547	35,096	33,094	41,729	49,404	118,484	212,172	120,504	46,268	48,345	824,485
1994	55,767	51,330	41,396	37,610	35,783	53,109	47,913	67,818	39,453	63,996	65,997	34,765	594,937
1995	37,360	36,989	32,190	30,231	30,416	41,543	53,149	55,708	249,726	294,739	82,496	55,163	999,710
1996	54,512	55,670	44,715	43,376	42,404	49,078	58,811	258,358	367,623	119,791	86,998	48,900	1,230,636
1997	49,841	48,417	45,722	40,915	42,716	53,403	46,617	255,182	492,928	166,147	91,297	60,729	1,393,914
1998	58,512	58,173	46,658	49,543	43,348	60,786	54,471	109,702	79,235	82,435	43,597	66,052	752,512
1999	70,553	47,969	31,276	38,061	35,790	50,614	46,490	83,808	155,975	112,249	46,074	51,429	770,288
2000	70,271	47,089	38,952	42,223	40,118	46,518	49,889	117,946	117,114	46,251	74,992	51,236	742,599
2001	48,366	47,297	41,000	37,414	35,189	42,728	44,559	69,177	45,679	49,240	61,605	48,938	571,192
2002	53,966	38,036	28,291	27,228	25,117	35,255	44,430	27,327	27,069	34,217	23,727	21,652	386,315
2003	40,979	32,280	28,365	27,154	25,159	37,926	47,258	79,677	99,251	42,847	84,883	56,919	602,698
2004	51,804	41,524	35,194	32,017	29,457	50,036	41,771	36,270	29,406	47,184	62,301	44,450	501,414
2005	71,324	42,306	32,675	32,131	27,344	32,525	46,684	71,434	89,625	38,525	56,016	47,233	587,822
AVERAGE:	56,457	44,449	38,772	37,053	34,300	43,203	52,886	103,290	165,198	98,675	67,366	50,909	792,558
MINIMUM:	37,360	30,887	24,379	23,526	22,198	29,351	39,169	27,327	20,191	28,387	23,727	21,652	386,315
MAXIMUM:	92,159	66,555	59,688	55,670	51,340	61,293	130,245	368,234	658,537	394,210	158,964	91,203	1,954,179

Simulated Flows at Colorado River near Kremmling at USGS Gage 09058000
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	911	494	348	326	410	446	624	517	1,405	854	1,099	708	679
1951	877	530	507	480	483	504	675	577	1,098	2,250	876	1,088	831
1952	1,008	683	604	596	593	584	528	1,858	5,610	1,866	1,019	1,498	1,369
1953	1,021	668	695	620	581	644	677	364	1,364	1,178	752	856	786
1954	768	627	555	551	510	522	618	223	432	923	747	467	580
1955	874	425	363	356	355	401	653	419	593	557	855	821	549
1956	746	510	475	440	426	539	532	374	1,212	718	1,146	674	650
1957	713	527	494	473	481	517	679	1,011	3,505	3,264	1,441	773	1,160
1958	758	763	705	600	634	663	678	1,967	3,923	782	1,177	703	1,112
1959	754	479	484	454	451	454	692	603	980	610	1,011	788	647
1960	959	674	597	479	514	694	416	733	1,421	794	1,044	690	753
1961	796	624	516	539	490	510	681	314	396	775	1,071	583	609
1962	873	747	598	553	559	679	1,334	2,802	5,227	2,676	782	951	1,483
1963	818	512	477	493	522	606	570	401	512	1,174	921	750	648
1964	764	431	313	341	335	411	707	462	651	421	1,017	616	540
1965	638	461	444	440	406	402	654	663	1,488	1,330	1,437	860	771
1966	721	678	640	599	588	728	516	537	489	839	1,205	526	674
1967	816	444	389	367	377	593	415	278	708	529	1,178	875	565
1968	864	547	448	435	460	445	756	447	1,202	519	504	946	630
1969	977	669	547	557	527	511	410	875	1,614	1,473	977	843	834
1970	638	745	628	653	578	612	721	1,806	4,290	2,066	1,014	687	1,204
1971	753	736	671	811	571	611	597	1,483	4,717	2,474	822	944	1,249
1972	952	566	575	507	551	735	577	894	2,278	802	1,181	677	859
1973	589	616	514	501	498	506	739	1,037	2,594	3,139	806	1,041	1,051
1974	972	660	565	586	521	667	574	1,792	3,321	1,304	975	693	1,054
1975	906	590	513	510	558	528	592	631	1,435	2,146	840	997	856
1976	847	605	535	544	526	597	542	718	750	474	945	833	660
1977	946	510	443	357	396	432	797	478	343	1,169	910	369	598
1978	881	501	458	399	412	525	608	839	1,402	819	958	802	718
1979	794	591	563	575	521	530	615	1,431	1,711	1,753	880	752	896
1980	761	599	555	631	583	572	662	1,054	3,130	1,921	1,123	775	1,031
1981	786	540	467	401	437	472	791	449	579	809	862	589	600
1982	777	525	418	460	407	428	591	444	1,140	709	693	705	608
1983	664	688	701	597	657	674	798	912	5,486	6,020	2,113	1,404	1,731
1984	965	659	653	523	659	496	560	4,926	9,998	5,229	2,363	1,294	2,358
1985	1,302	1,051	881	779	700	785	814	2,103	4,764	2,008	690	774	1,388

Simulated Flows at Colorado River near Kremmling at USGS Gage 09058000
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1986	900	939	763	688	721	810	1,081	2,357	5,705	3,087	728	813	1,550
1987	847	809	678	635	653	686	627	817	1,177	687	845	1,232	807
1988	638	577	506	488	489	531	648	863	1,925	952	1,169	543	778
1989	726	601	418	414	437	683	430	819	701	688	1,044	578	630
1990	772	507	435	398	421	540	797	310	811	676	1,109	613	616
1991	850	537	397	406	441	490	714	617	1,066	1,034	1,207	806	715
1992	805	637	459	422	458	594	510	529	612	678	1,013	634	614
1993	740	560	439	439	470	560	710	924	2,574	1,761	727	797	892
1994	830	755	611	579	595	784	612	720	567	1,057	1,072	573	732
1995	530	519	416	408	452	565	720	421	2,925	4,211	1,178	826	1,101
1996	742	738	590	620	629	617	605	3,144	5,553	1,756	1,342	707	1,421
1997	684	658	633	537	634	682	449	2,836	7,208	2,426	1,280	852	1,573
1998	764	793	672	695	667	828	607	936	872	1,249	645	1,087	819
1999	1,040	648	402	449	510	712	565	792	1,918	1,606	660	801	843
2000	1,038	652	555	613	616	652	634	1,339	1,753	772	1,222	827	891
2001	740	685	596	562	555	597	582	536	593	845	1,022	804	677
2002	839	525	416	417	427	513	613	323	540	621	422	376	503
2003	636	455	399	404	412	568	682	723	1,137	745	1,382	919	706
2004	613	568	453	421	461	698	559	254	375	805	1,033	686	595
2005	1,067	585	445	436	409	425	522	425	973	507	892	774	623
AVERAGE:	821	615	529	506	511	581	642	1,002	2,156	1,474	1,025	796	890
MINIMUM:	530	425	313	326	335	401	410	223	343	421	422	369	503
MAXIMUM:	1,302	1,051	881	779	721	828	1,334	4,926	9,998	6,020	2,363	1,498	2,358

Simulated Flows at Colorado River near Kremmling at USGS Gage 09058000
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	56,021	29,373	21,422	20,053	22,754	27,426	37,138	31,761	83,577	52,535	67,588	42,124	491,772
1951	53,909	31,526	31,153	29,503	26,816	31,000	40,181	35,504	65,322	138,336	53,782	64,771	601,803
1952	61,971	40,648	37,119	36,641	32,922	35,907	31,440	114,260	333,832	114,751	62,629	89,116	991,236
1953	62,764	39,750	42,740	38,142	32,279	39,599	40,306	22,397	81,176	72,425	46,237	50,907	568,722
1954	47,220	37,288	34,127	33,895	28,337	32,115	38,801	13,727	25,733	56,784	45,960	27,777	419,764
1955	53,711	25,286	22,334	21,887	19,711	24,644	32,927	25,738	35,286	34,277	52,558	48,880	397,239
1956	45,865	30,369	29,189	27,043	23,677	33,132	31,669	22,981	72,128	44,165	70,470	40,113	470,801
1957	43,852	31,367	30,362	29,061	26,735	31,759	40,380	62,138	208,562	200,689	88,583	46,015	839,503
1958	46,601	45,407	43,368	36,912	35,236	40,743	40,370	120,963	233,458	48,105	72,383	41,810	805,356
1959	46,340	28,507	29,759	27,940	25,074	27,923	41,187	37,094	58,304	37,490	62,169	46,866	468,653
1960	58,950	40,092	36,692	29,462	28,560	42,676	24,774	45,086	84,562	48,804	64,199	41,042	544,899
1961	48,950	37,152	31,742	33,118	27,207	31,377	40,499	19,334	23,488	47,645	65,826	34,675	441,013
1962	53,684	44,439	36,763	34,030	31,054	41,720	79,399	172,301	311,060	164,569	48,113	56,566	1,073,698
1963	50,308	30,482	29,316	30,315	29,010	37,248	33,912	24,633	30,462	72,180	56,649	44,655	469,170
1964	46,988	25,617	19,267	20,975	18,618	25,289	42,098	28,385	38,728	25,902	62,561	36,669	391,097
1965	39,220	27,458	27,306	27,052	22,574	24,741	38,932	40,779	88,550	81,756	88,383	51,158	557,909
1966	44,326	40,318	39,337	36,821	32,684	44,778	30,734	32,998	29,088	51,561	74,099	31,302	488,046
1967	37,851	26,421	23,930	22,579	20,938	36,456	24,697	17,071	42,112	32,552	72,461	52,043	409,111
1968	53,130	32,553	27,524	26,765	25,574	27,375	45,008	27,484	71,517	31,943	31,009	56,269	456,151
1969	60,058	39,800	33,608	34,278	29,279	31,432	24,409	53,797	96,057	90,602	60,064	50,151	603,535
1970	39,207	44,321	38,633	40,166	32,088	37,856	42,903	111,069	255,293	127,059	62,337	40,908	871,640
1971	46,299	43,771	41,276	37,593	31,723	37,582	35,510	91,167	280,704	152,124	50,555	56,152	904,456
1972	58,545	33,655	35,330	31,153	30,614	45,204	34,345	54,982	135,563	49,292	72,602	40,283	621,568
1973	36,207	36,681	31,576	30,795	27,677	31,104	43,976	63,741	154,371	193,009	49,537	61,937	760,611
1974	59,749	39,282	34,747	36,053	28,948	41,027	34,144	110,185	197,590	80,203	59,950	41,234	763,112
1975	55,734	35,125	31,521	31,383	30,970	32,463	35,230	38,825	85,366	131,968	51,671	59,348	619,604
1976	52,061	35,998	32,907	33,445	29,211	36,727	32,260	44,131	44,623	29,130	58,084	49,567	478,144
1977	58,181	30,320	27,216	21,979	21,991	28,549	47,416	29,385	20,431	71,870	55,960	21,981	433,279
1978	54,166	29,800	28,143	24,542	22,901	32,305	36,191	51,592	83,442	50,356	58,936	47,718	520,092
1979	48,799	35,196	34,644	35,360	28,929	32,567	36,578	87,968	101,820	107,789	54,095	44,773	648,518
1980	46,792	35,631	34,107	38,788	32,391	35,195	39,368	64,812	186,264	118,122	69,070	46,133	746,673
1981	48,360	32,137	28,697	24,631	24,297	29,026	47,079	27,615	34,447	49,725	52,981	35,052	434,047
1982	47,748	31,255	25,690	28,308	22,629	26,303	35,159	27,297	67,833	43,618	42,582	41,976	440,396
1983	40,833	40,920	43,112	36,687	36,508	41,420	47,469	56,092	326,431	370,182	129,912	83,534	1,253,100
1984	59,321	39,189	40,141	32,164	31,020	30,481	33,298	302,917	594,902	321,528	145,327	77,023	1,707,311
1985	80,046	62,519	54,159	47,898	38,860	48,245	48,413	129,308	283,498	123,470	42,440	46,066	1,004,922

Simulated Flows at Colorado River near Kremmling at USGS Gage 09058000
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1986	55,367	55,894	46,932	42,310	40,045	49,785	64,329	144,910	339,464	189,786	44,765	48,374	1,121,961
1987	52,074	48,119	41,713	39,039	36,246	42,207	37,309	50,253	70,031	42,245	51,932	73,319	584,487
1988	39,259	34,362	31,093	29,874	27,173	32,658	38,569	53,084	114,540	58,541	71,876	32,324	563,353
1989	44,665	35,754	25,728	25,447	24,260	42,009	25,611	50,345	41,730	42,280	64,174	34,381	456,384
1990	47,445	30,153	26,738	24,452	23,358	33,211	47,418	19,032	48,288	41,557	68,191	36,462	446,305
1991	52,283	31,958	24,441	24,969	24,495	30,120	42,483	37,911	63,416	63,575	74,246	47,965	517,862
1992	49,520	37,891	28,223	25,920	25,423	36,500	30,328	32,519	36,415	41,696	62,317	37,713	444,465
1993	45,494	33,314	26,987	27,022	26,080	34,428	42,234	56,844	153,163	108,283	44,710	47,413	645,972
1994	51,060	44,906	37,579	35,606	33,041	48,231	36,435	44,293	33,764	64,983	65,889	34,087	529,874
1995	32,573	30,906	25,609	25,072	25,130	34,749	42,872	25,915	174,026	258,903	72,442	49,173	797,370
1996	45,614	43,939	36,280	38,121	34,911	37,918	36,029	193,302	330,403	107,968	82,509	42,052	1,029,046
1997	42,042	39,133	38,936	32,993	35,227	41,959	26,705	174,373	428,933	149,196	78,690	50,688	1,138,875
1998	46,986	47,215	41,351	42,764	37,054	50,900	36,094	57,561	51,912	76,780	39,654	64,679	592,950
1999	63,934	38,533	24,694	27,618	28,307	43,757	33,614	48,716	114,139	98,773	40,586	47,674	610,345
2000	63,813	38,785	34,138	37,681	34,226	40,092	37,737	82,334	104,334	47,485	75,153	49,230	645,008
2001	45,487	40,756	36,673	34,528	30,798	36,717	34,615	32,956	35,306	51,961	62,832	47,862	490,491
2002	51,613	31,237	25,597	25,619	23,709	31,545	36,477	19,862	32,147	38,184	25,921	22,372	364,283
2003	39,130	27,047	24,564	24,818	22,856	34,898	40,567	44,432	67,635	45,794	85,005	54,658	511,404
2004	50,008	33,823	27,831	25,904	25,586	42,898	33,292	15,624	22,296	49,502	63,527	40,798	431,089
2005	65,589	34,834	27,363	26,825	22,732	26,147	31,045	26,136	57,884	31,204	54,870	46,049	450,678
AVERAGE:	50,495	36,575	32,525	31,143	28,401	35,749	38,214	61,606	128,311	90,629	63,054	47,390	644,092
MINIMUM:	32,573	25,286	19,267	20,053	18,618	24,644	24,409	13,727	20,431	25,902	25,921	21,981	364,283
MAXIMUM:	80,046	62,519	54,159	47,898	40,045	50,900	79,399	302,917	594,902	370,182	145,327	89,116	1,707,311

Simulated Flows at Colorado River below the Confluence with the Williams Fork River
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	251	206	137	119	126	148	227	181	389	169	420	282	222
1951	235	224	228	158	154	191	361	315	375	557	339	482	302
1952	382	254	246	224	209	220	182	555	2,559	486	408	409	510
1953	264	252	190	234	171	206	305	135	315	217	344	232	239
1954	189	225	215	191	147	206	247	140	154	222	248	232	202
1955	453	201	157	167	150	170	213	148	214	174	298	240	216
1956	187	270	267	190	207	202	178	256	364	175	415	138	238
1957	154	211	199	163	161	174	268	237	1,553	1,215	468	233	420
1958	350	264	277	229	213	228	234	1,231	1,311	190	364	251	429
1959	172	211	213	203	186	153	261	153	329	192	246	298	218
1960	268	288	237	167	212	249	168	189	573	203	295	201	254
1961	187	331	160	184	139	182	275	138	232	246	403	391	239
1962	462	262	308	211	198	281	301	1,351	2,592	1,349	334	147	651
1963	244	292	210	224	217	240	244	152	170	217	233	431	239
1964	345	195	128	155	145	169	289	156	250	172	171	220	200
1965	142	203	211	212	176	176	279	185	405	251	295	151	224
1966	159	191	260	193	179	257	246	161	185	143	374	180	211
1967	287	183	179	168	161	262	136	148	226	204	293	277	211
1968	284	266	199	174	189	190	287	140	393	191	143	375	235
1969	282	281	188	210	174	166	135	205	963	407	213	294	293
1970	137	243	175	245	178	202	308	665	1,297	519	225	226	368
1971	271	285	265	273	237	251	215	600	2,434	1,256	369	286	562
1972	327	213	212	209	207	313	216	163	793	185	405	201	287
1973	169	215	182	188	176	184	240	198	1,611	1,606	342	272	449
1974	268	288	231	247	190	243	230	650	1,383	440	381	221	398
1975	278	213	192	191	213	175	264	140	303	566	296	245	257
1976	207	226	170	202	163	202	201	149	298	201	284	291	216
1977	282	239	156	145	135	161	224	177	192	494	502	172	241
1978	317	255	230	161	172	202	154	192	374	227	195	228	226
1979	160	241	197	232	159	199	212	260	520	355	282	202	252
1980	175	210	200	266	191	186	266	195	1,238	671	226	292	342
1981	196	213	175	127	125	168	272	224	295	243	405	300	229
1982	229	240	169	191	160	186	198	174	347	282	258	136	214
1983	159	214	285	195	237	188	303	150	1,984	2,975	957	294	665
1984	332	290	325	224	243	221	286	2,427	5,055	2,323	805	315	1,073
1985	446	364	280	277	237	261	145	736	2,051	668	274	258	500

Simulated Flows at Colorado River below the Confluence with the Williams Fork River
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1986	295	399	282	252	182	135	256	995	3,200	1,359	321	306	665
1987	321	278	241	233	216	217	135	194	356	178	267	162	233
1988	192	261	208	222	219	213	153	197	1,001	303	485	203	304
1989	167	256	186	168	198	259	135	196	275	275	215	249	215
1990	176	217	195	160	178	251	257	137	418	178	485	314	247
1991	349	270	172	167	157	210	271	177	345	187	217	211	228
1992	209	309	209	190	197	271	220	247	222	230	664	328	275
1993	328	301	187	168	172	208	283	266	555	267	255	340	277
1994	395	325	238	223	214	289	239	222	232	267	315	267	269
1995	265	256	179	170	200	243	301	138	902	1,167	461	373	388
1996	309	303	235	291	267	258	156	1,233	1,991	587	238	324	516
1997	346	308	291	240	366	231	205	1,254	2,571	1,022	596	252	640
1998	283	305	255	274	228	264	234	142	218	303	232	296	253
1999	396	353	192	232	229	331	245	156	571	289	272	411	306
2000	313	246	204	251	253	263	258	720	315	162	503	379	323
2001	239	256	260	213	223	254	223	231	246	206	544	314	268
2002	257	221	176	168	152	185	156	151	136	281	102	117	176
2003	165	212	161	150	163	208	341	537	778	309	453	442	327
2004	247	323	238	220	229	367	270	160	198	243	616	379	291
2005	515	333	219	217	178	183	207	214	461	287	265	246	277
AVERAGE:	268	259	214	203	192	219	234	372	870	502	357	274	331
MINIMUM:	137	183	128	119	125	135	135	135	136	143	102	117	176
MAXIMUM:	515	399	325	291	366	367	361	2,427	5,055	2,975	957	482	1,073

Simulated Flows at Colorado River below the Confluence with the Williams Fork River
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	15425	12265	8395	7328	7004	9100	13537	11145	23144	10410	25817	16810	160380
1951	14451	13352	14007	9699	8561	11734	21476	19392	22344	34238	20833	28688	218775
1952	23506	15086	15117	13785	11594	13500	10843	34120	152249	29908	25101	24310	369119
1953	16227	15022	11679	14405	9478	12665	18130	8310	18743	13355	21165	13790	172969
1954	11629	13402	13250	11721	8167	12646	14695	8618	9187	13677	15224	13785	146001
1955	27830	11985	9648	10259	8340	10479	12682	9097	12737	10719	18347	14300	156423
1956	11487	16040	16439	11653	11487	12402	10578	15724	21643	10770	25511	8212	171946
1957	9463	12582	12219	10028	8950	10700	15954	14571	92394	74706	28756	13878	304201
1958	21511	15124	17046	14102	11844	14037	13923	75688	77996	11673	22394	14926	310264
1959	10589	12529	13118	12482	10330	9386	15511	9420	19572	11782	15108	17748	157575
1960	16456	17111	14579	10249	11765	15285	9982	11607	34077	12496	18113	11958	183678
1961	11521	19701	9826	11314	7732	11208	16353	8490	13790	15136	24809	23274	173154
1962	28427	15599	18926	12985	11020	17266	17906	83041	154222	82968	20512	8770	471642
1963	14976	17352	12921	13795	12072	14744	14544	9329	10124	13349	14301	25644	173151
1964	21229	11581	7867	9519	8030	10396	17191	9602	14852	10577	10527	13120	144491
1965	8742	12082	12958	13022	9785	10839	16609	11373	24092	15425	18119	8964	162010
1966	9773	11383	15980	11878	9950	15800	14642	9898	10979	8796	23012	10721	152812
1967	17618	10892	11026	10347	8926	16132	8105	9126	13454	12534	18039	16465	152664
1968	17490	15830	12209	10705	10504	11680	17090	8578	23374	11723	8767	22337	170287
1969	17367	16711	11579	12887	9645	10230	8033	12575	57320	25016	13086	17523	211972
1970	8394	14434	10750	15045	9865	12427	18333	40874	77166	31919	13840	13477	266524
1971	16684	16933	16316	16759	13185	15414	12765	36921	144863	77206	22704	17032	406782
1972	20081	12680	13047	12874	11521	19243	12870	10048	47170	11364	24920	11964	207782
1973	10396	12819	11193	11541	9776	11314	14266	12170	95835	98779	21037	16194	325320
1974	16501	17143	14228	15160	10559	14960	13688	39943	82281	27063	23444	13177	288147
1975	17071	12672	11779	11749	11832	10775	15691	8621	18009	34827	18171	14600	185797
1976	12737	13424	10472	12429	9055	12407	11945	9133	17711	12336	17482	17303	156434
1977	17354	14245	9620	8887	7509	9887	13328	10864	11440	30368	30882	10259	174643
1978	19475	15201	14141	9887	9569	12419	9173	11816	22284	13984	11960	13595	163504
1979	9852	14355	12115	14291	8834	12252	12612	15986	30959	21804	17335	11999	182394
1980	10747	12488	12301	16327	10632	11443	15853	12011	73653	41229	13879	17375	247938
1981	12047	12701	10786	7805	6959	10310	16197	13790	17574	14958	24895	17844	165866
1982	14105	14273	10408	11725	8865	11443	11770	10676	20637	17338	15853	8112	155205
1983	9756	12711	17547	11962	13168	11576	18044	9196	118060	182933	58875	17474	481302
1984	20416	17277	19961	13803	13481	13610	16999	149208	300792	142838	49474	18749	776608
1985	27431	21651	17229	17035	13149	16025	8600	45262	122041	41056	16826	15331	361636

Simulated Flows at Colorado River below the Confluence with the Williams Fork River
No Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1986	18159	23762	17368	15508	10090	8301	15225	61183	190395	83539	19714	18187	481431
1987	19752	16540	14806	14322	12004	13327	8033	11929	21205	10935	16429	9655	168937
1988	11795	15529	12800	13621	12139	13101	9096	12093	59565	18648	29807	12107	220301
1989	10282	15217	11445	10306	11023	15913	8033	12048	16345	16892	13231	14789	155524
1990	10831	12920	11963	9813	9866	15428	15276	8433	24856	10928	29807	18695	178816
1991	21436	16055	10563	10255	8714	12919	16110	10869	20538	11507	13363	12537	164866
1992	12878	18381	12828	11675	10962	16675	13107	15160	13226	14161	40857	19499	199407
1993	20149	17923	11511	10304	9538	12790	16852	16342	33022	16405	15660	20221	200717
1994	24302	19323	14618	13733	11898	17748	14209	13664	13780	16392	19348	15859	194874
1995	15674	15239	11004	10453	11093	14929	17884	8457	53676	71770	28355	22216	280750
1996	18991	18052	14453	17911	14854	15853	9280	75832	118503	36078	14660	19274	373741
1997	21297	18312	17887	14749	20351	14188	12172	77129	152997	62870	36650	14969	463571
1998	17395	18172	15681	16828	12681	16238	13942	8713	12986	18649	14243	17598	183126
1999	24331	21034	11834	14288	12718	20355	14604	9586	33988	17755	16747	24479	221717
2000	19267	14648	12572	15447	14070	16199	15325	44267	18747	9949	30956	22576	234023
2001	14704	15207	15990	13073	12397	15589	13272	14196	14640	12647	33420	18682	193817
2002	15820	13128	10806	10319	8435	11375	9294	9258	8110	17305	6261	6980	127091
2003	10151	12610	9875	9253	9065	12800	20270	33017	46319	18983	27874	26308	236525
2004	15165	19209	14610	13501	12708	22581	16051	9812	11788	14961	37858	22523	210767
2005	31638	19842	13456	13337	9868	11281	12290	13156	27443	17629	16264	14626	200830
AVERAGE:	16,478	15,388	13,156	12,467	10,672	13,452	13,933	22,882	51,766	30,844	21,975	16,277	239,290
MINIMUM:	8,394	10,892	7,867	7,328	6,959	8,301	8,033	8,310	8,110	8,796	6,261	6,980	127,091
MAXIMUM:	31,638	23,762	19,961	17,911	20,351	22,581	21,476	149,208	300,792	182,933	58,875	28,688	776,608

Simulated Flows at Middle Fork South Platte River below Montgomery Reservoir
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	3	0	0	0	0	0	1	19	43	39	16	9	11
1951	3	0	0	0	0	0	1	19	43	39	16	9	11
1952	3	0	0	0	0	0	1	19	43	39	16	9	11
1953	3	0	0	0	0	0	1	19	43	39	16	9	11
1954	3	0	0	0	0	0	1	19	43	39	35	9	12
1955	3	0	0	0	0	0	1	19	43	39	16	9	11
1956	3	0	0	0	0	0	1	19	43	39	16	9	11
1957	3	0	0	0	0	0	1	19	43	39	16	9	11
1958	3	0	0	0	0	0	1	19	43	39	16	9	11
1959	3	0	0	0	0	0	1	19	43	39	16	9	11
1960	3	0	0	0	0	0	1	19	43	39	16	9	11
1961	3	0	0	0	0	0	1	19	43	39	21	9	11
1962	3	0	0	0	0	0	1	19	43	39	16	9	11
1963	3	0	0	0	0	0	1	19	43	39	21	9	11
1964	3	0	0	0	0	0	1	19	43	39	16	9	11
1965	3	0	0	0	0	0	1	19	43	39	16	9	11
1966	3	0	0	0	0	0	1	19	43	39	21	9	11
1967	3	0	0	0	0	0	1	19	43	39	16	9	11
1968	3	0	0	0	0	0	1	19	43	39	16	9	11
1969	3	0	0	0	0	0	1	19	43	39	16	9	11
1970	3	0	0	0	0	0	1	19	43	39	16	9	11
1971	3	0	0	0	0	0	1	19	43	39	16	9	11
1972	3	0	0	0	0	0	1	19	43	39	16	9	11
1973	3	0	0	0	0	0	1	19	43	39	16	9	11
1974	3	0	0	0	0	0	1	19	43	39	16	9	11
1975	3	0	0	0	0	0	1	19	43	39	16	9	11
1976	3	0	0	0	0	0	1	19	43	39	16	9	11
1977	3	0	0	0	0	0	1	19	43	39	34	9	12
1978	3	0	0	0	0	0	1	19	43	39	16	9	11
1979	3	0	0	0	0	0	1	19	43	39	16	9	11
1980	3	0	0	0	0	0	1	19	43	39	16	9	11
1981	3	0	0	0	0	0	1	19	43	39	42	9	13
1982	3	0	0	0	0	0	1	19	43	39	16	9	11
1983	3	0	0	0	0	0	1	19	43	39	16	9	11
1984	3	0	0	0	0	0	1	19	43	39	16	9	11
1985	3	0	0	0	0	0	1	19	43	39	16	9	11

Simulated Flows at Middle Fork South Platte River below Montgomery Reservoir
No Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1986	3	0	0	0	0	0	1	19	43	39	16	9	11
1987	3	0	0	0	0	0	1	19	43	39	16	9	11
1988	3	0	0	0	0	0	1	19	43	39	16	9	11
1989	3	0	0	0	0	0	1	19	43	39	16	9	11
1990	2	0	0	0	0	0	0	14	76	30	14	7	12
1991	4	0	0	0	0	0	0	15	49	37	17	9	11
1992	1	0	0	0	0	0	1	26	37	81	17	7	14
1993	2	0	0	0	0	0	0	19	57	57	24	8	14
1994	5	0	0	0	0	0	2	25	47	15	11	9	9
1995	5	0	0	0	0	0	0	3	50	83	32	14	16
1996	5	0	0	0	0	0	16	23	62	36	13	8	14
1997	3	0	0	0	0	0	0	23	49	39	25	16	13
1998	6	0	0	0	0	0	0	8	20	40	9	11	8
1999	4	1	0	0	0	0	0	14	43	50	25	12	12
2000	4	0	0	0	0	0	0	31	42	26	16	2	10
2001	0	0	0	0	0	0	0	29	52	35	15	8	12
2002	2	0	0	0	0	0	0	10	13	5	31	4	6
2003	0	0	0	0	0	0	0	25	50	34	13	13	11
2004	3	0	0	0	0	0	0	17	25	21	17	4	7
2005	1	0	0	0	0	0	0	15	23	37	13	7	8
AVERAGE:	3	0	0	0	0	0	1	19	43	39	18	9	11
MINIMUM:	0	0	0	0	0	0	0	3	13	5	9	2	6
MAXIMUM:	6	1	0	0	0	0	16	31	76	83	42	16	16

PROPOSED ACTION ALTERNATIVE

Reservoir Data

Homestake Reservoir Simulated End-Of-Month Contents
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1950	30,020	30,014	30,040	30,068	30,073	24,393	15,996	21,283	32,506	32,299	31,028	30,911
1951	28,540	28,534	28,559	28,586	28,592	22,913	13,995	20,713	34,485	42,008	42,328	42,199
1952	39,822	39,816	39,845	39,877	38,077	29,291	17,172	18,893	36,503	40,700	42,075	41,528
1953	38,908	38,155	38,183	38,215	38,221	32,539	23,613	27,995	41,473	42,951	42,704	42,575
1954	40,197	40,191	40,220	40,252	40,259	35,295	27,907	34,330	32,702	32,424	31,194	29,412
1955	29,315	29,139	29,164	29,191	29,197	23,518	14,600	18,444	23,833	19,947	18,696	18,594
1956	16,232	16,227	16,246	16,267	16,271	10,596	2,731	12,478	21,007	18,236	16,987	16,888
1957	14,527	14,523	14,540	14,560	12,758	3,982	189	418	16,690	31,578	33,932	33,392
1958	30,777	30,024	30,049	30,077	30,083	24,403	15,485	23,807	31,845	29,765	28,498	28,384
1959	26,014	26,009	26,032	26,058	26,064	20,386	11,471	15,497	26,520	25,305	24,045	23,935
1960	21,569	21,564	21,585	21,609	21,614	15,937	8,269	11,883	22,003	21,825	20,570	20,466
1961	18,102	18,098	18,118	18,139	18,143	12,468	3,563	8,384	13,097	9,236	8,001	10,451
1962	10,239	10,235	10,251	10,268	10,272	4,600	185	5,349	14,517	17,614	16,834	16,735
1963	14,374	14,370	14,388	14,407	14,411	8,738	175	6,165	9,974	6,122	4,426	4,347
1964	1,998	1,996	2,004	2,014	2,015	172	170	5,640	10,991	8,111	6,878	6,793
1965	4,440	4,438	4,449	4,462	4,465	169	166	5,053	17,402	26,629	29,056	30,490
1966	28,681	28,675	28,700	28,727	28,733	23,772	16,395	19,946	22,297	22,040	20,826	19,057
1967	18,968	18,793	18,813	18,835	18,839	13,164	4,912	12,029	20,561	20,589	19,336	19,234
1968	16,871	16,867	16,886	16,907	16,911	11,236	2,333	3,209	15,360	15,001	17,529	17,429
1969	15,067	15,063	15,081	15,101	15,105	9,431	1,531	10,446	17,151	17,882	16,634	16,535
1970	14,174	14,170	14,188	14,207	14,211	8,537	179	11,225	25,243	26,170	25,209	25,217
1971	23,408	23,403	23,425	23,450	23,454	17,777	9,669	13,064	20,915	20,962	19,709	19,606
1972	17,243	17,238	17,257	17,279	17,283	11,608	2,703	6,997	21,231	21,258	20,176	20,315
1973	17,951	17,947	17,966	17,988	17,992	12,317	3,412	7,730	20,897	27,171	27,998	27,884
1974	25,515	25,509	25,533	25,558	25,564	19,886	11,382	19,438	29,568	29,641	28,477	28,363
1975	25,993	25,988	26,011	26,037	26,043	20,365	11,450	13,759	23,129	32,719	32,966	32,847
1976	30,474	30,469	30,494	30,522	30,528	24,848	15,929	22,754	30,075	30,320	29,658	29,543
1977	27,172	27,167	27,191	27,218	27,223	22,263	14,887	15,634	17,200	16,955	15,750	13,987
1978	13,901	13,727	13,744	13,763	13,767	8,094	186	5,706	24,159	31,068	29,799	29,683
1979	27,313	27,308	27,332	27,358	27,364	21,685	12,769	19,526	30,970	36,865	37,300	37,176

Homestake Reservoir Simulated End-Of-Month Contents
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1980	34,801	34,795	34,823	34,853	34,859	29,178	20,255	24,418	38,883	40,761	39,481	39,355
1981	36,979	36,973	37,001	37,032	37,038	31,356	22,431	26,515	33,230	29,324	28,058	27,944
1982	25,575	25,569	25,593	25,618	25,624	19,946	11,031	14,398	26,964	32,399	34,364	34,243
1983	31,869	31,864	31,890	31,918	30,118	21,335	8,659	7,242	21,753	32,459	36,927	36,385
1984	33,767	33,015	33,041	33,070	31,270	22,487	9,810	16,699	31,391	40,810	42,996	43,011
1985	41,257	40,504	40,533	40,565	40,572	34,889	26,778	37,629	42,959	42,951	42,268	42,140
1986	40,832	40,825	40,855	40,887	40,894	35,211	27,680	33,287	42,963	42,952	41,705	41,687
1987	39,310	39,304	39,333	39,365	39,371	33,668	25,940	34,353	40,277	38,928	37,650	37,525
1988	35,150	35,144	35,172	35,202	35,208	29,527	21,453	25,406	36,079	34,386	33,113	32,993
1989	30,621	30,615	30,640	30,669	30,674	24,995	17,479	24,763	29,909	28,483	27,218	27,105
1990	24,736	24,731	24,754	24,779	24,784	19,107	10,193	14,778	25,300	23,819	22,560	22,453
1991	20,088	20,084	20,104	20,127	20,131	14,455	5,547	13,212	24,038	24,686	23,426	23,318
1992	20,952	20,948	20,968	20,992	20,996	15,330	9,972	19,951	28,473	28,358	25,942	20,288
1993	19,955	19,951	19,971	19,993	19,998	10,960	3,319	13,699	28,202	29,931	30,327	30,238
1994	30,201	30,196	30,221	30,249	30,254	21,701	11,204	20,936	28,933	28,817	28,738	26,342
1995	14,923	14,919	14,936	14,956	14,960	14,634	186	3,202	24,469	38,551	40,698	40,668
1996	40,626	40,619	40,648	40,681	40,687	33,411	19,244	29,025	40,997	40,828	39,889	39,811
1997	39,770	39,763	39,792	39,824	39,831	30,015	15,909	25,862	42,970	42,951	42,994	43,012
1998	42,560	42,553	42,583	42,616	42,623	34,455	34,140	40,791	42,957	42,952	42,995	42,915
1999	42,872	42,865	42,895	42,928	42,935	34,468	19,663	23,202	39,423	42,570	42,995	42,752
2000	42,709	42,702	42,732	42,766	42,772	38,296	29,989	42,994	42,955	42,951	42,472	42,001
2001	41,958	41,951	41,981	42,014	42,021	33,066	16,046	18,598	29,206	29,090	28,502	28,437
2002	27,309	23,568	23,591	23,616	23,620	18,292	7,676	7,626	7,562	7,496	4,449	1,834
2003	1,822	1,820	1,828	1,837	1,839	1,833	1,817	12,972	16,582	19,632	19,567	19,514
2004	5,480	5,478	5,490	5,504	5,507	5,285	184	8,710	16,858	16,770	16,710	16,660
2005	16,633	16,629	16,647	16,668	16,672	8,623	172	8,559	20,588	25,076	25,002	24,940
AVERAGE:	25,903	25,769	25,791	25,817	25,693	19,838	11,432	17,261	26,933	28,595	28,208	27,885
MINIMUM:	1,822	1,820	1,828	1,837	1,839	169	166	418	7,562	6,122	4,426	1,834
MAXIMUM:	42,872	42,865	42,895	42,928	42,935	38,296	34,140	42,994	42,970	42,952	42,996	43,012

Wolford Mountain Reservoir Simulated End-Of-Month Contents
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1950	59,701	59,658	59,730	59,802	59,788	59,701	59,448	65,611	65,444	65,490	59,774	58,214
1951	52,892	52,812	52,822	52,889	52,840	52,710	52,475	65,625	65,444	65,490	65,090	60,900
1952	56,677	56,595	56,608	56,631	56,596	56,462	65,750	65,598	65,444	65,490	65,090	65,646
1953	56,811	56,720	56,790	56,817	56,761	56,627	56,325	65,618	65,444	65,490	65,090	53,563
1954	53,375	53,334	53,344	53,412	53,356	53,226	52,932	63,444	62,917	62,438	47,258	45,384
1955	29,037	28,396	27,893	27,658	27,393	26,913	26,705	40,486	45,613	45,236	39,945	34,445
1956	34,313	34,236	34,226	34,230	34,178	34,072	33,845	65,675	65,443	64,950	59,238	53,096
1957	52,909	52,820	52,829	52,896	52,841	52,711	52,418	65,625	65,444	65,490	65,583	65,244
1958	64,905	64,810	64,829	64,863	64,805	64,664	64,340	65,601	65,444	64,951	59,238	52,656
1959	52,470	52,381	52,390	52,414	52,358	52,279	51,988	65,626	65,444	65,490	61,627	53,228
1960	52,916	52,827	52,837	52,904	52,848	52,718	65,754	65,598	65,444	65,490	59,755	53,639
1961	53,450	53,361	53,428	53,496	53,482	53,351	53,058	65,624	65,444	64,951	53,682	54,304
1962	63,549	63,455	63,473	63,057	62,469	57,028	65,749	65,598	65,444	65,490	65,090	56,228
1963	53,383	53,343	53,410	53,434	53,379	53,248	52,954	65,624	65,444	59,598	51,058	48,238
1964	33,054	31,318	30,792	30,230	29,708	26,595	26,388	43,234	50,755	50,342	45,184	38,323
1965	38,179	38,149	38,143	38,151	38,098	37,987	37,746	65,665	65,443	65,490	65,174	64,837
1966	65,769	65,674	65,694	65,728	65,671	65,528	65,203	65,599	65,444	64,951	45,850	39,745
1967	39,473	39,442	39,437	39,446	39,394	39,281	40,708	61,515	65,456	65,490	61,625	53,803
1968	51,977	51,888	51,897	51,920	51,865	51,736	51,447	64,467	65,447	65,490	65,583	59,072
1969	53,829	53,740	53,750	53,775	53,719	53,638	61,519	65,607	65,444	65,490	62,236	53,235
1970	53,047	52,958	52,968	52,992	52,937	52,806	52,514	65,625	65,444	65,490	59,775	59,458
1971	59,256	59,164	59,179	59,208	59,151	59,015	65,746	65,598	65,444	65,490	65,090	64,752
1972	64,414	64,369	64,388	64,421	64,363	64,222	63,979	65,602	65,444	65,490	57,826	55,629
1973	55,436	55,345	55,414	55,398	55,384	55,252	54,953	65,620	65,444	65,490	65,136	59,103
1974	52,857	52,768	52,777	52,759	52,746	52,666	56,116	65,618	65,444	65,490	59,776	53,637
1975	53,325	53,236	53,303	53,285	53,272	53,191	52,977	65,624	65,444	65,490	65,090	53,646
1976	53,457	53,368	53,435	53,417	53,404	53,273	53,059	65,624	65,444	65,490	59,776	53,224
1977	53,037	52,947	53,014	53,081	53,068	52,987	52,695	52,361	51,897	46,131	40,178	39,872
1978	21,193	21,123	21,101	21,092	21,043	20,952	22,414	51,639	65,484	65,490	59,772	52,461
1979	52,275	52,186	52,195	52,218	52,205	52,076	51,864	65,626	65,444	65,490	65,090	53,233

Wolford Mountain Reservoir Simulated End-Of-Month Contents
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1980	53,046	53,006	53,015	53,039	52,984	52,854	52,640	65,625	65,444	65,490	59,776	53,224
1981	53,037	52,947	53,014	53,081	53,068	52,937	52,645	65,625	65,444	62,972	48,384	46,542
1982	31,426	31,351	31,338	31,338	31,287	31,185	30,968	59,616	65,462	65,490	65,090	64,752
1983	64,538	64,443	64,462	64,496	64,438	64,297	63,975	65,602	65,444	65,490	65,583	62,952
1984	62,618	62,574	62,591	62,623	62,566	62,476	62,238	65,606	65,444	65,490	65,583	65,244
1985	65,769	65,939	65,985	65,985	65,970	65,877	65,737	65,598	65,444	65,490	65,090	64,752
1986	65,429	65,939	65,959	65,985	65,970	65,892	65,737	65,598	65,444	65,490	65,090	64,752
1987	65,755	65,939	65,959	65,985	65,928	65,785	65,737	65,598	65,444	65,202	64,803	53,454
1988	53,265	53,176	53,186	53,210	53,155	53,024	54,659	65,621	65,444	65,490	59,776	53,637
1989	53,448	53,359	53,426	53,493	53,438	53,307	64,126	65,601	65,444	64,951	54,177	53,105
1990	52,917	52,828	52,838	52,905	52,849	52,719	52,427	64,720	65,446	64,953	53,379	51,753
1991	51,445	51,356	51,422	51,487	51,474	51,345	51,058	65,629	65,444	65,490	59,776	53,636
1992	53,448	53,358	53,368	53,393	53,337	53,207	52,992	65,624	65,444	64,951	50,849	46,672
1993	45,412	45,327	45,329	45,345	45,291	45,171	44,984	65,646	65,444	65,490	65,090	64,340
1994	64,003	63,909	63,927	63,960	63,903	63,762	63,520	65,603	65,444	59,647	49,166	48,890
1995	48,619	48,534	48,586	48,601	48,554	48,429	48,215	65,637	65,444	65,490	65,090	64,752
1996	64,442	64,356	64,376	64,405	64,354	64,213	65,739	65,598	65,444	65,490	59,776	59,458
1997	59,161	59,078	59,092	59,117	59,068	58,961	64,816	65,600	65,444	65,490	65,090	64,752
1998	64,999	65,330	65,364	65,409	65,352	65,209	65,738	65,598	65,444	65,490	65,090	59,469
1999	59,172	59,089	59,161	59,185	59,136	59,000	58,707	65,613	65,444	65,490	65,090	64,280
2000	54,952	54,871	54,939	54,961	54,912	54,780	55,693	65,619	65,444	64,951	53,176	52,029
2001	51,844	51,764	51,773	51,792	51,744	51,615	51,383	65,628	65,444	64,951	54,185	47,220
2002	46,954	46,878	46,881	46,894	46,844	46,722	46,530	46,231	45,814	39,516	29,073	27,695
2003	19,448	19,382	19,356	19,341	19,296	19,209	19,045	48,582	65,496	65,003	59,045	52,638
2004	52,451	52,371	52,381	52,400	52,352	52,251	51,975	59,734	63,645	63,162	47,127	46,389
2005	29,765	29,700	29,685	29,681	29,637	29,536	29,379	57,522	65,467	65,490	65,090	58,319
AVERAGE:	52,220	52,129	52,134	52,138	52,072	51,798	52,924	63,126	64,161	63,597	58,574	54,527
MINIMUM:	19,448	19,382	19,356	19,341	19,296	19,209	19,045	40,486	45,613	39,516	29,073	27,695
MAXIMUM:	65,769	65,939	65,985	65,985	65,970	65,892	65,754	65,675	65,496	65,490	65,583	65,646

Williams Fork Reservoir Simulated End-Of-Month Contents
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1950	66,230	61,473	59,007	58,061	56,473	54,174	59,260	68,579	86,429	90,030	73,597	66,382
1951	61,460	58,237	56,028	54,784	53,948	51,500	50,874	66,035	96,052	96,303	89,843	72,487
1952	62,937	58,921	55,994	53,371	51,688	49,386	57,503	82,436	96,289	96,302	89,842	79,610
1953	72,660	68,402	64,261	60,058	58,428	56,518	55,835	65,976	87,680	91,515	83,922	77,315
1954	71,991	67,956	64,038	60,058	59,436	57,596	56,720	60,662	63,081	59,819	53,056	47,690
1955	31,760	28,592	26,431	24,590	23,518	22,040	27,092	34,375	43,015	45,769	40,683	30,766
1956	24,876	20,958	18,582	16,799	15,018	12,651	18,518	33,889	43,620	45,618	37,497	32,618
1957	27,722	24,606	23,272	21,695	20,221	18,916	18,665	30,276	70,296	96,360	89,890	83,586
1958	72,530	68,315	64,218	60,058	57,917	55,640	55,210	82,436	96,069	96,303	80,310	73,830
1959	68,867	65,875	62,996	60,057	58,529	56,341	55,694	63,247	72,184	73,314	66,954	60,012
1960	56,450	51,262	46,402	43,953	41,843	39,863	49,419	63,666	91,097	95,961	86,484	80,628
1961	75,280	70,148	65,135	60,058	59,048	57,985	54,879	63,197	80,052	77,057	65,707	64,303
1962	63,062	61,443	56,990	54,672	53,151	51,378	66,397	92,168	96,099	96,303	88,551	82,519
1963	76,701	71,095	65,609	60,058	58,571	56,236	55,926	56,258	57,961	54,409	53,358	43,400
1964	29,443	26,763	25,238	23,777	22,267	20,494	16,619	26,788	32,811	32,722	29,335	23,714
1965	20,234	16,971	14,295	11,905	9,777	7,569	11,855	20,599	50,703	67,198	65,683	64,284
1966	63,048	61,302	57,207	55,116	53,874	51,519	51,001	55,482	58,941	60,141	42,813	37,840
1967	33,554	31,115	29,744	28,571	27,323	25,212	29,415	34,653	51,873	58,148	48,798	41,714
1968	36,546	33,140	31,303	29,755	27,943	25,842	21,743	26,391	38,958	43,288	45,780	29,847
1969	21,803	18,023	15,287	12,590	10,585	7,996	14,377	28,095	55,544	64,420	58,033	48,359
1970	49,950	47,918	46,285	43,442	41,143	38,511	38,173	62,858	96,182	96,303	89,842	83,548
1971	77,466	71,604	65,863	60,058	57,133	53,599	62,280	76,916	96,049	96,303	88,852	79,758
1972	71,136	67,112	63,615	60,057	57,766	53,966	58,120	62,602	71,934	72,080	55,015	50,257
1973	48,491	45,252	42,496	40,441	38,901	37,286	36,826	52,726	86,198	96,326	89,266	80,738
1974	75,363	70,203	65,162	60,058	58,418	56,201	61,638	82,209	96,016	96,303	83,411	76,044
1975	69,150	65,479	61,995	60,057	58,207	55,872	55,200	59,191	69,310	83,859	76,012	86,031
1976	60,679	57,089	54,572	52,412	50,413	47,704	51,416	57,569	65,612	68,964	62,236	55,050
1977	47,016	43,208	41,322	40,196	38,940	37,092	36,522	37,790	42,149	33,067	15,849	11,186
1978	3,025	1,462	1,145	1,043	941	831	5,928	13,760	31,247	35,092	30,574	23,356
1979	19,976	17,144	14,700	11,832	9,494	6,309	10,439	22,377	49,540	60,199	54,528	48,680

Williams Fork Reservoir Simulated End-Of-Month Contents
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1980	43,654	40,421	37,588	34,084	31,068	29,388	29,749	43,117	64,424	67,635	61,114	51,982
1981	46,010	42,978	40,855	39,521	38,288	36,600	31,028	35,587	43,181	41,811	24,400	13,443
1982	8,580	5,942	4,045	2,119	761	651	642	7,977	31,192	43,271	40,479	40,557
1983	40,239	36,407	32,125	29,510	26,154	24,852	19,647	31,556	95,107	96,305	89,844	80,869
1984	73,252	68,796	63,824	59,887	57,760	53,651	52,950	90,996	96,267	96,302	89,842	83,548
1985	77,466	71,604	65,863	60,058	58,166	55,099	65,494	88,839	96,273	96,302	89,412	81,975
1986	76,289	70,820	65,471	60,058	59,466	63,499	70,808	87,296	96,210	96,302	89,842	83,548
1987	77,466	71,604	65,863	60,058	57,260	54,631	59,608	70,530	84,110	86,390	77,305	71,431
1988	66,479	63,026	59,771	55,928	52,872	51,171	57,682	71,697	96,089	96,303	76,271	69,720
1989	65,001	61,721	59,349	57,566	55,711	52,958	58,874	66,970	72,130	68,901	66,823	59,199
1990	54,694	51,129	47,881	45,542	43,376	40,201	39,593	45,797	52,460	53,807	35,776	26,562
1991	17,941	13,502	10,684	8,441	6,864	4,294	3,779	20,255	43,875	46,193	43,169	39,774
1992	34,434	29,602	26,430	23,885	21,115	16,765	21,665	36,591	48,980	53,931	28,741	18,571
1993	6,855	2,244	1,264	1,163	1,061	950	938	28,058	64,108	78,288	74,891	64,502
1994	56,070	52,068	48,681	45,555	43,076	39,836	43,734	58,240	69,754	66,721	55,560	45,804
1995	40,427	37,127	34,613	32,464	29,736	26,075	19,526	28,177	69,051	96,363	89,892	74,980
1996	67,435	63,137	58,650	53,607	49,558	45,392	53,128	84,229	96,091	96,303	89,108	79,043
1997	70,586	64,512	59,331	54,847	50,182	46,059	51,503	78,448	96,148	96,303	89,842	83,548
1998	77,466	71,604	65,863	60,058	56,272	52,283	55,973	65,502	74,095	83,622	79,319	63,558
1999	55,003	49,916	46,885	43,289	40,232	35,407	34,760	43,602	61,972	69,439	67,544	51,351
2000	42,884	38,934	35,146	31,202	27,657	23,439	29,112	52,083	67,151	70,807	51,279	38,472
2001	31,224	27,556	23,539	20,340	17,563	13,797	13,379	27,336	37,825	43,441	19,238	7,747
2002	1,422	1,321	1,225	1,124	1,022	911	899	4,561	5,499	912	892	742
2003	734	634	536	433	331	224	220	33,075	70,763	76,719	67,872	54,659
2004	47,995	44,111	41,104	38,305	35,546	31,498	30,918	40,891	48,375	49,333	26,900	17,997
2005	10,010	6,395	4,279	1,682	1,059	948	8,323	29,941	51,315	59,669	54,090	47,770
AVERAGE:	49,090	45,325	42,144	39,291	37,376	35,122	37,455	50,974	67,919	71,619	62,771	54,766
MINIMUM:	734	634	536	433	331	224	220	4,561	5,499	912	892	742
MAXIMUM:	77,466	71,604	65,863	60,058	59,466	63,499	70,808	92,168	96,289	96,363	89,892	83,586

Dillon Reservoir Simulated End-Of-Month Contents
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1950	224,767	221,933	215,493	211,963	208,859	201,987	193,145	207,430	255,969	255,968	229,238	209,214
1951	191,575	185,278	178,652	173,050	166,179	161,068	160,907	190,082	256,006	255,968	255,546	241,566
1952	233,784	228,119	221,002	216,059	211,400	206,901	212,208	256,257	255,871	255,969	256,162	236,564
1953	221,102	213,985	208,513	206,004	202,410	194,486	186,797	200,889	255,983	255,968	255,624	229,777
1954	208,947	201,080	193,604	188,931	181,916	175,664	151,880	152,587	146,576	126,037	112,607	101,777
1955	96,412	91,686	88,004	82,353	78,289	72,860	73,229	90,502	118,173	113,864	112,702	112,101
1956	106,180	102,426	98,274	89,345	83,499	76,665	77,676	120,056	171,248	167,805	141,604	115,532
1957	102,987	94,785	87,279	77,240	71,047	63,931	63,291	94,227	192,374	256,087	255,698	255,827
1958	255,928	255,473	253,474	249,843	247,162	246,420	246,027	256,208	255,871	255,969	236,525	216,087
1959	201,314	196,177	191,130	188,132	184,990	181,598	183,383	205,164	255,974	255,968	235,793	217,463
1960	216,941	214,780	209,907	204,381	199,282	197,805	201,526	228,282	255,928	255,969	228,347	202,909
1961	191,288	187,837	183,058	177,916	172,864	167,722	160,278	179,388	219,151	224,544	217,791	230,075
1962	242,135	240,250	239,922	239,969	239,892	238,682	251,688	256,200	255,871	255,969	238,477	213,451
1963	197,757	191,984	186,064	179,811	175,304	170,864	156,668	151,039	148,555	121,678	107,259	97,772
1964	89,538	87,229	83,022	80,326	77,087	73,320	70,852	92,470	120,050	117,869	101,055	90,317
1965	83,425	79,325	75,902	69,421	65,497	60,141	61,501	93,582	193,002	256,086	255,610	255,739
1966	255,996	255,541	254,343	253,941	251,308	250,712	246,077	252,702	255,878	233,546	213,685	196,616
1967	186,559	180,567	172,637	166,326	160,316	152,103	143,053	165,197	213,935	230,938	220,038	219,336
1968	212,897	207,509	199,123	192,074	185,959	180,558	181,202	193,567	250,773	255,978	255,948	243,587
1969	235,572	229,492	223,677	220,493	214,491	209,087	203,081	241,875	255,900	255,969	243,989	238,550
1970	238,876	238,426	238,198	237,482	234,772	233,820	235,862	256,223	255,871	255,969	255,468	246,407
1971	246,878	246,426	243,264	241,482	240,196	239,301	245,664	256,209	255,871	255,969	245,465	242,245
1972	238,548	235,272	230,999	228,823	225,372	223,223	220,929	245,172	255,894	255,969	237,119	221,944
1973	207,589	202,065	196,140	189,405	181,714	174,268	174,494	202,119	255,981	255,968	254,277	241,352
1974	237,240	233,861	230,625	229,404	228,654	228,440	231,773	256,229	255,871	255,969	237,983	218,619
1975	211,138	204,077	196,490	191,614	188,366	185,118	185,507	202,765	255,979	255,968	250,282	230,827
1976	215,522	212,332	208,338	205,561	202,662	201,146	193,236	214,392	239,443	241,477	229,771	221,155
1977	219,931	215,611	208,045	200,824	194,140	189,714	196,192	204,115	211,003	184,847	166,239	146,477
1978	137,624	133,757	128,395	121,448	118,066	113,338	111,860	135,507	224,178	243,892	218,987	190,430
1979	173,914	167,256	159,771	151,208	147,188	145,576	149,220	180,783	256,026	255,968	255,651	235,036

Dillon Reservoir Simulated End-Of-Month Contents
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1980	220,523	215,756	211,475	211,419	210,972	210,770	213,470	244,775	255,894	255,969	231,099	212,875
1981	197,804	193,983	189,179	184,004	178,587	175,997	169,266	169,210	177,985	167,594	155,369	142,264
1982	134,144	130,429	126,299	123,754	119,913	114,783	111,871	135,400	201,925	234,610	248,106	250,465
1983	250,114	247,928	245,338	244,640	244,392	244,167	247,116	256,170	255,871	255,969	256,125	256,251
1984	255,666	255,211	254,515	253,410	250,018	249,789	254,502	256,196	255,871	255,969	255,989	256,116
1985	256,372	256,726	256,508	256,565	254,192	253,960	256,486	256,193	255,871	255,969	251,898	243,857
1986	243,772	243,577	242,399	241,338	239,228	234,039	241,276	256,215	255,871	255,969	248,732	234,808
1987	234,349	230,878	226,537	224,373	223,713	223,502	229,769	256,232	255,871	255,969	238,440	220,458
1988	209,492	206,843	202,820	202,030	201,762	201,567	206,940	231,156	255,922	255,969	248,994	227,017
1989	212,258	204,638	198,794	193,991	189,955	189,768	186,176	215,501	255,953	255,969	239,017	219,856
1990	205,678	198,107	190,129	184,154	179,401	173,430	177,861	197,711	249,834	255,980	249,728	234,517
1991	232,679	228,751	221,359	214,939	208,697	201,508	196,768	226,945	255,930	255,969	249,346	230,031
1992	219,314	216,154	211,664	208,194	205,279	204,003	200,522	228,912	253,875	252,955	244,316	233,610
1993	228,746	226,867	221,761	216,991	212,888	208,069	211,171	253,580	255,877	255,969	254,182	245,073
1994	237,195	233,190	228,940	226,079	222,868	220,449	217,463	245,536	255,893	238,772	226,177	216,180
1995	211,067	207,971	204,179	200,544	198,220	195,997	198,969	215,270	255,954	255,969	256,162	251,706
1996	251,129	250,675	248,896	248,159	247,150	246,372	255,876	256,194	255,871	255,969	245,795	237,743
1997	236,668	236,220	235,127	233,824	233,430	233,212	240,214	256,217	255,871	255,969	256,162	249,229
1998	243,977	241,770	238,056	235,346	232,950	231,194	229,656	254,263	255,875	255,969	254,173	240,983
1999	235,318	232,390	227,319	224,455	221,332	219,798	218,201	244,088	255,896	255,969	256,162	245,137
2000	238,990	234,929	230,609	228,088	225,454	223,322	227,199	256,235	255,871	255,969	248,027	235,569
2001	226,787	222,461	218,818	216,005	213,096	211,235	208,492	241,475	255,901	253,804	245,723	235,667
2002	225,981	219,516	212,890	207,797	202,856	197,126	193,674	198,097	193,713	171,747	131,119	113,816
2003	102,202	95,762	88,692	83,193	77,918	71,645	72,059	118,603	189,583	205,121	187,257	174,857
2004	165,487	161,393	156,713	153,476	150,555	149,002	144,005	153,098	157,618	141,607	128,304	115,593
2005	107,604	103,270	97,174	93,199	87,924	81,645	81,693	108,916	150,599	161,015	143,289	126,945
AVERAGE:	204,744	200,892	196,242	192,407	188,779	185,408	184,998	205,597	231,793	233,015	222,761	210,167
MINIMUM:	83,425	79,325	75,902	69,421	65,497	60,141	61,501	90,502	118,173	113,864	101,055	90,317
MAXIMUM:	256,372	256,726	256,508	256,565	254,192	253,960	256,486	256,257	256,026	256,087	256,162	256,251

Upper Blue Reservoir Simulated End-Of-Month Contents
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1950	250	0	0	0	0	0	0	592	2,066	2,046	1,221	250
1951	250	0	0	0	0	0	0	592	2,066	2,046	2,059	1,008
1952	250	0	0	0	0	0	0	592	2,066	2,046	2,059	1,056
1953	250	0	0	0	0	0	0	592	2,066	2,046	2,059	1,930
1954	250	0	0	0	0	0	0	592	2,066	1,281	250	250
1955	250	0	0	0	0	0	0	592	2,066	2,046	2,059	913
1956	250	0	0	0	0	0	0	592	2,066	2,046	1,762	1,723
1957	250	0	0	0	0	0	0	592	2,066	2,046	2,059	2,067
1958	250	0	0	0	0	0	0	592	2,066	2,046	1,993	1,949
1959	250	0	0	0	0	0	0	592	2,066	2,046	2,059	2,014
1960	250	0	0	0	0	0	0	592	2,066	2,046	1,935	1,893
1961	250	0	0	0	0	0	0	592	2,066	2,046	250	2,087
1962	250	0	0	0	0	0	0	592	2,066	2,046	2,059	2,000
1963	250	0	0	0	0	0	0	592	1,290	2,059	250	250
1964	250	0	0	0	0	0	0	592	2,066	2,046	318	311
1965	250	0	0	0	0	0	0	592	2,066	2,046	2,059	2,067
1966	250	0	0	0	0	0	0	592	2,066	2,046	250	250
1967	250	0	0	0	0	0	0	170	1,308	2,058	1,125	322
1968	250	0	0	0	0	0	0	0	1,752	2,051	2,059	1,084
1969	250	0	0	0	0	0	76	765	1,811	2,050	1,722	250
1970	250	0	0	0	0	0	0	409	2,019	2,047	2,059	2,067
1971	250	0	0	0	0	0	0	0	1,470	2,056	2,059	493
1972	250	0	0	0	0	0	0	0	1,593	2,054	649	250
1973	250	0	0	0	0	0	0	0	1,350	2,058	2,059	250
1974	250	0	0	0	0	0	0	0	1,897	2,049	2,059	250
1975	250	0	0	0	0	0	0	0	774	2,067	2,059	642
1976	250	0	0	0	0	0	0	0	894	2,065	2,059	745
1977	250	0	0	0	0	0	0	243	1,020	832	250	250
1978	250	0	0	0	0	0	0	160	1,805	2,050	2,059	250
1979	250	0	0	0	0	0	0	328	1,629	2,053	2,059	251

Upper Blue Reservoir Simulated End-Of-Month Contents
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1980	250	0	0	0	0	0	0	0	1,720	1,665	250	250
1981	250	0	0	0	0	0	0	174	560	847	250	250
1982	250	0	0	0	0	0	0	0	1,231	2,059	2,059	2,067
1983	250	0	0	0	0	0	0	0	1,092	2,062	2,059	2,067
1984	250	0	0	0	0	0	0	0	1,352	2,058	2,059	2,067
1985	250	0	0	0	0	0	0	0	1,407	1,362	1,327	342
1986	250	0	0	0	0	0	0	79	1,954	2,048	2,059	2,067
1987	250	0	0	0	0	0	0	198	1,591	1,955	760	250
1988	250	0	0	0	0	0	0	0	2,076	2,046	1,559	333
1989	250	0	0	0	0	0	36	501	1,601	1,549	530	518
1990	250	0	0	0	0	0	0	294	2,053	2,046	250	250
1991	250	0	0	0	0	0	0	321	1,715	2,052	744	250
1992	250	0	0	0	0	0	0	606	1,693	2,052	250	250
1993	250	0	0	0	0	0	0	68	1,228	2,060	2,059	1,799
1994	250	0	0	0	0	0	0	474	2,068	2,046	1,855	587
1995	250	0	0	0	0	0	0	0	1,301	2,058	2,059	2,013
1996	250	0	0	0	0	0	0	108	2,074	2,046	2,059	869
1997	250	0	0	0	0	0	0	128	1,851	2,050	2,059	2,067
1998	250	0	0	0	0	0	0	209	1,134	2,061	2,059	353
1999	250	0	0	0	0	0	0	119	1,936	2,048	2,059	345
2000	250	0	0	0	0	0	0	544	1,965	1,902	643	629
2001	250	0	0	0	0	0	0	482	1,958	2,048	1,610	566
2002	250	0	0	0	0	0	22	317	939	909	250	250
2003	250	0	0	0	0	0	0	570	2,066	2,046	1,994	1,189
2004	250	0	0	0	0	0	69	416	1,424	1,838	250	250
2005	250	0	0	0	0	0	27	519	1,662	2,053	1,166	429
AVERAGE:	250	0	0	0	0	0	4	326	1,702	1,937	1,451	918
MINIMUM:	250	0	0	0	0	0	0	0	560	832	250	250
MAXIMUM:	250	0	0	0	0	0	76	765	2,076	2,067	2,059	2,087

Green Mountain Reservoir Simulated End-Of-Month Contents
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1950	103,699	93,313	87,557	81,774	75,873	69,926	78,823	111,439	153,974	153,965	130,399	119,934
1951	94,171	87,293	80,538	73,756	66,866	59,933	56,099	93,613	154,012	153,965	154,093	140,197
1952	114,777	103,771	92,906	82,008	70,990	59,932	68,927	104,551	153,988	153,965	154,093	140,911
1953	115,403	105,271	95,282	85,260	75,116	64,928	60,713	85,104	154,030	153,965	152,808	140,525
1954	115,050	105,989	97,071	88,121	79,046	69,925	66,043	89,460	93,965	77,201	76,866	75,603
1955	74,492	73,556	72,729	71,880	70,927	69,928	75,878	100,002	123,246	120,625	119,713	111,509
1956	86,116	81,852	77,705	73,533	69,254	64,930	70,550	131,540	153,938	140,766	126,978	117,008
1957	91,561	85,206	78,972	72,711	66,343	59,933	57,587	66,456	131,262	153,999	154,093	140,911
1958	127,987	115,335	102,835	90,299	77,635	64,927	61,545	154,244	153,902	151,743	121,678	113,190
1959	87,360	82,846	78,451	74,031	69,503	64,930	58,615	80,383	142,228	153,983	138,066	127,204
1960	103,534	95,780	88,158	80,508	72,740	64,929	75,123	94,618	154,009	153,965	136,849	126,877
1961	101,490	95,146	88,933	82,691	76,332	69,926	63,234	87,022	116,111	100,820	100,001	93,948
1962	88,085	82,426	76,885	71,319	65,647	59,934	78,475	150,074	153,908	153,965	149,760	122,026
1963	96,639	91,266	86,021	80,749	75,361	69,926	72,996	88,105	106,641	80,969	80,214	78,464
1964	76,872	75,459	74,157	72,833	71,404	69,928	64,574	85,783	107,139	120,952	112,079	104,270
1965	82,245	77,756	73,380	68,980	64,478	59,934	64,474	86,563	137,742	153,990	154,093	141,624
1966	129,413	117,475	105,692	93,873	81,922	69,924	75,032	95,141	116,317	102,887	90,410	86,464
1967	78,330	75,625	73,031	70,415	67,695	64,931	69,260	86,907	124,080	144,369	120,955	108,267
1968	84,844	80,834	76,941	73,023	68,999	64,931	56,027	67,332	111,791	129,456	145,066	133,190
1969	107,759	99,159	90,694	82,199	73,586	64,929	71,125	88,304	151,147	153,969	138,773	127,095
1970	115,658	104,475	93,434	82,360	71,167	59,932	63,448	134,799	153,933	153,965	138,841	127,154
1971	115,707	104,514	93,463	82,380	71,177	59,932	71,130	108,445	153,980	153,965	147,168	121,567
1972	97,956	91,319	84,811	78,274	71,624	64,929	72,022	90,115	154,019	153,965	134,122	123,831
1973	113,775	103,969	94,305	84,608	74,791	64,928	56,238	80,212	140,425	153,985	154,093	123,845
1974	97,838	90,225	82,739	75,225	67,600	59,933	66,701	128,520	153,943	153,965	143,386	131,754
1975	106,319	98,007	89,830	81,623	73,298	64,929	67,563	82,741	125,504	154,008	154,093	133,865
1976	108,366	100,644	93,059	85,445	77,708	69,925	75,260	92,668	125,704	146,565	135,844	126,017
1977	100,631	94,458	88,417	82,347	76,160	69,926	56,147	61,866	77,307	70,061	69,750	68,096
1978	66,584	65,232	63,980	62,709	61,343	59,935	65,247	78,081	133,183	153,996	144,098	131,649
1979	105,926	96,693	87,593	78,463	69,219	59,932	65,340	90,813	146,544	153,976	150,469	137,811

Green Mountain Reservoir Simulated End-Of-Month Contents
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1980	112,319	102,805	93,431	84,026	74,499	64,928	68,704	89,851	154,020	153,965	135,676	125,874
1981	100,436	94,302	88,300	82,269	76,121	69,926	57,467	68,109	91,801	86,067	85,702	82,441
1982	76,519	74,177	71,944	69,690	67,333	64,931	58,029	78,320	120,346	154,016	154,093	140,197
1983	126,560	113,194	99,978	86,726	73,349	59,931	51,767	81,405	154,038	153,965	154,093	116,303
1984	90,885	84,665	78,566	72,440	66,208	59,934	63,304	154,241	153,902	153,965	154,093	140,197
1985	126,560	113,194	99,978	86,726	73,349	59,931	80,978	154,212	153,902	153,965	151,401	137,894
1986	124,644	111,662	98,828	85,959	72,966	59,931	70,986	115,888	153,964	153,965	154,093	141,624
1987	129,413	117,475	105,692	93,873	81,922	69,924	76,751	112,939	153,970	153,965	145,895	101,853
1988	86,224	81,937	77,769	73,576	69,275	64,930	72,138	96,510	154,005	153,965	126,750	118,240
1989	92,238	87,747	83,380	78,987	74,480	69,926	79,918	96,981	125,793	133,293	124,669	116,460
1990	90,996	86,753	82,634	78,489	74,231	69,927	59,153	71,171	104,542	117,623	103,981	98,063
1991	79,587	76,630	73,786	70,918	67,947	64,931	59,533	84,097	154,032	153,965	129,544	120,629
1992	95,200	90,115	85,157	80,173	75,073	69,926	75,607	98,970	115,243	108,556	108,113	100,881
1993	82,725	78,140	73,668	69,173	64,574	59,934	56,661	91,336	154,016	153,965	145,325	134,126
1994	123,174	112,485	101,947	91,374	80,673	69,924	75,470	101,148	138,825	116,904	94,295	89,071
1995	81,566	77,213	72,973	68,708	64,342	59,934	50,164	64,851	154,075	153,965	154,093	140,197
1996	126,560	113,194	99,978	86,726	73,349	59,931	69,456	154,231	153,902	153,965	110,985	103,335
1997	95,893	88,670	81,571	74,446	67,210	59,933	67,957	135,846	153,931	153,965	154,093	140,911
1998	127,987	115,335	102,835	90,299	77,635	64,927	70,901	94,207	151,936	153,968	147,389	115,148
1999	69,754	84,760	79,888	74,990	69,982	64,930	68,409	83,482	154,033	153,965	154,093	140,911
2000	115,583	105,415	95,390	85,332	75,152	64,928	71,907	133,674	153,935	148,883	128,925	118,673
2001	93,176	86,497	79,941	73,358	66,666	59,933	57,536	86,255	125,264	113,150	109,864	103,804
2002	79,631	77,665	75,813	73,938	71,956	69,927	58,507	67,163	56,896	54,937	75,027	73,319
2003	64,883	64,302	63,833	63,335	62,819	62,927	70,317	108,706	151,248	142,982	116,558	109,525
2004	83,279	80,582	78,002	75,399	72,686	69,927	70,485	88,396	104,876	89,882	89,505	85,691
2005	80,089	77,032	74,087	71,119	68,047	64,931	72,765	98,476	133,397	152,975	141,360	130,021
AVERAGE:	99,366	92,336	85,517	78,669	71,708	64,715	66,769	98,310	136,319	138,085	129,973	117,861
MINIMUM:	64,883	64,302	63,833	62,709	61,343	59,931	50,164	61,866	56,896	54,937	69,750	68,096
MAXIMUM:	129,413	117,475	105,692	93,873	81,922	69,928	80,978	154,244	154,075	154,016	154,093	141,624

Montgomery Reservoir Simulated End-Of-Month Contents
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1950	4,186	3,840	3,300	2,760	2,181	1,429	662	1,382	4,155	4,545	4,444	4,323
1951	3,952	3,606	3,066	2,526	1,947	1,195	662	1,382	4,155	4,545	4,444	4,369
1952	3,936	3,590	3,050	2,510	1,931	1,179	662	1,382	4,155	4,545	4,444	4,369
1953	3,936	3,590	3,050	2,510	1,931	1,179	662	1,382	4,155	4,545	4,444	4,369
1954	3,936	3,590	3,050	2,510	1,931	1,179	662	1,382	4,155	4,545	3,307	3,233
1955	3,050	2,703	2,163	1,624	1,045	662	662	1,382	4,155	4,545	4,444	4,369
1956	3,936	3,590	3,050	2,510	1,931	1,179	662	1,382	4,155	4,545	4,444	4,369
1957	3,936	3,590	3,050	2,510	1,931	1,179	662	1,382	4,155	4,545	4,444	4,369
1958	3,936	3,590	3,050	2,510	1,931	1,179	662	1,382	4,155	4,545	4,444	4,369
1959	3,936	3,590	3,050	2,510	1,931	1,179	662	1,382	4,155	4,545	4,444	4,369
1960	3,936	3,590	3,050	2,510	1,931	1,179	662	1,382	4,155	4,545	4,444	4,369
1961	3,936	3,590	3,050	2,510	1,931	1,179	662	1,382	4,155	4,545	4,120	4,046
1962	3,610	3,263	2,723	2,184	1,604	853	662	1,382	4,155	4,545	4,444	4,369
1963	2,932	2,380	1,810	1,323	892	415	243	1,085	2,968	3,066	4,644	4,286
1964	3,240	2,686	2,113	1,541	1,019	449	206	1,673	3,791	4,388	4,604	4,421
1965	3,979	3,793	3,602	3,407	2,542	1,296	352	82	3,284	4,574	4,227	4,641
1966	2,980	2,241	1,704	3,598	3,244	2,493	2,223	3,032	3,330	4,355	3,284	2,238
1967	1,962	1,702	1,454	1,207	998	908	161	435	2,366	4,628	4,206	3,637
1968	2,939	2,340	1,850	1,429	979	422	307	155	4,145	4,901	4,852	4,353
1969	4,506	3,545	3,092	2,744	2,335	1,226	334	3,799	4,851	4,826	4,031	4,718
1970	4,697	4,524	3,629	2,103	1,085	731	629	2,072	4,739	4,742	4,739	4,584
1971	4,557	3,493	2,578	1,777	1,288	808	515	1,190	4,555	4,640	4,644	4,690
1972	4,216	3,676	3,100	2,177	1,526	616	164	1,421	4,264	4,423	4,263	4,129
1973	3,565	3,345	2,797	2,177	1,593	968	665	1,845	4,842	4,713	4,286	4,409
1974	3,481	3,049	2,529	1,949	1,656	1,119	944	1,967	4,906	4,653	4,198	4,167
1975	2,799	2,346	1,903	1,450	1,007	325	233	395	3,870	4,524	4,368	4,392
1976	3,822	3,315	2,808	2,331	1,893	1,441	920	1,683	4,374	4,534	4,668	4,306
1977	3,266	2,435	1,960	1,612	1,316	999	961	1,553	3,777	4,190	3,302	3,320
1978	2,887	2,424	1,944	1,465	858	725	725	1,016	4,815	4,948	4,542	4,724
1979	3,572	2,950	2,063	1,688	1,323	820	556	1,049	4,803	4,730	4,826	4,758

Montgomery Reservoir Simulated End-Of-Month Contents
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1980	4,180	3,560	2,946	2,273	1,567	1,036	626	1,087	4,643	4,423	3,299	3,407
1981	3,147	3,007	2,758	2,514	1,957	1,370	1,320	1,962	4,354	4,227	2,706	2,338
1982	2,143	1,577	826	443	443	443	443	309	2,986	4,731	4,322	4,230
1983	3,862	3,276	2,346	2,043	1,783	1,487	751	959	4,780	4,854	4,956	3,828
1984	3,719	2,801	1,830	1,287	851	611	611	2,140	4,499	4,805	4,856	4,584
1985	4,432	4,227	3,472	2,682	2,404	1,769	997	1,478	4,822	4,865	4,155	4,237
1986	2,664	2,111	1,608	1,428	1,229	998	993	366	4,222	4,947	4,811	4,742
1987	4,538	3,781	3,340	2,791	2,307	1,588	953	3,238	4,824	4,901	4,655	4,565
1988	4,166	3,928	3,097	2,335	1,854	1,255	208	1,031	4,694	4,592	4,840	4,907
1989	4,527	4,281	3,515	2,437	1,492	882	516	1,035	2,281	4,407	4,945	4,879
1990	4,555	4,381	3,368	2,702	2,170	1,619	1,347	783	3,258	4,398	4,555	4,263
1991	4,104	3,963	3,008	2,319	2,038	1,730	546	736	3,397	4,741	4,814	4,611
1992	4,537	4,435	3,589	2,709	1,927	1,103	449	1,397	4,695	4,540	4,686	4,730
1993	4,649	4,520	4,036	3,546	3,096	1,801	307	1,289	4,914	4,671	4,617	4,954
1994	4,780	4,575	4,045	3,497	2,627	1,449	573	1,276	4,414	4,159	3,715	4,405
1995	4,621	4,552	4,254	3,963	3,382	1,550	408	202	4,870	5,069	4,851	3,847
1996	3,791	4,699	4,533	4,360	4,199	2,597	815	502	4,907	4,976	4,196	4,993
1997	4,648	3,728	2,728	2,571	1,791	959	744	752	4,965	4,910	4,888	4,465
1998	4,569	4,522	4,423	3,551	2,611	1,565	829	1,582	2,458	4,889	4,386	4,463
1999	4,362	4,270	3,585	2,675	1,796	832	389	788	4,733	4,893	4,903	4,778
2000	4,741	4,741	4,679	3,836	2,933	1,883	1,327	2,600	4,827	4,733	4,884	4,884
2001	4,632	4,632	4,613	3,873	2,461	564	387	1,532	2,481	2,794	2,998	3,961
2002	4,668	4,659	4,577	3,640	2,550	1,335	644	1,321	2,971	2,966	1,432	1,432
2003	1,427	1,427	1,251	965	965	965	965	2,732	4,801	4,727	4,726	4,697
2004	4,623	4,699	4,113	2,673	986	529	529	1,978	4,447	4,714	4,222	4,241
2005	4,238	4,219	4,118	3,659	3,301	1,525	669	1,882	4,737	4,686	4,092	2,935
AVERAGE:	3,856	3,510	2,970	2,436	1,865	1,142	662	1,382	4,155	4,545	4,313	4,222
MINIMUM:	1,427	1,427	826	443	443	325	161	82	2,281	2,794	1,432	1,432
MAXIMUM:	4,780	4,741	4,679	4,360	4,199	2,597	2,223	3,799	4,965	5,069	4,956	4,993

Elevenmile Canyon Reservoir Simulated End-Of-Month Contents
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1950	96,676	96,674	96,680	96,679	96,679	96,679	96,679	96,656	96,661	96,699	96,702	96,682
1951	96,664	96,559	96,579	96,492	96,666	96,673	96,673	96,631	96,249	96,689	96,699	96,624
1952	96,673	96,670	96,674	96,626	96,673	96,673	96,678	96,680	97,193	97,156	96,710	96,679
1953	96,666	96,685	96,674	96,644	96,673	96,673	96,677	96,612	96,663	96,716	96,705	96,628
1954	96,673	96,673	96,675	96,647	96,673	96,673	96,666	96,639	96,621	96,626	96,356	94,422
1955	92,192	90,217	87,030	80,783	75,210	70,279	66,691	64,262	63,941	61,373	57,776	56,192
1956	53,976	51,725	49,308	43,660	40,945	37,425	35,700	34,596	34,444	34,276	34,148	33,677
1957	32,724	31,757	30,446	29,500	29,109	29,020	29,016	29,013	35,121	72,539	97,710	97,619
1958	96,534	96,715	96,668	96,522	96,668	96,679	96,679	96,669	97,128	97,056	96,701	96,651
1959	96,579	96,646	96,663	96,527	96,656	96,672	96,676	96,626	96,636	96,702	96,704	96,668
1960	96,687	96,672	96,669	96,627	96,668	96,672	96,459	96,632	96,920	96,638	96,663	96,626
1961	96,670	96,658	96,665	96,596	96,669	96,674	96,674	96,618	96,590	96,720	96,732	96,697
1962	96,673	96,672	96,677	96,643	96,675	96,679	96,679	96,655	96,714	96,756	96,693	96,659
1963	96,670	96,678	96,680	96,665	96,669	96,672	96,671	96,641	96,642	96,624	96,591	96,641
1964	96,577	96,192	95,642	94,565	93,049	91,446	90,532	89,774	89,544	91,144	91,294	87,802
1965	82,919	78,848	75,797	70,514	66,484	63,105	61,737	61,541	63,213	86,657	96,834	96,691
1966	96,668	96,674	96,680	96,679	96,679	96,677	96,672	96,640	96,641	96,556	96,655	96,457
1967	95,679	95,428	95,467	95,068	95,491	96,229	96,651	96,633	96,609	96,702	96,707	96,685
1968	96,681	96,664	96,669	96,609	96,668	96,668	96,677	96,640	96,631	96,694	96,712	96,690
1969	96,674	96,666	96,669	96,591	96,668	96,668	96,672	96,650	97,237	97,709	96,868	96,680
1970	96,683	96,667	96,679	96,679	96,679	96,679	96,679	96,682	97,413	97,039	96,725	96,690
1971	96,673	96,676	96,675	96,679	96,679	96,679	96,676	96,608	96,809	96,725	96,708	96,613
1972	96,679	96,675	96,680	96,679	96,679	96,679	96,679	96,654	96,679	96,696	96,704	96,692
1973	96,675	96,669	96,680	96,679	96,679	96,679	96,677	96,700	97,364	97,307	96,991	96,683
1974	96,673	96,672	96,680	96,679	96,679	96,679	96,662	96,464	96,585	96,715	96,700	96,682
1975	96,675	96,672	96,680	96,679	96,679	96,679	96,679	96,655	96,782	96,733	96,711	96,685
1976	96,675	96,678	96,680	96,679	96,679	96,679	96,679	96,661	96,669	96,710	96,713	96,709
1977	96,684	96,674	96,680	96,679	96,679	96,679	96,679	96,648	96,639	96,674	96,659	96,515
1978	96,192	96,555	96,676	96,666	96,666	96,666	96,364	95,834	96,356	96,662	96,692	96,601
1979	96,518	96,636	96,649	94,033	93,009	92,682	94,172	96,327	96,919	97,439	96,711	96,684
1980	96,674	96,672	96,673	96,650	96,670	96,671	96,673	96,689	97,394	97,362	96,710	96,672
1981	96,626	96,674	96,676	96,634	96,670	96,677	96,679	96,650	96,654	96,655	96,659	96,646
1982	96,613	96,649	96,666	96,480	96,668	96,667	96,663	96,659	96,666	96,694	96,706	96,698

Elevenmile Canyon Reservoir Simulated End-Of-Month Contents
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1983	96,674	96,673	96,674	96,634	96,669	96,675	96,661	96,605	96,817	97,630	97,201	96,652
1984	96,650	96,674	96,679	96,679	96,679	96,679	96,679	96,649	97,067	97,517	96,875	96,689
1985	96,696	96,666	96,596	96,658	96,679	96,679	96,679	96,679	97,215	97,050	96,695	96,692
1986	96,670	96,683	96,680	96,679	96,679	96,679	96,625	96,581	96,663	96,933	96,723	96,687
1987	96,679	96,688	96,680	96,679	96,679	96,679	96,675	96,680	97,276	97,366	96,716	96,681
1988	96,663	96,676	96,680	96,679	96,679	96,679	96,679	96,654	96,665	96,785	96,715	96,686
1989	96,667	96,675	96,680	96,679	96,679	96,679	96,679	96,652	96,687	96,710	96,709	96,687
1990	96,665	96,672	96,680	96,679	96,679	96,679	96,676	96,653	96,659	96,719	96,715	96,690
1991	96,673	96,674	96,680	96,679	96,679	96,679	96,679	96,666	96,687	96,728	96,735	96,689
1992	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
1993	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
1994	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
1995	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
1996	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
1997	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
1998	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
1999	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
2000	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
2001	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
2002	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
2003	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
2004	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
2005	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
AVERAGE:	93,651	93,432	93,186	92,633	92,307	91,996	91,846	91,758	92,097	93,593	94,201	93,957
MINIMUM:	32,724	31,757	30,446	29,500	29,109	29,020	29,016	29,013	34,444	34,276	34,148	33,677
MAXIMUM:	96,696	96,715	96,680	96,679	96,679	96,679	96,679	96,700	97,413	97,709	97,710	97,619

Source: Elevenmile Reservoir end-of-month contents from Denver Water's PACSM model for the Existing System Existing Demand simulation (Base285). Data from PACSM from 1950 through 1991. EOM contents from 1992 through 2005 were assumed to be the average of 1950 through 1991.

PROPOSED ACTION ALTERNATIVE

Diversions

Simulated Deliveries through Homestake Tunnel
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1951	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1952	2335	0	0	0	1806	8765	12642	3667	2862	2471	850	468	35866
1953	2578	747	0	0	0	5661	8880	781	3110	3786	1187	49	26779
1954	2335	0	0	0	0	4942	7339	1710	1506	156	1146	1715	20849
1955	61	170	0	0	0	5661	8880	781	3110	3786	1187	49	23685
1956	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1957	2335	0	0	0	1806	8765	3782	3667	2862	2471	850	468	27006
1958	2578	747	0	0	0	5661	8880	781	3110	3786	1187	49	26779
1959	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1960	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1961	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1962	2335	0	0	0	0	5661	6162	781	3110	3786	1187	49	23071
1963	2335	0	0	0	0	5661	8547	781	3110	3786	1187	49	25456
1964	2335	0	0	0	0	1840	0	781	3110	3786	1187	49	13088
1965	2335	0	0	0	0	4291	0	781	3110	3786	1187	49	15539
1966	2335	0	0	0	0	4942	7339	1710	1506	156	1146	1715	20849
1967	61	170	0	0	0	5661	8880	781	3110	3786	1187	49	23685
1968	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1969	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1970	2335	0	0	0	0	5661	8343	781	3110	3786	1187	49	25252
1971	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1972	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1973	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1974	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1975	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1976	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1977	2335	0	0	0	0	4942	7339	1710	1506	156	1146	1715	20849
1978	61	170	0	0	0	5661	8698	781	3110	3786	1187	49	23503
1979	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1980	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1981	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1982	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789

Simulated Deliveries through Homestake Tunnel
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1983	2335	0	0	0	1806	8765	12642	3667	2862	2471	850	468	35866
1984	2578	747	0	0	1806	8765	12642	3667	2862	2471	850	468	36856
1985	2578	747	0	0	0	5661	8880	781	3110	3786	1187	49	26779
1986	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1987	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1988	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1989	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1990	2335	0	0	0	0	5681	8880	781	3110	3786	1187	49	25789
1991	2335	0	0	0	0	5661	8880	781	3110	3786	1187	49	25789
1992	2335	0	0	0	0	5651	5326	0	0	0	2339	5596	21247
1993	303	0	0	0	0	9024	7616	0	2114	8190	1048	22	28317
1994	0	0	0	0	0	8535	10462	0	2928	0	0	2331	24256
1995	11390	0	0	0	0	312	14431	0	1	4414	3687	0	34235
1996	0	0	0	0	0	7255	14852	1730	7237	6372	1131	0	38577
1997	0	0	0	0	0	9795	14712	0	4146	5981	2612	0	37246
1998	409	0	0	0	0	8146	725	951	6702	6897	1084	0	24914
1999	0	0	0	0	0	8445	14760	3302	0	3218	1304	275	31304
2000	0	0	0	0	0	4453	9510	0	7530	780	382	392	23047
2001	0	0	0	0	0	8933	16977	8997	0	0	509	0	35416
2002	1093	3735	0	0	0	5312	10584	0	0	0	3006	2589	26319
2003	0	0	0	0	0	0	0	0	9843	0	0	0	9843
2004	14010	0	0	0	0	212	5088	0	0	0	0	0	19310
2005	0	0	0	0	0	8036	9488	431	0	0	0	0	17955
AVERAGE:	2,174	129	0	0	129	5,838	8,706	1,117	2,952	3,191	1,169	356	25,762
MINIMUM:	0	0	0	0	0	0	0	0	0	0	0	0	9,843
MAXIMUM:	14,010	3,735	0	0	1,806	9,795	16,977	8,997	9,843	8,190	3,687	5,596	38,577

Simulated Deliveries through Hoosier Tunnel
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	264	0	0	0	0	0	24	1231	3383	1691	1046	971	8610
1951	0	0	0	0	0	0	24	1231	3383	1691	1046	1017	8392
1952	758	0	0	0	0	0	47	1334	4920	2626	1785	1156	12626
1953	806	0	0	0	0	0	0	294	2315	1496	646	85	5642
1954	1680	0	0	0	0	0	0	1060	1404	1048	0	0	5192
1955	0	0	0	0	0	0	0	688	1777	2110	1870	1113	7558
1956	663	0	0	0	0	0	0	2205	4760	1843	492	0	9963
1957	1473	0	0	0	0	0	0	374	4657	2080	0	0	8584
1958	1817	0	0	0	0	0	0	3042	2126	1249	0	0	8234
1959	1699	0	0	0	0	0	0	489	5040	2471	496	0	10195
1960	1764	0	0	0	0	0	0	901	4608	2386	315	0	9974
1961	1643	0	0	0	0	0	0	1180	3836	428	0	751	7838
1962	1837	0	0	0	0	0	0	1524	4998	3087	1393	87	12926
1963	1750	0	0	0	0	0	49	2293	3257	98	224	0	7671
1964	0	0	0	0	0	0	0	1839	3452	2542	1429	0	9262
1965	61	0	0	0	0	0	0	651	4891	615	1053	842	8113
1966	1817	0	0	0	0	0	0	1311	2404	2732	201	0	8465
1967	0	0	0	0	0	0	100	1074	3265	3457	1224	968	10088
1968	72	0	0	0	0	0	0	644	5099	2473	898	1148	10334
1969	834	0	0	0	0	0	73	2590	735	1396	609	1470	7707
1970	0	0	0	0	0	0	0	1542	743	131	1584	1433	5433
1971	1817	0	0	0	0	0	0	780	4906	1856	1936	1729	13024
1972	243	0	0	0	0	0	0	1422	3448	1626	1609	598	8946
1973	0	0	0	0	0	0	0	370	1581	849	1083	1809	5692
1974	0	0	0	0	0	0	0	1202	4033	2074	1222	1809	10340
1975	0	0	0	0	0	0	0	378	3133	2092	1296	1584	8483
1976	392	0	0	0	0	0	0	1013	4566	1993	1598	1282	10844
1977	495	0	0	0	0	0	27	158	1915	410	0	0	3005
1978	0	0	0	0	0	0	49	684	4762	1088	1241	1809	9633
1979	0	0	0	0	0	0	0	1064	3863	1653	1510	1782	9872
1980	1	0	0	0	0	0	0	188	1678	1595	2068	0	5530
1981	0	0	0	0	0	0	38	757	3135	734	19	0	4683
1982	0	0	0	0	0	0	0	603	4236	3370	1263	1230	10702

Simulated Deliveries through Hoosier Tunnel
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1983	1817	0	0	0	0	0	0	274	3238	414	874	538	7155
1984	1817	0	0	0	0	0	0	968	1763	741	739	1373	7401
1985	1817	0	0	0	0	0	0	865	2279	1141	970	1227	8299
1986	92	0	0	0	0	0	0	989	5625	2541	1809	1818	12874
1987	1817	0	0	0	0	0	167	2404	2098	720	1450	669	9325
1988	0	0	0	0	0	0	14	1212	5470	1691	761	1205	10353
1989	83	0	0	0	0	0	80	1807	3516	3973	1320	0	10779
1990	268	0	0	0	0	0	7	996	5148	2851	1796	0	11066
1991	0	0	0	0	0	0	0	1299	4559	3353	1768	722	11701
1992	0	0	0	0	0	0	86	2318	3627	3425	1053	0	10509
1993	0	0	0	0	0	0	0	1386	4814	2599	1965	422	11186
1994	1549	0	0	0	0	0	103	1652	4272	148	15	1241	8980
1995	337	0	0	0	0	0	0	0	2643	26	704	329	4039
1996	1763	0	0	0	0	0	0	462	5823	1422	1004	1382	11856
1997	619	0	0	0	0	0	0	631	4082	791	412	1016	7551
1998	1817	0	0	0	0	0	0	676	1489	3570	775	1898	10225
1999	103	0	0	0	0	0	3	950	3610	1727	1745	1687	9825
2000	95	0	0	0	0	0	0	2232	3693	1686	1451	0	9157
2001	379	0	0	0	0	0	5	2122	1403	207	147	1020	5283
2002	316	0	0	0	0	0	49	756	1549	0	0	0	2670
2003	0	0	0	0	0	0	23	2068	3126	812	79	978	7086
2004	939	0	0	0	0	0	119	1334	2525	1180	0	0	6097
2005	0	0	0	0	0	0	107	1661	3669	2641	1148	719	9945
AVERAGE:	670	0	0	0	0	0	21	1,164	3,434	1,690	949	766	8,695
MINIMUM:	0	0	0	0	0	0	0	0	735	0	0	0	2,670
MAXIMUM:	1,837	0	0	0	0	0	167	3,042	5,823	3,973	2,068	1,898	13,024

PROPOSED ALTERNATIVE

Substitution Summary

Simulated Springs Utilities Total Substitution Bill Repayment
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	0	0	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0	0	0	2,767	0	2,767
1955	0	0	0	0	0	0	0	0	0	0	726	0	726
1956	0	0	0	0	0	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	2,338	0	2,338
1962	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	4,318	0	4,318
1964	0	0	0	0	0	0	0	0	0	0	623	0	623
1965	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	2,324	0	2,324
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	1,605	0	1,605
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	2,396	0	2,396
1982	0	0	0	0	0	0	0	0	0	0	0	0	0

Simulated Springs Utilities Total Substitution Bill Repayment
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	749	0	749
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	139	0	139
1995	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	390	0	390
2002	0	0	0	0	0	0	0	0	0	0	2,710	0	2,710
2003	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	2,731	0	2,731
2005	0	0	0	0	0	0	0	0	0	0	0	0	0
AVERAGE:	0	0	0	0	0	0	0	0	0	0	425	0	425
MINIMUM:	0	0	0	0	0	0	0	0	0	0	0	0	0
MAXIMUM:	0	0	0	0	0	0	0	0	0	0	4,318	0	4,318

PROPOSED ALTERNATIVE

Streamflows

Simulated Flows at Homestake Creek below Homestake Project at USGS Gage 09064000
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	20	14	12	10	8	7	12	39	94	23	12	10	22
1951	6	5	5	4	3	5	13	48	110	72	22	9	25
1952	11	6	5	5	4	3	4	34	134	43	24	22	25
1953	6	4	4	4	4	4	11	33	127	40	20	7	22
1954	4	5	4	4	3	3	32	52	134	39	12	12	25
1955	16	9	7	5	4	4	20	30	56	77	39	9	23
1956	5	7	7	6	5	7	7	67	76	36	19	5	21
1957	4	4	3	4	4	5	12	25	125	110	21	19	28
1958	9	9	7	6	6	5	11	58	73	11	17	7	18
1959	4	4	3	3	3	3	11	31	93	17	20	8	17
1960	21	12	5	4	4	7	8	28	87	23	25	8	19
1961	5	5	3	3	3	4	8	36	51	37	24	17	16
1962	13	19	14	8	8	9	11	38	80	44	24	10	23
1963	7	4	3	3	3	6	19	43	45	39	50	22	20
1964	7	6	4	5	4	4	10	40	55	83	41	12	23
1965	6	6	6	6	5	5	17	36	101	83	23	10	23
1966	24	11	8	6	5	7	19	34	26	36	53	10	25
1967	9	4	3	4	4	8	4	50	77	25	31	23	20
1968	12	8	5	4	4	5	8	11	100	22	24	28	20
1969	19	13	12	8	7	7	7	62	65	29	23	14	19
1970	16	9	7	6	6	6	12	75	113	31	24	22	22
1971	24	17	12	7	7	8	5	27	72	25	21	15	27
1972	10	7	8	6	7	9	15	32	114	25	20	24	20
1973	24	14	11	3	0	5	12	33	107	64	13	11	23
1974	4	5	3	5	9	4	3	56	87	25	23	2	25
1975	5	3	2	0	7	3	15	20	82	85	10	12	19
1976	10	6	2	2	2	3	11	49	69	26	24	13	20
1977	14	1	4	4	3	11	15	35	99	25	14	10	18
1978	13	9	7	5	4	5	5	40	141	68	46	12	20
1979	7	4	6	6	7	17	2	48	96	62	11	14	30
1980	5	7	8	5	0	5	23	32	116	37	21	13	23
1981	9	8	9	5	4	7	6	31	65	42	16	20	23
1982	12	10	8	4	6	5	8	27	103	59	20	29	19
1983	19	13	10	10	5	5	2	15	114	84	34	23	24
1984	18	14	11	9	9	10	13	67	115	76	47	18	28
													34

Simulated Flows at Homestake Creek below Homestake Project at USGS Gage 09064000
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1985	18	12	7	7	7	10	5	74	156	78	19	15	34
1986	7	15	13	10	10	12	9	41	214	141	0	24	41
1987	23	14	12	9	7	9	8	59	60	16	20	8	20
1988	4	4	7	11	3	5	6	30	91	14	15	25	18
1989	14	5	1	4	4	13	9	51	55	24	17	5	17
1990	1	4	3	3	3	5	19	34	90	24	6	2	16
1991	8	15	5	4	4	5	8	54	92	29	27	19	22
1992	8	7	5	3	4	5	31	64	56	90	26	20	27
1993	18	14	10	9	9	8	12	66	109	63	24	25	31
1994	14	13	8	6	6	7	18	62	72	36	15	14	23
1995	10	8	4	3	4	7	10	19	139	170	37	24	36
1996	21	11	11	10	10	9	5	73	126	40	24	18	30
1997	13	9	7	6	1	9	4	63	181	57	37	25	34
1998	22	11	6	4	3	5	3	49	86	58	29	14	24
1999	11	8	5	2	5	7	15	44	107	41	28	24	25
2000	15	8	6	4	5	5	8	96	149	52	17	18	32
2001	12	7	5	4	4	4	20	73	70	55	28	13	25
2002	7	6	1	3	3	5	25	170	102	14	8	15	30
2003	21	14	5	3	3	5	22	71	88	24	21	24	25
2004	7	5	5	4	4	7	33	54	54	62	15	11	22
2005	11	9	5	6	10	7	7	56	79	29	27	7	21
AVERAGE:	12	9	6	5	5	6	12	48	96	49	23	15	24
MINIMUM:	1	1	1	0	0	3	2	11	26	11	0	2	18
MAXIMUM:	24	19	14	11	10	17	33	170	214	170	53	29	41

Simulated Flows at Homestake Creek below Homestake Project at USGS Gage 09064000
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	1,242	833	738	615	444	430	703	2,375	5,588	1,432	719	624	15,743
1951	353	309	332	228	194	277	750	2,927	6,575	4,428	1,380	523	18,276
1952	676	369	338	277	230	215	218	2,112	7,965	2,632	1,476	1,321	17,829
1953	398	249	228	240	205	231	658	2,029	7,546	2,432	1,215	392	15,823
1954	242	286	234	230	194	207	1,903	3,183	7,997	2,402	754	690	18,322
1955	1,012	521	413	292	215	262	1,209	1,816	3,326	4,739	2,408	558	18,769
1956	314	415	408	346	300	405	402	4,092	4,537	2,242	1,181	275	14,917
1957	230	237	211	216	205	278	738	1,511	7,423	6,757	1,272	1,153	20,231
1958	541	517	436	367	309	321	627	3,551	4,356	706	1,032	414	13,177
1959	223	224	187	204	168	199	642	1,884	5,506	1,036	1,253	480	12,006
1960	1,306	716	330	271	232	423	482	1,722	5,153	1,434	1,517	485	14,071
1961	327	308	205	184	171	218	487	2,186	3,056	2,301	1,456	983	11,882
1962	829	1,153	657	493	458	533	680	2,309	4,778	2,697	1,476	584	16,847
1963	403	239	168	180	191	344	1,132	2,631	2,702	2,426	3,060	1,307	14,783
1964	461	381	233	282	236	256	602	2,429	3,299	5,107	2,547	741	16,574
1965	394	360	356	340	266	284	1,032	2,202	6,010	5,074	1,428	600	18,346
1966	1,476	649	489	363	283	422	1,129	2,072	1,537	2,201	3,256	567	14,444
1967	552	247	212	235	223	508	255	3,091	4,560	1,520	1,906	1,355	14,664
1968	738	467	298	271	240	329	490	658	5,960	1,366	1,468	1,681	13,968
1969	1,176	765	730	501	392	444	390	3,787	3,848	1,792	1,402	835	16,062
1970	967	559	422	380	313	368	741	4,611	6,696	1,876	1,476	1,296	19,705
1971	1,476	983	720	412	367	521	313	1,646	4,296	1,528	1,292	922	14,476
1972	599	405	472	389	369	536	911	1,989	6,776	1,522	1,259	1,428	16,655
1973	1,458	824	655	206	20	309	718	2,001	8,360	3,954	813	652	17,970
1974	235	275	176	328	496	233	160	3,462	5,189	1,546	1,412	98	13,610
1975	333	188	124	19	362	158	908	1,225	4,888	5,247	592	687	14,731
1976	602	344	146	103	109	177	633	2,986	4,098	1,612	1,476	749	13,035
1977	838	50	217	232	193	680	881	2,171	5,891	1,542	881	568	14,144
1978	814	548	433	295	249	329	313	2,460	8,418	4,203	2,829	692	21,581
1979	428	232	375	359	381	1,039	147	2,956	5,702	3,814	667	836	16,936
1980	303	410	491	286	16	293	1,358	1,953	6,880	2,256	1,310	775	16,331
1981	580	450	552	313	212	423	368	1,924	3,865	2,611	994	1,175	13,467
1982	748	615	473	229	307	293	468	1,636	6,133	3,632	1,259	1,728	17,521
1983	1,194	773	634	620	274	320	122	895	6,786	5,168	2,103	1,343	20,232
1984	1,125	816	677	538	488	605	786	4,129	6,865	4,674	2,908	1,080	24,891

Simulated Flows at Homestake Creek below Homestake Project at USGS Gage 09064000
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1985	1,101	704	441	405	376	613	318	4,561	9,268	4,768	1,155	899	24,609
1986	416	911	826	640	567	715	544	2,519	12,750	8,651	14	1,427	29,980
1987	1,405	808	767	544	406	544	460	3,611	3,562	1,000	1,217	473	14,797
1988	218	242	434	659	140	325	331	1,872	5,404	863	924	1,461	12,873
1989	869	287	48	224	245	781	546	3,166	3,253	1,476	1,025	300	12,220
1990	58	265	199	155	151	308	1,136	2,110	5,338	1,476	357	97	11,650
1991	503	912	280	243	229	318	497	3,306	5,455	1,766	1,635	1,130	16,274
1992	500	418	309	195	206	321	1,845	3,906	3,355	5,531	1,590	1,164	19,340
1993	1,092	845	599	525	498	513	703	4,056	6,499	3,902	1,476	1,473	22,181
1994	880	761	465	377	349	435	1,088	3,811	4,288	2,207	942	852	16,455
1995	642	465	240	192	221	405	611	1,181	8,300	10,434	2,305	1,428	26,424
1996	1,300	658	671	631	544	532	283	4,507	7,518	2,466	1,476	1,081	21,667
1997	828	545	420	377	52	543	252	3,899	10,796	3,511	2,277	1,463	24,963
1998	1,332	642	344	237	191	307	179	2,996	5,130	3,560	1,789	804	17,511
1999	698	502	314	145	268	461	890	2,689	6,354	2,528	1,695	1,428	17,972
2000	929	485	286	247	270	310	487	5,906	8,886	3,217	1,068	1,091	23,182
2001	714	415	295	265	211	263	1,193	4,518	4,165	3,389	1,707	769	17,904
2002	455	334	34	190	189	321	1,508	10,452	6,051	884	508	867	21,793
2003	1,289	805	297	185	166	281	1,330	4,355	5,263	1,476	1,276	1,437	18,160
2004	437	295	304	251	208	433	1,936	3,327	3,198	3,809	908	676	15,782
2005	684	549	288	344	546	402	409	3,441	4,708	1,785	1,689	397	15,242
AVERAGE:	731	510	390	319	274	393	713	2,943	5,716	3,011	1,438	898	17,336
MINIMUM:	58	50	34	19	16	158	122	658	1,537	706	14	97	11,650
MAXIMUM:	1,476	1,153	857	659	567	1,039	1,936	10,452	12,750	10,434	3,256	1,728	29,980

Simulated Flows at Blue River below Green Mountain Reservoir
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	554	278	171	163	205	211	92	61	509	567	595	310	311
1951	515	229	198	196	208	196	226	113	525	1762	598	397	433
1952	552	315	301	292	311	286	90	134	2311	982	411	384	530
1953	522	276	261	272	284	298	241	67	347	767	324	337	334
1954	523	264	256	427	172	257	254	70	240	699	185	179	295
1955	152	132	110	99	101	115	92	61	173	411	500	292	187
1956	505	192	183	175	183	187	90	120	568	539	610	312	306
1957	513	219	221	213	209	208	202	76	64	1175	937	498	381
1958	378	360	325	298	330	323	210	166	2055	524	683	292	494
1959	507	171	168	177	175	173	279	67	142	366	689	361	274
1960	635	272	216	216	244	283	90	91	583	663	631	303	352
1961	516	222	206	192	211	218	269	65	169	634	545	402	305
1962	327	340	205	221	242	260	90	151	1936	1082	341	587	481
1963	584	194	272	190	202	210	93	64	171	833	492	230	297
1964	138	137	123	124	126	139	242	88	152	178	613	245	193
1965	440	191	182	181	181	179	93	85	138	836	977	605	343
1966	456	357	307	306	337	338	100	61	164	672	509	207	319
1967	243	165	147	141	144	173	90	61	124	178	748	394	218
1968	476	184	165	159	160	154	259	62	144	178	156	353	204
1969	516	241	240	241	250	237	90	225	157	847	620	351	337
1970	358	362	329	284	297	283	102	150	2150	1283	552	412	546
1971	364	360	302	286	308	319	90	94	1586	1067	350	586	475
1972	504	244	240	226	245	265	94	93	822	511	570	377	350
1973	318	297	275	270	285	276	293	87	176	1130	243	630	357
1974	531	255	225	233	240	257	90	93	1312	629	393	337	383
1975	534	259	238	248	258	250	120	61	98	1240	299	462	341
1976	485	246	223	216	245	234	94	151	107	176	447	371	250
1977	562	190	187	184	197	203	412	133	166	499	216	146	259
1978	199	169	168	154	155	178	91	140	169	362	550	405	229
1979	511	230	237	235	249	244	92	119	118	1211	438	374	341
1980	515	264	254	257	283	293	92	61	1351	1020	634	319	446
1981	481	212	200	189	203	208	400	123	162	414	156	209	247
1982	190	150	139	143	141	183	276	86	130	182	370	498	207
1983	393	329	294	301	325	366	266	62	1820	2330	1029	1039	714
1984	585	288	239	208	229	219	104	581	3306	2391	1393	845	868

Simulated Flows at Blue River below Green Mountain Reservoir
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1985	632	490	453	398	398	403	90	204	2339	1139	358	444	611
1986	443	396	337	331	372	414	90	103	1695	1279	274	427	513
1987	365	371	299	282	308	317	90	61	547	339	504	874	364
1988	374	177	157	155	163	195	90	61	547	606	628	248	285
1989	522	204	173	179	188	211	90	150	142	341	629	301	262
1990	548	166	161	153	162	171	344	93	165	342	424	246	251
1991	443	209	179	176	169	152	247	151	191	667	826	443	323
1992	508	201	172	170	177	181	95	121	168	420	158	255	220
1993	377	185	202	200	222	248	214	128	1283	1273	408	355	425
1994	305	296	271	271	291	292	100	61	181	696	521	222	293
1995	235	191	165	161	179	202	317	84	907	2655	701	418	521
1996	393	361	330	326	359	338	90	728	2929	1132	999	324	693
1997	292	277	240	233	247	267	91	141	2995	1227	554	473	585
1998	381	353	310	326	344	345	90	61	173	760	358	668	348
1999	553	211	173	175	187	213	95	137	873	1176	351	360	377
2000	533	292	265	265	287	279	90	61	1137	532	494	317	379
2001	499	233	216	216	229	238	225	61	213	652	279	276	279
2002	520	203	175	169	164	195	357	97	508	293	190	198	256
2003	306	181	149	141	140	177	101	75	173	495	836	298	258
2004	537	185	167	163	170	192	175	61	190	681	162	214	243
2005	254	186	159	159	184	192	90	87	136	172	602	343	214
AVERAGE:	440	250	224	221	230	240	160	119	743	807	519	388	363
MINIMUM:	138	132	110	99	101	115	90	61	64	172	156	146	187
MAXIMUM:	635	490	453	427	398	414	412	728	3,306	2,655	1,393	1,039	868

Simulated Flows at Blue River below Green Mountain Reservoir
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	34,047	16,549	10,497	10,045	11,397	12,984	5,489	3,761	30,277	34,838	36,580	18,447	224,911
1951	31,645	13,611	12,177	12,047	11,574	12,039	13,425	6,937	31,234	108,339	36,800	23,630	313,458
1952	33,939	18,718	18,514	17,941	17,297	17,580	5,382	8,265	137,518	60,383	25,251	22,839	383,627
1953	32,096	16,412	16,023	16,712	15,773	18,204	14,344	4,123	20,668	47,192	19,900	20,064	241,511
1954	32,132	15,702	15,718	26,277	9,563	15,789	15,111	4,321	14,279	42,950	11,374	10,626	213,842
1955	9,347	7,855	6,769	6,110	5,636	7,100	5,485	3,760	10,286	25,268	30,748	17,361	135,725
1956	31,043	11,422	11,248	10,736	10,162	11,490	5,382	7,405	33,795	33,114	37,515	18,556	221,868
1957	31,537	13,010	13,567	13,090	11,608	12,787	12,005	4,701	3,786	72,276	57,606	29,605	275,578
1958	23,232	21,417	19,974	18,349	18,351	19,857	12,479	10,210	122,258	32,208	41,978	17,391	357,704
1959	31,195	10,189	10,355	10,864	9,738	10,644	16,597	4,096	8,420	22,488	42,364	21,506	198,456
1960	39,074	16,181	13,285	13,269	13,550	16,174	5,382	5,574	34,681	40,773	38,769	18,044	254,756
1961	31,719	13,185	12,691	11,784	11,713	13,404	16,010	3,967	10,042	38,981	33,528	23,892	220,916
1962	20,100	20,207	12,616	13,574	13,438	15,997	5,382	9,309	115,184	66,540	20,944	34,958	348,249
1963	35,880	11,571	16,731	11,703	11,220	12,898	5,562	3,919	10,156	51,194	30,244	13,679	214,757
1964	8,463	8,132	7,549	7,649	6,989	8,574	14,382	5,394	9,060	10,938	37,703	14,608	139,441
1965	27,070	11,392	11,161	11,131	10,061	11,014	5,563	5,224	8,200	51,404	60,066	35,971	248,257
1966	28,028	21,255	18,905	18,840	18,723	20,758	5,968	3,760	9,758	41,316	31,316	12,338	230,965
1967	14,939	9,798	9,057	8,697	7,983	10,632	5,382	3,760	7,386	10,938	45,991	23,472	158,035
1968	29,242	10,961	10,149	9,801	8,893	9,440	15,418	3,784	8,594	10,938	9,563	20,983	147,766
1969	31,732	14,346	14,756	14,813	13,907	14,548	5,382	13,855	9,368	52,060	36,102	20,916	243,785
1970	22,017	21,516	20,238	17,466	16,468	17,419	6,073	9,205	127,911	78,863	33,939	24,537	395,652
1971	22,354	21,436	18,550	17,606	17,100	19,616	5,382	5,757	94,346	65,632	21,492	34,852	344,123
1972	30,990	14,509	14,729	13,909	13,630	16,283	5,584	5,727	48,893	31,418	35,063	22,421	253,156
1973	19,551	17,662	16,909	16,608	15,812	16,985	17,422	5,377	10,496	69,460	14,918	37,460	258,660
1974	32,668	15,150	13,826	14,318	13,314	15,803	5,382	5,717	78,077	38,665	24,183	20,059	277,162
1975	32,833	15,413	14,664	15,258	14,322	15,357	7,138	3,760	5,831	76,265	18,364	27,512	246,717
1976	29,818	14,662	13,688	13,255	13,600	14,411	5,581	9,255	6,353	10,803	27,497	22,064	180,987
1977	34,535	11,329	11,489	11,331	10,936	12,471	24,537	8,162	9,898	30,654	13,278	8,705	187,325
1978	12,222	10,031	10,319	9,477	8,617	10,973	5,401	8,600	10,036	22,284	33,827	24,085	165,872
1979	31,429	13,693	14,579	14,447	13,854	14,993	5,460	7,346	7,051	74,477	26,955	22,234	246,518
1980	31,658	15,737	15,631	15,806	15,718	18,041	5,460	3,760	80,417	62,748	39,002	18,995	322,973
1981	29,551	12,636	12,319	11,605	11,265	12,770	23,787	7,585	9,636	25,438	9,598	12,466	178,656
1982	11,707	8,911	8,520	8,784	7,850	11,270	16,439	5,291	7,730	11,172	22,761	29,662	150,097
1983	24,170	19,566	18,080	18,518	18,049	22,519	15,818	3,784	108,302	143,244	63,268	61,843	517,161
1984	35,982	17,152	14,716	12,761	12,695	13,481	6,218	35,716	196,697	147,048	85,666	50,277	628,409

Simulated Flows at Blue River below Green Mountain Reservoir
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1985	38,839	29,145	27,830	24,448	22,094	24,787	5,382	12,516	139,186	70,022	22,004	26,441	442,694
1986	27,232	23,562	20,723	20,365	20,673	25,452	5,382	6,352	100,840	78,648	16,842	25,395	371,466
1987	23,650	22,087	18,384	17,368	17,122	19,504	5,382	3,760	32,546	20,868	31,019	52,023	263,713
1988	22,983	10,562	9,644	9,532	9,044	11,963	5,382	3,760	32,557	37,266	38,634	14,774	206,101
1989	32,099	12,126	10,631	10,989	10,458	12,991	5,382	9,241	8,459	20,938	38,684	17,915	189,913
1990	33,716	11,065	9,899	9,412	8,977	10,534	20,497	5,698	9,844	21,002	26,087	14,643	181,374
1991	27,215	12,447	11,004	10,839	9,369	9,352	14,709	9,261	11,382	40,997	50,762	26,353	233,690
1992	31,253	11,932	10,579	10,434	9,819	11,100	5,680	7,455	9,996	25,845	9,739	15,194	159,026
1993	23,209	11,012	12,442	12,310	12,354	15,224	12,727	7,855	76,368	78,265	25,072	21,154	307,992
1994	18,756	17,614	16,636	16,693	16,150	17,978	5,964	3,760	10,742	42,799	32,038	13,233	212,363
1995	14,480	11,375	10,134	9,874	9,932	12,421	18,877	5,153	53,988	163,267	43,093	24,872	377,466
1996	24,154	21,494	20,320	20,170	19,928	20,799	5,382	44,736	174,295	69,633	61,424	19,281	501,616
1997	17,981	16,510	14,740	14,305	13,732	16,398	5,401	8,657	178,188	75,467	34,082	28,141	423,602
1998	23,440	21,026	19,050	20,027	19,122	21,191	5,382	3,760	10,268	46,708	22,034	39,746	251,754
1999	34,002	12,553	10,623	10,760	10,370	13,071	5,638	8,421	51,965	72,332	21,582	21,418	272,735
2000	32,790	17,347	16,300	16,303	15,937	17,145	5,382	3,760	67,661	32,717	30,389	18,835	274,566
2001	30,689	13,857	13,303	13,257	12,730	14,611	13,372	3,761	12,678	40,085	17,138	16,399	201,880
2002	31,949	12,096	10,749	10,385	9,123	11,981	21,245	5,992	30,249	18,029	11,693	11,792	185,283
2003	18,822	10,786	9,139	8,644	7,803	10,864	6,008	4,592	10,272	30,452	51,429	17,722	186,533
2004	33,047	11,038	10,252	10,009	9,427	11,807	10,438	3,760	11,306	41,845	9,935	12,740	175,604
2005	15,613	11,093	9,795	9,798	10,194	11,810	5,382	5,376	8,094	10,560	36,987	20,438	155,140
AVERAGE:	27,033	14,858	13,789	13,580	12,771	14,737	9,550	7,300	44,241	49,644	31,908	23,117	262,528
MINIMUM:	8,463	7,855	6,769	6,110	5,636	7,100	5,382	3,760	3,786	10,560	9,563	8,705	135,725
MAXIMUM:	39,074	29,145	27,830	26,277	22,094	25,452	24,537	44,736	196,697	163,267	85,666	61,843	628,409

Simulated Flows at Blue River below Dillon Reservoir at USGS Gage 09050700
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	50	50	50	68	50	50	50	50	311	155	50	50	82
1951	50	50	50	59	71	50	50	50	564	924	289	50	189
1952	50	50	50	50	50	50	50	126	1940	467	110	50	252
1953	50	50	50	50	50	50	50	50	496	345	79	50	114
1954	50	50	50	50	68	50	50	50	50	246	50	50	68
1955	50	50	50	52	55	62	50	50	50	50	250	50	68
1956	50	50	50	50	50	62	50	50	50	50	218	50	65
1957	50	50	50	50	50	50	50	50	50	387	594	156	133
1958	80	84	50	50	50	50	50	694	1228	243	50	50	223
1959	50	50	50	50	50	50	50	50	274	222	214	50	97
1960	122	50	50	50	50	50	50	50	735	339	195	50	149
1961	50	50	50	50	50	50	50	50	50	155	288	50	79
1962	50	142	50	61	66	80	50	729	1145	446	50	50	244
1963	50	50	50	50	50	50	50	50	50	204	244	50	80
1964	50	50	50	50	50	62	50	50	50	50	287	50	71
1965	50	50	50	50	50	62	50	50	50	130	559	234	116
1966	140	77	50	50	50	50	50	50	159	186	154	50	89
1967	50	50	50	50	50	62	50	50	50	50	197	65	65
1968	50	50	50	50	50	50	50	50	50	89	175	50	64
1969	50	50	50	50	50	50	50	50	657	456	233	50	150
1970	81	88	86	50	50	50	50	681	1497	717	69	50	290
1971	79	82	50	50	50	50	50	378	1373	517	50	50	231
1972	50	50	50	50	50	50	50	50	953	145	50	50	132
1973	50	50	50	50	50	50	50	50	394	705	50	50	134
1974	50	50	50	50	50	62	50	416	870	203	50	50	162
1975	50	50	50	50	50	50	50	50	179	912	50	50	134
1976	50	50	50	50	50	50	50	50	50	50	50	50	50
1977	58	50	50	51	50	50	50	50	50	200	50	50	63
1978	113	76	80	73	70	90	50	50	50	50	114	50	72
1979	50	53	50	50	52	50	50	50	117	657	126	50	114
1980	50	50	50	50	50	71	50	50	1511	551	174	50	225
1981	50	50	50	50	50	50	50	50	50	50	50	50	50
1982	50	50	50	50	52	84	50	50	50	50	50	113	58

Simulated Flows at Blue River below Dillon Reservoir at USGS Gage 09050700
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1983	93	50	50	63	68	118	50	218	1711	1209	459	185	357
1984	83	87	50	50	50	53	50	1061	1929	1338	840	323	495
1985	228	117	101	82	50	61	167	755	1283	516	50	50	289
1986	77	62	50	50	50	74	50	374	1430	678	50	50	250
1987	67	61	50	50	50	60	50	258	823	162	220	50	158
1988	50	50	50	50	50	73	50	50	697	304	50	50	127
1989	50	50	50	50	50	56	50	50	131	114	245	50	79
1990	50	50	50	52	50	50	50	50	50	220	50	50	65
1991	50	50	50	50	50	50	50	50	597	301	245	155	141
1992	50	50	50	50	50	50	50	50	50	50	50	50	50
1993	50	50	82	80	94	123	50	50	1385	616	50	50	223
1994	50	50	50	50	50	50	50	50	336	186	50	50	85
1995	50	50	50	50	50	62	50	50	1349	1615	326	50	314
1996	62	57	50	50	50	50	50	1357	1824	598	160	50	364
1997	50	58	50	50	50	54	50	582	2111	651	219	50	331
1998	50	50	50	50	50	50	50	50	654	351	50	50	125
1999	50	50	50	50	50	50	50	50	1372	705	124	50	221
2000	50	50	50	50	50	50	50	485	851	189	50	50	165
2001	50	50	50	50	50	50	50	50	347	165	50	50	84
2002	68	107	92	89	82	101	50	50	50	136	449	99	115
2003	104	95	79	75	75	100	50	50	50	50	248	50	86
2004	50	50	50	50	50	50	50	50	50	159	50	50	59
2005	50	50	50	50	71	81	50	50	50	50	224	50	69
AVERAGE:	63	59	54	54	54	60	52	182	612	364	170	67	149
MINIMUM:	50	50	50	50	50	50	50	50	50	50	50	50	50
MAXIMUM:	228	142	101	89	94	123	167	1,357	2,111	1,615	840	323	495

Simulated Flows at Blue River below Dillon Reservoir at USGS Gage 09050700
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	3,074	2,975	3,074	4,190	2,777	3,074	2,975	3,074	18,481	9,534	3,074	2,975	59,277
1951	3,074	2,975	3,074	3,645	3,935	3,074	2,975	3,074	33,538	56,844	17,764	2,975	136,947
1952	3,074	2,975	3,074	3,074	2,777	3,074	2,975	7,734	115,426	28,726	6,763	2,975	182,647
1953	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	29,530	21,237	4,834	2,975	82,673
1954	3,074	2,975	3,074	3,074	3,788	3,074	2,975	3,074	2,975	15,131	3,074	2,975	49,263
1955	3,074	2,975	3,074	3,193	3,037	3,824	2,975	3,074	2,975	3,074	15,342	2,975	49,592
1956	3,074	2,975	3,074	3,074	2,777	3,825	2,975	3,074	2,975	3,074	13,408	2,975	47,280
1957	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	23,785	36,522	9,261	96,640
1958	4,916	4,992	3,074	3,074	2,777	3,074	2,975	42,703	73,096	14,962	3,074	2,975	161,692
1959	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	16,276	13,639	13,161	2,975	70,148
1960	7,504	2,975	3,074	3,074	2,777	3,074	2,975	3,074	43,733	20,870	11,981	2,975	108,086
1961	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	9,553	17,711	2,975	57,311
1962	3,074	8,459	3,074	3,738	3,640	4,924	2,975	44,851	68,118	27,403	3,074	2,975	176,305
1963	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	12,562	14,986	2,975	57,595
1964	3,074	2,975	3,074	3,074	2,777	3,824	2,975	3,074	2,975	3,074	17,642	2,975	51,513
1965	3,074	2,975	3,074	3,074	2,777	3,824	2,975	3,074	2,975	7,999	34,391	13,897	84,109
1966	8,578	4,556	3,074	3,074	2,777	3,074	2,975	3,074	9,484	11,434	9,441	2,975	64,516
1967	3,074	2,975	3,074	3,074	2,777	3,825	2,975	3,074	2,975	3,074	12,116	3,689	46,902
1968	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	5,477	10,750	2,975	46,274
1969	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	39,069	28,030	14,334	2,975	108,505
1970	4,964	5,262	5,314	3,074	2,777	3,074	2,975	41,894	69,102	44,112	4,216	2,975	209,739
1971	4,829	4,879	3,074	3,074	2,777	3,074	2,975	23,214	81,681	31,796	3,074	2,975	167,422
1972	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	56,691	8,924	3,074	2,975	95,761
1973	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	23,441	43,370	3,074	2,975	96,957
1974	3,074	2,975	3,074	3,074	2,777	3,765	2,975	25,572	51,779	12,476	3,074	2,975	117,610
1975	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	10,634	56,103	3,074	2,975	96,883
1976	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	3,074	3,074	2,975	36,195
1977	3,542	2,975	3,074	3,153	2,777	3,074	2,975	3,074	2,975	12,287	3,074	2,975	45,955
1978	6,962	4,494	4,913	4,495	3,866	5,558	2,975	3,074	2,975	3,074	7,036	2,975	52,397
1979	3,074	3,135	3,074	3,074	2,913	3,074	2,975	3,074	6,964	40,417	7,750	2,975	82,499
1980	3,074	2,975	3,074	3,074	2,777	4,356	2,975	3,074	89,904	33,910	10,698	2,975	162,866
1981	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	3,074	3,074	2,975	36,195
1982	3,074	2,975	3,074	3,074	2,911	5,154	2,975	3,074	2,975	3,074	3,074	6,700	42,134

Simulated Flows at Blue River below Dillon Reservoir at USGS Gage 09050700
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1983	5,688	2,975	3,074	3,897	3,749	7,258	2,975	13,388	101,821	74,359	28,247	10,980	258,411
1984	5,108	5,198	3,074	3,074	2,777	3,274	2,975	65,254	114,759	82,259	51,626	19,216	358,594
1985	14,024	6,983	8,241	5,066	2,777	3,723	9,962	46,404	76,342	31,733	3,074	2,975	209,304
1986	4,710	3,698	3,074	3,074	2,777	4,575	2,975	23,008	85,071	41,681	3,074	2,975	180,692
1987	4,136	3,629	3,074	3,074	2,777	3,679	2,975	15,881	48,946	9,949	13,547	2,975	114,642
1988	3,074	2,975	3,074	3,074	2,777	4,504	2,975	3,074	41,469	18,678	3,074	2,975	91,723
1989	3,074	2,975	3,074	3,074	2,777	3,420	2,975	3,074	7,789	6,995	15,043	2,975	57,245
1990	3,074	2,975	3,074	3,210	2,777	3,074	2,975	3,074	2,975	13,508	3,074	2,975	46,765
1991	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	35,527	18,499	15,038	9,196	102,357
1992	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	3,074	3,074	2,975	36,195
1993	3,074	2,975	5,057	4,934	5,243	7,551	2,975	3,074	82,411	37,896	3,074	2,975	161,239
1994	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	19,993	11,425	3,074	2,975	61,564
1995	3,074	2,975	3,074	3,074	2,777	3,825	2,975	3,074	80,278	99,295	20,025	2,975	227,421
1996	3,806	3,409	3,074	3,074	2,777	3,074	2,975	83,456	108,538	36,773	9,854	2,975	263,785
1997	3,074	3,426	3,074	3,074	2,777	3,307	2,975	35,764	125,597	40,018	13,471	2,975	239,532
1998	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	38,934	21,577	3,074	2,975	90,657
1999	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	81,621	43,373	7,610	2,975	159,676
2000	3,074	2,975	3,074	3,074	2,777	3,074	2,975	29,849	50,662	11,641	3,074	2,975	119,224
2001	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	20,652	10,151	3,074	2,975	60,949
2002	4,176	6,394	5,684	5,457	4,539	6,228	2,975	3,074	2,975	8,350	27,595	5,899	83,346
2003	6,376	5,638	4,855	4,599	4,146	6,157	2,975	3,074	2,975	3,074	15,251	2,975	62,095
2004	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	9,755	3,074	2,975	42,876
2005	3,074	2,975	3,074	3,074	3,930	4,963	2,975	3,074	2,975	3,074	13,787	2,975	49,950
AVERAGE:	3,846	3,502	3,317	3,301	2,998	3,693	3,100	11,216	36,426	22,363	10,459	3,961	108,181
MINIMUM:	3,074	2,975	3,074	3,074	2,777	3,074	2,975	3,074	2,975	3,074	3,074	2,975	36,195
MAXIMUM:	14,024	8,459	6,241	5,457	5,243	7,551	9,962	83,456	125,597	99,295	51,626	19,216	358,594

Simulated Flows at Blue River below Continental-Hoosier Project
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	35	26	16	11	12	13	26	74	171	82	40	33	45
1951	24	20	13	11	12	13	19	117	239	203	77	43	66
1952	29	24	14	11	12	10	35	125	216	67	37	29	51
1953	26	22	15	13	12	12	16	83	250	97	47	24	51
1954	18	19	13	12	12	11	22	39	28	47	42	26	24
1955	27	21	15	12	11	11	28	58	66	44	54	47	33
1956	24	24	16	15	13	13	20	150	128	44	39	27	43
1957	17	21	16	15	15	11	18	67	219	237	125	50	68
1958	30	27	17	15	12	12	15	137	184	51	45	33	48
1959	21	20	14	15	15	12	15	67	135	56	44	35	37
1960	27	24	16	13	12	12	30	48	103	59	38	26	34
1961	21	20	13	12	10	10	13	37	56	61	90	24	31
1962	42	29	17	15	15	13	39	105	92	72	17	11	39
1963	15	20	14	12	11	12	19	9	9	31	63	38	21
1964	18	21	13	12	11	10	12	43	46	37	63	14	25
1965	13	19	13	13	11	10	15	84	234	244	117	27	67
1966	33	24	18	15	14	12	19	35	29	19	59	21	25
1967	15	19	12	11	10	11	17	30	64	25	50	28	25
1968	17	21	15	13	12	10	13	36	102	56	81	32	34
1969	31	24	16	13	12	11	20	58	127	86	49	51	42
1970	23	26	17	14	13	13	15	153	248	164	45	19	63
1971	33	27	19	16	14	13	30	84	157	103	29	30	46
1972	32	21	17	14	13	14	23	62	150	50	36	31	39
1973	16	21	16	13	12	12	13	78	180	124	38	22	46
1974	18	22	15	14	13	13	16	112	97	73	29	25	37
1975	23	22	14	11	12	12	14	61	115	129	51	31	41
1976	24	22	16	14	13	12	19	65	75	51	33	32	31
1977	30	21	14	11	11	11	21	56	49	37	39	21	27
1978	16	17	11	10	9	10	20	75	203	135	32	25	47
1979	21	22	15	12	12	12	18	66	172	132	50	31	47
1980	25	27	18	14	12	12	15	98	252	117	38	34	55
1981	25	26	18	14	12	13	19	27	47	39	46	38	27
1982	25	24	18	17	16	15	19	70	137	86	68	30	44
1983	38	31	21	18	19	17	16	61	299	238	109	70	78
1984	46	40	28	21	18	16	19	167	276	192	121	44	83

Simulated Flows at Blue River below Continental-Hoosier Project
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1985	51	43	26	19	16	15	41	166	186	109	45	41	63
1986	36	30	18	15	14	15	27	78	101	88	24	7	38
1987	28	26	16	14	11	13	24	78	120	59	44	25	38
1988	19	22	14	15	16	14	25	65	104	72	48	31	37
1989	26	27	18	15	15	13	33	94	101	36	49	31	38
1990	26	24	14	12	12	11	24	52	93	38	42	38	32
1991	43	29	20	17	16	17	23	100	122	39	50	36	43
1992	26	20	13	10	9	10	22	77	68	35	65	36	33
1993	22	20	12	9	10	11	16	105	162	90	27	32	43
1994	18	22	17	13	11	11	31	67	70	54	40	31	32
1995	22	21	12	9	10	9	16	68	314	331	116	51	82
1996	36	24	21	18	17	13	32	233	203	115	36	35	66
1997	32	29	20	17	14	15	30	147	290	145	96	35	73
1998	31	27	16	13	12	13	16	60	82	47	48	34	33
1999	29	26	20	15	14	12	18	80	199	121	42	38	51
2000	25	21	15	13	12	16	27	118	87	43	34	35	37
2001	22	20	15	12	11	11	23	102	141	102	55	38	46
2002	24	22	14	12	11	10	18	23	17	25	31	17	19
2003	18	18	13	11	10	10	20	118	183	92	50	32	48
2004	22	20	15	12	12	13	18	25	20	29	55	22	22
2005	21	23	16	12	10	11	17	50	74	34	46	23	28
AVERAGE:	26	24	16	13	13	12	21	81	137	89	53	32	43
MINIMUM:	13	17	11	9	9	9	12	9	9	19	17	7	19
MAXIMUM:	51	43	28	21	19	17	41	233	314	331	125	70	83

Simulated Flows at Blue River below Continental-Hoosier Project
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	2,129	1,566	983	696	657	809	1,566	4,543	10,156	5,046	2,439	1,980	32,570
1951	1,465	1,181	816	706	687	800	1,156	7,210	14,224	12,468	4,720	2,546	47,979
1952	1,798	1,415	886	660	642	613	2,089	7,695	12,836	4,117	2,305	1,737	36,793
1953	1,615	1,288	896	805	645	744	942	5,115	14,884	5,988	2,901	1,423	37,246
1954	1,111	1,101	797	715	675	702	1,332	2,390	1,642	2,888	2,553	1,538	17,444
1955	1,665	1,258	914	754	637	696	1,667	3,554	3,952	2,683	3,297	2,803	23,880
1956	1,469	1,448	987	937	730	826	1,186	9,229	7,605	2,713	2,374	1,619	31,123
1957	1,029	1,265	956	905	827	686	1,086	4,145	13,054	14,589	7,666	2,979	49,187
1958	1,861	1,603	1,045	922	685	749	883	8,423	10,960	3,120	2,743	1,971	34,965
1959	1,284	1,191	891	893	825	756	891	4,127	8,029	3,465	2,726	2,059	27,137
1960	1,668	1,399	968	779	655	747	1,784	2,956	6,154	3,602	2,347	1,523	24,582
1961	1,278	1,197	828	713	575	623	744	2,287	3,339	3,732	5,523	1,416	22,255
1962	2,609	1,715	1,065	929	817	794	2,342	6,487	5,455	4,457	1,074	679	28,423
1963	913	1,164	862	723	627	747	1,110	527	564	1,934	3,870	2,282	15,323
1964	1,129	1,228	771	708	636	642	719	2,638	2,766	2,300	3,904	862	18,303
1965	800	1,145	823	780	632	624	910	5,176	13,920	14,995	7,194	1,597	48,596
1966	1,999	1,413	1,089	907	758	765	1,139	2,149	1,743	1,160	3,650	1,241	18,013
1967	910	1,129	767	686	581	699	1,004	1,836	3,816	1,567	3,069	1,679	17,743
1968	1,074	1,256	934	793	850	645	748	2,242	6,085	3,438	5,010	1,928	24,803
1969	1,930	1,400	994	770	546	701	1,186	3,556	7,576	5,281	3,042	3,048	30,130
1970	1,387	1,520	1,020	881	744	815	864	9,433	14,783	10,060	2,795	1,101	45,403
1971	2,037	1,591	1,189	972	788	787	1,772	5,135	9,335	6,324	1,797	1,778	33,505
1972	1,983	1,226	1,029	888	721	831	1,368	3,791	8,940	3,063	2,211	1,840	27,891
1973	980	1,247	977	816	670	725	744	4,780	10,724	7,630	2,322	1,329	32,944
1974	1,120	1,282	912	835	724	816	949	6,889	5,767	4,485	1,757	1,467	27,003
1975	1,425	1,320	843	691	639	758	833	3,751	6,859	7,919	3,150	1,827	30,015
1976	1,500	1,308	995	870	719	732	1,146	3,968	4,440	3,147	2,050	1,899	22,774
1977	1,838	1,247	833	686	596	656	1,235	3,462	2,901	2,292	2,384	1,239	19,369
1978	992	990	702	638	527	614	1,187	4,592	12,087	8,277	1,939	1,511	34,056
1979	1,296	1,291	913	748	645	712	1,050	4,083	10,253	8,089	3,058	1,827	33,965
1980	1,521	1,625	1,130	860	686	720	922	6,028	14,987	7,212	2,362	2,005	40,058
1981	1,566	1,563	1,095	855	679	795	1,152	1,637	2,782	2,388	2,857	2,271	19,640
1982	1,560	1,441	1,121	1,050	880	934	1,108	4,314	8,138	5,269	4,173	1,810	31,798
1983	2,330	1,868	1,281	1,101	1,051	1,055	977	3,745	17,805	14,664	6,728	4,149	56,754
1984	2,619	2,375	1,741	1,301	997	962	1,116	10,266	16,410	11,823	7,413	2,596	59,819

Simulated Flows at Blue River below Continental-Hoosier Project
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1985	3,160	2,564	1,611	1,151	869	895	2,437	10,213	11,083	6,682	2,780	2,417	45,862
1986	2,226	1,775	1,105	916	789	893	1,610	4,810	5,996	5,409	1,474	413	27,416
1987	1,704	1,528	1,013	833	630	780	1,404	4,785	7,137	3,644	2,676	1,475	27,609
1988	1,192	1,260	869	947	880	883	1,472	3,971	6,199	4,449	2,971	1,832	26,945
1989	1,608	1,596	1,108	950	844	780	1,980	5,780	5,999	2,218	3,024	1,874	27,761
1990	1,599	1,426	850	765	639	673	1,440	3,204	5,509	2,352	2,573	2,266	23,296
1991	2,649	1,728	1,227	1,044	877	1,038	1,346	6,164	7,257	2,416	3,096	2,115	30,957
1992	1,615	1,204	818	620	525	598	1,322	4,743	4,050	2,123	4,007	2,157	23,782
1993	1,361	1,209	709	554	545	696	926	6,479	9,634	5,552	1,685	1,897	31,247
1994	1,096	1,292	1,025	829	638	661	1,827	4,119	4,174	3,316	2,490	1,864	23,331
1995	1,357	1,271	724	553	545	560	931	4,151	18,684	20,340	7,123	3,050	59,289
1996	2,216	1,453	1,300	1,090	963	830	1,885	14,350	12,060	7,051	2,212	2,086	47,496
1997	1,942	1,737	1,213	1,022	771	953	1,813	9,011	17,245	8,910	5,931	2,054	52,602
1998	1,936	1,606	997	812	693	804	939	3,708	4,860	2,874	2,964	2,027	24,220
1999	1,799	1,555	1,201	920	800	736	1,084	4,945	11,870	7,437	2,590	2,261	37,198
2000	1,543	1,263	894	780	689	962	1,626	7,231	5,187	2,673	2,071	2,095	27,014
2001	1,325	1,193	932	757	604	646	1,351	6,302	8,391	6,291	3,378	2,245	33,415
2002	1,457	1,309	882	725	629	623	1,099	1,391	1,034	1,529	1,916	1,007	13,601
2003	1,078	1,042	824	663	541	594	1,190	7,232	10,887	5,661	3,063	1,923	34,698
2004	1,371	1,162	895	748	655	782	1,073	1,538	1,203	1,784	3,385	1,289	15,885
2005	1,276	1,346	955	767	563	674	995	3,059	4,422	2,101	2,804	1,387	20,349
AVERAGE:	1,600	1,407	986	829	703	756	1,262	4,988	8,176	5,482	3,279	1,880	31,348
MINIMUM:	800	990	702	553	525	560	719	527	564	1,160	1,074	413	13,601
MAXIMUM:	3,160	2,564	1,741	1,301	1,051	1,055	2,437	14,350	18,684	20,340	7,666	4,149	59,819

Simulated Flows at Muddy Creek below Wolford Mountain Reservoir
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	91	10	10	7	9	15	130	161	320	56	104	33	79
1951	95	12	14	8	12	18	77	245	396	122	25	77	92
1952	79	16	14	8	14	17	60	614	606	87	26	119	139
1953	171	35	28	27	15	29	77	132	388	68	21	198	99
1954	11	20	11	12	9	17	90	57	139	49	256	34	59
1955	274	26	22	16	13	20	122	57	82	73	100	96	76
1956	13	19	16	12	9	24	150	90	297	60	108	104	75
1957	11	20	15	14	12	19	77	195	682	225	35	21	110
1958	23	30	20	16	16	26	78	603	304	58	109	128	118
1959	11	25	20	15	11	14	73	102	355	63	74	145	75
1960	20	22	13	15	14	72	69	469	307	67	105	105	107
1961	13	23	17	18	9	19	56	152	208	66	198	24	67
1962	13	57	39	38	37	131	461	747	378	125	31	157	185
1963	59	26	21	17	14	29	89	74	211	145	156	55	75
1964	253	54	24	22	15	60	53	56	81	82	103	121	78
1965	9	21	20	18	12	15	116	65	559	145	31	19	85
1966	25	37	26	22	11	37	90	333	182	59	320	104	105
1967	9	13	17	16	9	34	80	57	166	93	85	141	60
1968	39	27	20	16	12	14	58	57	398	79	33	116	72
1969	93	24	22	20	12	19	13	954	245	100	78	159	148
1970	18	39	30	25	13	26	88	434	363	89	113	14	105
1971	20	29	21	17	17	50	121	469	474	111	28	17	115
1972	15	25	22	17	23	55	124	637	361	53	136	49	127
1973	18	26	21	18	15	25	65	499	343	134	33	109	109
1974	115	27	20	17	16	46	76	812	294	82	107	105	144
1975	15	24	16	16	17	27	70	154	386	126	30	200	90
1976	17	26	19	19	18	35	88	528	276	66	102	116	110
1977	16	17	13	12	10	11	99	300	88	140	103	10	69
1978	312	15	10	12	9	24	133	44	324	111	107	129	103
1979	11	19	23	16	9	23	107	391	495	95	24	206	118
1980	10	23	19	15	20	25	92	287	499	73	111	115	107
1981	13	21	12	12	7	13	78	319	211	96	249	33	89
1982	254	25	17	13	10	23	60	37	446	109	25	23	87

Simulated Flows at Muddy Creek below Wolford Mountain Reservoir
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1983	21	21	18	15	16	24	64	366	767	261	44	54	139
1984	17	20	24	23	24	27	82	856	660	180	36	22	165
1985	25	24	25	24	25	47	241	765	302	76	17	12	132
1986	13	23	31	25	41	88	302	739	388	118	23	19	151
1987	15	21	17	16	21	30	201	339	172	64	17	198	93
1988	8	12	12	13	15	32	183	356	334	65	101	107	103
1989	13	22	17	16	16	82	13	307	199	72	193	29	82
1990	11	14	9	8	11	25	130	39	173	109	234	34	67
1991	12	17	8	6	8	32	86	187	393	82	104	108	87
1992	8	13	9	8	11	25	100	66	139	63	239	73	63
1993	27	13	9	11	14	28	74	186	426	90	21	21	77
1994	24	16	13	10	13	27	121	338	163	136	176	7	88
1995	11	11	8	11	14	20	54	41	607	119	23	22	78
1996	25	18	13	18	27	37	178	699	448	83	105	18	140
1997	22	21	17	17	20	68	46	780	622	90	22	9	145
1998	21	13	18	21	24	65	86	332	218	89	22	99	84
1999	19	18	12	14	18	47	87	293	445	86	25	21	90
2000	163	18	11	14	19	26	148	395	190	68	203	27	108
2001	9	17	15	10	14	25	81	88	174	69	188	124	68
2002	12	15	11	10	10	18	69	129	64	151	174	28	58
2003	143	11	6	7	8	20	129	50	127	79	115	123	68
2004	9	22	9	11	12	49	99	68	49	68	271	20	58
2005	280	15	8	18	12	18	138	38	155	76	20	118	75
AVERAGE:	54	22	17	16	15	33	106	314	323	96	99	78	98
MINIMUM:	8	10	6	6	7	11	13	37	49	49	17	7	58
MAXIMUM:	312	57	39	38	41	131	461	954	767	261	320	206	185

Simulated Flows at Muddy Creek below Wolford Mountain Reservoir
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	5,614	573	596	407	474	913	7,706	9,909	19,057	3,421	6,369	1,935	56,974
1951	5,869	731	838	484	652	1,087	4,578	15,070	23,571	7,532	1,520	4,595	66,527
1952	4,831	925	856	500	767	1,048	3,593	37,724	36,048	5,319	1,600	7,094	100,305
1953	10,491	2,086	1,728	1,655	806	1,805	4,602	8,109	23,116	4,151	1,267	11,770	71,586
1954	664	1,179	704	748	494	1,032	5,343	3,505	8,262	3,033	15,741	2,025	42,730
1955	16,851	1,554	1,370	968	714	1,247	7,266	3,505	4,886	4,486	6,144	5,722	54,713
1956	777	1,101	954	751	485	1,460	8,914	5,504	17,683	3,701	6,616	6,186	54,132
1957	849	1,206	915	875	650	1,185	4,591	11,990	40,607	13,815	2,136	1,223	79,842
1958	1,397	1,799	1,207	998	896	1,586	4,647	37,062	18,074	3,552	6,683	7,628	85,529
1959	667	1,501	1,213	900	606	840	4,356	6,255	21,139	3,887	4,563	8,622	54,549
1960	1,223	1,312	787	951	751	4,426	4,107	28,615	18,262	4,143	6,439	6,245	77,461
1961	785	1,397	1,031	1,128	515	1,155	3,314	9,371	12,378	4,068	12,167	1,427	48,736
1962	799	3,419	2,426	2,351	2,046	8,072	27,455	45,926	22,521	7,670	1,877	9,359	133,921
1963	3,619	1,529	1,265	1,054	768	1,762	5,291	4,527	12,529	8,904	9,611	3,297	54,156
1964	15,558	3,243	1,470	1,360	847	3,712	3,182	3,431	4,834	5,019	6,348	7,179	56,183
1965	555	1,251	1,217	1,130	646	914	6,909	3,990	33,269	8,895	1,881	1,131	61,788
1966	1,518	2,181	1,615	1,376	634	2,296	5,347	20,495	10,822	3,640	19,655	6,183	75,762
1967	533	772	1,063	998	490	2,062	4,782	3,505	9,862	5,734	5,197	8,419	43,417
1968	2,393	1,624	1,258	989	664	849	3,466	3,505	23,709	4,882	2,051	6,875	52,265
1969	5,740	1,422	1,355	1,241	661	1,180	774	58,686	14,606	6,145	4,788	9,433	106,031
1970	1,084	2,350	1,830	1,536	698	1,584	5,217	26,679	21,603	5,480	6,956	816	75,833
1971	1,216	1,738	1,305	1,024	955	3,082	7,184	28,849	28,190	6,819	1,737	1,000	83,099
1972	934	1,516	1,377	1,046	1,269	3,377	7,407	39,145	21,470	3,260	8,347	2,938	92,086
1973	1,078	1,532	1,293	1,106	831	1,536	3,842	30,713	20,383	8,229	2,001	6,504	79,048
1974	7,048	1,628	1,221	1,032	909	2,848	4,532	49,921	17,506	5,052	6,593	6,259	104,549
1975	945	1,439	983	977	953	1,646	4,150	9,445	22,950	7,755	1,872	11,885	65,000
1976	1,017	1,569	1,152	1,144	973	2,134	5,237	32,439	16,440	4,050	6,288	6,908	79,351
1977	975	1,007	821	755	565	703	5,905	18,436	5,226	8,593	6,359	584	49,929
1978	19,169	899	614	731	489	1,501	7,939	2,717	19,289	6,820	6,587	7,694	74,449
1979	666	1,157	1,393	987	500	1,408	6,366	24,038	29,447	5,833	1,474	12,239	85,508
1980	636	1,386	1,150	933	1,113	1,585	5,445	17,642	29,708	4,467	6,810	6,814	77,669
1981	771	1,222	726	768	413	828	4,615	19,586	12,582	5,923	15,290	1,984	64,708
1982	15,590	1,517	1,052	812	528	1,442	3,543	2,253	26,559	6,705	1,528	1,343	62,872

Simulated Flows at Muddy Creek below Wolford Mountain Reservoir
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1983	1,318	1,247	1,087	953	910	1,461	3,829	22,515	45,612	16,037	2,680	3,218	100,867
1984	1,055	1,163	1,486	1,438	1,322	1,633	4,881	52,618	39,295	11,056	2,186	1,303	119,436
1985	1,552	1,418	1,522	1,463	1,367	2,874	14,319	47,008	17,967	4,694	1,027	692	95,903
1986	799	1,361	1,893	1,521	2,303	5,419	17,941	45,427	23,085	7,272	1,386	1,118	109,525
1987	915	1,279	1,039	970	1,157	1,835	11,951	20,870	10,247	3,923	1,026	11,799	67,011
1988	466	743	718	771	809	1,945	10,864	21,897	19,889	4,015	6,233	6,386	74,736
1989	817	1,286	1,044	971	873	5,029	774	18,883	11,819	4,427	11,840	1,725	59,488
1990	696	840	579	494	619	1,556	7,754	2,383	10,306	6,685	14,378	2,022	48,312
1991	722	1,022	472	374	465	1,968	5,129	11,494	23,414	5,018	6,420	6,436	62,934
1992	466	786	562	495	600	1,512	5,937	4,052	8,300	3,881	14,675	4,365	45,631
1993	1,635	773	536	681	789	1,739	4,397	11,410	25,337	5,556	1,311	1,241	55,405
1994	1,472	949	777	618	708	1,681	7,206	20,779	9,685	6,337	10,839	418	63,489
1995	689	671	513	678	770	1,200	3,188	2,525	36,136	7,338	1,431	1,306	56,445
1996	1,558	1,078	822	1,078	1,508	2,284	10,592	43,007	26,677	5,075	6,446	1,049	101,174
1997	1,330	1,268	1,074	1,076	1,115	4,196	2,754	47,975	37,010	5,509	1,329	529	105,165
1998	1,270	774	1,122	1,276	1,332	3,984	5,114	20,413	12,949	5,501	1,348	5,882	60,965
1999	1,150	1,089	743	851	988	2,875	5,198	18,005	26,478	5,307	1,543	1,236	65,463
2000	10,039	1,097	695	838	1,033	1,619	8,806	24,263	11,312	4,201	12,473	1,581	77,957
2001	582	984	927	596	763	1,553	4,837	5,403	10,339	4,267	11,588	7,387	49,226
2002	734	903	671	599	580	1,118	4,084	7,916	3,810	9,283	10,700	1,657	42,055
2003	8,809	649	379	439	433	1,221	7,695	3,101	7,571	4,861	7,057	7,290	49,505
2004	559	1,288	568	656	652	2,989	5,866	4,157	2,915	4,163	16,673	1,191	41,677
2005	17,195	891	522	1,089	647	1,130	8,220	2,320	9,228	4,646	1,257	7,046	54,191
AVERAGE:	3,348	1,309	1,045	958	830	2,055	6,303	19,307	19,214	5,929	6,078	4,646	71,022
MINIMUM:	466	573	379	374	413	703	774	2,253	2,915	3,033	1,026	418	41,677
MAXIMUM:	19,169	3,419	2,426	2,351	2,303	8,072	27,455	58,686	45,612	16,037	19,655	12,239	133,921

Simulated Flows at Williams Fork River below Williams Fork Reservoir
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	204	136	78	63	77	97	15	29	247	55	321	159	124
1951	133	116	92	76	59	86	102	48	186	422	232	356	160
1952	208	127	102	96	84	88	15	54	799	273	256	256	196
1953	176	140	108	132	75	79	76	26	180	62	235	154	120
1954	128	134	112	102	52	73	90	34	37	106	142	109	94
1955	310	107	76	76	60	64	15	32	93	44	182	201	105
1956	119	125	89	71	79	85	15	78	237	46	186	104	103
1957	110	104	65	71	68	68	76	21	162	274	275	184	124
1958	250	138	123	115	86	89	79	79	398	70	287	142	155
1959	128	103	97	90	63	73	79	35	203	65	145	149	102
1960	140	157	127	65	85	99	27	38	164	63	183	125	108
1961	128	135	118	114	57	63	121	24	107	116	251	158	116
1962	186	121	137	89	71	81	21	99	656	336	203	131	178
1963	144	144	132	126	69	93	98	40	51	103	58	179	103
1964	263	94	64	59	63	64	132	28	127	55	104	118	98
1965	88	111	96	88	79	74	15	26	166	118	188	98	96
1966	95	86	119	77	52	98	103	49	68	34	316	109	101
1967	124	93	69	60	61	91	15	36	102	70	197	157	90
1968	145	117	82	70	77	80	136	15	264	63	19	301	113
1969	172	114	92	93	76	75	15	61	40	61	149	210	97
1970	41	81	57	94	83	82	83	73	137	222	162	161	106
1971	171	177	154	149	99	128	15	39	499	343	203	226	184
1972	199	132	117	107	93	129	27	45	257	59	317	130	135
1973	88	109	100	78	72	71	84	28	100	205	196	183	110
1974	134	150	131	129	71	94	15	69	441	183	267	163	154
1975	165	117	106	77	76	83	96	22	180	125	192	204	120
1976	145	100	86	76	77	84	33	37	140	69	159	175	98
1977	184	121	81	62	63	70	86	28	50	206	319	95	114
1978	190	80	48	44	43	54	15	46	214	101	112	146	91
1979	97	98	87	88	78	91	15	43	143	73	164	122	92
1980	114	115	101	105	95	67	84	27	130	73	145	179	103
1981	140	105	87	59	58	69	159	21	155	117	309	209	124
1982	131	98	60	80	65	48	60	18	121	120	132	65	83
1983	64	120	126	89	108	72	162	15	26	841	326	211	181
1984	186	154	147	114	94	116	90	79	1009	542	331	210	256
1985	231	176	148	154	87	108	15	69	456	137	163	172	160

Simulated Flows at Williams Fork River below Williams Fork Reservoir
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1986	180	169	149	139	70	21	15	58	566	257	152	181	163
1987	173	167	144	137	102	93	15	57	78	32	171	115	107
1988	120	106	106	114	105	78	15	59	237	76	351	132	125
1989	109	113	95	84	85	104	15	56	131	125	72	163	96
1990	112	109	96	81	83	107	81	32	229	46	315	194	124
1991	196	129	89	75	72	90	94	48	199	62	121	102	106
1992	126	145	99	87	96	124	15	65	89	47	448	230	131
1993	246	141	71	49	48	56	70	15	168	112	126	244	112
1994	207	132	109	99	91	114	31	60	99	115	205	183	121
1995	132	107	85	75	86	107	165	15	221	280	272	322	155
1996	209	135	129	142	126	114	15	137	643	228	140	222	186
1997	208	171	140	80	253	80	15	64	664	284	215	167	194
1998	170	162	145	145	115	136	15	31	83	56	138	277	123
1999	204	149	98	107	103	146	98	31	105	43	120	317	126
2000	201	123	114	115	111	126	15	76	109	21	352	260	136
2001	167	122	123	101	97	116	92	52	90	30	446	221	138
2002	149	63	52	45	42	53	75	17	42	107	23	30	58
2003	46	59	49	44	40	47	109	18	223	59	214	293	100
2004	161	133	108	102	101	142	122	37	79	22	414	191	135
2005	216	135	96	97	59	52	15	46	155	50	168	153	104
AVERAGE:	158	123	102	92	81	87	60	44	224	141	212	179	126
MINIMUM:	41	59	48	44	40	21	15	15	26	21	19	30	58
MAXIMUM:	310	177	154	154	253	146	165	137	1,009	841	448	356	256

Simulated Flows at Williams Fork River below Williams Fork Reservoir
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	12,555	8,093	4,797	3,844	4,293	5,970	893	1,778	14,705	3,352	19,718	9,462	89,460
1951	8,187	6,924	5,682	4,686	3,270	5,305	6,055	2,928	11,079	25,965	14,279	21,203	115,563
1952	12,766	7,544	6,247	5,911	4,840	5,384	893	3,335	47,536	16,800	15,749	15,256	142,061
1953	10,844	8,324	6,621	8,127	4,148	4,838	4,535	1,589	10,731	3,798	14,421	9,155	87,131
1954	7,843	7,957	6,901	6,290	2,893	4,473	5,376	2,064	2,212	6,516	8,735	6,503	67,763
1955	19,058	8,353	4,648	4,650	3,307	3,948	893	1,957	5,557	2,724	11,174	11,955	76,224
1956	7,339	7,413	5,497	4,349	4,366	5,224	893	4,797	14,104	2,823	11,445	6,211	74,461
1957	6,769	6,196	4,014	4,366	3,775	4,169	4,552	1,285	9,653	16,818	16,924	10,975	89,496
1958	15,358	8,186	7,588	7,041	4,753	5,494	4,722	4,887	23,706	4,302	17,674	8,422	112,133
1959	7,852	6,119	5,934	5,544	3,523	4,480	4,708	2,139	12,055	3,988	8,910	8,847	74,099
1960	8,601	9,316	7,810	5,212	4,731	6,068	1,630	2,313	9,786	3,854	11,233	7,412	77,966
1961	7,848	8,049	7,244	7,036	3,150	3,893	7,174	1,475	6,365	7,124	15,423	9,406	84,187
1962	11,464	7,175	8,411	5,445	3,950	4,972	1,254	6,102	39,055	20,654	12,497	7,778	128,757
1963	8,855	8,563	8,126	7,765	3,813	5,712	5,806	2,462	3,022	6,326	3,558	10,668	74,676
1964	16,177	5,591	3,906	3,598	3,487	3,924	7,861	1,750	7,576	3,378	6,412	6,994	70,654
1965	5,424	6,595	5,880	5,414	4,415	4,575	893	1,624	9,896	7,278	11,542	5,845	69,381
1966	5,629	5,105	7,335	4,728	2,909	6,031	6,108	2,997	4,041	2,066	19,416	6,491	73,056
1967	7,597	5,525	4,238	3,698	3,412	5,569	893	2,185	6,048	4,295	12,125	9,332	64,917
1968	8,922	6,981	5,054	4,317	4,263	4,901	8,111	922	15,696	3,885	1,170	17,907	82,129
1969	10,578	6,783	5,640	5,691	4,234	4,613	893	3,744	2,381	3,755	9,178	12,503	69,993
1970	2,495	4,810	3,535	5,758	4,611	5,034	4,947	4,477	8,177	13,669	9,951	9,584	77,048
1971	10,531	10,506	9,499	9,169	5,497	7,848	893	2,398	29,706	21,099	12,460	13,446	133,052
1972	12,247	7,884	7,164	6,590	5,191	7,944	1,617	2,776	15,313	3,623	19,484	7,732	97,565
1973	5,381	6,504	6,129	4,784	3,988	4,338	4,978	1,739	5,933	12,612	12,027	10,909	79,322
1974	8,255	8,948	8,072	7,950	3,920	5,799	893	4,219	26,261	11,273	16,407	9,713	111,710
1975	10,139	6,952	6,547	4,705	4,243	5,125	5,705	1,373	10,701	7,690	11,792	12,118	87,090
1976	8,886	5,931	5,292	4,684	4,268	5,178	1,936	2,263	8,317	4,236	9,803	10,414	71,208
1977	11,306	7,185	4,962	3,840	3,514	4,324	5,096	1,716	2,988	12,640	19,610	5,670	82,851
1978	11,690	4,739	2,973	2,711	2,413	3,313	893	2,847	12,718	6,184	6,865	8,662	66,008
1979	5,942	5,826	5,328	5,409	4,322	5,595	893	2,655	8,496	4,481	10,056	7,259	66,260
1980	6,979	6,854	6,228	6,463	5,302	4,150	4,992	1,687	7,712	4,465	8,926	10,625	74,383
1981	8,618	6,273	5,322	3,601	3,200	4,232	9,486	1,294	9,216	7,201	18,991	12,422	89,856
1982	8,063	5,817	3,682	4,895	3,602	2,924	3,556	1,118	7,219	7,359	8,117	3,879	60,231
1983	3,941	7,169	7,718	5,447	5,988	4,409	9,650	922	1,556	51,726	20,053	12,582	131,161
1984	11,412	9,188	9,066	7,033	5,244	7,113	5,374	4,832	60,035	33,344	20,359	12,506	185,506
1985	14,221	10,458	9,095	9,484	4,850	6,660	893	4,239	27,125	8,452	10,037	10,264	115,778

Simulated Flows at Williams Fork River below Williams Fork Reservoir
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1986	11,091	10,031	9,138	8,546	3,882	1,280	893	3,596	33,665	15,793	9,351	10,771	118,037
1987	10,626	9,937	8,885	8,446	5,641	5,727	893	3,488	4,624	1,994	10,502	6,844	77,607
1988	7,394	6,323	6,501	6,993	5,820	4,816	893	3,636	14,094	4,688	21,571	7,865	90,594
1989	6,694	6,728	5,853	5,152	4,741	6,404	893	3,444	7,809	7,715	4,434	9,676	69,543
1990	6,909	6,485	5,932	4,983	4,624	6,610	4,824	1,967	13,641	2,834	19,356	11,551	89,716
1991	12,034	7,666	5,446	4,611	3,972	5,627	5,620	2,959	11,849	3,836	7,438	6,083	77,041
1992	7,769	8,641	6,063	5,357	5,354	7,648	893	4,009	5,293	2,863	27,571	13,700	95,181
1993	15,126	8,398	4,391	3,029	2,659	3,422	4,164	922	10,019	6,905	7,753	14,547	81,335
1994	12,719	7,877	6,725	6,085	5,044	6,986	1,852	3,711	5,873	7,073	12,586	10,906	87,437
1995	8,101	6,346	5,202	4,595	4,757	6,554	9,792	922	13,136	17,204	16,736	19,160	112,505
1996	12,881	8,019	7,928	8,701	6,994	7,008	921	8,417	38,235	13,990	8,630	13,186	134,910
1997	12,812	10,192	8,636	4,933	14,041	4,915	893	3,934	39,528	17,445	13,232	9,963	140,524
1998	10,435	9,613	8,910	8,934	6,411	8,374	893	1,929	4,951	3,450	8,479	18,491	88,870
1999	12,530	8,859	6,023	6,594	5,697	8,991	5,827	1,876	6,267	2,629	7,349	18,877	91,519
2000	12,350	7,346	7,007	7,084	6,189	7,776	893	4,675	6,502	1,320	21,636	15,471	98,249
2001	10,250	7,249	7,579	6,236	5,372	7,114	5,503	3,180	5,370	1,827	27,434	13,131	100,245
2002	9,157	3,736	3,200	2,764	2,353	3,246	4,462	1,029	2,523	6,606	1,391	1,782	42,249
2003	2,849	3,495	2,986	2,676	2,201	2,907	6,463	1,117	13,296	3,603	13,183	17,427	72,203
2004	9,926	7,914	6,621	6,258	5,612	8,758	7,252	2,275	4,724	1,376	25,429	11,347	97,492
2005	13,286	8,053	5,916	5,957	3,275	3,209	893	2,829	9,227	3,093	10,356	9,078	75,172
AVERAGE:	9,731	7,335	6,270	5,682	4,502	5,371	3,583	2,729	13,345	8,679	13,052	10,678	90,957
MINIMUM:	2,495	3,495	2,973	2,676	2,201	1,280	893	922	1,556	1,320	1,170	1,782	42,249
MAXIMUM:	19,058	10,506	9,499	9,484	14,041	8,991	9,792	8,417	60,035	51,726	27,571	21,203	185,506

Simulated Flows at Colorado River Below the Confluence with the Eagle River
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	1242	860	599	552	655	694	1265	1929	4241	1523	1317	968	1320
1951	1154	860	815	720	771	772	1136	2378	4226	3893	1486	1366	1636
1952	1379	1055	912	872	851	838	1383	4668	10579	2962	1785	1883	2429
1953	1283	1008	965	974	861	955	1097	1548	4625	2063	1264	1058	1475
1954	1002	983	844	898	698	769	1092	1196	1159	1199	952	710	960
1955	1199	741	595	662	563	633	1141	1786	2081	1172	1291	1006	1066
1956	951	840	777	687	671	840	1196	3207	3636	1209	1470	824	1362
1957	902	836	743	707	749	783	1099	2745	8767	6608	2383	1278	2305
1958	1164	1187	1057	887	956	964	1100	5085	6746	1218	1395	926	1891
1959	963	802	763	725	708	686	1118	2086	4000	1300	1378	1067	1300
1960	1479	1119	850	713	765	1145	1445	2446	4383	1520	1313	901	1508
1961	1047	962	765	733	720	766	1023	1660	2176	1215	1427	1404	1161
1962	1590	1243	926	844	959	1070	3009	5971	8809	4335	1277	1231	2608
1963	1228	972	795	752	811	902	1087	1580	1492	1489	1333	1097	1131
1964	980	763	556	566	549	621	1060	1992	2582	1187	1423	870	1098
1965	872	778	725	692	656	655	1167	2398	5350	3363	2360	1406	1705
1966	1265	1099	990	880	861	1072	1050	2015	1469	1241	1489	752	1166
1967	912	752	627	610	612	914	1220	1465	3076	1493	1441	1197	1194
1968	1042	694	1068	628	668	625	1105	1829	4716	1526	1270	1209	1365
1969	1290	1070	890	882	809	802	1395	2906	3342	2574	1365	1162	1544
1970	1244	982	969	917	848	906	1040	5385	7233	3390	1515	1420	2159
1971	1400	1216	908	893	972	1061	1567	3249	8562	3923	1327	1418	2207
1972	1275	1138	888	825	887	1090	1065	2386	5210	1346	1427	1211	1561
1973	1196	1065	858	863	853	809	1113	3267	5913	4802	1312	1356	1955
1974	1308	1029	931	918	856	1056	1227	5127	6143	2250	1420	999	1943
1975	1248	978	855	847	907	854	1016	1956	4982	4457	1383	1328	1737
1976	1229	1013	869	857	889	933	1157	2410	2899	1357	1404	1190	1352
1977	1334	824	676	597	639	662	1148	1149	1175	1380	1119	562	941
1978	1139	794	744	652	638	796	1202	2541	5769	2428	1399	1082	1600
1979	1084	968	839	808	774	852	1230	3781	6047	3606	1397	1027	1872
1980	1056	984	915	958	924	902	1120	3022	6606	2928	1470	1102	1833
1981	1080	903	788	663	670	686	1174	1318	2707	1321	1072	879	1105
1982	1133	854	696	704	648	734	1060	2198	4655	2620	1321	1225	1489
1983	1159	1107	1014	883	930	957	1115	2355	10739	8949	3221	1854	2863
1984	1412	1178	1089	873	934	858	1036	8598	15098	8058	3698	2167	3761

Simulated Flows at Colorado River Below the Confluence with the Eagle River
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(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1985	2004	1505	1244	1130	1074	1205	1875	5532	8657	3350	1218	1221	2504
1986	1479	1449	1183	1086	1177	1295	2124	4752	9541	4750	1292	1356	2625
1987	1428	1301	1041	939	953	1005	1380	2863	2842	1204	1184	1437	1466
1988	882	993	829	811	825	841	1175	2329	4144	1448	1440	834	1379
1989	934	948	750	753	758	1065	1149	2393	2200	1282	1354	749	1197
1990	997	803	738	666	652	810	1240	1223	2858	1261	1272	799	1110
1991	1164	887	696	672	690	746	1078	2377	3780	1857	1569	1137	1390
1992	1068	1018	759	691	730	867	1078	2465	2044	1309	1346	905	1193
1993	940	880	722	735	747	858	1108	3948	6942	3587	1254	1167	1910
1994	1176	1106	856	783	804	1047	1175	2394	2093	1372	1271	798	1243
1995	834	826	693	639	711	876	1115	1623	7810	7683	2159	1291	2194
1996	1248	1212	925	913	971	1027	1465	6677	9180	2941	1732	1121	2454
1997	1130	1121	988	886	985	1155	1165	6050	12031	3791	2093	1420	2736
1998	1338	1275	985	1024	985	1232	1191	2937	2875	2314	1201	1395	1566
1999	1435	1087	709	810	831	1071	1106	2427	4913	2750	1282	1190	1636
2000	1393	1024	821	881	922	945	1223	3876	3751	1237	1479	1130	1560
2001	1011	1027	867	791	804	871	1067	2651	2235	1291	1344	1046	1253
2002	1070	830	639	617	610	736	1097	1206	1109	749	515	553	812
2003	863	714	601	584	583	760	1124	2933	3980	1251	1650	1239	1359
2004	1024	888	728	663	688	1047	1103	1703	1634	1282	1243	956	1082
2005	1397	923	696	692	655	705	1096	2572	3593	1448	1235	1010	1337
AVERAGE:	1,180	991	835	784	793	890	1,225	2,939	4,989	2,573	1,483	1,141	1,654
MINIMUM:	834	694	556	552	549	621	1,016	1,149	1,109	749	515	553	812
MAXIMUM:	2,004	1,505	1,244	1,130	1,177	1,295	3,009	8,598	15,098	8,949	3,698	2,167	3,761

Simulated Flows at Colorado River Below the Confluence with the Eagle River
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	76,376	51,167	36,804	33,941	36,377	42,680	75,302	118,583	252,372	93,636	80,973	57,581	955,792
1951	70,947	51,163	50,098	44,298	42,829	47,485	67,618	146,216	251,497	239,400	91,349	81,258	1,184,158
1952	84,779	62,750	56,069	53,628	47,287	51,526	82,286	287,054	629,494	182,130	109,761	112,027	1,758,791
1953	78,908	59,984	59,327	59,877	47,812	58,714	65,260	95,192	275,183	126,830	77,706	62,958	1,067,731
1954	61,614	58,513	51,903	55,205	38,766	47,254	64,969	73,549	68,961	73,742	58,509	42,258	695,243
1955	73,715	44,096	36,576	34,563	31,249	38,919	67,882	109,810	123,838	72,063	79,387	59,860	771,958
1956	58,496	49,959	47,758	42,265	37,240	51,678	71,194	197,179	216,354	74,345	90,361	49,040	985,869
1957	55,482	49,765	45,692	43,457	41,605	48,127	65,373	168,781	521,705	406,304	146,532	76,025	1,668,848
1958	71,556	70,646	64,975	54,521	53,067	59,288	65,444	312,647	401,399	74,921	85,763	55,128	1,369,355
1959	59,218	47,706	46,929	44,565	39,310	42,173	66,548	128,258	238,039	79,945	84,702	63,513	940,906
1960	90,913	66,565	52,245	43,844	42,489	70,391	85,983	150,398	260,797	93,459	80,711	53,627	1,091,422
1961	64,400	57,238	47,037	45,069	40,013	47,117	60,882	103,288	129,483	74,730	87,714	83,550	840,521
1962	97,742	73,946	56,963	51,883	53,272	65,765	179,074	367,155	524,166	266,523	78,536	73,276	1,888,301
1963	75,525	57,861	48,903	46,257	45,049	55,454	64,706	97,161	88,762	91,539	81,950	65,299	818,466
1964	60,230	45,380	34,207	34,814	30,489	38,168	63,095	122,472	153,636	73,013	87,469	51,745	794,718
1965	53,616	46,275	44,553	42,574	36,423	40,265	69,465	147,455	318,357	206,800	145,113	83,638	1,234,534
1966	77,790	65,409	60,852	54,127	47,826	65,919	62,461	123,880	87,436	76,327	91,575	44,728	858,330
1967	56,107	44,770	38,564	37,514	34,006	56,184	72,573	90,098	183,025	91,774	88,580	71,254	864,449
1968	64,063	41,288	65,670	38,604	37,124	38,428	65,771	112,481	280,606	93,830	78,089	71,918	987,872
1969	79,326	63,648	54,744	54,240	44,924	49,320	83,039	178,664	198,862	158,244	83,909	69,119	1,118,039
1970	76,487	58,432	59,567	56,404	47,088	55,690	61,886	331,126	430,422	208,432	93,128	84,526	1,563,188
1971	86,106	72,373	55,837	54,882	53,963	65,232	93,219	199,794	509,474	241,209	81,598	84,367	1,598,054
1972	78,382	67,728	54,632	50,746	49,263	67,051	63,375	146,739	310,000	82,739	87,740	72,031	1,130,426
1973	73,545	63,388	52,743	53,072	47,374	49,754	66,210	200,867	351,880	295,280	80,700	80,701	1,415,514
1974	80,413	61,241	57,219	56,425	47,545	64,933	72,990	315,243	365,539	138,352	87,316	59,428	1,406,644
1975	76,762	58,204	52,551	52,101	50,368	52,498	60,475	120,254	296,436	274,078	85,039	79,050	1,257,816
1976	75,546	60,285	53,407	52,677	49,349	57,378	68,846	148,205	172,501	83,430	86,327	70,809	978,760
1977	82,010	49,014	41,536	36,729	35,469	40,687	68,333	70,624	69,905	84,866	66,790	33,459	681,422
1978	70,022	47,245	45,760	40,085	35,443	48,960	71,523	156,261	343,306	149,291	85,992	64,402	1,158,290
1979	66,630	57,624	51,614	49,671	42,984	52,399	73,175	232,498	359,801	221,757	85,682	61,094	1,355,129
1980	64,943	58,563	56,272	58,894	51,317	55,450	66,671	185,823	393,102	180,068	90,379	65,594	1,327,076
1981	66,423	53,714	48,436	40,791	37,210	42,203	69,862	81,056	161,064	81,201	65,917	52,327	800,204
1982	69,641	50,846	42,777	43,281	35,977	45,115	63,066	135,165	276,972	161,110	81,223	72,923	1,078,096
1983	71,271	65,851	62,326	54,311	51,644	58,846	66,346	144,807	639,008	550,265	198,082	110,311	2,073,068
1984	86,845	70,114	66,971	53,688	51,853	52,781	61,675	528,668	898,409	495,457	227,369	128,923	2,722,753

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(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1985	123,243	89,527	76,522	69,471	59,644	74,065	111,567	340,173	515,121	205,962	74,917	72,626	1,812,838
1986	90,913	86,230	72,726	66,762	65,390	79,655	126,366	292,185	567,757	292,066	79,445	80,716	1,900,211
1987	87,785	77,397	63,984	57,742	52,944	61,767	82,123	176,012	169,115	74,008	72,784	85,538	1,061,199
1988	54,229	59,105	51,002	49,856	45,611	51,734	69,931	143,204	246,587	89,050	88,516	49,618	998,645
1989	57,453	56,411	46,090	46,311	42,098	65,500	68,342	147,133	130,903	78,798	83,235	44,577	866,851
1990	61,307	47,757	45,387	40,952	36,234	49,830	73,807	75,165	170,091	77,513	78,209	47,561	803,833
1991	71,588	52,784	42,800	41,348	38,347	45,887	64,134	146,151	224,941	114,177	96,495	67,637	1,006,289
1992	65,679	60,594	46,642	42,460	40,519	53,290	64,121	151,581	121,633	80,471	82,775	53,863	863,628
1993	57,796	52,355	44,373	45,202	41,489	52,760	65,961	242,761	413,057	220,547	77,088	69,457	1,382,864
1994	72,327	65,815	52,611	48,132	44,666	64,360	69,931	147,226	124,566	84,389	78,146	47,512	899,681
1995	51,259	49,143	42,622	39,314	39,515	53,849	66,339	99,768	464,717	472,413	132,738	76,813	1,588,490
1996	76,711	72,133	56,850	56,137	53,929	63,173	87,169	410,526	546,234	180,850	106,475	66,700	1,776,889
1997	69,489	66,716	60,774	54,503	54,678	71,016	69,321	372,013	715,930	233,112	128,676	84,488	1,980,718
1998	82,241	75,872	60,577	62,948	54,702	75,747	70,851	180,591	171,101	142,298	73,845	83,002	1,133,775
1999	88,290	64,699	43,584	49,824	46,164	65,861	65,795	149,262	292,336	169,089	78,851	70,810	1,184,565
2000	85,626	60,909	50,477	54,185	51,232	56,118	72,756	238,313	223,205	76,081	90,967	67,238	1,129,107
2001	62,195	61,110	53,305	48,652	44,671	53,541	63,511	162,984	132,997	79,407	62,624	62,237	907,234
2002	65,772	49,402	39,312	37,913	33,884	45,236	65,273	74,162	65,982	46,060	31,646	32,931	587,573
2003	53,087	42,502	36,974	35,918	32,354	46,747	66,894	180,347	236,805	76,904	101,446	73,737	983,715
2004	62,957	52,821	44,789	40,787	38,186	64,375	65,624	104,729	97,217	78,858	76,412	56,883	783,638
2005	85,869	54,952	42,787	42,569	36,390	43,344	65,238	158,154	213,805	89,036	75,957	60,119	968,220
AVERAGE:	72,529	58,946	51,352	48,214	44,051	54,709	72,886	180,713	296,891	158,182	91,168	67,889	1,197,530
MINIMUM:	51,259	41,286	34,207	33,941	30,489	38,168	60,475	70,624	65,982	46,060	31,646	32,931	587,573
MAXIMUM:	123,243	89,527	76,522	69,471	65,390	79,655	179,074	528,668	898,409	550,265	227,369	128,923	2,722,753

Simulated Flows at Colorado River above the Confluence with the Eagle River
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WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	960	598	402	383	480	518	873	898	1896	846	1102	719	806
1951	924	626	607	535	595	585	859	1172	1986	2445	978	1105	1037
1952	1115	800	702	675	669	659	839	2946	6957	1966	1144	1501	1663
1953	1062	766	726	753	675	753	858	773	2040	1253	855	851	947
1954	825	733	648	722	536	619	809	484	469	891	745	493	666
1955	940	519	416	404	417	476	808	837	913	596	929	797	672
1956	797	610	576	513	499	630	820	1302	1738	748	1203	652	842
1957	768	630	565	535	582	608	843	1820	5149	3828	1648	885	1492
1958	888	888	807	677	745	768	853	3026	4434	803	1196	709	1317
1959	802	585	569	548	544	532	869	1206	1489	659	1095	844	813
1960	1142	843	660	541	593	900	817	1331	2020	863	1062	690	965
1961	860	731	569	585	561	604	832	827	856	832	1136	816	767
1962	1087	912	689	639	730	851	2190	4165	8132	2983	882	989	1856
1963	966	712	602	585	630	728	829	790	673	1136	963	807	785
1964	626	561	397	414	400	479	860	957	1095	462	1037	637	678
1965	704	586	551	525	503	514	864	1346	2527	1531	1586	987	1020
1966	889	841	778	699	687	863	730	895	562	830	1234	544	798
1967	693	552	455	452	459	718	658	725	1198	638	1201	939	725
1968	945	649	548	489	546	548	910	1022	2134	652	629	997	838
1969	1068	791	639	657	618	624	764	1565	1954	1599	1052	928	1024
1970	789	896	702	731	711	743	887	3116	5041	2300	1134	813	1491
1971	913	886	742	727	734	625	936	2279	5678	2748	922	1045	1536
1972	1034	671	716	640	685	900	847	1457	2851	878	1248	777	1059
1973	777	803	874	650	646	680	1005	1936	3264	3403	983	1123	1332
1974	1061	767	718	705	666	838	897	2937	3864	1480	1083	762	1317
1975	1010	742	668	668	742	680	795	1267	2496	2549	982	1082	1142
1976	964	771	673	672	692	748	914	1382	1179	532	1012	920	872
1977	1058	630	513	447	496	513	934	642	339	1156	944	388	674
1978	938	599	559	492	494	816	833	1487	2556	1009	991	839	952
1979	863	734	612	613	597	656	912	2433	2738	2025	940	783	1162
1980	841	750	697	772	715	687	835	1992	3981	2042	1177	869	1281
1981	884	672	582	493	514	550	920	725	1418	847	859	632	758
1982	871	628	507	523	488	568	827	1185	1926	994	812	814	846
1983	809	845	805	896	763	786	938	1557	6882	6411	2319	1523	2032
1984	1098	872	812	627	708	646	762	5989	11067	5609	2585	1533	2699
1985	1499	1118	971	905	862	956	1257	3532	5734	2255	808	871	1732
1986	1056	1113	932	864	924	997	1555	3342	6899	3324	852	955	1885
1987	1043	991	814	742	770	817	985	1493	1391	719	885	1248	992
1988	725	751	637	647	640	657	881	1343	2305	1016	1230	625	954
1989	787	731	566	578	590	857	713	1269	904	742	1082	603	787
1990	812	618	575	521	517	661	988	549	1050	710	1115	647	731
1991	936	677	524	508	538	590	876	1150	1498	1094	1243	846	875

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WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1992	665	776	600	542	595	712	696	971	683	642	1026	636	730
1993	756	662	546	571	596	679	830	1927	3566	1960	752	812	1139
1994	907	863	673	612	644	864	805	1103	663	1041	1073	584	822
1995	608	622	524	492	548	676	893	906	4197	4793	1342	927	1381
1996	887	939	727	705	764	798	988	4202	6181	1948	1415	822	1700
1997	811	614	744	665	769	868	783	4150	8284	2702	1485	1021	1925
1998	952	978	759	806	781	989	915	1784	1332	1341	709	1110	1039
1999	1147	806	509	619	644	823	781	1363	2621	1826	749	864	1064
2000	1143	791	633	687	722	757	638	1916	1968	752	1220	861	1026
2001	787	795	667	608	634	695	749	1125	768	801	1002	822	789
2002	678	639	460	443	452	573	747	444	455	556	385	363	533
2003	671	542	461	442	453	617	794	1296	1662	697	1376	956	832
2004	842	698	573	521	531	814	702	590	494	767	1012	747	693
2005	1161	711	531	523	492	529	785	1162	1506	627	911	794	812
AVERAGE:	918	747	631	603	618	703	889	1,680	2,776	1,605	1,095	856	1,095
MINIMUM:	608	519	397	383	400	478	658	444	339	462	385	363	533
MAXIMUM:	1,499	1,118	971	905	924	997	2,190	5,989	11,067	6,411	2,585	1,533	2,699

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Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	59,012	35,557	24,707	23,526	26,680	31,826	51,972	55,200	112,814	52,022	67,788	42,782	583,886
1951	56,791	37,267	37,334	32,870	33,039	35,985	51,135	72,049	118,173	150,324	60,166	65,743	750,676
1952	68,543	47,600	43,136	41,513	37,146	40,492	49,912	181,134	413,954	120,880	70,332	89,322	1,203,964
1953	65,316	45,603	44,621	46,290	37,484	46,306	51,068	47,506	121,404	77,044	52,551	50,648	685,841
1954	50,746	43,618	39,830	44,407	29,788	38,064	48,161	29,739	27,900	54,780	45,802	29,340	482,175
1955	57,815	30,882	25,607	24,816	23,155	29,384	48,054	51,440	54,351	38,621	57,125	47,451	486,701
1956	49,037	36,271	35,399	31,527	27,700	38,715	48,822	80,063	103,422	45,966	73,948	38,803	609,673
1957	47,216	37,468	34,730	32,911	32,306	37,403	50,164	111,880	306,403	235,382	101,325	52,657	1,079,865
1958	54,616	52,831	49,636	41,607	41,389	47,236	50,787	186,040	263,871	49,358	73,536	42,215	953,122
1959	49,327	34,817	35,004	33,722	30,199	32,717	51,710	74,162	88,616	40,533	67,349	50,243	588,399
1960	70,211	50,170	40,589	33,288	32,956	55,335	54,664	81,814	120,187	53,094	65,296	41,069	698,553
1961	52,875	43,472	34,988	34,737	31,136	37,119	49,493	50,832	50,921	51,158	69,856	48,555	555,142
1962	66,813	54,285	42,347	39,320	40,580	52,297	130,297	256,079	364,860	183,447	54,222	58,862	1,343,389
1963	59,427	42,350	37,016	34,711	34,984	44,735	49,314	48,587	40,042	69,836	59,226	47,995	568,223
1964	50,801	33,374	24,382	25,447	22,200	29,448	51,163	58,837	65,173	28,380	63,744	37,932	490,881
1965	43,311	34,868	33,872	32,267	27,908	31,629	51,395	82,744	150,388	94,131	97,497	58,758	738,788
1966	54,694	50,042	47,819	42,964	38,157	53,041	43,441	55,031	33,444	51,021	75,866	32,360	577,880
1967	42,599	32,822	27,981	27,615	25,482	44,159	39,189	44,549	71,303	39,259	73,836	55,884	524,858
1968	58,119	38,630	33,681	30,057	30,307	33,704	54,178	62,839	126,985	40,082	38,675	59,319	606,576
1969	65,695	47,042	39,315	40,406	34,347	38,368	45,438	96,258	116,265	98,342	84,676	55,074	741,226
1970	48,536	53,327	43,168	44,947	39,496	45,669	52,810	191,595	299,979	141,451	69,739	48,406	1,079,123
1971	58,169	52,730	45,849	44,698	40,770	50,720	55,705	140,105	337,878	168,968	56,715	62,192	1,112,299
1972	63,570	39,951	44,009	39,351	38,031	55,361	50,373	89,619	169,641	53,967	78,726	46,239	766,838
1973	47,746	47,804	41,441	39,995	35,850	41,835	59,802	119,017	194,248	209,233	60,419	66,841	964,231
1974	65,240	45,652	44,138	43,324	36,988	51,556	53,364	180,586	229,951	90,991	66,562	45,338	953,690
1975	62,113	44,127	41,103	41,069	41,184	41,821	47,315	77,908	148,547	156,706	60,375	84,390	826,658
1976	59,262	45,895	41,374	41,293	38,447	45,987	54,410	84,953	70,144	32,694	62,201	54,747	631,407
1977	65,076	37,506	31,545	27,455	27,569	31,566	55,566	39,460	20,191	71,063	58,070	23,110	488,177
1978	57,678	35,628	34,388	30,237	27,445	37,865	49,546	91,405	152,083	62,029	60,912	49,945	689,161
1979	53,077	43,658	37,605	37,666	33,183	40,314	54,260	149,615	162,935	124,537	57,816	46,616	841,282
1980	51,736	44,636	42,847	47,475	39,688	42,232	49,664	122,503	236,868	125,590	72,372	51,718	927,329
1981	53,155	39,992	35,757	30,302	28,521	33,791	54,768	44,579	84,359	52,055	52,795	37,613	547,687
1982	53,553	37,343	31,197	32,171	27,128	34,951	49,215	72,885	114,624	61,148	49,957	48,456	612,628
1983	49,760	50,263	49,475	42,782	42,353	48,309	55,832	95,737	409,490	394,211	142,592	90,605	1,471,409
1984	67,486	51,912	49,959	38,576	39,346	39,747	45,343	368,241	856,537	344,872	158,964	91,203	1,954,186
1985	92,159	66,555	59,688	55,670	47,887	58,770	74,811	217,163	341,209	138,639	49,703	51,846	1,254,080
1986	84,911	66,253	57,286	53,113	51,340	61,293	92,545	205,469	398,647	204,369	52,393	56,808	1,364,427
1987	64,102	58,953	50,077	45,634	42,737	50,264	58,600	91,806	82,773	44,204	54,434	74,274	717,858
1988	44,555	44,674	39,180	39,770	35,536	40,387	51,260	82,570	137,172	62,477	75,623	37,174	690,380
1989	48,368	43,504	34,820	35,559	32,790	52,668	42,430	78,026	53,810	45,645	66,513	35,891	570,024
1990	49,913	38,689	35,348	32,063	28,739	40,618	56,774	33,786	62,469	43,662	68,554	38,526	529,121
1991	57,524	40,285	32,240	31,234	29,854	36,271	52,120	70,728	89,143	67,270	76,404	50,346	633,419

Simulated Flows at Colorado River Below the Confluence with the Eagle River
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1992	53,209	46,176	36,901	33,317	33,042	43,800	41,408	59,684	40,653	39,499	63,098	37,841	528,628
1993	46,467	39,375	33,546	35,095	33,094	41,728	49,404	118,491	212,172	120,504	46,268	48,345	824,489
1994	55,767	51,330	41,396	37,610	35,783	53,109	47,913	67,816	39,453	63,996	65,993	34,765	594,933
1995	37,380	36,989	32,190	30,231	30,416	41,543	53,149	55,712	249,726	294,739	82,496	55,163	999,714
1996	54,512	55,870	44,715	43,376	42,404	49,076	58,811	258,358	367,823	119,791	86,998	48,900	1,230,636
1997	49,841	48,417	45,721	40,914	42,715	53,402	46,617	255,184	492,928	166,147	91,297	60,729	1,393,912
1998	58,512	58,173	46,658	49,544	43,348	60,786	54,471	109,702	79,235	82,435	43,597	66,049	752,510
1999	70,553	47,969	31,276	38,061	35,790	50,614	46,490	83,811	155,975	112,249	46,074	51,429	770,291
2000	70,271	47,089	38,952	42,223	40,118	46,518	49,889	117,946	117,114	46,251	74,988	51,236	742,595
2001	48,366	47,297	41,000	37,414	35,189	42,728	44,559	69,182	45,679	49,240	61,602	48,933	571,189
2002	53,966	38,036	28,291	27,228	25,117	35,255	44,430	27,327	27,069	34,215	23,688	21,598	386,220
2003	41,262	32,277	28,363	27,152	25,158	37,928	47,258	79,677	98,913	42,847	84,594	56,914	602,341
2004	51,804	41,541	35,211	32,035	29,475	50,053	41,771	36,270	29,406	47,184	62,228	44,457	501,435
2005	71,399	42,306	32,675	32,131	27,344	32,525	46,684	71,434	89,622	38,525	56,016	47,233	587,894
AVERAGE:	56,463	44,449	38,771	37,052	34,300	43,197	52,886	103,306	165,195	98,662	67,350	50,909	792,540
MINIMUM:	37,380	30,882	24,382	23,526	22,200	29,384	39,169	27,327	20,191	28,380	23,688	21,598	386,220
MAXIMUM:	92,159	66,555	59,688	55,670	51,340	61,293	130,297	368,241	658,537	394,211	158,964	91,203	1,954,186

Simulated Flows at Colorado River near Kremmling at USGS Gage 09058000
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	911	494	348	326	410	446	624	531	1405	854	1099	708	680
1951	877	530	507	480	483	504	675	577	1098	2250	875	1088	831
1952	1008	683	604	596	593	584	528	1858	5610	1866	1019	1498	1369
1953	1021	668	695	620	581	644	677	364	1364	1178	752	855	786
1954	768	627	555	551	510	622	618	223	432	923	748	467	580
1955	873	425	363	356	355	401	553	419	593	557	855	821	549
1956	746	510	475	440	426	539	532	374	1212	718	1146	674	650
1957	713	527	494	473	481	517	679	1011	3505	3260	1441	773	1159
1958	758	763	705	600	634	663	678	1967	3923	782	1177	703	1112
1959	754	479	484	454	451	454	692	603	980	610	1011	787	647
1960	959	674	597	479	514	694	416	733	1421	794	1044	690	753
1961	796	624	516	539	490	510	681	315	395	775	1070	583	609
1962	873	747	598	553	559	679	1335	2803	5226	2676	782	950	1483
1963	818	512	477	493	522	606	570	401	512	1174	916	751	648
1964	765	431	313	341	335	405	707	461	651	421	1018	616	540
1965	638	461	444	440	406	402	654	662	1488	1326	1439	861	770
1966	722	678	640	599	588	728	516	537	489	839	1204	526	674
1967	617	444	389	367	377	593	415	278	708	529	1178	875	565
1968	864	547	448	435	460	445	756	447	1202	519	504	945	630
1969	976	668	546	557	526	511	410	875	1614	1473	977	843	833
1970	638	745	628	653	578	612	721	1806	4294	2066	1014	687	1204
1971	753	736	671	611	571	611	597	1483	4721	2474	822	944	1250
1972	952	566	575	507	551	735	577	894	2278	802	1181	677	859
1973	589	616	514	501	498	506	739	1037	2594	3139	806	1041	1051
1974	972	660	565	586	521	667	574	1792	3321	1304	975	693	1054
1975	906	590	513	510	558	528	592	632	1435	2146	840	997	856
1976	847	605	535	544	526	597	542	718	750	474	945	833	660
1977	946	510	443	357	396	432	797	478	343	1169	910	369	598
1978	877	501	457	399	412	525	608	839	1407	819	959	802	718
1979	794	591	563	575	521	530	615	1431	1711	1749	880	752	895
1980	761	599	555	631	583	572	662	1054	3130	1921	1123	775	1031
1981	786	540	467	401	437	472	791	449	579	809	860	589	599
1982	778	525	418	460	407	428	591	444	1140	709	693	705	608
1983	664	688	701	597	657	674	798	912	5478	6020	2113	1404	1730
1984	965	659	653	523	559	496	560	4927	9998	5229	2363	1294	2358

Simulated Flows at Colorado River near Kremmling at USGS Gage 09058000
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1985	1302	1051	881	779	700	785	814	2103	4764	2008	690	774	1388
1986	900	939	763	686	721	810	1081	2357	5705	3087	726	813	1550
1987	847	809	678	635	653	686	627	817	1177	687	845	1232	807
1988	636	577	506	486	489	531	648	864	1925	952	1169	543	778
1989	726	601	418	414	437	683	430	819	701	688	1044	578	630
1990	772	507	435	398	421	540	797	310	812	676	1109	613	616
1991	850	537	397	406	441	490	714	617	1066	1034	1207	806	715
1992	805	637	459	422	458	594	510	529	612	678	1013	634	614
1993	740	560	439	439	470	560	710	925	2574	1761	727	797	892
1994	830	755	611	579	595	784	612	720	567	1057	1072	573	732
1995	530	519	416	408	452	565	720	422	2925	4211	1178	826	1101
1996	742	738	590	620	629	617	605	3144	5553	1756	1342	707	1421
1997	684	658	633	537	634	882	449	2836	7208	2426	1280	852	1573
1998	764	793	672	695	667	828	607	936	872	1249	645	1087	819
1999	1040	648	402	449	510	712	565	792	1918	1606	660	801	843
2000	1038	652	555	613	616	652	634	1339	1753	772	1222	827	891
2001	740	685	596	562	555	597	582	536	593	845	1022	804	677
2002	839	525	416	417	427	513	613	323	540	621	421	375	503
2003	641	454	399	404	412	568	682	723	1131	745	1378	918	706
2004	813	569	453	422	461	698	559	254	375	805	1032	686	595
2005	1068	585	445	436	409	425	522	425	973	507	892	774	623
AVERAGE:	821	615	529	506	511	581	642	1,002	2,156	1,474	1,025	796	890
MINIMUM:	530	425	313	326	335	401	410	223	343	421	421	369	503
MAXIMUM:	1,302	1,051	881	779	721	828	1,335	4,927	9,998	6,020	2,363	1,498	2,358

Simulated Flows at Colorado River near Kremmling at USGS Gage 09058000
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	56,021	29,373	21,422	20,053	22,754	27,426	37,138	32,632	83,576	52,535	67,587	42,124	492,641
1951	53,906	31,526	31,153	29,503	26,816	31,000	40,181	35,508	65,322	138,336	53,782	64,771	601,804
1952	61,971	40,648	37,119	36,641	32,922	35,907	31,440	114,260	333,832	114,751	62,629	89,116	991,236
1953	62,764	39,750	42,740	38,142	32,279	39,599	40,306	22,397	81,176	72,425	46,237	50,903	568,718
1954	47,220	37,288	34,127	33,895	28,337	32,115	36,801	13,727	25,733	56,784	45,974	27,765	419,766
1955	53,693	25,283	22,331	21,886	19,710	24,677	32,927	25,738	35,286	34,277	52,558	48,876	397,242
1956	45,865	30,369	29,189	27,043	23,677	33,132	31,669	22,993	72,128	44,165	70,468	40,109	470,807
1957	43,852	31,367	30,362	29,061	26,735	31,759	40,380	62,144	208,562	200,448	88,583	46,015	839,268
1958	46,601	45,407	43,368	36,912	35,236	40,743	40,370	120,963	233,458	48,105	72,380	41,808	805,351
1959	46,341	28,506	29,758	27,939	25,074	27,923	41,187	37,100	58,304	37,490	62,169	46,859	468,650
1960	58,950	40,092	36,692	29,462	28,560	42,676	24,781	45,073	84,575	48,804	64,197	41,036	544,898
1961	48,950	37,152	31,742	33,118	27,207	31,377	40,499	19,342	23,488	47,645	65,791	34,691	441,002
1962	53,700	44,439	36,763	34,031	31,054	41,720	79,451	172,327	310,978	164,570	48,113	56,548	1,073,694
1963	50,302	30,486	29,320	30,319	29,014	37,252	33,912	24,638	30,462	72,179	56,298	44,680	468,862
1964	47,028	25,622	19,270	20,979	18,620	24,924	42,045	28,369	38,716	25,895	62,572	36,662	390,702
1965	39,204	27,455	27,306	27,052	22,574	24,741	38,932	40,680	88,550	81,514	88,473	51,247	557,728
1966	44,415	40,318	39,337	36,821	32,684	44,776	30,734	32,998	29,088	51,561	74,015	31,302	488,051
1967	37,924	26,422	23,930	22,580	20,939	36,457	24,697	17,071	42,115	32,552	72,460	52,043	409,190
1968	53,156	32,552	27,522	26,764	25,573	27,375	45,008	27,483	71,520	31,943	31,009	56,247	456,152
1969	60,015	39,760	33,568	34,238	29,238	31,391	24,409	53,802	96,057	90,601	60,064	50,185	603,328
1970	39,207	44,321	38,633	40,166	32,088	37,656	42,903	111,074	255,493	127,058	62,337	40,908	871,844
1971	46,299	43,771	41,276	37,592	31,723	37,582	35,512	91,167	280,949	152,124	50,555	56,152	904,702
1972	58,545	33,655	35,330	31,153	30,614	45,204	34,345	54,982	135,563	49,292	72,602	40,283	621,568
1973	36,207	36,681	31,576	30,795	27,677	31,104	43,976	63,741	154,371	193,009	49,537	61,937	760,611
1974	59,747	39,281	34,746	36,052	28,947	41,026	34,144	110,191	197,590	80,203	59,947	41,229	763,103
1975	55,735	35,125	31,521	31,383	30,970	32,463	35,230	38,832	85,366	131,968	51,671	59,341	619,605
1976	52,061	35,998	32,907	33,445	29,211	36,727	32,260	44,138	44,623	29,130	58,082	49,563	478,145
1977	58,181	30,320	27,216	21,979	21,991	26,549	47,416	29,385	20,431	71,868	55,960	21,981	433,277
1978	53,911	29,800	28,126	24,542	22,901	32,305	36,191	51,592	83,718	50,355	58,950	47,712	520,103
1979	48,799	35,193	34,842	35,357	28,926	32,564	36,578	87,974	101,820	107,547	54,097	44,766	648,263
1980	46,792	35,631	34,107	36,788	32,391	35,195	39,368	64,820	186,264	118,122	69,068	46,128	746,674
1981	48,360	32,137	28,697	24,631	24,297	29,026	47,079	27,622	34,447	49,725	52,868	35,068	433,957
1982	47,832	31,252	25,688	28,305	22,628	26,302	35,159	27,297	67,844	43,617	42,582	41,976	440,482
1983	40,833	40,920	43,112	36,687	36,508	41,420	47,469	56,092	325,951	370,183	129,906	83,534	1,252,615
1984	59,321	39,189	40,141	32,164	31,020	30,481	33,298	302,924	594,902	321,528	145,327	77,023	1,707,318

Simulated Flows at Colorado River near Kremmling at USGS Gage 09058000
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1985	80,046	62,519	54,159	47,898	38,860	48,245	48,413	129,308	283,498	123,470	42,440	46,066	1,004,922
1986	55,367	55,894	46,932	42,310	40,045	49,785	64,329	144,910	339,464	189,786	44,765	48,374	1,121,961
1987	52,074	48,119	41,713	39,039	36,246	42,207	37,309	50,253	70,031	42,245	51,932	73,299	584,467
1988	39,259	34,362	31,093	29,874	27,173	32,658	38,569	53,104	114,540	58,541	71,872	32,320	563,365
1989	44,665	35,755	25,728	25,448	24,260	42,009	25,611	50,344	41,738	42,280	64,175	34,381	456,394
1990	47,445	30,153	26,738	24,452	23,358	33,210	47,418	19,032	48,294	41,557	68,186	36,461	446,304
1991	52,283	31,958	24,441	24,969	24,495	30,120	42,483	37,917	63,416	63,575	74,244	47,964	517,865
1992	49,519	37,891	28,223	25,920	25,423	36,500	30,328	32,528	36,415	41,696	62,317	37,710	444,468
1993	45,493	33,313	26,987	27,021	26,079	34,427	42,234	56,851	153,163	108,283	44,710	47,413	645,974
1994	51,060	44,906	37,579	35,606	33,041	48,231	36,435	44,293	33,764	64,983	65,885	34,087	529,870
1995	32,573	30,906	25,609	25,072	25,130	34,749	42,872	25,919	174,026	258,903	72,442	49,173	797,374
1996	45,614	43,939	36,280	38,121	34,911	37,918	36,029	193,302	330,403	107,968	82,509	42,052	1,029,046
1997	42,042	39,133	38,936	32,993	35,227	41,959	26,705	174,376	428,933	149,196	78,690	50,688	1,138,878
1998	46,986	47,215	41,351	42,764	37,054	50,900	36,094	57,561	51,912	76,780	39,654	64,676	592,947
1999	63,934	38,533	24,694	27,618	28,307	43,757	33,614	48,719	114,139	98,773	40,586	47,674	610,348
2000	63,813	38,785	34,138	37,681	34,226	40,092	37,737	82,334	104,334	47,485	75,148	49,230	645,003
2001	45,487	40,756	36,673	34,528	30,798	36,717	34,615	32,961	35,306	51,961	62,829	47,857	490,488
2002	51,613	31,237	25,597	25,619	23,709	31,545	36,477	19,862	32,147	38,182	25,882	22,317	364,187
2003	39,413	27,045	24,561	24,816	22,855	34,898	40,567	44,432	67,297	45,794	84,716	54,653	511,047
2004	50,008	33,840	27,848	25,921	25,604	42,916	33,292	15,624	22,296	49,502	63,454	40,804	431,109
2005	65,663	34,834	27,363	26,825	22,732	26,147	31,045	26,136	57,881	31,204	54,870	46,049	450,749
AVERAGE:	50,501	36,575	32,525	31,142	28,401	35,742	38,214	61,622	128,308	90,616	63,038	47,390	644,074
MINIMUM:	32,573	25,283	19,270	20,053	18,620	24,677	24,409	13,727	20,431	25,895	25,882	21,981	364,187
MAXIMUM:	80,046	62,519	54,159	47,898	40,045	50,900	79,451	302,924	594,902	370,183	145,327	89,116	1,707,318

Simulated Flows at Colorado River below the Confluence with the Williams Fork River
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	251	206	137	119	126	148	227	181	389	169	420	282	222
1951	235	224	228	158	154	191	361	315	375	557	339	482	302
1952	382	254	246	224	209	220	182	555	2559	486	408	409	510
1953	264	252	190	234	171	206	305	135	315	217	344	232	239
1954	189	225	215	191	147	206	247	140	154	222	248	230	202
1955	454	201	157	167	150	170	213	148	214	174	298	240	216
1956	187	270	267	190	207	202	178	256	364	175	415	138	238
1957	154	211	199	163	161	174	268	237	1553	1215	468	233	420
1958	350	254	277	229	213	228	234	1231	1311	190	364	251	429
1959	172	211	213	203	186	153	261	153	329	192	246	298	218
1960	268	288	237	167	212	249	168	189	573	203	295	201	254
1961	187	331	160	184	139	182	275	138	232	246	403	391	239
1962	463	262	308	213	198	280	301	1351	2590	1349	334	147	651
1963	244	292	210	224	217	240	244	152	170	217	229	431	239
1964	344	195	128	155	145	163	288	156	249	172	171	220	199
1965	142	203	211	212	176	176	279	185	405	251	296	152	224
1966	160	191	260	193	179	257	246	161	185	143	374	180	211
1967	287	183	179	168	161	262	136	148	226	204	293	277	211
1968	284	266	199	174	189	190	287	140	393	191	143	375	235
1969	282	281	188	210	174	166	135	205	963	407	213	294	293
1970	137	243	175	245	178	202	308	665	1300	519	225	226	368
1971	271	285	265	273	237	251	215	600	2439	1256	369	286	562
1972	327	213	212	209	207	313	216	163	793	185	405	201	287
1973	169	215	182	188	176	184	240	198	1611	1606	342	272	449
1974	268	288	231	247	190	243	230	650	1383	440	381	221	398
1975	278	213	192	191	213	175	264	140	303	566	296	245	257
1976	207	226	170	202	163	202	201	149	298	201	284	291	216
1977	282	239	156	145	135	161	224	177	192	494	502	172	241
1978	317	255	230	161	172	202	154	192	374	227	195	228	226
1979	160	241	197	232	159	199	212	260	520	355	282	202	252
1980	175	210	200	266	191	186	266	195	1238	671	226	292	342
1981	196	213	175	127	125	168	272	224	295	243	403	302	229
1982	229	240	169	191	160	186	198	174	347	282	258	136	214

Simulated Flows at Colorado River below the Confluence with the Williams Fork River
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1983	159	214	285	195	237	188	303	150	1984	2975	957	294	665
1984	332	290	325	224	243	221	286	2427	5055	2323	805	315	1073
1985	446	364	280	277	237	261	145	736	2051	668	274	258	500
1986	295	399	282	252	182	135	256	995	3200	1359	321	306	665
1987	321	278	241	233	216	217	135	194	356	178	267	162	233
1988	192	261	208	222	219	213	153	197	1001	303	485	203	304
1989	167	256	186	168	198	259	135	196	275	275	215	249	215
1990	176	217	195	160	178	251	257	137	418	178	485	314	247
1991	349	270	172	167	157	210	271	177	345	187	217	211	228
1992	209	309	209	190	197	271	220	247	222	230	664	328	275
1993	328	301	187	168	172	208	283	266	555	267	255	340	277
1994	395	325	238	223	214	289	239	222	232	267	315	267	269
1995	255	256	179	170	200	243	301	138	902	1167	461	373	388
1996	309	303	235	291	267	258	156	1233	1991	587	238	324	516
1997	346	308	291	240	366	231	205	1254	2571	1022	596	252	640
1998	283	305	255	274	228	264	234	142	218	303	232	296	253
1999	396	353	192	232	229	331	245	156	571	289	272	411	306
2000	313	246	204	251	253	263	258	720	315	162	503	379	323
2001	239	256	260	213	223	254	223	231	246	206	544	314	268
2002	257	221	176	168	152	185	156	151	136	281	102	117	176
2003	165	212	161	150	163	208	341	537	778	309	453	442	327
2004	247	323	238	220	229	367	270	160	198	243	614	379	291
2005	516	333	219	217	178	183	207	214	461	287	265	245	277
AVERAGE:	268	259	214	203	192	219	234	372	870	502	357	274	331
MINIMUM:	137	183	128	119	125	135	135	135	136	143	102	117	176
MAXIMUM:	516	399	325	291	366	367	361	2,427	5,055	2,975	957	482	1,073

Simulated Flows at Colorado River below the Confluence with the Williams Fork River
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1950	15,425	12,265	8,395	7,328	7,004	9,100	13,537	11,145	23,144	10,410	25,817	16,809	160,379
1951	14,451	13,352	14,007	9,699	8,561	11,734	21,476	19,392	22,344	34,238	20,833	28,688	218,775
1952	23,506	15,086	15,117	13,785	11,594	13,500	10,843	34,120	152,248	29,908	25,101	24,310	369,118
1953	16,227	15,022	11,679	14,405	9,478	12,665	18,130	8,310	18,743	13,355	21,165	13,790	172,969
1954	11,629	13,402	13,250	11,721	8,165	12,646	14,695	8,618	9,187	13,677	15,227	13,713	145,930
1955	27,896	11,984	9,647	10,258	8,339	10,479	12,682	9,097	12,737	10,719	16,347	14,300	156,485
1956	11,487	16,040	16,439	11,653	11,487	12,402	10,578	15,724	21,643	10,770	25,511	8,212	171,946
1957	9,463	12,582	12,219	10,028	8,950	10,700	15,954	14,571	92,394	74,707	28,756	13,878	304,202
1958	21,511	15,124	17,046	14,102	11,844	14,037	13,923	75,688	77,996	11,673	22,394	14,927	310,265
1959	10,589	12,529	13,118	12,482	10,330	9,386	15,511	9,420	19,572	11,782	15,108	17,748	157,575
1960	16,456	17,111	14,579	10,249	11,765	15,285	9,982	11,607	34,077	12,496	18,113	11,958	183,678
1961	11,521	19,701	9,826	11,314	7,732	11,208	16,353	8,490	13,790	15,136	24,775	23,291	173,137
1962	28,443	15,599	18,926	13,070	11,020	17,219	17,930	83,065	154,138	82,969	20,512	8,770	471,661
1963	14,976	17,352	12,921	13,795	12,072	14,744	14,544	9,329	10,124	13,349	14,051	25,644	172,901
1964	21,175	11,581	7,866	9,519	8,030	10,010	17,134	9,585	14,841	10,569	10,521	13,116	143,947
1965	8,739	12,080	12,958	13,022	9,785	10,839	16,609	11,373	24,092	15,425	18,208	9,054	162,184
1966	9,862	11,383	15,980	11,878	9,950	15,800	14,642	9,898	10,979	8,796	23,012	10,721	152,901
1967	17,618	10,892	11,026	10,347	8,926	16,132	8,105	9,126	13,454	12,534	18,040	16,481	152,681
1968	17,454	15,830	12,209	10,705	10,504	11,680	17,090	8,578	23,374	11,723	8,767	22,337	170,251
1969	17,367	16,711	11,579	12,887	9,645	10,230	8,033	12,575	57,320	25,016	13,127	17,523	212,013
1970	8,394	14,434	10,750	15,045	9,865	12,427	18,333	40,874	77,367	31,918	13,840	13,477	266,724
1971	16,684	16,933	16,316	16,759	13,185	15,414	12,765	36,921	145,108	77,205	22,704	17,032	407,026
1972	20,081	12,680	13,047	12,874	11,521	19,243	12,870	10,048	47,170	11,364	24,920	11,964	207,782
1973	10,396	12,819	11,193	11,541	9,776	11,314	14,266	12,170	95,835	98,779	21,039	16,193	325,321
1974	16,501	17,143	14,228	15,160	10,559	14,960	13,688	39,943	82,281	27,063	23,444	13,177	288,147
1975	17,071	12,672	11,779	11,749	11,832	10,775	15,691	8,621	18,009	34,827	18,171	14,600	185,797
1976	12,737	13,424	10,472	12,429	9,055	12,407	11,945	9,133	17,711	12,336	17,482	17,303	156,434
1977	17,354	14,245	9,620	8,887	7,509	9,887	13,328	10,864	11,440	30,368	30,882	10,259	174,643
1978	19,492	15,201	14,124	9,887	9,569	12,419	9,173	11,816	22,284	13,984	11,960	13,595	163,504
1979	9,852	14,355	12,115	14,291	8,834	12,252	12,612	15,986	30,959	21,804	17,335	11,999	182,394
1980	10,747	12,488	12,301	16,327	10,632	11,443	15,853	12,011	73,653	41,229	13,879	17,375	247,938
1981	12,047	12,701	10,786	7,805	6,959	10,310	16,197	13,790	17,574	14,958	24,772	17,957	165,856
1982	14,103	14,272	10,408	11,725	8,893	11,442	11,770	10,676	20,637	17,338	15,853	8,112	155,229

Simulated Flows at Colorado River below the Confluence with the Williams Fork River
Proposed Action Alternative
(AF)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1983	9,756	12,711	17,547	11,962	13,168	11,576	18,044	9,196	118,060	182,933	58,875	17,474	481,302
1984	20,416	17,277	19,961	13,803	13,481	13,610	16,999	149,208	300,792	142,838	49,474	18,749	776,608
1985	27,431	21,651	17,229	17,035	13,149	16,025	8,600	45,262	122,041	41,056	16,826	15,331	361,636
1986	18,159	23,762	17,368	15,508	10,090	8,301	15,225	61,183	190,395	83,539	19,714	18,187	481,431
1987	19,752	16,540	14,806	14,322	12,004	13,327	8,033	11,929	21,205	10,935	16,429	9,655	168,937
1988	11,795	15,529	12,800	13,621	12,139	13,101	9,096	12,093	59,565	18,648	29,807	12,107	220,301
1989	10,282	15,217	11,445	10,306	11,023	15,913	8,033	12,048	16,345	16,893	13,231	14,789	155,525
1990	10,831	12,920	11,963	9,813	9,866	15,428	15,276	8,433	24,856	10,928	29,807	18,695	178,816
1991	21,436	16,055	10,563	10,255	8,714	12,919	16,110	10,869	20,538	11,507	13,363	12,537	164,866
1992	12,876	18,381	12,828	11,675	10,962	16,675	13,107	15,160	13,226	14,161	40,857	19,500	199,408
1993	20,149	17,923	11,511	10,304	9,538	12,790	16,852	16,342	33,022	16,405	15,660	20,221	200,717
1994	24,302	19,323	14,618	13,733	11,898	17,748	14,209	13,664	13,780	16,392	19,348	15,859	194,874
1995	15,674	15,239	11,004	10,453	11,093	14,929	17,884	8,457	53,676	71,770	28,355	22,216	280,750
1996	18,991	18,052	14,453	17,911	14,854	15,853	9,280	75,832	118,503	36,078	14,660	19,274	373,741
1997	21,298	18,312	17,887	14,749	20,351	14,188	12,172	77,129	152,997	62,870	36,850	14,969	463,572
1998	17,395	18,172	15,681	16,828	12,681	16,238	13,942	8,713	12,986	18,649	14,243	17,598	183,126
1999	24,331	21,034	11,834	14,288	12,718	20,355	14,604	9,586	33,986	17,755	16,747	24,479	221,717
2000	19,267	14,648	12,572	15,447	14,070	16,199	15,325	44,267	18,747	9,949	30,956	22,576	234,023
2001	14,704	15,207	15,990	13,073	12,397	15,589	13,272	14,196	14,640	12,647	33,420	18,682	193,817
2002	15,820	13,128	10,806	10,319	8,435	11,375	9,294	9,258	8,110	17,305	6,264	6,979	127,093
2003	10,151	12,610	9,875	9,253	9,065	12,800	20,270	33,017	46,319	18,983	27,874	26,294	236,511
2004	15,165	19,209	14,610	13,501	12,708	22,581	16,051	9,812	11,788	14,961	37,783	22,523	210,692
2005	31,721	19,842	13,456	13,337	9,868	11,281	12,290	13,156	27,434	17,629	16,264	14,593	200,871
AVERAGE:	16,481	15,388	13,156	12,468	10,672	13,444	13,932	22,882	51,772	30,844	21,969	16,279	239,288
MINIMUM:	8,394	10,892	7,866	7,328	6,959	8,301	8,033	8,310	8,110	8,796	6,264	6,979	127,093
MAXIMUM:	31,721	23,762	19,961	17,911	20,351	22,581	21,476	149,208	300,792	182,933	58,875	28,688	776,608

Simulated Flows at Middle Fork South Platte River below Montgomery Reservoir
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1950	3	0	0	0	0	0	1	19	43	39	16	9	11
1951	3	0	0	0	0	0	1	19	43	39	16	9	11
1952	3	0	0	0	0	0	1	19	43	39	16	9	11
1953	3	0	0	0	0	0	1	19	43	39	16	9	11
1954	3	0	0	0	0	0	1	19	43	39	42	9	13
1955	3	0	0	0	0	0	1	19	43	39	16	9	11
1956	3	0	0	0	0	0	1	19	43	39	16	9	11
1957	3	0	0	0	0	0	1	19	43	39	16	9	11
1958	3	0	0	0	0	0	1	19	43	39	16	9	11
1959	3	0	0	0	0	0	1	19	43	39	16	9	11
1960	3	0	0	0	0	0	1	19	43	39	16	9	11
1961	3	0	0	0	0	0	1	19	43	39	16	9	11
1962	3	0	0	0	0	0	1	19	43	39	21	9	11
1963	3	0	0	0	0	0	1	19	43	39	16	9	11
1964	3	0	0	0	0	0	1	19	43	39	55	9	14
1965	3	0	0	0	0	0	1	19	43	39	16	9	11
1966	3	0	0	0	0	0	1	19	43	39	16	9	11
1967	3	0	0	0	0	0	1	19	43	39	21	9	11
1968	3	0	0	0	0	0	1	19	43	39	16	9	11
1969	3	0	0	0	0	0	1	19	43	39	16	9	11
1970	3	0	0	0	0	0	1	19	43	39	16	9	11
1971	3	0	0	0	0	0	1	19	43	39	16	9	11
1972	3	0	0	0	0	0	1	19	43	39	16	9	11
1973	3	0	0	0	0	0	1	19	43	39	16	9	11
1974	3	0	0	0	0	0	1	19	43	39	16	9	11
1975	3	0	0	0	0	0	1	19	43	39	16	9	11
1976	3	0	0	0	0	0	1	19	43	39	16	9	11
1977	3	0	0	0	0	0	1	19	43	39	16	9	11
1978	3	0	0	0	0	0	1	19	43	39	30	9	12
1979	3	0	0	0	0	0	1	19	43	39	16	9	11
1980	3	0	0	0	0	0	1	19	43	39	16	9	11
1981	3	0	0	0	0	0	1	19	43	39	43	9	13
1982	3	0	0	0	0	0	1	19	43	39	16	9	11

Simulated Flows at Middle Fork South Platte River below Montgomery Reservoir
Proposed Action Alternative
(CFS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL AVG
1983	3	0	0	0	0	0	1	19	43	39	16	9	11
1984	3	0	0	0	0	0	1	19	43	39	16	9	11
1985	3	0	0	0	0	0	1	19	43	39	16	9	11
1986	3	0	0	0	0	0	1	19	43	39	16	9	11
1987	3	0	0	0	0	0	1	19	43	39	16	9	11
1988	3	0	0	0	0	0	1	19	43	39	16	9	11
1989	3	0	0	0	0	0	1	19	43	39	16	9	11
1990	2	0	0	0	0	0	0	14	76	30	14	7	12
1991	4	0	0	0	0	0	0	15	49	37	17	9	11
1992	1	0	0	0	0	0	1	26	37	81	17	7	14
1993	2	0	0	0	0	0	0	19	57	57	24	8	14
1994	5	0	0	0	0	0	2	25	47	15	11	9	9
1995	5	0	0	0	0	0	0	3	50	83	32	14	16
1996	5	0	0	0	0	0	16	23	62	36	13	8	14
1997	3	0	0	0	0	0	0	23	49	39	25	16	13
1998	6	0	0	0	0	0	0	8	20	40	9	11	8
1999	4	1	0	0	0	0	0	14	43	50	25	12	12
2000	4	0	0	0	0	0	0	31	42	26	16	2	10
2001	0	0	0	0	0	0	0	29	52	35	15	8	12
2002	2	0	0	0	0	0	0	10	13	5	37	4	6
2003	0	0	0	0	0	0	0	25	50	34	13	13	11
2004	3	0	0	0	0	0	0	17	25	21	23	4	8
2005	1	0	0	0	0	0	0	15	23	37	13	7	8
AVERAGE:	3	0	0	0	0	0	1	19	43	39	19	9	11
MINIMUM:	0	0	0	0	0	0	0	3	13	5	9	2	6
MAXIMUM:	6	1	0	0	0	0	16	31	76	83	55	16	16

WATER QUALITY

Appendix C-1 Regulation No. 33 Upper Colorado River Basin

Appendix C-2 Regulation No. 38 South Platte River Basin

Appendix C-1 Regulation No. 33 Upper Colorado River Basin

REGULATION NO. 33 UPPER COLORADO RIVER BASIN
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION:12 BASIN: Upper Colorado River Stream Segment Description	Desig	Classifications	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
1. Mainstem of the Colorado River, including all tributaries, wetlands, lakes and reservoirs, within Rocky Mountain National Park, or which flow into Rocky Mountain National Park.	OW	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
2. Mainstem of the Colorado River, including all tributaries, wetlands, lakes, and reservoirs within, or flowing into Arapahoe National Recreation Area, including Grand Lake, Shadow Mountain Lake and Lake Granby.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
3. Mainstem of the Colorado River from the outlet of Lake Granby to the confluence with Roaring Fork River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
4. All tributaries to the Colorado River, including all wetlands, from the outlet of Lake Granby to the confluence with the Roaring Fork River, which are on National Forest lands, except for those tributaries included in Segments 1 and 2, and specific listings in Segments 5, 9 and 10.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
5. All lakes and reservoirs tributary to the Colorado River from the boundary of Rocky Mountain National Park and Arapahoe National Recreation Area to a point immediately below the confluence with the Roaring Fork River which are not on National Forest lands, except for specific listing in Segments 1 and 9.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
6a. All tributaries to the Colorado River, including all wetlands, from the boundary of Rocky Mountain National Park and Arapahoe National Recreation Area to a point immediately below the confluence with the Blue River which are not on National Forest lands, except for specific listings in Segments 6b, 6c, 7b, 8 and 10.		Aq Life Cold 1 Recreation 2 Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 NO_2=0.05 B=0.75 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrIII(ch)=TVS CrVI(ac/ch)=TVS	Cu(ac/ch)=TVS Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS)	Hg(ch)=0.01(tot Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
6b. Mainstem of un-named tributary from the headwaters (Sec 32, T3N, R76W) to Willow Creek Reservoir Road (Section 8, T2N, R76W).	UP	Aq Life Cold 2 Recreation 2 Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	CN=0.2	S=0.002 B=0.75 NO_2=0.05 NO_3=10	As(ac)=100 Cd(ch)=10 CrIII(ch)=100 CrVI(ch)=100	Cu(ac)=200 Pb(ch)=100 Mn(ch)=200 Ni(ac/ch)=200	Se(ch)=20 Zn(ch)=2000	All metals are Trec unless otherwise noted.

REGULATION NO. 33 UPPER COLORADO RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION:12 BASIN: Upper Colorado River	Desig	Classifications	NUMERIC STANDARDS						TEMPORARY MODIFICATIONS AND QUALIFIERS
Stream Segment Description			PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			
6c. Mainstem of un-named tributary to Willow Creek from the Willow Creek Reservoir Rd (Sec. 8, T2N, R76W) to the confluence Willow Creek (Sec. 17, T2N, R76W).	UP	Aq Life Cold 2 Recreation 2 Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05	As(ch)=100(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS	Cu(ac/ch)=TVS Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
7a. All tributaries to the Colorado River, including all wetlands, from a point immediately above the confluence with the Blue River to a point immediately below the confluence with the Roaring Fork River, which are not on National Forest lands, except for specific listings in Segment 7b and in the Blue River, Eagle River, and Roaring Fork River basins.		Aq Life Cold 1 Recreation 2 Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
7b. Mainstem of Muddy Creek, including all tributaries, from the outlet of Wolford Mountain Reservoir to the confluence with the Colorado River; mainstems of Rock Creek, Deep Creek, Sheephorn Creek, Sweetwater Creek and the Piney River, including all tributaries, from their sources to their confluences with the Colorado River, which are not on National Forest lands.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS(dis) Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
8. Mainstem of the Williams Fork River, including all tributaries and wetlands from the source to the confluence with the Colorado River, except for those tributaries listed in segment 9.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100m	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS' Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Point of compliance for Fe and Mn at Aspen Canyon Ranch well.
9. All tributaries to the Colorado and Fraser Rivers, including all wetlands, lakes and reservoirs, within the Never Summer, Indian Peaks, Byers, Eagles Nest and Flat Tops Wilderness Areas.	OW	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
10. Mainstem of the Fraser River, including all tributaries and wetlands from the source to the confluence with the Colorado River, except for those tributaries included in Segment 9.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	

REGULATION NO. 33 UPPER COLORADO RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION:12 BASIN: Blue River	Desig	Classifications	NUMERIC STANDARDS						TEMPORARY MODIFICATIONS AND QUALIFIERS
Stream Segment Description			PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			
1. Mainstem of the Blue River from the source to Dillon Reservoir, except for specific listing in Segments 2a and 2b.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
2a. Mainstem of the Blue River from the confluence with French Gulch to a point one half mile below Summit County Road 3.	UP	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=4 CrIII(ac)=50(Trec) CrIII(ch)=50 CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=$e^{(1.25(ln(hard))+0.7[illegible])}$	
2b. Mainstem of the Blue River from a point one half mile below Summit County Road 3 to the confluence with the Swan River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=1/2$e^{(1.0166(ln(hard))-3.1[illegible])}$ CrIII(ac)=50(Trec) CrIII(ch)=50 CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=$e^{(0.9805(ln(hard))+1.402)}$	
3. Dillon Reservoir, including all direct tributaries and all tributaries, wetlands, lakes and reservoirs in the Blue River drainage above Dillon Reservoir, except for specific listings in Segments 1, 2, 5, 6, 10, 11, 12, 13 and 14.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Special standards for Dillon Reservoir only: Total Phosphorus as P=0.0074 mg/l in the top 15 meters of the water column for the months of July, August, September & October.
4. Deleted.									
5. Mainstem of Soda Creek from the source to Dillon Reservoir.		Aq Life Cold 1 Recreation 1a Agriculture Water Supply	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.0-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ch)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
6. Mainstem of the Snake River, including all tributaries and wetlands from the source to Dillon Reservoir, except for specific listings in Segments 7, 8 and 9.	UP	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Temporary modifications: type iii Cd(ch)=2.3 Cu(ch)=17 no Zn(ac) Zn(ch)=654 Effective until 2/28/09.
7. Mainstem of Peru Creek, including all tributaries and wetlands from the source to the confluence with the Snake River, except for specific listing in Segment 8.	UP	Aq Life Cold 1 Recreation 2	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 NO_2=0.05	As(ch)=100(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Temporary modifications: no Cd(ac) Cd(ch)=5.2 Cu(ch)=79 Pb(ch)=6.7 no Zn(ac) Zn(ch)=1,380 Effective until 2/28/09.

REGION:12 BASIN: Blue River	Desig	Classifications	NUMERIC STANDARDS					TEMPORARY MODIFICATIONS AND QUALIFIERS
Stream Segment Description			PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l		
8. Mainstem of Keystone Gulch, including all tributaries and wetlands from the source to the confluence with the Snake River. Mainstem of Chihuahua Creek including all tributaries, and wetlands from the source to the confluence with Peru Creek. Mainstem of the North Fork of the Snake River, including all tributaries and wetlands from the source to the confluence with the Snake River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
9 Mainstem of Deer Creek, including all tributaries and wetlands from the source to the confluence with the Snake River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
10. Mainstem of French Gulch including all tributaries and wetlands from the source to a point 1.5 miles below Lincoln.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
11. Mainstem of French Gulch from a point 1.5 miles below Lincoln to the confluence with the Blue River.	UP	Aq Life Cold 1 Recreation 1b Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=325/100ml E.Coli=205/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05	Ac(ch)=100(Trec) Cd(ac/ch)=existing quality CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac)=TVS	Cu(ch)=TVS Fe(ch)=1000(Trec) Pb(ac/ch)=existing quality Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=existing quality	
12. Mainstem of Illinois Gulch and Fredonia Gulch from their source to their confluence with the Blue River.	UP	Aq Life Cold 2 Recreation 1b Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=325/100ml E.Coli=205/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Temporary Modification: Zn(ch)=850 Effective until 2/28/09 for Illinois Gulch
13. Mainstem of Tenmile Creek from the Climax Parshall Flume to a point immediately above the confluence of West Tenmile Creek and all tributaries and wetlands from the source of Tenmile Creek to a point immediately above the confluence with West Tenmile Creek, except for the specific listing in Segment 15.		Aq Life Cold 1 Recreation 1b Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=325/100ml E.Coli=205/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05	As(ch)=100(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS Cr(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS	Cu(ac/ch)=TVS Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
14. Mainstem of Tenmile Creek, including all tributaries and wetlands from a point immediately above the confluence with West Tenmile Creek to Dillon Reservoir, except for the specific listing in Segment 15.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
15. Mainstem of Clinton Creek from the source to the confluence with Tenmile Creek.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	

REGULATION NO. 33 UPPER COLORADO RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION:12 BASIN: Blue River Stream Segment Description	Desig	Classifications	NUMERIC STANDARDS: PHYSICAL and BIOLOGICAL	NUMERIC STANDARDS: INORGANIC mg/l		NUMERIC STANDARDS: METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
16. All tributaries to the Blue River, including all wetlands, lakes and reservoirs, within the Eagles Nest and Ptarmigan Peak Wilderness Areas.	OW	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
17 Mainstem of the Blue River from the outlet of Dillon Reservoir to the confluence with the Colorado River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
18. All tributaries to the Blue River, including all wetlands, from the outlet of Dillon Reservoir to the outlet of Green Mountain Reservoir, except for the specific listing in Segment 16.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
19. All tributaries to the Blue River, including all wetlands, from the outlet of Green Mountain Reservoir to the confluence with the Colorado River, except for specific listings in Segment 20.		Aq Life Cold 1 Recreation 2 Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
20. Mainstems of Elliot Creek and Spruce Creek including all tributaries and wetlands, from their sources to the confluence with the Blue River.		Aq Life Cold 1 Recreation 2 Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	

REGULATION NO. 33 UPPER COLORADO RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION:12 BASIN: **Eagle River** Stream Segment Description	Desig	Classifications	NUMERIC STANDARDS: PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
1. All tributaries and wetlands to the Eagle River system within the Gore Range - Eagles Nest Wilderness Area and Holy Cross Wilderness Area.	OW[1]	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
	[1] Consistent with the provisions of section 25-8-104 C.R.S. the OW designation shall not apply with respect to the Homestake Water Project of the Cities of Aurora and Colorado Springs.								
2. Mainstem of The Eagle River from the source to the compressor house bridge at Belden.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l Ph=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
3. All tributaries to the Eagle River, including wetlands, from the source to the compressor house bridge at Belden, except for the specific listing in Segment 4 and those waters included in Segment 1.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
4. Mainstem of Homestake Creek from the confluence of the East Fork to the confluence with the Eagle River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
5a Mainstem of the Eagle River from a point immediately above the compressor house bridge at Belden to a point immediately above the Highway 24 Bridge near Tigiwon Road.	9/30/00 Baseline does not apply	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ch)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS	Hg(ch)=0.01(tot) Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac)=TVS Zn(ch)=106	Seasonal Temporary Modifications type iii effective through 1/1/09. March 1 through April 30 Zn(ac)=472 Zn(ch)=410 May 1 through February 29 Zn(ac)=178 Zn(ch)=166
5b. Mainstem of the Eagle River from a point immediately above the Highway 24 Bridge near Tigiwon Road to a point immediately above the confluence with Martin Creek.	9/30/00 Baseline does not apply	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ch)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS	Hg(ch)=0.01(tot) Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac)=TVS Zn(ch)=106	Seasonal Temporary Modifications type iii effective through 1/1/09. March 1 through April 30 Zn(ac)=332 Zn(ch)=310 May 1 through February 29 Zn(ac)=153 Zn(ch)=123

REGULATION NO. 33 UPPER COLORADO RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION:12 BASIN: Eagle River Stream Segment Description	Desig	Classifications	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
5c. Mainstem of the Eagle River from a point immediately above Martin Creek to a point immediately above the confluence with Gore Creek.	9/30/00 Baseline does not apply	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ch)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS	Hg(ch)=0.01(tot) Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac)=TVS Zn(ch)=106	Seasonal Temporary Modifications type iii effective through 1/1/09. March 1 through April 30 Zn(ac)=275 Zn(ch)=257 May 1 through February 29 Zn(ac)=127 Zn(ch)=TVS
6. All tributaries to the Eagle River, including all wetlands, from the compressor house bridge at Bolden to a point immediately below the confluence with Lake Creek, except for the specific listings in Segments 1, 7 and 8.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH 3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
7a. Mainstem of Cross Creek from the source to a point immediately below the Minturn Middle School, except for those waters included in Segment 1.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ch)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ch)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
7b. Mainstem of Cross Creek from a point immediately below the Minturn Middle School to the confluence with the Eagle River, except for those waters included in Segment 1.	9/30/00 Baseline does not apply	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Seasonal Temporary Modifications type iii effective through 1/1/09. March 1 through April 30 Zn(ac)=254 Zn(ch)=193 May 1 through February 29 Zn(ac)=120 Zn(ch)=118

REGULATION NO. 33 UPPER COLORADO RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION:12 BASIN: Eagle River Stream Segment Description	Desig	Classifications	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
8. Mainstem of Gore Creek from the confluence with Black Gore Creek to the confluence with the Eagle River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
9. Mainstem of the Eagle River from Gore Creek to the confluence with the Colorado River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
10. All tributaries to the Eagle River, including all wetlands, from a point immediately below the confluence with Lake Creek to the confluence with the Colorado River, except for specific listings in Segments 11 and 12, and those waters included in Segment 1.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
11. Mainstem of Alkali Creek from the source to the confluence with the Eagle River; mainstem of Milk Creek from the source to the confluence with the Eagle River.	UP	Aq Life Cold 2 Recreation 1b Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=325/100ml E.Coli=205/100ml	CN(ac)=0.2 NO_2(ac)=10 NO_3(ac)=100	B=0.75 Cl=250	As(ch)=100(Trec) Be(ch)=100(Trec) Cd(ch)=10(Trec) CrIII(ch)=100(Trec)	CrVI(ch)=100(Trec) Cu(ch)=200(Trec) Pb(ch)=100(Trec) Mn(ch)=200(Trec)	Ni(ch)=200(Trec) Se(ac/ch)=TVS Zn(ch)=2000(Trec)	
12. Mainstem of Brush Creek, from the source to the confluence with the Eagle River, including the East and West Forks.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	

REGULATION NO. 33 UPPER COLORADO RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION:12 BASIN: Roaring Fork River		Desig	Classifications	NUMERIC STANDARDS							TEMPORARY MODIFICATIONS AND QUALIFIERS
Stream Segment Description				PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l				
1.	All tributaries to the Roaring Fork River system, including all wetlands, lakes and reservoirs, within the Maroon Bells/Snowmass, Holy Cross, Raggeds, Collegiate Peaks and the Hunter/Fryingpan Wilderness Areas.	OW	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
2.	Mainstem of the Roaring Fork River, including all tributaries and wetlands, from the source to a point immediately below the confluence with Hunter Creek, except for those tributaries included in Segment 1.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
3a.	Mainstem of the Roaring Fork River, including all tributaries and wetlands, from a point immediately below the confluence with Hunter Creek, to the confluence with the Colorado River except for those tributaries included in Segment 1 and specific listings in Segments 3b through 10.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
3b.	Mainstem of Red Canyon and all tributaries and wetlands from the source to the confluence with the Roaring Fork River, except for Landis Creek from its source to the Hopkins Ditch Diversion.	UP	Aq Life Cold 2 Recreation 2 Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
4.	Mainstem of Brush Creek from the source to the confluence with the Roaring Fork River.	UP	Aq Life Cold 1 Recreation 1a Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05	As(ch)=100(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
5.	Mainstem of the Fryingpan River from the source to the confluence with the North Fork.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
6.	Mainstem of the Fryingpan River from the confluence with the North Fork to the confluence with the Roaring Fork River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
7.	All tributaries to the Fryingpan River system, including all wetlands, except for those tributaries included in Segment 1.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	

REGULATION NO. 33 UPPER COLORADO RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION:12 BASIN: Roaring Fork River	Desig	Classifications	NUMERIC STANDARDS							TEMPORARY MODIFICATIONS AND QUALIFIERS
Stream Segment Description			PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l				
8. Mainstem of the Crystal River, including all tributaries and wetlands, from the source to the confluence with the Roaring Fork River, except for specific listings in Segments 1, 9 and 10.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS		
9. Mainstem of Coal Creek including all tributaries and wetlands from the source to the confluence with the Crystal River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS		
10. Mainstem of Thompson Creek including all tributaries and wetlands from the source to the confluence with the Crystal River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS		

REGULATION NO. 33 UPPER COLORADO RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION:12 BASIN: North Platte River Stream Segment Description	Desig	Classifications	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
1. All tributaries to the North Platte and Encampment Rivers, including all wetlands, lakes and reservoirs, within the Mount Zirkel, the Never Summer, and the Platte River Wilderness Areas.	OW	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
2. Mainstem of the Encampment River, including all tributaries, wetlands, lakes and reservoirs from the source to the Colorado/Wyoming border, except for those tributaries included in Segment 1.		Aq Life Cold 1 Recreation 1b Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=325/100ml E.Coli=205/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
3. Mainstem of the North Platte River from the confluence of Grizzly Creek and Little Grizzly Creek to the Colorado/Wyoming border.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
4. All tributaries to the North Platte River system, including all wetlands, lakes and reservoirs, except for those tributaries included in Segment 1, and specific listings in Segments 5, 6 and 7.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ch)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrIII(ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Mn(ch)=WS Mn(ac/ch)=TVS Pb(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
5a. Mainstem of the Michigan River from the source to the Colorado State Forest boundary.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrIII(ch)=TVS CrVI(ac/ch)=TVS	Cu(ac/ch)=TVS Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Mn(ch)=WS Mn(ac/ch)=TVS Pb(ac/ch)=TVS	Hg(ch)=0.01(tot) Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
5b. Mainstem of the Michigan River from the Colorado State Forest boundary to the confluence with the North Platte River.		Aq Life Cold 1 Recreation 2 Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ch)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=TVS(Trec) CrIII(ch)=TVS CrVI(ac/ch)=TVS	Cu(ac/ch)=TVS Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Mn(ch)=WS Mn(ac/ch)=TVS Pb(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
6. Mainstem of Pinkham Creek from the Routt National Forest boundary to the confluence with the North Platte River.		Aq Life Cold 1 Recreation 2 Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=100	As(ch)=100(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
7. Mainstem of Government Creek from the boundary of the Colorado State Forest to the confluence with the Canadian River. Mainstem of Spring Creek from the source to the confluence with Illinois River.	UP	Aq Life Cold 2 Recreation 2 Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=100	As(ch)=100(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Water + Fish organics apply

REGULATION NO. 33 UPPER COLORADO RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION:12 BASIN: Yampa River Stream Segment Description		Desig	Classifications	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
1.	All tributaries to the Yampa River, including all wetlands, lakes and reservoirs, which are within the Mount Zirkel, Flat Tops and Sarvis Creek Wilderness Areas.	OW	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
2a	Mainstem of the Yampa River from the confluence with Wheeler Creek to the confluence with Elkhead Creek, except for segment 2b.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
2b.	All lakes and reservoirs tributary to the Yampa River from the source to the confluence with Elkhead Creek, except for those listed in Segment 1. All lakes and reservoirs tributary to Elkhead Creek from the source to the confluence with the Yampa River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
3.	All tributaries to the Yampa River, including all wetlands, from the source to the confluence with Elk River, except for specific listings in Segments 1, 4, 5, 6, 7, 8, 13 and 19. Mainstem of the Bear River, including all tributaries and wetlands from the boundary of the Flat Tops Wilderness Area to the confluence with the Yampa River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
4.	Mainstem of Little White Snake Creek from the source to the confluence with the Yampa River.	UP	Aq Life Cold 2 Recreation 2 Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	CN=0.005 S=0.002 B=0.75 NO_2=0.05	NO_3=10 Cl=250 SO_4=WS	As(ac)=50 Cd(ac)=5 CrIII(ac)=50 CrVI(ac)=50 Cu(ch)=200	Fe(ch)=WS(dis) Pb(ac)=50 Mn(ch)=WS Mn(ac/ch)=TVS Hg(ac)=2.0	Ni(ch)=100 Se(ch)=20 Ag(ac)=100 Zn(ac/ch)=2000	All metals are Trec unless otherwise noted.
5.	Mainstem of Chimney Creek, including all tributaries and wetlands, which are not on National Forest lands, from the source to the confluence with the Yampa River.		Aq Life Cold 1 Recreation 1b Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=325/100ml E.Coli=205/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05	As(ch)=100(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS	Cu(ac/ch)=TVS Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
6.	Mainstem of Oak Creek, including all tributaries and wetlands, from the source to the point of discharge of the Oak Creek wastewater treatment plant.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
7.	Mainstem of Oak Creek, including all tributaries and wetlands, from the point of discharge of the Oak Creek wastewater treatment plant to the confluence with the Yampa River.		Aq Life Cold 1 Recreation 1b Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=325/100ml E.Coli=205/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05	As(ch)=100(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS	Cu(ac/ch)=TVS Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
8.	Mainstem of the Elk River including, all tributaries and wetlands, from the source to the confluence with the Yampa River, except for those tributaries included in Segment 1.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
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10.	Deleted									
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REGULATION NO. 33 UPPER COLORADO RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION:12 BASIN: Yampa River		Desig	Classifications	NUMERIC STANDARDS						TEMPORARY MODIFICATIONS AND QUALIFIERS
Stream Segment Description				PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			
12.	All tributaries to the Yampa River, including all wetlands, from the confluence with the Elk River to the confluence with Elkhead Creek, which are not on National Forest lands, except for specific listings in Segments 13a, 13b, 13c, 13d and 13e.	UP	Aq Life Cold 2 Recreation 2 Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	CN(ac)=0.2	S=0.002 B=0.75 NO_2=0.05 NO_3=100	As(ac)=100 Cd(ch)=10 CrIII(ch)=100 CrVI(ch)=100 Cu(ac)=200	Pb(ch)=100 Mn(ch)=200 Ni(ch)=200	Se(ch)=20 Zn(ch)=2000	All metals are Trec unless otherwise noted.
13a.	Mainstem of Trout Creek, including all tributaries and wetlands, from the source to the confluence with the Yampa River, which are not on National Forest lands, except for specific listings in Segments 13b and 13c.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Temporary modification. NH_3(ac/ch)=TVS(old) (Type I). Expiration date of 12/31/2011.
13b.	Mainstem of Foidel Creek, including all tributaries and wetlands. Mainstem Fish Creek, including all tributaries from County Road 27 downstream to the confluence with Trout Creek. Middle Creek and all tributaries, from County Road 27 downstream to the confluence with Trout Creek.		Aq Life Cold 1 Recreation 1a Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05	As(ch)=100(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Fish Creek Fe(ch)=1600(Trec) Foidel Creek and Middle Creek Pb(ac/ch)=TVS	Mn(ac/ch)=TVS Hg(ch)=0.01(tot) Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
13c.	Mainstem of Trout Creek from headgate of Spruce Hill Ditch (approximately 2,500 feet north of where County Road 27 crosses Trout Creek) to its confluence with Fish Creek. All tributaries to Trout Creek from the headgate of Spruce Hill Ditch (approximately 2,500 feet north of where County Road 27 crosses Trout Creek) to County Road 179 except for specific listings in 13b.		Aq Life Cold 1 Recreation 1a Agriculture June through February Water Supply	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 June through February NO_3=10 Cl=250 SO_4=WS	As(ch)=100(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS June through February As(ac)=50(Trec) CrIII(ac)=50(Trec)	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(tot) June through February Fe(ch)=WS(dis) Mn(ch)=WS	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
13d.	Mainstem of Dry Creek, including all tributaries and wetlands, from the source to the confluence with the Yampa River.	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05	As(ac)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
13e.	Mainstems of Sage Creek and Grassy Creek, including all tributaries and wetlands, from their sources to the confluence with the Yampa River.	UP	Aq Life Warm 2 Recreation 2 Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05	As(ac)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
14.	Mainstem of Elkhead Creek, including all tributaries and wetlands, from the boundary of the National Forest lands, to the confluence with the Yampa River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
15.	Deleted.									
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REGULATION NO. 33 UPPER COLORADO RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION:12 BASIN: Yampa River	Desig	Classifications	NUMERIC STANDARDS							TEMPORARY MODIFICATIONS AND QUALIFIERS
Stream Segment Description			PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l				
18. Mainstem of the Little Snake River, including all tributaries and wetlands, from the Routt National Forest boundary to the Colorado/Wyoming border.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS		
19. All tributaries to the Little Snake River, including all wetlands, lakes and reservoirs, which are on National Forest lands in Routt County.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch) Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS		
20. All tributaries to the Yampa River, including wetlands, above the confluence with Elkhead Creek that are within National Forest boundaries.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS		

Appendix C-2 Regulation No. 38 South Platte River Basin

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 3 AND 4 BASIN: UPPER SOUTH PLATTE RIVER Stream Segment Description	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
1a. Mainstem of the South Platte River from the source of the South and Middle Forks to a point immediately above the confluence with the North Fork of the South Platte River, including all mainstem reservoirs.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5 - 9.0 F.Col=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
1b. All tributaries to the South Platte River, including lakes, reservoirs and wetlands within the Lost Creek and Mt. Evans Wilderness Areas.	OW	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Col =200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
2a. All tributaries to the South Platte River system, including all lakes, reservoirs and wetlands from the headwaters of the South and Middle Forks to a point immediately below the confluence with Tarryall Creek except for specific listings in Segment 1b, 2b and c.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Col=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
2b. Mainstem of Mosquito Creek from the confluence with South Mosquito Creek to its confluence with the Middle Fork of the South Platte River.	UP	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Col=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ch)=220	*Temporary modification* Zn(ch)= 283µg/l (dis) based on uncertainty. Expiration date 2/28/07
2c. South Mosquito Creek from the source to confluence with Mosquito Creek and No Name Creek from the source to the confluence with South Mosquito Creek.	UP	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Col=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ch)=280	Temporary modifications Cd(ch)=3.3 µg/l (dis) Zn(ch)=400 µg/l (dis) based on uncertainty. Expiration date 2/28/07
3. All tributaries to the South Platte River, including all lakes, reservoirs and wetlands from a point immediately below the confluence with Tarryall Creek to a point immediately above the confluence with the North Fork of the South Platte River, except for specific listings in Segment 1b.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Col=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
4. Mainstem of the North Fork of the South Platte River, including all tributaries, lakes, reservoirs and wetlands from the source to the confluence with the South Platte River, except for specific listings in Segments 1b, 5a, 5b, and 5c.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Col=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
5a. Mainstem of Geneva Creek from the source to the confluence with Scott Gomer Creek.		Aq Life Cold 1 Recreation 1a Agriculture	D.O. =6.0 mg/l D.O. (sp)=7.0 mg/l pH = 3.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 NO_2=0.05	As(ch)=100(Trec) Cd(ch)=2 CrIII(ch)=100 CrVI(ch)=25 Cu(ch)=18(dis)	Fe(ch)=1200 Pb(ch)=4 Mn(ch)=530(dis) Hg(ch)=0.05 Ni(ch)=50	Se(ch)=4.6 Ag(ch)=1 Zn(ch)=190(dis)	All Metals Trec unless otherwise noted

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 3 AND 4 BASIN: UPPER SOUTH PLATTE RIVER Stream Segment Description	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
5b. Mainstem of Geneva Creek from the confluence with Scott Gomer Creek to the confluence with the North Fork of the South Platte River, all tributaries of Geneva Creek including lakes, reservoirs and wetlands from source to confluence with the North Fork of the South Platte River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011	CN=0.005 S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
5c. Mainstem of Gooseberry Gulch and all tributaries from source to confluence with Elk Creek.	UP	Aq Life Cold 2 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Temporary modification: NH_3(ac/ch)=Existing Quality(Type iii). Expiration date of 12/31/2010.
6a. Mainstem of the South Platte River from a point immediately above the confluence with the North Fork of the South Platte River to the inlet of Chatfield Reservoir.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
6b. Chatfield Reservoir.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Mean total phosphorous P=0.027 mg/L measured throughout the water column in Chatfield Reservoir only for months of July, August and September
6c. Mainstem of the South Platte River from the outlet of Chatfield Reservoir to Bowles Avenue.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS*	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac)=TVS Mn(ch)=90µg/l(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	*Cu (ac/ch) = TVS *2.7 below the confluence with Marcy Gulch to Bowles Avenue
7. All tributaries to the South Platte River, including all lakes, and reservoirs and wetlands from a point immediately below the confluence with the North Fork of the South Platte River to the outlet of Chatfield Reservoir except for specific listings in Segments 8, 9, 10, 11, 12 and 13.	UP	Aq Life Cold 2 Recreation 1a Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05	As(ch)=100(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS Cr III(ac)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
8. Mainstems of East and West Plum Creek from the source to the boundary of National Forest lands, including all tributaries, lakes, reservoirs and wetlands within the Plum Creek drainage which are on National Forest Lands, except for the specific listing in Segments 9 and 10b.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
9. Mainstem of Bear Creek, including all tributaries, lakes, and reservoirs, and wetlands from the source to the inlet of Perry Park Reservoir (Douglas County).		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. =6.0 mg/l D.O. (sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
10a. Mainstem of East and West Plum Creek and Plum Creek from the boundary of National Forest lands to Chatfield Reservoir, except for specific listings in Segment 10b.	UP	Aq Life Warm 1 Recreation 1a Water Supply Agriculture	D.O. = 5.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS*	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis)	Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	*Cu (ac/ch) = TVS *2.4 on East Plum Creek and Plum Creek below the Plum Creek Wastewater Authority Discharge. Temporary modification: NH_3(ac/ch)=TVS(old)(Type i) Expiration date of 12/31/2011

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 2,3 & 4 BASIN: UPPER SOUTH PLATTE RIVER Stream Segment Description	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
10b. Mainstem of West Plum Creek including all tributaries, lakes, reservoirs, and wetlands from its source to Perry Park Pond		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
11a. All tributaries to the East Plum Creek system, including all lakes, reservoirs and wetlands which are not on national forest lands	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
11b. All tributaries to the West Plum Creek system, including all lakes, reservoirs and wetlands, which are not on national forest lands, except for specific listings in Segments 9 and 12	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modification NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2011
12. Mainstem of Garber Creek and Jackson Creek from the boundary of National Forest lands to the confluence with West Plum Creek		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
13. Mainstem of Deer Creek, including the North and South Forks, from the source to Chatfield Reservoir		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
14. Mainstem of the South Platte River from Bowles Avenue in Littleton, Colorado, to the Burlington Ditch diversion in Denver, Colorado		Aq Life Warm 1 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS*2.8 Fe(ch)=WS(dis)	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=190(dis) Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modification NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2011
15. Mainstem of the South Platte River from the Burlington Ditch diversion in Denver, Colorado, to a point immediately below the confluence with Big Dry Creek	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.* pH = 6.5-9.0** F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=1.0 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS*2.3 Fe(ch)=WS(dis)	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=400(dis) Mn(ac/ch)=TVS Hg(ac)=2.4(dis) Hg(ch)=0.4(dis)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	*See attached table for site-specific Dissolved Oxygen and Ammonia standards. **pH=6.0-9.0 from 64th Ave. downstream 2 miles Temporary modifications NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2014
16a. Mainstem of Sand Creek from the confluence of Murphy and Coal Creek in Arapahoe County to the confluence with the South Platte River	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS*	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac)=TVS Se(ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modifications Se(ch)= 19.3 µg/l Se(ac)=no acute standard type iii Expiration date of 2/28/10. NH_3(ac/ch)=TVS(old)(Type i) Expiration date of 12/31/2011 *Cu (ac/ch) = TVS *2.6 below the Sand Creek Water Reuse Facility outfall

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 2 3 & 4 BASIN: UPPER SOUTH PLATTE RIVER	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
16b. Aurora Reservoir		Aq Life Warm 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
16c. All tributaries to the South Platte River, including all lakes, reservoirs and wetlands, from the outlet of Chatfield Reservoir to a point immediately below the confluence with Big Dry Creek, except for specific listings in the subbasins of the South Platte River, and in Segments 16a, 16b, 16d, 16e, 16f, 16g, 17a, 17b and 17c	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Fish Ingestion Organics Temporary modifications East & West Toll Gate Creeks, Toll Gate Creek Se(ch)=18ug/l(dis) Se(ac)=no acute standard type iii Expiration date of 2/28/10 NH_3(ac/ch)=TVS(old)(Type i) Expiration date of 12/31/2011
16d. Second Creek from the source to the O'Brian Canal	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O. (ch)=3.3 mg/l[1] pH=6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	[1] 15th percentile of D.O. measurements collected between 6:30 a.m. and 6:30 p.m.
16e. Third Creek from the source to the O'Brian Canal	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O. (ch)=4.0 mg/l[1] pH=6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	[1] 15th percentile of D.O. measurements collected between 6:30 a.m. and 6:30 p.m.
16f. Barr Lake Tributary from the source to the Denver Hudson Canal	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O. (ch)=[1] pH=6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	[1] When water is present D.O. concentrations shall be maintained at levels that protect classified uses.
16g. Marcy Gulch from, including all lakes, reservoirs, and wetlands from the source to the confluence with the South Platte	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E. Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS*	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	*Cu (ac/ch) = TVS *2.4 below the Centennial Wastewater Treatment Facility outfall Temporary modification NH_3(ac/ch)=TVS(old)(Type i) Expiration date of 12/31/2011
17a. Washington Park Lakes, City Park Lake, Rocky Mountain Lake, Berkely Lake	UP	Aq Life Warm 1 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
17b. Sloan's Lake		Aq Life Warm 1 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
17c. Bowles Lake, a.k.a. Patrick Reservoir or Bow Mar Lake		Aq Life Warm 1 Recreation 1a Agriculture	D.O.=5.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	Al(ac/ch)=TVS As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	

UPPER SOUTH PLATTE RIVER SEGMENT 15

Site-Specific Minimum Dissolved Oxygen and Ammonia Standards

UNDERLYING STANDARDS

Dissolved Oxygen

Early Life Stage Protection Period (April 1 through July 31)	
1-Day[1,5,6]	3.0 mg/L (acute)
7-Day Average [1,2,4]	5.0 mg/L
Older Life Stage Protection Period (August 1 through March 31)	
1-Day [1,5]	2.0 mg/L (acute)
7-Day Mean of Minimums[1,3]	2.5 mg/L
30-Day Average [1,2]	4.5 mg/L

TEMPORARY MODIFICATION

During the period until October 31, 2001, the Segment 15 dissolved oxygen standards from 88th Avenue north to the end of the Segment shall be the currently existing ambient conditions as monitored in 1992, 1993, and 1994 by the Division and by the Metro District. Beginning November 1, 2001, the standards shall apply to all sections of Segment 15 south of the Brighton Ditch diversion. The standards north of the Brighton Ditch diversion shall continue to be the ambient conditions existing in 1992, 1993, and 1994. Beginning November 1, 2004, the standards shall apply to all sections of Segment 15.

Footnotes

1 For the purposes of determining compliance with the standards, dissolved oxygen measurements shall only be taken in the flowing portion of the stream at mid-depth, and at least six inches above the bottom of the channel. All sampling protocols and test procedures shall be in accordance with procedures and protocols approved by the Division.

2 A minimum of four independent daily means must be used to calculate the average for the 7-Day Average standard. A minimum of eight independent daily means must be used to calculate the average for the 30-Day Average standard. The four days and the eight days must be representative of the 7-Day and the 30-Day periods respectively. The daily means shall be the mean of the daily high and low values. In calculating the mean values, the dissolved oxygen saturation value shall be used in place of any dissolved oxygen measurements which exceed saturation.

3 The 7-Day Mean minimum is the average of the daily minimums measured at the location on each day during any 7-Day period.

4 North of the Lupton Bottoms Ditch diversion, the ELS 7-Day average standards for the period July 1 – June 31 shall be 4.6 mg/L.

5 During a 24 hour day dissolved oxygen levels are likely to be lower during the nighttime when there is no photosynthesis. The dissolved oxygen levels should not drop below the acute standard (ELS acute standard of 3.0 mg/L or the OLS standards of 2.0 mg/L). However, if during the ELS period multiple measurements are below 3.0 mg/L during the same nighttime period, the multiple measurements shall be considered a single exceedance of the acute standard. For measurements below 2.0 mg/L during either the ELS or the OLS periods, each hourly measurement below 2.0 mg/L shall be considered an exceedance of the acute standards.

6 In July, the dissolved oxygen level in Segment 15 may be lower than the 3.0 mg/L acute standard for up to 14 exceedances in any one year and up to a total of 21 exceedances in three years before there is a determination that the acute dissolved oxygen standards is not being met. Exceedances shall be counted as described in Footnote 5.

Ammonia:

Early Life Stage Protection Period (April 1 through July 31)

Ammonia	Warm Water = (mg/l as N)Total

$$acute = \frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$$

$$chronic\,(Apr1-July31) = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) * MIN\left(2.85,\ 1.45 * 10^{0.028(25-T)}\right)$$

$$chronic\,(Aug1-Mar31) = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) * 1.45 * 10^{0.028*(25-MAX(T,7))}$$

NH_3 = old TVS	Warm Water Acute = 0.62/FT/FPH/2$^{(4\ \text{old})}$ in mg/ (N)

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 3 AND 4 BASIN: CHERRY CREEK Stream Segment Description	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
1. Mainstem of Cherry Creek from the source of East and West Cherry Creek to the inlet of Cherry Creek Reservoir	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS Fe(ch)=WS(dis)	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
2. Cherry Creek Reservoir		Aq Life Warm 1 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml Season mean chlorophyll a = 15 ug/l measured in the upper three meters of the water column for the months of July through September	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
3. Mainstem of Cherry Creek from the outlet of Cherry Creek Reservoir to the confluence with the South Platte River	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS Fe(ch)=WS(dis)	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modification NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2011
4. All tributaries to Cherry Creek, including all lakes, reservoirs and wetlands, from the source of East and West Cherry Creeks to the confluence with the South Platte River, except for specific listings in Segment 2	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modification NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2011

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 3 BASIN: BEAR CREEK Stream Segment Description		DESIG	CLASSIFICATIONS	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
1a	Mainstem of Bear Creek from the source to Harriman Ditch, including all mainstem reservoirs		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
1b	Mainstem of Bear Creek from Harriman Ditch to the inlet of Bear Creek Reservoir	UP	Aq Life Cold 2 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Water + Fish Organics
1c	Bear Creek Reservoir and Soda Lakes		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	*See narrative phosphorus standard below
2	Mainstem of Bear Creek from the outlet of Bear Creek Reservoir to the confluence with the South Platte River	UP	Aq Life Warm 1 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
3	All tributaries to Bear Creek, including all lakes, reservoirs and wetlands, from the source to a point immediately below the confluence with Cub Creek Except for specific listings in Segment 7		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
4a	All tributaries to Bear Creek, including all lakes, reservoirs and wetlands, from a point immediately below the confluence with Cub Creek to the confluence with the South Platte River, except for specific listing in Segments 4b, 4c, 5 and 6	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Water + Fish Organics Temporary modification NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2011
4b	Swede Gulch, including all ponds, lakes, reservoirs and wetlands, from its headwaters to its confluence with Kerr Gulch		Aq Life Cold 2 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Water + Fish Organics

*Narrative Phosphorus Standard for Segment 1c of Bear Creek: Concentrations of total phosphorus in Bear Creek Reservoir shall be limited to the extent necessary to prevent stimulation of algal growth to protect beneficial uses. Sufficient dissolved oxygen shall be present in the upper half of the reservoir hypolimnion layer to provide for the survival and growth of cold water aquatic life species. Attainment of this standard shall, at a minimum, require shifting the reservoir trophic state from a eutrophic and hypertrophic condition to a eutrophic and mesotrophic condition.

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION: 3 BASIN: BEAR CREEK Stream Segment Description		DESIG	CLASSIFICATIONS	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
4c	Swede Gulch, including all ponds, lakes, reservoirs and wetlands, from its confluence with Kerr Gulch to its confluence with Bear Creek.		Aq Life Cold 2 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Col=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Water + Fish Organics
5	Sawmill, Troublesome, and Cold Springs Gulches, and mainstem of Turkey Creek, including all tributaries, lakes, reservoirs and wetlands, from the source to the confluence with Bear Creek, except for specific listing in Segment 6.	UP	Aq Life Cold 2 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Col=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Water + Fish Organics
6	Mainstem of North Turkey Creek, from the source to the confluence with Turkey Creek.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Col=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
7	All tributaries to Bear Creek, including lakes, reservoirs and wetlands, within the Mt. Evans Wilderness Area.	OW	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Col=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 3 BASIN: CLEAR CREEK Stream Segment Description		DESIG	CLASSIFICATIONS	NUMERIC STANDARDS						TEMPORARY MODIFICATIONS AND QUALIFIERS
				PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			
1	Mainstem of Clear Creek, including all tributaries, lakes, reservoirs and wetlands, from the source to the I-70 bridge above Silver Plume.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
2	Mainstem of Clear Creek, including all tributaries, lakes, reservoirs and wetlands, from the I-70 bridge above Silver Plume to the Argo Tunnel discharge, except for specific listings in Segments 3 through 10.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 SO_4=WS NO_3=10 Cl=250	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS Se(ac/ch)=TVS	Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac)=TVS Zn(ch)=200	Temporary modifications Cu(ch)=8.1 µg/l (dis)- Mn(ch)=106 µg/l (dis) Zn(ch)=257 µg/l (dis) type iii Expiration date of 7/01/09
3a	Mainstem of South Clear Creek, including all tributaries, lakes, reservoirs and wetlands, from the source to the confluence with Clear Creek, except for the specific listing in 3b and 19.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis)	Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Temporary modification Zn(ch)=100 µg/l (dis) type iii Expiration date of 7/01/09
3b	Mainstem of Leavenworth Creek from source to confluence with South Clear Creek.		Aq Life Cold 2 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Temporary modifications Pb(ch)=17 µg/l (dis) Zn(ch)=220 µg/l (dis) Expiration date of 2/28/10
4	Mainstem of West Clear Creek from the source to the confluence with Woods Creek.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
5	Mainstem of West Clear Creek from the confluence with Woods Creek to the confluence with Clear Creek.	UP	Aq Life Cold 1 Recreation 1a Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05	As(ch)=100(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS Zn(ac)=$e^{0.8404[\ln(hardness)]+1.8810}$ Zn(ch)=$e^{0.8404[\ln(hardness)]+1.5127}$	Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr)	
6	All tributaries to West Clear Creek, including all lakes, reservoirs and wetlands, from the source to the confluence with Clear Creek, except for specific listings in Segments 7 and 8.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Temporary modification Zn(ch)=38 µg/l (dis) type iii Expiration date of 7/01/09
7	Mainstem of Woods Creek from the outlet of Upper Urad Reservoir to the confluence with West Clear Creek.	UP	Aq Life Cold 2 Recreation 2	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.0-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 NO_2=0.05	WQS_{WC} = {(Q_{WC} + Q_{WFCC}) X WQS_{WFCC} - (Q_{WFCC} X C_{WFCC})}/Q_{WC} WQS_{WC} = Water Quality Standards for Woods Creek Q_{WC} = Flow for Woods Creek Q_{WFCC} = Flow for West Fork Clear Creek WQS_{WFCC} = Water Quality Standards for West Fork Clear Creek C_{WFCC} = Ambient Concentration in West Fork Clear Creek			Standards shall be applied using the Segment 7 equation
8	Mainstem of Lion Creek from the source to the confluence with West Clear Creek.	UP	Aq Life Cold 2 Recreation 1a	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=3.0-9.0 F.Coli=200/100ml E.Coli=126/100ml						

*REFER TO STATEMENT OF BASIS AND PURPOSE

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 3 BASIN: CLEAR CREEK Stream Segment Description		DESIG	CLASSIFICATIONS	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
9a	Mainstem to the Fall River, including all tributaries, lakes, reservoirs and wetlands, from the source to the confluence with Clear Creek		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Temporary modification Cu(ch)=11 µg/l (dis) type iii Expiration date of 7/01/09
9b	Mainstem of Trail Creek, including all tributaries, lakes, reservoirs, and wetlands from the source to the confluence with Clear Creek		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 SO_4=WS NO_3=10 Cl=250	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS Se(ac/ch)=TVS	Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac)=TVS Zn(ch)=200	Temporary modifications Cd(ch)=4.6 ug/l Cu(ch)=148 ug/l Pb(ch)=7.6 µg/l Mn(ch)=548 Zn(ch)=1068 µg/l type iii Expiration date of 7/01/09
10	Mainstem of Chicago Creek, including all tributaries, lakes, reservoirs and wetlands, from the source to the confluence with Clear Creek, except for specific listings in Segment 19		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
11	Mainstem of Clear Creek from the Argo Tunnel discharge to the Farmers Highline Canal diversion in Golden Colorado	UP	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ch)=17	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ch)=300	Temporary modification Zn(ch)=339 µg/l (dis) Mn(ch)=861 µg/l (dis), type iii Expiration date of 7/01/09.
12	All tributaries to Clear Creek, including all lakes, reservoirs and wetlands, from the Argo Tunnel discharge to the Farmers Highline Canal diversion in Golden, Colorado except for specific listings in Segments 13a and 13b	UP	Aq Life Cold 2 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
13a	Mainstem of North Clear Creek and Four Mile Gulch including all tributaries, lakes, reservoirs and wetlands from their sources to the lowest water supply intake located in each stream and Chase Gulch including all tributaries, lakes, reservoirs and wetlands from its source to the confluence with North Clear Creek		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O.(sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS	Cu(ac/ch)=TVS Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
13b	Mainstem of North Clear Creek including all tributaries, lakes, reservoirs and wetlands from the source to the confluence with Clear Creek, except for the specific listings in segment 13a	UP	Aq Life Cold 2 Recreation 1a Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05	As(ac)=100(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS	Cu(ch)=64 Fe(ch)=5400(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ch)=740	Temporary modifications Cd(ch)=6.0 µg/l (dis) Mn(ch)=5,293 µg/l (dis) Zn(ch)=1,864 µg/l (dis) type iii Expiration date of 7/01/09
14a	Mainstem of Clear Creek from the Farmers Highline Canal diversion in Golden, Colorado to the Denver Water conduit #16 crossing	UP	Aq Life Warm 2 Recreation 2 Water Supply Agriculture	D.O. = 5.0 mg/l pH = 6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVSX3.66*	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=500 Hg(ch)=0.01(tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVSX 1.57*	
14b	Mainstem of Clear Creek from the Denver Water conduit #16 crossing to Youngfield Street in Wheat Ridge, Colorado	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O. = 5.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVSX3.66*	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=500 Hg(ch)=0.01(tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVSX 1.57*	

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION: 3	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS						TEMPORARY MODIFICATIONS AND QUALIFIERS
BASIN: CLEAR CREEK			PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			
Stream Segment Description									
15. Mainstem of Clear Creek from Youngfield Street in Wheat Ridge, Colorado, to the confluence with the South Platte River	UP	Aq Life Warm 1 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVSx1.66*	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Trec)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVSx1.57*	Aquatic life warm 1 goal qualifier Temporary modification NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2011
16a. Mainstem of Lena Gulch including all tributaries, lakes, reservoirs and wetlands from its source to the outlet of Maple Grove Reservoir	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
16b. All tributaries to Clear Creek from the Farmers Highline Canal diversion in Golden, Colorado to the confluence with the South Platte River, except for specific listings in Segments 16a, 17a, 17b, 18a and 18b.	UP	Aq Life Warm 2 Recreation 2 Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
17a. Arvada Reservoir	UP	Aq Life Cold 2 Recreation 2 Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Water + Fish Organics
17b. Mainstem of Ralston Creek from the source to the inlet of Arvada Reservoir, including Ralston Reservoir, and Upper Long Lake	UP	Aq Life Cold 2 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Water + Fish Organics
18a. Mainstem of Ralston Creek, including all lakes and reservoirs, from the outlet of Arvada Reservoir to the confluence with Clear Creek	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
18b. Mainstem of Leyden Creek and Van Bibber Creek from their source to their confluence with Ralston Creek. Mainstem of Little Dry Creek from its source to its confluence with Clear Creek.	UP	Aq Life Warm 2 Recreation 2 Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
19. All tributaries to Clear Creek, including lakes, reservoirs and wetlands, within the Mt. Evans Wilderness Area.	OW	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=250	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	

* TVS x (times) the FWER (final water effect ratio) = site-specific standard

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 3 BASIN: BIG DRY CREEK Stream Segment Description	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
1. Mainstem of Big Dry Creek, including all tributaries, lakes, reservoirs and wetlands, from the source to the confluence with the South Platte River, except for specific listing in Segment 2, 3, 4a, 4b, 5 and 6.	UP	Aq Life Warm 2 Recreation 1b Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=325/100ml E.Coli=205/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=4.5	As(ac)=100(Trec) Be(ch)=100 Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS	Cu(ac/ch)=TVS Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS 4/1 thru 10/31 Se(ch)=7.4 Se(ac)=TVS 11/1 thru 3/31 Se(ch)=15 Se(ac)=19.1	Temporary modifications NH_3(ac/ch)=TVS(old)(Type i). Expiration date of 12/31/2011
2. Standley Lake		Aq Life Warm 1 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS Be(ch)=4	See attached Table 2 for additional standards for segment 2. See * for narrative standard.
3. Great Western Reservoir	UP	Aq Life Warm 2 Recreation 2 Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=2.7	As(ac)=100(Trec) Be(ch)=100 Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS	Cu(ac/ch)=TVS Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	See attached Table 2 for additional standards for segment 3. Temporary modification NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2011
4a. Mainstem and all tributaries to Woman and Walnut Creeks from sources to Standley Lake and Great Western Reservoir except for specific listings in Segments 4b and 5.	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10	As(ac)=50(Trec) Be(ch)=4 Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ac)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	See attached Table 2 for additional standards for segment 4a.
4b. North and South Walnut Creek and Walnut Creek from the outlet of ponds A-4 and B-5 to Indiana Street.	UP	Aq Life Warm 2 Recreation 2 Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005 S=0.002 B=0.75	NO_2=0.5 NO_3=10	As(ac)=50(Trec) Be(ch)=4 Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ac)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	See attached Table 2 for additional standards for segment 4b.
5. Mainstems of North and South Walnut Creek including all tributaries, lakes, reservoirs and wetlands, from their sources to the outlets of ponds A-4 and B-5, on Walnut Creek, and Pond C-2 on Woman Creek. All three ponds are located on Rocky Flats property.	UP	Aq Life Warm 2 Recreation 2 Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS Be(ch)=4	See attached Tables 2 and 3 for additional standards and temporary modifications for seg 5. Goal qualifier for all use classifications expires 12/31/09
6. Upper Big Dry Creek and South Upper Big Dry Creek from their source to Standley Lake.	UP	Aq Life Warm 2 Recreation 2 Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	

*Narrative standard for Segment 2, Big Dry Creek, Standley Lake: The trophic status of Standley Lake shall be maintained as mesotrophic as measured by a combination of common indicator parameters such as total phosphorus, chlorophyll a, secchi depth, and dissolved oxygen. Implementation of this narrative standard shall only be by Best Management Practices and controls implemented on a voluntary basis.

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 2 AND 3 BASIN: BOULDER CREEK Stream Segment Description	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
1. All tributaries to Boulder Creek, including all lakes, reservoirs and wetlands, within the Indian Peaks Wilderness Area	OW	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
2. Mainstem of Boulder Creek, including all tributaries, lakes, reservoirs and wetlands, from the boundary of the Indian Peaks Wilderness Area to a point immediately above the confluence with South Boulder Creek, except for the specific listings in Segment 3 and 12		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
3. Mainstem of Middle Boulder Creek, including all tributaries, lakes, reservoirs and wetlands, from the source to the outlet of Barker Reservoir, except for specific listing on Segment 1		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS Fe(ch)=WS(dis)	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
4a. Mainstem of South Boulder Creek, including all tributaries, lakes, reservoirs and wetlands, from the source to the outlet of Gross Reservoir		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
4b. Mainstem of South Boulder Creek, including all tributaries, lakes, reservoirs and wetlands, from the outlet of Gross Reservoir to South Boulder Road, except for specific listings in Segments 4c and 4d		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
4c. Mainstem of Cowdrey Drainage from the source below Cowdrey Reservoir #2 to the Davidson Ditch	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
4d. Mainstem of Cowdrey Drainage from immediately downstream of the Davidson Ditch to the confluence with South Boulder Creek	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
5. Mainstem of South Boulder Creek from South Boulder Road to the confluence with Boulder Creek	UP	Aq Life Warm 1 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
6. Mainstem of Coal Creek, including all tributaries, lakes, reservoirs and wetlands, from the source to highway 93	UP	Aq Life Cold 2 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 2 AND 3 BASIN BOULDER CREEK	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS						TEMPORARY MODIFICATIONS AND QUALIFIERS
Stream Segment Description			PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			
7a Mainstem of Coal Creek from highway 93 to highway 36 (Boulder Turnpike)	UP	Aq Life Warm 1 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
7b Mainstem of Coal Creek from Highway 36 to the confluence with Boulder Creek	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modifications NH_3(ac/ch)=TVS(old) (Type i) Expiration date of 12/31/2011
6 All tributaries to South Boulder Creek, including all lakes, reservoirs and wetlands from South Boulder Road to the confluence with Boulder Creek and all tributaries to Coal Creek, including all lakes, reservoirs and wetlands from Highway 93 to the confluence with Boulder Creek	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=250	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS Fe(ch)=WS(dis)	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
9 Mainstem of Boulder Creek from a point immediately above the confluence with South Boulder Creek to the confluence with Coal Creek		Aq Life Warm 1 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS Fe(ch)=WS(dis)	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modifications type (iii) Cu (ac/ch)=Current Condition. Expiration date of 12/31/2009. NH_3(ac/ch)=TVS(old) (Type i) Expiration date of 12/31/2011
10 Mainstem of Boulder Creek from the confluence with Coal Creek to the confluence with St. Vrain Creek	UP	Aq Life Warm 1 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modifications NH_3(ac/ch)=TVS(old) (Type i) Expiration date of 12/31/2011
11 All tributaries to Boulder Creek, including all lakes, reservoirs, and wetlands from a point immediately above the confluence with South Boulder Creek to the confluence with St. Vrain Creek, except for specific listings in Segments 5, 7a and 7b	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS Fe(ch)=WS(dis)	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
12 Deleted									

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 2 AND 3 BASIN: ST. VRAIN CREEK Stream Segment Description	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
1. All tributaries to St. Vrain Creek, including all lakes, reservoirs and wetlands, which are within the Indian Peaks Wilderness Area and Rocky Mountain National Park.	OW	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
2. Mainstem of St. Vrain Creek, including all tributaries, lakes, reservoirs and wetlands, from the boundary of the Indian Peaks Wilderness Area and Rocky Mountain National Park to Hygiene Road.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100 E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
3. Mainstem of St. Vrain Creek from Hygiene Road to the confluence with the South Platte River and Barbour Ponds.	UP	Aq Life Warm 1 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100 Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modification NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2011.
4a. Mainstem of Left Hand Creek, including all tributaries, lakes, reservoirs and wetlands, from the source to highway 36 except for specific listings in Segment 4b.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
4b. Mainstem of James Creek, including all tributaries, lakes, reservoirs and wetlands, from the source to the confluence with Left Hand Creek.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
5. Mainstem of Left Hand Creek, including all tributaries, lakes, reservoirs and wetlands from highway 36 to the confluence with St. Vrain Creek.	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrIII(ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
6. All tributaries to St. Vrain Creek, including lakes, reservoirs and wetlands from Hygiene Road to the confluence with the South Platte River, except for specific listings in the Boulder Creek subbasin and in segments 4a, 4b and 5.	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100 Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modifications Se(ch)=6.6µg/l (dis) type ii Expiration date of 2/28/10. NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2011.
7. Boulder Reservoir, Coot Lake, and Left Hand Valley Reservoir.		Aq Life Warm 1 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100 E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 2 BASIN: MIDDLE SOUTH PLATTE RIVER Stream Segment Description	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
1a. Mainstem of the South Platte River from a point immediately below the confluence with Big Dry Creek to the confluence with St. Vrain Creek	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.* pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrIII(ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS*2.2	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	*See attached table for site-specific Dissolved Oxygen and Ammonia standards Fish Ingestion Organics Temporary modification NH_3(ac/ch)=TVS(old) (Type i) Expiration date of 12/31/2011
1b. Mainstem of the South Platte River from a point immediately below the confluence with St. Vrain Creek to the Weld/Morgan County Line	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrIII(ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Fish Ingestion Organics Temporary modifications NH_3(ac/ch)=TVS(old) (Type i) Expiration date of 12/31/2011
2. Deleted									
3a. All tributaries to the South Platte River, including all lakes, reservoirs and wetlands, from a point immediately below the confluence with Big Dry Creek to the Weld/Morgan County line, except for specific listings in the subbasins of the South Platte River and in Segments 3b, 4, 5a, 5b, 5c and 6	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Fish Ingestion Organics Temporary modification NH_3(ac/ch)=TVS(old)(Type i) Expiration date of 12/31/2011
3b. Hayesmount Tributaries including the Upper Hayesmount Tributary from the source to the confluence with Box Elder Creek and the Lower Hayesmount Tributaries from the source to the Denver Hudson Canal	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O. (ch)=[1] pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	[1]When water is present, D.O. concentrations shall be maintained at levels that protect classified uses
4. Barr Lake and Milton Reservoir	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrIII(ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Fish Ingestion Organics
5a. Mainstems of Lone Tree Creek, Crow Creek and Box Elder Creek from their sources to their confluences with the South Platte River except for specific listings in Segment 5b	UP	Aq Life Warm 2 Recreation 2 Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 2 BASIN: MIDDLE SOUTH PLATTE RIVER Stream Segment Description	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS: PHYSICAL and BIOLOGICAL	NUMERIC STANDARDS: INORGANIC mg/l		NUMERIC STANDARDS: METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
5c. Mainstem of Boxelder Creek from the confluence with Coyote Run to the Denver Hudson Canal	UP	Aq Life Warm 2 Recreation 2 Agriculture	D.O. (ch)=4.7 mg/l* pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=10 NO_3=100	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	*15th percentile of D.O. measurements collected between 6:30 a.m. and 6:30 p.m.
6. Lost Creek from Interstate 76 south, including all its tributaries, stock ponds and wetlands	UP	Aq Life Warm 2 Recreation 2 Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E. Coli=630/100ml	NO_3=100 NO_2=10 CN=0.2	S=0.002 B=0.75	As=100(Trec) Be(ch)=100(Trec) Cd=10(Trec) CrIII=100(Trec) CrVI=100(Trec) Cu=200(Trec)	Pb=100(Trec) Mn=200(Trec) Ni=200(Trec) Se=20(Trec)	Zn=2000(Trec)	

Site-Specific Minimum Dissolved Oxygen and Ammonia Standards for Middle South Platte Segment 1a

Dissolved Oxygen:

STANDARDS
Early Life Stage Protection Period (April 1 through July 31)
1-Day[1,4,5] 3.0 mg/L (acute)
7-Day Average[1,2] 5.0 mg/L
Older Life Stage Protection Period (August 1 through March 31)
1-Day[1,4] 2.0 mg/L (acute)
7-Day Mean of Minimums[1,3] 2.5 mg/L
30-Day Average[1,2] 4.5 mg/L

Footnotes

1. For the purpose of determining compliance with the standards, dissolved oxygen measurements shall only be taken in the flowing portion of the stream at mid-depth, and at least six inches above the bottom of the channel. All sampling protocols and test procedures shall be in accordance with procedures and protocols approved by the Division.

2. A minimum of four independent daily means must be used to calculate the average for the 7-Day Average standard. A minimum of eight independent daily means must be used to calculate the average for the 30-Day Average standard. The four days and the eight days must be representative of the 7-Day and the 30-Day periods respectively. The daily mean shall be the mean of the daily high and low values. In calculating the mean values, the dissolved oxygen saturation value shall be used in place of any dissolved oxygen measurements which exceed saturation.

3. The 7-Day Mean Minimum is the average of the daily minimums measured at a location on each day during any 7-Day period.

4. During a 24 hour day, dissolved oxygen levels are likely to be lower during the nighttime when there is no photosynthesis. The dissolved oxygen levels should not drop below the acute standard (ELS acute standard of 3.0 mg/L or the OLS standard of 2.0 mg/L). However, if during the ELS period multiple measurements are below 3.0 mg/L during the same nighttime period, the multiple measurements shall be considered a single exceedance of the acute standard. For measurements below 2.0 mg/L during either the ELS or the OLS periods, each hourly measurement below 2.0 mg/L shall be considered an exceedance of the acute standard.

5. In July, the dissolved oxygen level in Segment 1a may be lower than the 3.0 mg/L acute standard for up to 14 exceedances in any one year and up to a total of 21 exceedances in three years before there is a determination that the acute dissolved oxygen standards is not being met. Exceedances shall be counted as described in Footnote 4.

Ammonia:

Early Life Stage Protection Period (April 1 through July 31)

Ammonia	Warm Water = (mg/l as N)Total

$$acute = \frac{0.411}{1 + 10^{7.204 - pH}} + \frac{58.4}{1 + 10^{pH - 7.204}}$$

$$chronic\,(Apr1 - July31) = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) * MIN\left(2.85, 1.45 * 10^{0.028(25-T)}\right)$$

$$chronic\,(Aug1 - Mar31) = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) * 1.45 * 10^{0.028*(25-MAX(T,7))}$$

NH_3 = old TVS	Warm Water Acute = 0.62/FT/FPH/2[(4 old)] in mg/ (N)

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 2 BASIN: BIG THOMPSON RIVER	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS						TEMPORARY MODIFICATIONS AND QUALIFIERS
Stream Segment Description			PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			
1. All tributaries to the Big Thompson River system, including all lakes, reservoirs and wetlands, which are within Rocky Mountain National Park, except for specific listings in Segment 2	OW	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
2. Mainstem of the Big Thompson River, including all tributaries, lakes, reservoirs, and wetlands from the boundary of Rocky Mountain National Park to the Home Supply Canal diversion except for the specific listing in Segment 7, mainstem of Black Canyon Creek and Glacier Creek below Estes Park water treatment plant		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Temporary modifications D.O., E. coli, NH_3, NO_3, B, Cd, Cu, Pb, Hg, Ni, Se, Ag, Zn = existing quality. Wapiti Meadow wetlands at the toe of Lake Estes Dam type iii Expiration date of 12/31/2009
3. Mainstem of the Big Thompson River from the Home Supply Canal diversion to the Big Barnes Ditch diversion	UP	Aq Life Cold 2 Recreation 1a Water Supply Agriculture	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Water + Fish Organics
4a. Mainstem of the Big Thompson from the Big Barnes Ditch diversion to the Greeley-Loveland Canal diversion	UP	Aq Life Cold 2 Water Supply Agriculture 5/1 – 10/15 Recreation 1a 10/16 – 4/30 Recreation 2	D.O. = 6.0 mg/l D.O. (sp)=7.0 mg/l pH = 6.5-9.0 5/1 - 10/15 F.Coli=200/100ml E.Coli=126/100ml 10/16 – 4/30 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Water + Fish Organics
4b. Mainstem of the Big Thompson from the Greeley-Loveland Canal diversion to County Road 11H	UP	Aq Life Warm 2 Agriculture 5/1 – 10/15 Recreation 1a 10/16 – 4/30 Recreation 2	D.O. = 5.0 mg/l pH = 6.5-9.0 5/1 – 10/15 F.Coli=200/100ml E.Coli=126/100ml 10/16 – 4/30 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Fish Ingestion Organics Temporary modification Se(ch)=5.5 ug/l (dis) type iii Expiration date of 2/28/10.
4c. Mainstem of the Big Thompson from County Road 11H to I-25	UP	Aq Life Warm 2 Agriculture 5/1 – 10/15 Recreation 1a 10/16 – 4/30 Recreation 2	D.O. = 5.0 mg/l pH = 6.5-9.0 5/1 – 10/15 F.Coli=200/100ml E.Coli=126/100ml 10/16 – 4/30 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Fish Ingestion Organics
5. Mainstem of The Big Thompson River from I-25 to the confluence with the South Platte River	UP	Aq Life Warm 2 Agriculture 5/1 – 10/15 Recreation 1b 10/16 – 4/30 Recreation 2	D.O. = 5.0 mg/l pH = 6.5-9.0 5/1 – 10/15 F.Coli=325/100ml E.Coli=205/100ml 10/16 – 4/30 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modification NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2011

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 2 BASIN: BIG THOMPSON RIVER Stream Segment Description	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
6. All tributaries to the Big Thompson River, including all lakes, reservoirs and wetlands, from the Home Supply Canal diversion to the confluence with the South Platte River except for specific listings in Segments 12.	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O. = 5.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Fish Ingestion Organics Temporary modification NH_3(ac/ch)=TVS(old) (Type i) Expiration date of 12/31/2011
7. Mainstem of the North Fork of the Big Thompson River from the boundary of Rocky Mountain National Park to the confluence with the Big Thompson River, mainstem of Buckhorn Creek from the source to the confluence with the Big Thompson River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
8. Mainstem of the Little Thompson River, including all tributaries, lakes, reservoirs and wetlands, from the source to the Culver Ditch diversion.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
9. Mainstem of the Little Thompson River from the Culver Ditch diversion to the confluence with the Big Thompson River.	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modifications NH_3(ac/ch)=TVS(old) (Type i) Expiration date of 12/31/2011
10. All tributaries to the Little Thompson River, including all lakes, reservoirs and wetlands, from the Culver ditch diversion to the Big Thompson River, except for specific listings in Segments 11 and 13.	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modifications NH_3(ac/ch)=TVS(old) (Type i) Expiration date of 12/31/2011
11. Carter Lake		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
12. Lake Loveland, Horseshoe Lake, Boyd Lake		Aq Life Warm 1 Recreation 1a Water Supply Agriculture	D.O. = 5.0 mg/l pH = 6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
13. Berthoud Reservoir, Johnstown Reservoir	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
14. Welch Reservoir, Lonetree Reservoir, Boedecker Lake, Lon Hagler Reservoir		Aq Life Warm 1 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS Fe(ch)=WS(dis)	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 7 BASIN: CACHE LA POUDRE RIVER		DESIG	CLASSIFICATIONS	NUMERIC STANDARDS						TEMPORARY MODIFICATIONS AND QUALIFIERS
				PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			
Stream Segment Description										
1	Mainstem of the Cache La Poudre River and all tributaries, including lakes, reservoirs and wetlands within Rocky Mountain National Park and the Rawah, Neota, Comanche Peak, and Cache La Poudre Wilderness Areas.	OW	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(c)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
2	Mainstem of the Cache La Poudre River and all tributaries, including lakes, reservoirs and wetlands from the boundaries of Rocky Mountain National Park and the Rawah, Neota, Comanche Peak, and Cache La Poudre Wilderness Areas to the Monroe Gravity Canal/North Poudre Supply canal diversion.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
3	Deleted									
4	Deleted									
5	Deleted									
6	Mainstem of the North Fork of the Cache La Poudre River, including all tributaries, lakes, reservoirs and wetlands, from the source to the inlet of Halligan Reservoir.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
7	Mainstem of the North Fork of the Cache La Poudre River from the inlet of Halligan Reservoir to the confluence with the Cache La Poudre River.	UP	Aq Life Cold 2 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Water + Fish Organics
8	All tributaries to the North Fork of the Cache La Poudre River, including all lakes, reservoirs and wetlands from the inlet of Halligan Reservoir to the confluence with the Cache La Poudre River, except for specific listings in Segment 9.	UP	Aq Life Cold 2 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Water + Fish Organics
9	Mainstem of Rabbit Creek and Lone Pine Creek from the source to the confluence with the North Fork of the Cache La Poudre River.		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
10	Mainstem of the Cache La Poudre River from the Monroe Gravity Canal/North Poudre Supply Canal diversion to Shields Street in Ft. Collins, Colorado.	UP	Aq Life Cold 2 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	Water + Fish Organics
11	Mainstem of the Cache La Poudre River from Shields Street in Ft. Collins to a point immediately above the confluence with Boxelder Creek.	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=2.7	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Nitrite as a 30 day average. Fish Ingestion Organics Temporary Modifications type (iii) Cu (ac/ch)=Current Condition. Expiration date of 12/31/2009 NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2011

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 2 BASIN: CACHE LA POUDRE RIVER Stream Segment Description	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS: PHYSICAL and BIOLOGICAL	NUMERIC STANDARDS: INORGANIC mg/l		NUMERIC STANDARDS: METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
12. Mainstem of the Cache La Poudre River from a point immediately above the confluence with Boxelder Creek to the confluence with the South Platte River	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=2.7	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Nitrite as a 30 day average Fish Ingestion Organics Temporary modifications type (iii) Cu (ac/ch)=Current Condition. Expiration date of 12/31/2009. NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2011
13a. All tributaries to the Cache La Poudre River, including all lakes reservoirs and wetlands, from a point immediately above the confluence with the North Fork of the Cache La Poudre River to the confluence with the South Platte River, except for specific listings in Segments 13b, 14, 15 and 16.	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modification NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2011
13b. Mainstem of Boxelder Creek from its source to the confluence with the Cache la Poudre River	UP	Aq Life Warm 2 5/15-9/15 Recreation 1b 9/16-5/14 Recreation 2 Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 5/15-9/15 F.Coli=325/100ml E.Coli=205/100ml 9/16-5/14 F.Coli=2000/100ml E.Coli=630/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modification NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2011
14. Horsetooth Reservoir		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) As(ch)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS	Cu(ac/ch)=TVS Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis)	Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
15. Watson Lake		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
16. Reservoir #4 (T 9 N, R 68 W), Water Supply Reservoir #3 (T 8 N, R 68 W), Claymore Lake, College Lake, Dixon Reservoir, Robert Benson Lake, Black Hollow Reservoir, Seeley Lake	UP	Aq Life Warm 1 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION 2 / BASIN: LARAMIE RIVER / Stream Segment Description	DESIG	CLASSIFICATIONS	NUMERIC STANDARDS: PHYSICAL and BIOLOGICAL	NUMERIC STANDARDS: INORGANIC mg/l		NUMERIC STANDARDS: METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
1. All tributaries to the Laramie River, including all lakes, reservoirs and wetlands, which are within the Rawah Wilderness Area	OW	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
2. Mainstem of the Laramie River, including all tributaries, lakes, reservoirs and wetlands, from the source to the Colorado/Wyoming border, except for specific listing in Segment 1		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION: 1 BASIN: Lower South Platte River Stream Segment Description		Desig	Classifications	NUMERIC STANDARDS						TEMPORARY MODIFICATIONS AND QUALIFIERS
				PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			
1	Mainstem of the South Platte River from the Weld/Morgan County line to the Colorado/Nebraska border	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modifications NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2011
2a	All tributaries to the South Platte River, including all lakes, reservoirs and wetlands, from the Weld/Morgan County line to the Colorado/Nebraska border, except for the specific listings in Segments 2b and 3.	UP	Aq Life Warm 2 Recreation 2 Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	CN=0.2 NO_2=1.0 NO_3=100	B=0.75	As(ch)=100(Trec) Be(ch)=100(Trec) Cd(ch)=10(Trec) CrIII(ch)=100(Trec)	CrVI(ch)=100(Trec) Cu(ch)=200(Trec) Pb(ch)=100(Trec)	Ni(ch)=200(Trec) Se(ch)=20(Trec) Zn(ch)=2000(Trec)	
2b	All tributaries to the South Platte River, including all lakes, reservoirs and wetlands, north of the South Platte River and below 4,500 feet in elevation in Morgan County, north of the South Platte River in Washington County, north of the South Platte River and below 4,200 feet in elevation in Logan County north of the South Platte River and below 3,700 feet in elevation in Sedgwick County, and the mainstems of Beaver Creek, Bijou Creek and Kiowa Creek from their sources to the confluence with the South Platte River.	UP	Aq Life Warm 2 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	Temporary modifications NH_3(ac/ch)=TVS(old) (Type i). Expiration date of 12/31/2011
3	Jackson Reservoir, Prewitt Reservoir, North Sterling Reservoir, Jumbo (Julesburg), Riverside Reservoir, Empire Reservoir and Vancil Reservoir	UP	Aq Life Warm 1 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	

REGULATION NO. 38 SOUTH PLATTE RIVER BASIN (continued)
STREAM CLASSIFICATIONS and WATER QUALITY STANDARDS

REGION: 1 and 5 BASIN: Republican River Stream Segment Description	Desig	Classifications	NUMERIC STANDARDS PHYSICAL and BIOLOGICAL	INORGANIC mg/l		METALS ug/l			TEMPORARY MODIFICATIONS AND QUALIFIERS
1. Mainstem of the South Fork of the Republican River from a point 10 miles above Bonny Reservoir to the Colorado-Kansas border	UP	Aq Life Warm 1 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
2. Bonny Reservoir. Stalker Lake		Aq Life Warm 1 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS Fe(ch)=WS(dis)	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
3. Mainstem of the North Fork of the Republican River from the source to the Colorado/Nebraska border and the mainstem of Chief Creek		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	D.O.=6.0 mg/l D.O.(sp)=7.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.05 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac/ch)=TVS	
4. Mainstem of the Arikaree River from the confluence of the North and South Forks to the Colorado/Kansas border		Aq Life Warm 1 Recreation 1a Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5	As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac/ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
5. Mainstem of the Black Wolf Creek from the source to the confluence with the Arikaree River	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=200/100ml E.Coli=126/100ml	NH_3(ac/ch)=TVS Cl_2(ac)=0.019 Cl_2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO_2=0.5 NO_3=10 Cl=250 SO_4=WS	As(ac)=50(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS Fe(ch)=WS(dis)	Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis) Hg(ch)=0.01(Tot) Ni(ac/ch)=TVS	Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS	
6. All tributaries to the Republican River system in Colorado including all lakes, reservoirs and wetlands, except for specific listings in Segments 1 through 5	UP	Aq Life Warm 2 Recreation 2 Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	CN=0.2 NO_2=10 NO_3=100	B=0.75	As(ch)=100(Trec) Be(ch)=100(Trec) Cd(ch)=10(Trec) CrIII(ch)=100(Trec)	CrVI(ch)=100(Trec) Cu(ch)=200(Trec) Pb(ch)=100(Trec)	Ni(ch)=200(Trec) Se(ch)=20(Trec) Zn(ch)=2000(Trec)	
7. Mainstem of the North Fork of the Smoky Hill River and mainstem of the Smoky Hill River, including all tributaries, lakes, reservoirs and wetlands, from the source to the Colorado/Kansas border	UP	Aq Life Warm 2 Recreation 2 Agriculture	D.O.=5.0 mg/l pH=6.5-9.0 F.Coli=2000/100ml E.Coli=630/100ml	CN=0.2 NO_2=10 NO_3=100	B=0.75	As(ch)=100(Trec) Be(ch)=100(Trec) Cd(ch)=10(Trec) CrIII(ch)=100(Trec)	CrVI(ch)=100(Trec) Cu(ch)=200(Trec) Pb(ch)=100(Trec)	Ni(ch)=200(Trec) Se(ch)=20(Trec) Zn(ch)=2000(Trec)	

Table 2
SITE SPECIFIC RADIONUCLIDE STANDARDS*
(in Picocuries/Liter)

The radionuclides listed below shall be maintained at the lowest practical level and in no case shall they be increased by any cause attributable to municipal, industrial, or agricultural practices to exceed the site specific numeric standards.

A. Ambient based site-specific standards:				
	Segment 2 Standley Lake	Segment 3 Great Western Reservoir	Segment 4a Segment 5 Woman Creek	Segment 4a Segment 4b Segment 5 Walnut Creek
Gross Alpha	6	5	7	11
Gross Beta	9	12	8	19
Plutonium	.03	.03	0.15** ***	0.15** ***
Americium	.03	.03	0.15** ***	0.15** ***
Tritium	500	500	500	500
Uranium	3	4	11	10
B. Other site-specific standard applicable to segments 2,3,4a, 4b, and 5.				
Curium	60	60	60	60
Neptunium	30	30	30	30

*Statewide standards also apply for radionuclides not listed above.
**0 15pCi/l Statewide Basic Standards.

***For plutonium and americium measurements in Segment 5 in Woman Creek and Segment 5 in Walnut Creek, attainment will be assessed based on the results of a 12-month flow-weighted rolling average concentration (computed monthly).

Table 3
Temporary Modifications (type i)
Big Dry Creek, Segment 5

Effective until December 31, 2009 for the Walnut Creek portions of segment 5:

Parameter	mg/l
Nitrate	100
Nitrite	4.5

Effective until December 31, 2009 for all of segment 5:

Parameter	mg/l
Benzene	0.005
Carbon tetrachloride	0.005
1,2-Dichloroethane	0.005
1,1-Dichloroethene	0.007
Tetrachloroethylene	0.005
Trichloroethylene	0.005

All other organic and radiologic parameters are covered by the Basic Standards.

RESPONSE TO COMMENTS ON DRAFT EA

Response to Comments on the Draft EA (September 2008)

COMMENT LETTER FROM:
Colorado Department of Public Health and the Environment
Bonie B. Pate, Project Coordinator, Restoration and Protection Unit - Water Quality Control Division
October 14, 2008

CDPHE-1: As mentioned in the Draft EA, Wolford Reservoir is on the 2008 303(d) list of impaired waters as shown in Regulation #93 Section 303(d) List Water-Quality-Limited Segments Requiring Total Maximum Daily Loads for dissolved oxygen. Although there may be only minor changes in Wolford reservoir content, implications for compliance with the dissolved oxygen standard should be considered in the proposed action during substitution years.

Response: The project team coordinated with Phil Hegeman, CDPHE on October 23, 2008 regarding their comment letter. In summary, CDPHE is concerned about the changes in volume in Homestake and Wolford Mountain reservoirs and potential resultant change to dissolved oxygen content and temperature levels. Refer to Section 3.5.1 Affected Environment (Water Quality) and Section 3.5.2 Environmental Consequences (Water Quality) Proposed Action, which better clarifies the locations for the analysis determination. Further, as discussed in Section 3.3.2 Environmental Consequences (Hydrology), the hydrologic modeling for this project demonstrated that there would be minimal stream flow changes and a proportionate minimal change in content in these reservoirs. Specifically, the model results showed that a minimal drop in the Homestake Reservoir content occurred only one time in a 56-year period. Minimal changes in flow and content are within the natural variation of these water bodies and are not anticipated to result in water quality impacts from the project.

CDPHE-2: Potential changes to water quality in Homestake should also be considered since changes to reservoir content are likely to be more significant. Prevention of future impairments is highly recommended.

Response: See response to comment CDPHE-1, and revisions made to Final EA in Section 3.5.1 and 3.5.2.

COMMENT LETTER FROM:
Bureau of Land Management
David Stout, Field Manager, Kremmling Field Office, Colorado
October 14, 2008

BLM-1: BLM requests clarification of the outstandingly remarkable values (ORVs) recognized for each of the eligible stream segments identified by BLM, portrayed in the EA. BLM provided clarifying information for Blue River Segments 2 and 3, and Colorado River Segments 3, 4, 5.

Response: Comment noted. See changes made to Final EA on Section 3.3.1.1 Blue River Basin and Section 3.3.1.4 Colorado River Basin, under the heading BLM Wild and Scenic Rivers Designation.

BLM-2: BLM is concerned about the cumulative effects analysis in this EA, particularly in relation to the proposed Windy Gap firming project. BLM notes that collectively, the individual reasonably foreseeable projects (which includes the Green Mountain Reservoir Substitution and Power Interference Agreements EA) could have substantial impacts on the ORVs over time. BLM suggests that Reclamation consider some limited measures to minimize cumulative impacts to the ORVs, such as operational restrictions on the proposed projects during very limited periods when changes in flow rates could be detrimental the ORVs.

Response: The changes in flow under the Proposed Action would be well within the normal range of flows that have historically occurred on the segments of the Colorado River and supported the flow-related ORVs as they exist today. Based on the magnitude and frequency of flow changes on the Colorado River, there would be no more than negligible direct impacts of this project on flow-related ORVs and a potential Wild and Scenic Rivers designation. Correspondingly, the incremental effect of the Proposed Action would be negligible in relation to other reasonably foreseeable projects. This response is reflected in the text on Page 3-51 of the Draft EA. The Final EA clarifies this in the cumulative effects analysis in Section 3.3.3.1 Cumulative Effects for the Proposed Action (Hydrology).

BLM-3: BLM presents a flow-related concern of this project and its effect on the Colorado River below the confluence with the Williams Fork River. When combined with potential flow decreases associated with the Windy Gap Project, does the additional flow decrease compound stream temperature impacts? BLM suggests that Reclamation and water users consider establishing triggers for both flow rates and stream temperatures when the substitution operation would not be implemented, to minimize impacts to fish populations. This may require establishing a real-time stream temperature monitoring station near the confluence with Williams Fork.

Response: Because of the requirements of the Blue River Decree, Springs Utilities must implement the substitution operation in August if Green Mountain Reservoir does not fill. The flow changes that occur in August along the Colorado River mainstem are the result of changes in the location of substitution releases under the Proposed Action versus the No Action Alternative. More water is released from Wolford Mountain and Homestake reservoirs than from Williams Fork Reservoir under the Proposed Action. Springs Utilities diversions from the Upper Blue River do not deplete the Colorado River from the confluence of the Williams Fork downstream to the confluence to the Blue River. In substitution years, water released from Williams Fork Reservoir for substitution payback augments flows in the Colorado River below the confluence of the Williams Fork River. Therefore, the effect on flows in the Colorado River from the confluence with the Williams Fork River downstream to the confluence with the Blue River under the Proposed Action is a reduction in the amount of water **added** to the river due to a change in substitution releases from Williams Fork Reservoir. However, in both the Proposed Action and the No Action Alternative, flows in this reach are higher as a result of substitution operations than in years when there are no substitution operations.

The flow reductions BLM refers to are ***maximum*** flow reductions. The flow reduction of 4.1 cfs below the confluence with the Williams Fork River occurs in only **one** year out of a 56-year study period. The next highest flow reduction is 2.0 cfs and the average flow reduction in the driest years and substitution years is only 0.6 cfs and 0.2 cfs, respectively. The average flow change in the driest years and substitution years is also less than 1 cfs at the Kremmling gage. These flow changes are considerably less than the accuracy of flow measuring devices at these locations.

Additional discussion of instream flow requirements and flow reductions along the Colorado River was added to Section 3.3.2.2 Proposed Action (Hydrology) of the Final EA.

BLM-4: BLM presents a flow-related concern of this project and its effect on the Colorado River below Kremmling. When combined with potential flow decreases associated with the Windy Gap Project, does the additional flow decrease extend the length and frequency of periods during August when flows are not acceptable for floatboating? BLM suggests that Reclamation and water users consider establishing triggers for flow rates when the substitution operations would not be implemented, to minimize impacts to floatboating recreation.

Response: See response to comment BLM-3.

COMMENT LETTER FROM:
Trout Unlimited
Amelia S. Whiting
October 10, 2008

TU-1 TU is concerned about the cumulative impacts of transmountain diversions on upper Colorado River, particularly the reach between Granby Reservoir and the Blue River. This reach of the river is a designated Gold Medal trout fishery and eligible for Wild and Scenic Rivers Act designation. TU states that a more detailed analysis of cumulative effects should be presented in the EA, even though the Proposed Action would create a negligible to minor cumulative effect in comparison to the reasonably foreseeable actions.

Response: Springs Utilities' transmountain diversions from the Upper Blue River do not deplete the reach of the Colorado River between Granby Reservoir and the Blue River. However, substitution operations affect the amount of additional water released to this reach. The cumulative effects analysis was supplemented and additional analysis completed of potential hydrologic effects due to reasonably foreseeable actions (Section 3.3.3 Cumulative Effects-Hydrology). See analysis and discussion added to Section 3.1.3 (Reasonably Foreseeable Water-Based Actions Considered in Cumulative Effects Analysis) and the cumulative effects analysis for all other resources (Sections 3.4.3 through 3.9.3) of the Final EA.

TU-2: TU recommends that Reclamation delay a determination of the Proposed Action pending the completion of the Windy Gap Firming Project Final EIS or supplement the Draft EA for this project.

Response: Reclamation does not believe that a delay in the decision on the Green Mountain Reservoir Substitution and Power Interference Agreements Project is warranted. The Windy Gap Firming Project (WGFP) is a proposed water supply project that would provide more reliable water deliveries to the Front Range and West Slope through additional physical connections to the Colorado-Big Thompson Project facilities. However, this Green Mountain Reservoir project is not to increase water deliveries but rather to provide operational flexibility in meeting substitution obligations under the Blue River Decree and the ability to assure replacement water and power generation to the West Slope of Colorado. This Green Mountain Reservoir project is also intended to fulfill Springs Utilities' obligations to Green Mountain Reservoir. Also, any potential changes to the Colorado River that would occur as a result of this Green Mountain Reservoir project would occur in a geographically distinct location and during a different season from those potential impacts resulting from the WGFP. Reclamation believes that the scopes of these separate actions are distinct and a decision on this project should not be contingent on a decision on the WGFP.

Additional analysis and discussions of potential hydrologic effects due to reasonably foreseeable actions was included in Section 3.3.3 (Hydrology) and Sections 3.4.3 through 3.9.3 (other resource topics) of the Final EA, as described in the response to comment TU-1.

TU-3: TU states that the Draft EA should address the potential impacts of climate change on the project and whether the need for the project will be triggered more often in the future based on historical data (i.e., the substitution requirement has required more in the last five years than previous years combined).

Response: The Proposed Action would provide additional operational flexibility to Springs Utilities by allowing Wolford Mountain and Homestake reservoirs to be used as additional substitution sources. Under certain climatic conditions, effects associated with this project may change. However, it is not possible to predict those anticipated changes or if climate change would increase need for future substitutions. If future impacts under the Proposed Action are determined to be outside those analyzed in this EA, additional NEPA compliance would be completed. The Final EA includes a discussion (Section 3.1.2) on how climate change may influence water resources in the West.

TU-4: TU states that the cumulative impacts of the Green Mountain Pump Back project combined with the Proposed Action on the Blue River downstream of Green Mountain Reservoir should be evaluated in the EA.

Response: Refer to the new section in the Final EA, Section 3.1.3 Reasonably Foreseeable Water-Based Actions Considered in Cumulative Effects Analysis. The Green Mountain Pump Back project was not considered a reasonably foreseeable project because there is not reasonable certainty as to the likelihood of this action occurring. The Green Mountain Pump Back project has only been studied at the feasibility level, and the formulation of a project, if any, to move forward has not been made by the study participants. In addition, there is currently not sufficient information available to define this action and conduct an analysis to quantify the cumulative effects of pump back options.

TU-5: TU states that the use of gage data from Kremmling (0905800) is too far downstream to adequately assess the direct impacts of flow changes on the Colorado River below the Williams Fork confluence. TU recommends evaluating data from the Parshall gage (i.e., Colorado River immediately below the Williams Fork River confluence) in the EA.

Response: Table 3-12 in the EA shows the modeled differences in flows for the Colorado River immediately below the confluence with the Williams Fork River. The title of Table 3-12 was mislabeled and has been corrected in the Final EA to read "Colorado River below the Confluence with the Williams Fork River."

TU-6: TU states that the EA should evaluate impacts on Colorado Water Conservation Board (CWCB) Instream Flow rights in the portion of the Colorado River between Granby Reservoir and the Blue River.

Response: Refer to the additional discussion of instream flow requirements and potential effects on these requirements that was added to Sections 3.3.1 and 3.3.2 in the Final EA.

TU-7: TU states that the use of a monthly time step model to assess impacts on aquatic resources within potentially affected streams is inadequate.

Response: As discussed in Section 3.3.2 of the Draft EA, a monthly model was considered adequate given the magnitude of hydrologic effects anticipated under the Proposed Action. Additional discussion regarding this issue was added to Section 3.3.2 in the Final EA.

TU-8: TU states that the discussion of direct and cumulative water quality impacts, particularly temperature, in the EA is too general to support that these impacts are not significant. Direct and cumulative impacts on water quality should be quantified.

Response: A qualitative water quality direct and cumulative analysis was conducted for the EA. It was determined that the Proposed Action would create none to minor short-term direct impacts on water quality. An agency is only required to conduct analysis to the point that the level of impacts can be determined. Since the qualitative analysis resulted in none to minor short-term impacts, a qualitative analysis is considered appropriate for this NEPA analysis.

TU-9: TU states that the EA should evaluate whether the Proposed Action will directly or cumulatively interfere with obligations under Senate Document 80.

Response: Reclamation does not believe that this project directly or cumulatively interferes with its obligations under Senate Document 80. Senate Document 80 specifies the manner of operation of Colorado-Big Thompson (C-BT) Project facilities. Green Mountain Reservoir is a component of the C-BT Project and is therefore subject to the provisions of Senate Document 80. There would be no change in Green Mountain Reservoir operations under the Proposed Action nor would there be any effect on other West Slope C-BT facilities, including Lake Granby, Grand Lake, Shadow Mountain Reservoir, and the Adams Tunnel. Green Mountain Reservoir will continue to be operated in accordance with Senate Document 80 under the Proposed Action. The explicit purpose of the requested substitution operation is to assure the fill of Green Mountain Reservoir which in turn assures and protects Reclamation's ability to perform its obligations under Senate Document 80.

TU-10: TU states that the Project Purpose and Need and the alternatives are too narrowly defined. Is the purpose of the project to "provide a reliable source of municipal water to the citizen owners and customers of Springs Utilities" as stated in § 1.1, page 1-1 of the Draft EA? Or is it to "allow Springs Utilities to comply with the Blue River Decree?"

Response: The purpose and need of the proposed project is adequately defined in Section 1.2 of the EA and provides Springs Utilities a broader range of operational flexibility under the Blue River Decree, which in turn provides Reclamation and WAPA the certainty they need to approve a long-term substitution plan.

The range of alternatives analyzed in the EA is sufficient for this level of NEPA analysis. An alternatives screening process was conducted (see Section 2.2 of the Final EA), where a reasonable range of alternatives was evaluated (Section 102(2)(E) of NEPA). Reasonable alternatives considered were those that were practical or feasible from technical and economic standpoints using common sense, rather than simply desirable from the standpoint of the applicant. The range of alternatives initially screened were assessed to determine if they could reasonably achieve the need that the Proposed Action is intended to address, while simultaneously minimizing environmental impacts. Unlike the Proposed Action, all of the preliminary alternatives that were considered required the construction of new facilities, which would result in significant environmental impacts.

TU-11: If a Power Interference Agreement were to be granted by Reclamation, specific conditions which reflect the scope and assumptions of the EA should be specifically stated in the Agreement. The 2003 Memorandum of Agreement is an agreement between private parties that could be subject to negotiated amendments. The Power Interference Agreement, on the other hand, is a federal agreement, subject to public review. Accordingly, the Agreement should contain all necessary conditions, including conditions that formed the basis of the assumptions used in the EA. In addition, the Agreement must include specific provisions precluding operation of the Agreement if such operation results in injury to the CWCB's Instream Flow water rights within pertinent reaches. Other terms and conditions may be needed to prevent or mitigate impacts to the human and natural environment as a result of the Proposed Action and to ensure compliance with Senate Document 80. Trout Unlimited would like to be notified if and when a draft Power Interference Agreement is ready for public review.

Response: WAPA may include language in the Power Interference Agreement referencing the Blue River Decree. The Power Interference Agreement is a means to document and formalize the terms of compensation between Springs Utilities and WAPA. WAPA has historically received compensation from Springs Utilities without the benefit of an agreement and will continue to do so in the absence of an agreement because WAPA is entitled to and has historically been compensated by court order (i.e., under the Blue River Decree). WAPA holds that the Power Interference Agreement can neither allow nor disallow stream depletions granted by the Blue River Decree and public review of and comment to the agreement is therefore not required.

COMMENT LETTER FROM:
Petros & White, LLC, on behalf of the Board of Commissioners, Summit County, Colorado
Charles B. White
October 14, 2008

SC-1: Summit County states that recent comments made by the Colorado Attorney General's Office in pending water court Case No. 03CW320 may have undermined and contradicted one of the 2003 MOAs assumptions. More specifically, 250 AF in the West Slope Account in the Upper Blue Reservoir would be administered as an exchange from Wolford Mountain Reservoir with a 2003 priority date, rather than a contractual bookover of storage between the two reservoirs. If implemented, this administrative policy would prevent the Substitution MOA from operating in a manner that the parties, including Summit County, intended. Summit County requests that the Proposed Action not be approved by Reclamation if the reservoir bookover cannot be implemented as contemplated by the 2003 MOAs.

Response: The Draft EA states (Section 1.2, Project Purpose and Need) that the MOAs form the basis of the Substitution and Power Interference Agreements. This NEPA action is being conducted concurrently to Colorado water court Case No. 03CW320, which is still pending a final determination. Any alteration to the terms and conditions of the agreements would require amendments to the agreements, and additional NEPA compliance if the impacts are determined to be outside those analyzed in this EA. Springs Utilities has not retracted their request to Reclamation for a substitution and power interference agreement. Therefore, Reclamation will continue to proceed with this NEPA process.

SC-2: The statement in the Draft EA that Springs Utilities' 1929 rights "are not governed by the terms and conditions of the Blue River Decree" is incorrect.

Response: The intent of this statement was with regard to substitution operations. This is clarified in the Final EA in Section 1.4.4 Springs Utilities' Collection Systems and Customers, under the heading Continental-Hoosier Transmountain Diversion System.

SC-3: The EA should also discuss the water rights Springs Utilities claimed in water court Case No. 03CW314. The EA should evaluate the impacts of exercising these rights of exchange and expressly incorporate the limitations of the Exchange MOA.

Response: Springs Utilities pending exchange water rights claimed in Colorado water court Case No. 03CW314 are separate and distinct water rights, unrelated to substitution operations as described in the Blue River Decree. The exchanges proposed in that water rights case are not part of the Proposed Action or No Action alternatives. Please refer to Section 3.3.3 of the Final EA for further discussion of these pending exchange rights in the cumulative effects analysis.

SC-4: The discussion of Springs Utilities Reuse Program is incomplete. The Draft EA should discuss Springs Utilities' reuse obligations under the Blue River Decree and consider opportunities for additional reuse of water that would be created by the approval of the Proposed Action.

Response: Springs Utilities' Continental-Hoosier System diversions would not change under the Proposed Action or the No Action alternatives. While diversions would not change, the net yield to Springs Utilities Continental-Hoosier System under the Proposed Action may increase in a limited number of substitution years when releases are made from Springs Utilities Wolford account or from Homestake Reservoir since they would not have to release as much water from Montgomery Reservoir or the Homestake system to payback Denver Water for substitution releases made on Springs Utilities behalf on the West Slope. However, because of West Slope delivery obligations in the MOA, the net yield to Springs Utilities' system, and subsequently reuse opportunity, may be reduced in some non-substitution years under the Proposed Action. To the degree that Springs Utilities has any additional yield from their Continental-Hoosier System, that water would be reused consistent with their current reuse program and the Blue River Decree. Springs Utilities currently reuses all water generated from their Continental-Hoosier System and would reuse any additional yield if it is generated under the Proposed Action.

SC-5: The Draft EA states that Denver Water supplied Springs Utilities with additional water to operate a Williams Fork to Hoosier Tunnel exchange after Green Mountain Reservoir and the Continental-Hoosier water rights were our of priority. Summit County requests that Reclamation describe the amount of water exchanged, if approval was obtained from Reclamation for power interference, and whether the exchange was administered by the Division 5 Engineer.

Response: The Williams Fork exchange included in the Draft EA in Table 1-1 Summary of Historical Substitution Year Operations (Section 1.4.6 Substitution Year Operations) does not relate to substitution but was listed for informational purposes only. To avoid confusion, this exchange has been removed from the Final EA in Table 1-1 as well as from the discussion in Section 1.4.6 Substitution Year Operations under the heading 1964 Substitution Year.

SC-6: The EA should examine the implications for water rights administration of a power interference agreement, including the effect on the Green Mountain power call of the State Engineer's policy on administration.

Response: The administration of Springs Utilities' power interference is carried out under the authority of the Blue River Decree. Springs Utilities must replace the power that would have been generated by Reclamation at Green Mountain Reservoir's hydroelectric plant had Springs Utilities not diverted water. Springs Utilities has historically provided the replacement power year-to-year by mutual agreement with the WAPA. There would be no change in the Green Mountain Reservoir power call nor would there be any change in the administration of a power interference agreement under the Proposed Action. The Proposed Action would establish a long-term power interference agreement with Reclamation and WAPA that would be operated in the same manner as under the No Action Alternative.

SC-7: Under certain circumstances, a Summit County 1041 permit may be required for the change in operation proposed in this EA.

Response: Comment noted. Clarification was added to the Final EA in Section 1.5 Required Permits and Approvals to note that additional County permits may be required, including a 1041 permit.

SC-8: The assumption that Denver Water would provide replacement water under the No Action Alternative does not appear to be valid since they do not have a legal obligation to provide this water. Thus, under the No Action Alternative, Springs Utilities would not have sufficient replacement water to divert the projected volume in its Continental-Hoosier System in a substitution year. This would result in much different impacts on the Blue River than those described in the Draft EA.

Response: The assumption that Denver Water continues to provide replacement water in the future on behalf of Springs Utilities in substitution years under the No Action Alternative is reasonable given that it is consistent with the manner in which Springs Utilities' substitution obligation has been paid back in all but one substitution year and it is consistent with the letter provided by Denver Water to Springs Utilities dated July 23, 2008, which states that Denver Water is willing to consider performing similar operations in the future.

SC-9: All or a portion of the 250 AF may be used for augmentation purposes, in which case it would be used to replace out-of-priority depletions to the Blue River or its tributaries, directly or by exchange, resulting in full consumption. Summit County beneficiaries of the water retain the right to reuse, successively use, and dispose of the effluent and return flows resulting from the use of that water.

Response: The assumption that all of the 250 AF is consumed is reasonable for modeling purposes and conservative from the standpoint of estimating flow changes. See additional discussion added to Section 2.4 in the Final EA regarding how this water might be used.

SC-10: Minimum bypasses from Dillon Reservoir are governed by the terms of the FERC Order. The relevant conditions require a bypass of 50 cfs or the inflow, whichever is less, without any exceptions.

Response: See discussion added to Section 3.3.1 in the Final EA regarding the 50 cfs bypass requirement per the FERC Order. The CDSS Model reflects the 50 cfs bypass or inflow, whichever is less, without exceptions, which is consistent with the FERC Order.

SC-11: The EA should identify the current issues surrounding the administration of the Green Mountain Reservoir water rights and the impact on the administration of the proposed substitution if the State Engineer's Interim Policy is changed (see pg. 3-14).

Response: The CDSS Model accurately reflects the current administration of the Green Mountain Reservoir water rights, which is defined in the 2008 Interim Policy adopted by the State Engineer. Potential changes to the State Engineer's Interim Policy and the associated effects on the administration of substitution operations are difficult to assess since there is no certainty regarding when or how the Interim Policy may change. Potential changes to the State Engineer's Interim Policy are not addressed in the Final EA since that is not a reasonably foreseeable action. Even so, the Interim Policy's primary effect is the calculation of the paper fill of Green Mountain Reservoir. Any change to this policy might result only in a change in the amount of fill deficit in substitution years, or the amount water required to complete the fill of Green Mountain Reservoir. However, regardless of how the fill deficit is calculated, the method of substitution operations under either the Proposed Action or the No Action Alternative would not be affected.

SC-12: Summit County refers to comment SC-8 [6], and refers to a statement in the CSU EA that assumes that CSU is able to obtain a sufficient supply of replacement water from Denver Water. Summit County suggests that there is a possibility under the No Action Alternative that CSU would not have sufficient replacement water to divert the projected volume in its Continental-Hoosier System in a substitution year.

Response: See response to comment SC-8.

SC-13: Summit County refers to the following statement "In years the substitution obligation is less than 2,100 AF and the total contents in the Upper Blue Reservoir are sufficient to fully payback the substitution obligation, there would be no difference in the location, amount or timing of substitution payback under the Proposed Action. Summit County indicated this statement does not take into account the requirement of the Substitution MOA that the timing or releases from Upper Blue Reservoir be coordinated between the River District, CSU and Denver Water to provide environmental benefits in the late summer and early fall.

Response: See additional discussion added to Section 3.3.2 in the Final EA.

COMMENT LETTER FROM:
White & Jankowski, L.L.P, on behalf of the Board of County Commissioners, Grand County, Colorado
David C. Taussig
October 30, 2008

GC-1: Grand County is concerned with the use of monthly averages rather than a daily stream flow model especially during the 13 substitution years. The use of monthly average flows is not adequate to address daily stream flows and the factors that affect the aquatic environment. The monthly timing and amount of average releases ignores the changed location of the releases from Williams Fork Reservoir to locations downstream. On any day when the release is at the downstream locations the effect is 100% decrease to the Williams Fork and Colorado River above the confluence with Muddy Creek.

Response: See response to Trout Unlimited's comment TU-7. Also, Tables 3-8 and 3-12 in the EA show the hydrologic effects to the Williams Fork River and Colorado River below the confluence with the Williams Fork River, respectively associated with the changed location of releases from Williams Fork Reservoir to locations downstream. Whether the analysis is completed on a daily basis or monthly basis, changes in substitution releases from Williams Fork Reservoir would only occur in years the last increment of Denver Water's substitution obligation is released from Williams Fork Reservoir. In those years, substitution releases from Wolford Mountain Reservoir would increase, while substitution releases from Williams Fork Reservoir would decrease. In years when the last increment of Denver Water's substitution obligation is released from Wolford Mountain Reservoir, the same amount of substitution water would released from both Wolford Mountain and Williams Fork reservoirs as explained below. A break down of the 13 substitution years during the study period and the associated flow changes in the Colorado River reach of concern follows.

- In 5 years, contents in Upper Blue Reservoir are sufficient to cover Spring Utilities entire substitution bill. In those years, there would be no change in releases from Williams Fork or Wolford Mountain reservoirs between the No Action and the Proposed Action alternatives.

- In one year (1977), contents in Upper Blue Reservoir would not be sufficient to cover Spring Utilities' entire substitution bill, which was estimated to be 1,606 AF. However, under both the No Action and Proposed Action alternatives, Denver Water would meet Springs Utilities' entire substitution obligation of 1,606 AF. Water would not be released from Springs Utilities' accounts in Wolford Mountain or Homestake reservoirs for substitution payback. Therefore, there would be no difference in releases from Williams Fork or Wolford Mountain reservoirs between the No Action and the Proposed Action alternatives.

- In 7 years, contents in Upper Blue Reservoir would not be sufficient to cover Spring Utilities substitution bill, in which case releases from Springs Utilities' account in Wolford Reservoir would be made under the Proposed Action. In six of those years, the last increment of Denver Water's substitution obligation would be released from Wolford Mountain Reservoir. The total amount released from Wolford Mountain Reservoir for substitution payback would be the same; however, the amounts releases from Springs Utilities' and Denver Water's accounts would be different. Likewise, the total amount released from Williams Fork Reservoir would be the same; however, the amount allocated to payback Denver Water substitution bill would increase and the amount allocated to payback Springs Utilities bill would decrease by a commensurate amount. In summary, there would be no change in the total amount of substitution water released from Wolford Mountain and Williams Fork reservoirs and no corresponding change in flows along the Colorado River in those years under the Proposed Action. **Table 1** illustrates why there would be no change in flows in 6 of these 7 years.

In one of these substitution years (1963) there would be a flow change in the reach of the Colorado River downstream of the confluence with Williams Fork River because of the changed location of the releases from Williams Fork Reservoir to Wolford Mountain and Homestake reservoirs. In 1963, the total substitution bill would be 4,319 AF. Of that amount, Denver Water would release 2,100 AF for Springs Utilities, 1,750 AF would be released from Springs Utilities' account in Wolford Mountain Reservoir, and 470 AF would be released from Homestake Reservoir. In that year, the last increment of Denver Water's substitution obligation would be released from Williams Fork Reservoir. As a result, the total substitution release from Wolford Mountain Reservoir for Denver Water and Springs Utilities would increase, while the total substitution release from Williams Fork Reservoir would decrease. However, the reduction in release from Williams Fork Reservoir is only 570 AF instead of the full 2,100 AF released by Denver Water for Springs Utilities as shown in **Table 2**. Model results show the reduction in substitution water released from Williams Fork Reservoir occurs over the period from August 1963 through March 1964. It is possible that the daily flow changes could be greater than an average monthly changes predicted by the model in those months, depending on the schedule of releases from Williams Fork Reservoir. However, Springs Utilities diversions from the Upper Blue River do not deplete the Colorado River from the confluence of the Williams Fork River downstream to the confluence of the Blue River. In substitution years, water release from Williams Fork Reservoir in August and September for substitution payback augments flows in the Colorado River below the confluence with the Williams Fork River. Therefore, the flow change associated with the change in location of substitution release to downstream locations would be a reduction in the amount of water added to the river.

In addition to the monthly model results, historical daily substitution releases in 2002 were evaluated because it is a recent substitution year and the driest year in the 56-year study period evaluated. In 2002, Springs Utilities' substitution operations were consistent with the Proposed Action. Their total substitution obligation was 3,143 AF of which 1,923 AF was paid back with a release from Denver Water's account in Wolford Mountain Reservoir. Denver Water's substitution bill was paid back in part by a release from Williams Fork Reservoir of 10,000 AF. Had 1,923 AF of Springs Utilities' substitution obligation been paid back with a release from

Williams Fork Reservoir consistent with the No Action alternative, the total release from Williams Fork Reservoir would have still been 10,000 AF. This is due to the manner in which Denver Water's substitution obligation is paid back with alternating releases from Wolford Mountain and Williams Fork Reservoir. Under the No Action alternative, 1,923 AF of the total substitution release from Williams Fork Reservoir would have been allocated to payback Springs Utilities obligation and the 1,923 AF released from Denver Water's account in Wolford Mountain Reservoir for Springs Utilities would have been released to payback Denver Water's obligation instead. As a result, there would have been no change in daily flows as a result of the Proposed Action in 2002.

GC-2: The maximum rate of exchange of 30 cfs is a significant amount of stream flow in the reach of the Colorado River below the confluence with the Williams Fork River. The 30 cfs rate of flow should be utilized as the maximum rate of impact under the Proposed Action to remove 30 cfs from the Williams Fork River and the Colorado River and instead release it from Wolford Mountain and Homestake reservoirs.

Response: The 30 cfs exchange referred to in Attachment A of the 2003 MOA is a separate exchange not associated with substitution operations. This exchange was included in the MOA and discussed in paragraph 4.e. as it pertains to the reuse of return flows from the 250 AF that would be provided to Summit County from Upper Blue Reservoir. The intent of that paragraph is that the reuse of any returns flows associated with the use of the 250 AF can not impact the exchanges listed in Attachment A. The 30 cfs should not be utilized as the maximum rate of impact from substitution operations as suggested by Grand County. The examples provided of potential flow changes in 2006 do not apply since that was not a substitution year, and Springs Utilities Proposed Action would not affect flows in these reaches of the Colorado and Williams Fork rivers during non-substitution years. Flows in 2006 are discussed in the response to Trout Unlimited's comment TU-6.

Table 1
Summary of Substitution Releases from Williams Fork, Wolford Mountain, and Homestake Reservoirs in 1966
Values in Acre-Feet

	No Action Alt.			Proposed Action Alt.			Difference in Total Releases
	CSU	Denver Water	Total Release	CSU	Denver Water	Total Release	
Wolford Mtn Reservoir							
Release from Springs Utilities Account	0	0	0	224	0	224	
Release from Denver Water Acct.	0	13425	13425	0	13201	13201	
Total Release	**0**	**13425**	**13425**	**224**	**13201**	**13425**	**0**
Williams Fork Reservoir							
Release for Springs Utilities	2324	0	2324	2100	0	2100	
Release for Denver Water	0	7676	7676	0	7900	7900	
Total Release	**2324**	**7676**	**10000**	**2100**	**7900**	**10000**	**0**
Homestake Reservoir	0	0	0	0	0	0	**0**
TOTAL RELEASE	**2324**	**21101**	**23425**	**2324**	**21101**	**23425**	**0**

Table 2
Summary of Substitution Releases from Williams Fork, Wolford Mountain, and Homestake Reservoirs in 1963
Values in Acre-Feet

	No Action Alt.			Proposed Action Alt.			Difference in Total Releases
	CSU	Denver Water	Total Release	CSU	Denver Water	Total Release	
Wolford Mtn Reservoir							
Release from Springs Utilities Account	0	0	0	1750	0	1750	
Release from Denver Water Acct.	0	25067	25067	0	23418	23418	
Total Release	**0**	**25067**	**25067**	**1750**	**23418**	**25168**	**101**
Williams Fork Reservoir							
Release for Springs Utilities	4319	0	4319	2100	0	2100	
Release for Denver Water	0	6251	6251	0	7900	7900	
Total Release	**4319**	**6251**	**10570**	**2100**	**7900**	**10000**	**-570**
Homestake Reservoir	0	0	0	469	0	469	**469**
TOTAL RELEASE	**4319**	**31318**	**35637**	**4319**	**31318**	**35637**	**0**

GC-3: Grand County is concerned with the cumulative impacts of various pending projects on the Colorado River and tributary headwaters. The cumulative impacts analysis conducted does not comply with NEPA. This EA could be supplemented based on information developed from the Denver Water Moffat Collection System Project and Windy Gap Firming Project (WGFP) and the use of PACSM in the cumulative impacts review. Grand County stated that NEPA does not involve a comparison. Rather impacts can result from individually minor actions that have a collective significant impact over time. Grand County also stated the lack of utilizing a daily time step stream flow model limits the ability to conduct a proper cumulative impact review.

Response: As suggested by Grand County the cumulative effects analysis was supplemented based on available information from the WGFP and Denver Water's Moffat Collection System Project. Additional analysis was completed of potential hydrologic effects due to reasonably foreseeable actions. See analysis and discussion added to Section 3.3.3 of the Final EA.

GC-4: The EA needs to be supplemented to include the information from the Grand County Stream Management Plan (GCSMP) and to include a discussion of potential mitigation measures developed in the GCSMP. The GCSMP studies some of the same reaches impacted by this project. The EA needs to include a discussion of ways to mitigate the cumulative adverse impacts.

Response: The Final EA has been supplemented to include a discussion of *Grand County's Stream Management Plan, Phase 2, Environmental and Water Users Flow Recommendations*. See Section 3.3.1.7 (Grand County Stream Management Plan in the Hydrology Section), Section 3.5.2 (Environmental Consequences for Water Quality), Section 3.8.1 (Affected Environment for Recreation), and Section 3.8.2 (Environmental Consequences for Recreation) in the Final EA. The Final EA also includes a discussion of mitigation measures for the Blue River above Dillon Reservoir in Section 2.4 and 3.3.2.2. As discussed in response to Grand County comment GC-1, there would be little to no change in flows under the Proposed Action along the Williams Fork River, Muddy Creek, Eagle River, and Colorado River mainstem under the Proposed Action, therefore, mitigation measures have not been proposed for those river reaches.

The Draft EA states (Section 1.2, Project Purpose and Need) that the MOAs form the basis of the Substitution and Power Interference Agreements. Paragraph 9.a. of the 2003 MOA states the timing of releases from Upper Blue Reservoir for substitution payback will be coordinated between the River District, Springs Utilities and Denver Water with releases made in the late summer and early fall to provide environmental benefits.