

# Colorado's Water Supply Future



## Water Supply Reserve Account Annual Report

October 29, 2010

To the House of Representatives Committee on Agriculture,  
Livestock, and Natural Resources and the Senate Committee  
on Agriculture, Natural Resources, and Energy

# COLORADO'S WATER SUPPLY FUTURE: Water Supply Reserve Account 2010 Annual Report

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## Background

The Water Supply Reserve Account (Account) was created in 2006 by Senate Bill 06-179. The legislature created the Account to help citizens identify and meet their critical water supply and management needs. Monies from the Account may be used to:

- Identify human, environmental, or recreational water needs (also commonly referred to as "Needs Assessments")
- Evaluate available water supplies in each river basin
- Build projects or identify methods to meet identified water supply needs

### Program Highlights

- ◆ Over \$26,000,000 Invested in Over 150 Projects Across Colorado
- ◆ Over \$50,000,000 Leveraged with Matching Funds from Numerous Sources
- ◆ Projects Recommended by Basin Roundtables on a Consensus Basis with Final Approval by the CWCB

The authorizing legislation provides funds for a broad range of eligible activities including: construction of infrastructure (storage, pipelines, river improvements, etc.), feasibility studies, studies of human and environmental needs, and technical assistance for permitting or environmental compliance.

## Overview

The Account is administered by the Colorado Water Conservation Board (CWCB) in collaboration with the Interbasin Compact Commission (IBCC) and the 9 Basin Roundtables established under House Bill 05-1177 (See Figure 1). Requests for funding

### Recent Legislation and WSRF Funding Levels

In 2009, the Water Supply Reserve Account Program was reauthorized in perpetuity by SB 09-106. SB 09-106 appropriates \$10,000,000 per year from the Severance Tax Trust Fund, subject to available funding. Due to budget shortfalls the WSRF has received the following funding the past 3 years: FY2008—\$6,000,000; FY2009—\$7,000,000; FY2010—\$5,775,000. It is authorized to receive \$6,000,000 in FY2011.

begin at the Basin Roundtables. Applications approved by the appropriate Roundtable are submitted to the CWCB. To date, all requests have been for grants and most project sponsors provide matching funds and/or leverage other monies.

Monies from the Account are distributed according to the WSRF Criteria and Guidelines, which were jointly developed by the CWCB and IBCC in collaboration with the Basin Roundtables. The Criteria and Guidelines are reviewed annually in October to consider changes to the Account's operation. The Criteria and Guidelines, application, and other materials are available on the CWCB website.

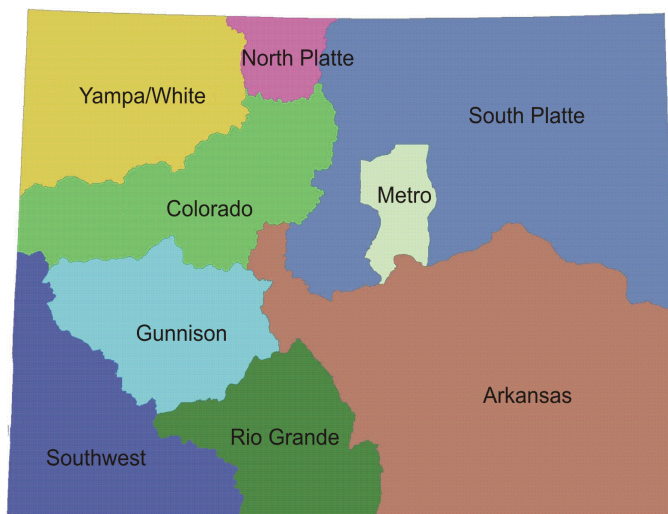


Figure 1. Colorado's Nine Basin Roundta-

## SPOTLIGHT



### RIO GRANDE RESTORATION FOUNDATION—RIO GRANDE STABILIZATION PROJECT

The Rio Grande Restoration Project has used WSRF funds to successfully leverage almost \$1M in funding from other sources. The Project helps implement the recommendations of a study of 91 miles of the Rio Grande from South Fork to the Alamosa/Costilla County line that was completed in 2001 through CWCB funding. The Study divided the 91-mile reach into sub-reaches to better examine the geomorphology, the flood plain and its function, the condition of the riparian zone and fisheries, and the condition and operation of irrigation diversion structures. The Study recognized the needs and importance of Colorado's obligations to the Rio Grande Compact. Benefits of the ongoing riparian stabilization project include:

- Improved water quality as a result of reduced sediment loading;
- Improved aquatic habitat;
- Improved wildlife habitat, including potential habitat for the federally endangered Southwestern Willow Flycatcher and other species;
- Improved condition of historic water flows to support agriculture;
- Improved efficiency in meeting the Rio Grande Compact obligations.

## SPOTLIGHT



### UPPER ARKANSAS WATER CONSERVANCY DISTRICT—HIGH ELEVATION DATA COLLECTION PLATFORMS

The Arkansas Basin Roundtable leveraged \$285,000 in federal Bureau of Reclamation grant funds when it awarded \$285,000 to the Upper Arkansas Water Conservancy District (UAWCD) from the Water Supply Reserve Account. In its mission to protect Upper Basin water, UAWCD provides domestic, commercial, and irrigation replacement water through augmentation plans. This project was designed to optimize the filling of reservoirs, improve timing of water releases, decrease administrative costs, and provide important public data. Six reservoir sites were installed to monitor high-alpine water and weather conditions. Nine tributary stream gauge sites were constructed above strategic diversion points (historic controlling calls) in Chaffee, Custer, and Fremont counties. More than 500,000 downstream Colorado residents are affected by available supplies of Upper Arkansas River water.

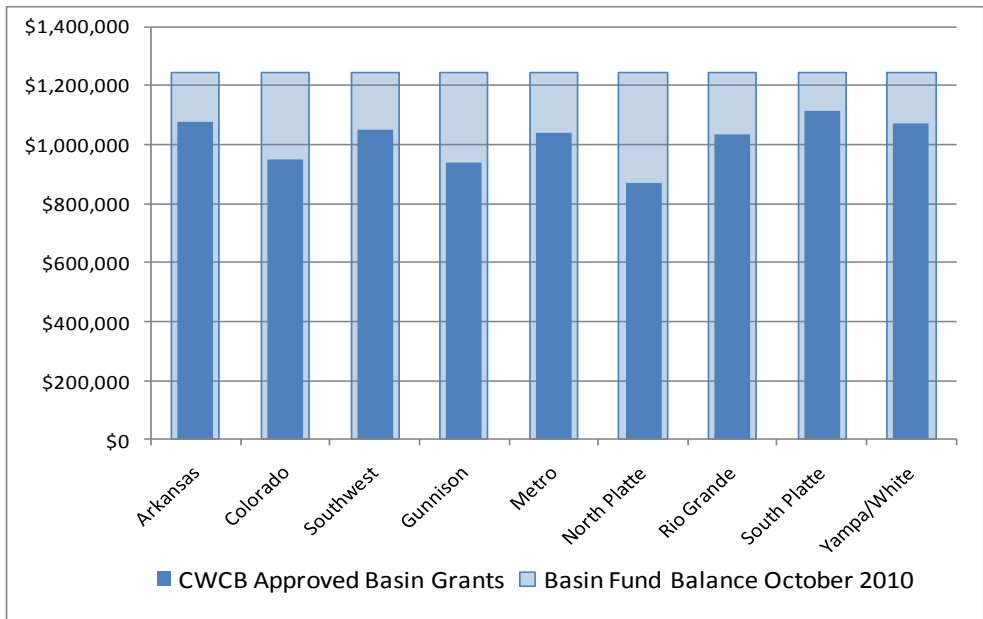


Figure 2. Basin Fund Distribution Approved per Basin

### Accomplishments

The WSRA has funded projects across the entire state. The WSRA Criteria and Guidelines splits the Account into Basin and Statewide Funds. Each Basin Account has received \$1,245,250 to date. Figure 2 shows the amount approved from each basin (totaling \$9,148,843).

To date, the Statewide Account has received \$19,967,750 with \$17,427,968 in approved grants. The distribution of WSRA funds from the Statewide Account per basin is shown in Figure 2.

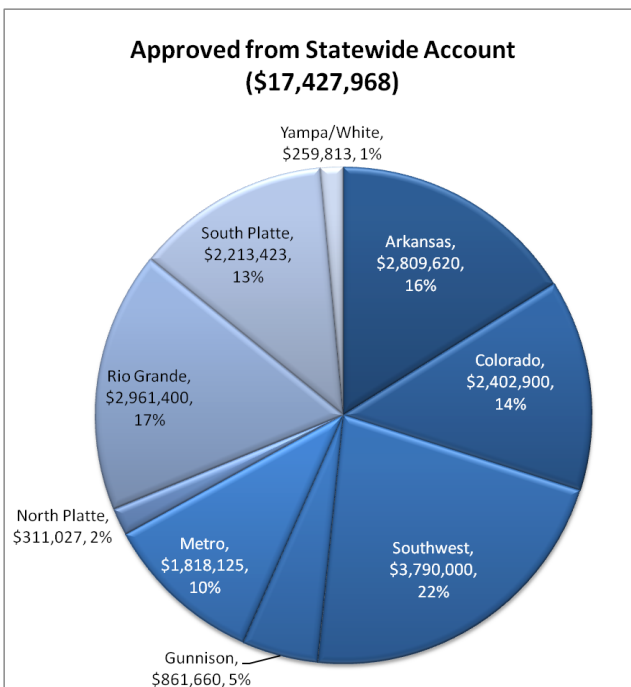


Figure 3. Statewide Fund Distribution Approved per Basin

### Sustaining Mineral Severance Tax Funding - Vital for Ongoing Success

Colorado has billions of dollars in funding needs for water supply and water management projects. The mineral severance tax fund was established to help local communities offset the impacts of extracting nonrenewable resources. The distribution formula for severance tax emphasizes water supply in order to provide a renewable resource - **water** - to help offset the impact from extractive natural resource development. The WSRA furthers this objective by helping to provide an adequate water supply for Colorado's citizens and environment.

Projects funded from the Account have addressed both traditional consumptive water needs (agricultural and municipal) as well as nonconsumptive needs (environmental and recreational) with most of the projects addressing multiple needs. Figure 4 shows the distribution of WSRA funding by primary category.

Funds from the Account provide the means to conduct both studies of water needs and actual project implementation. Figure 5 shows how the Account has supported both aspects of water projects by amount of funding as well as number of projects funded. Though the Account has funded more studies than implementation projects, more funds have been allocated towards the implementation of projects to meet critical water supply needs.

### Observations

The Water Supply Reserve Account Program has been a tremendous success. The Account has funded a mix of consumptive and nonconsumptive water projects and promoted multi-purpose projects throughout the State. The Account has funded projects that help Colorado meet its water supply needs with funding that was not available until the passage of the legislation.

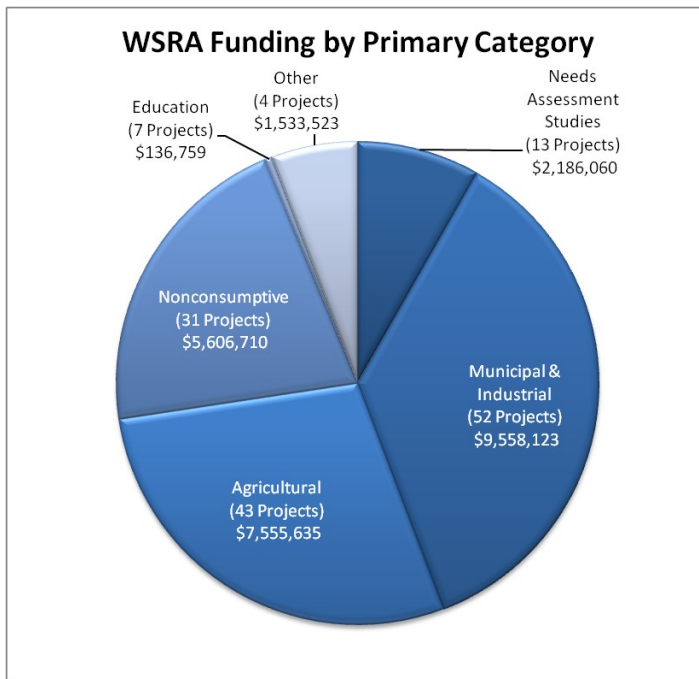


Figure 4. Funding Distribution by Primary Category

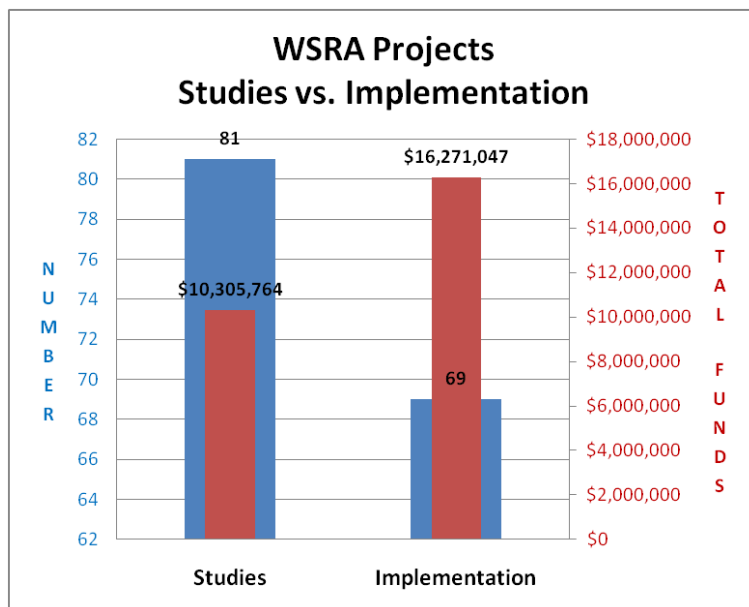


Figure 5. Funding and Project Distribution by Type

The annual review of the Criteria and Guidelines allows for program adjustments. Adjustments to the Criteria and Guidelines have allowed the WSRA to adapt to the changing needs of Colorado's water community.

## SPOTLIGHT

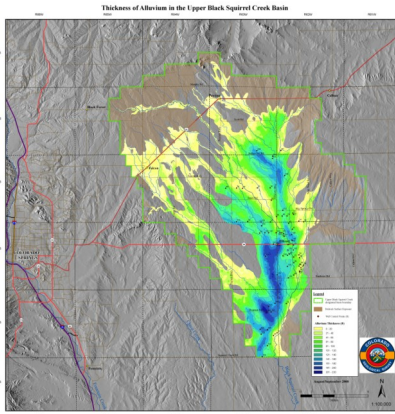


### GOODMAN POINT WATER DISTRICT—PROJECT CONSTRUCTION

Residents of Goodman Point Water District in Montezuma County, near Cortez, Colorado, have been hauling water since the area's settlement in the late 1800s. Goodman Point is now within a month of completing its 30 year quest for domestic water at Goodman Point (Montezuma County/Cortez). This project would have never become a reality without the "seed" grant from WSRA for the initial studies, and a \$260,000 construction grant for this \$900,000 project. This includes 11 miles of four inch line, a pump station, and a 54,000 gallon storage tank.



## SPOTLIGHT



### EL PASO COUNTY WATER AUTHORITY—UPPER BLACK SQUIRREL CREEK AQUIFER RECHARGE INVESTIGATION

In June 2007, the Colorado Geological Survey initiated a project for the El Paso County Water Authority to evaluate and refine the existing knowledge of the hydrogeology of the alluvial aquifer system in the Upper Black Squirrel Creek basin for the purpose of assessing the potential for aquifer recharge and storage implementation. Ground water from the alluvial aquifer has been the dominant water source since the late 1800's. Recent growth in the area continues to increase demand for scarce water supplies. Water from the alluvial aquifer is used for domestic, agricultural, and municipal uses. The report details the hydrogeology of the Upper Black Squirrel Creek basin and provides specific locations for future implementation of aquifer recharge / storage projects.

## WSRA Fund Appropriation and Receipts

October 2010

Fiscal Year	Legislative Appropriation	Actual Funds Received		
		Total	Statewide Account	Basin Account
2006/2007	\$10,000,000	\$10,000,000	\$5,500,000	\$4,500,000
2007/2008	\$6,000,000	\$6,000,000	\$4,200,000	\$1,800,000
2008/2009	\$10,000,000	\$7,000,000	\$4,300,000	\$2,700,000
2009/2010	\$5,775,000	\$5,775,000	\$4,215,750	\$1,559,250
2010/2011	\$6,000,000	\$2,400,000	\$1,752,000	\$648,000
<b>TOTAL</b>	<b>\$37,775,000</b>	<b>\$31,175,000</b>	<b>\$19,967,750</b>	<b>\$11,207,250</b>

Note: WSRA is a Severance Tax Tier II program with 40% of funds distributed July 1, 30% on Jan. 1, and 30% on April 1. In FY 2008/2009 the final 30% installment of \$3,000,000 was not received due to the State's budgetary shortfall. Currently, only the first 40% installment for FY 2010/2011 has been received.

Table 1. Summary of WSRA Appropriations and Receipts

### Funding

#### Summary

Table 1 displays the legislative appropriations and actual funds received by the Water Supply Reserve Account Program since its inception in 2006. As a Severance Tax "Tier II" program appropriated funds are distributed on a 3-part schedule as available with 40% on July 1, 30% on January 1, and the final 30% on April 1 of the fiscal year. In Fiscal Year 2008/ 2009 the final 30% installment was not received due to the state's budgetary shortfall. Table 1 also shows the breakdown of funds between the Basin and Statewide Accounts as directed by the Criteria and Guidelines. The Basin Account funds are then distributed evenly among the 9 basin roundtables.

Figure 6 summarizes the status of all approved WSRA projects. Per the WSRA Criteria and Guidelines applications for

### Summary of WSRA Project Status



Figure 6. Summary of WSRA Project Status

the Basin Account are considered at each of the CWCB's bi-monthly board meetings once they have received approval from the appropriate basin roundtable as documented in a letter from the roundtable's chair. Applications to the Statewide Account are considered either once a year in September or twice a year in September and March.

## WSRA Projects Approved by the CWCB

Name of Water Activity	Basin Account	Statewide Account	Total
<b>Arkansas Basin Total</b>	<b>\$1,076,756</b>	<b>\$2,809,620</b>	<b>\$3,886,376</b>
Arkansas Valley Conduit		\$200,000	\$200,000
Southeastern Colorado Water Conservancy District: Tamarisk Project		\$50,000	\$50,000
Upper Black Squirrel Creek Aquifer Recharge Investigation	\$45,200		\$45,200
Ground Water Conference	\$24,721		\$24,721
Fountain Creek Vision Task Force	\$75,000		\$75,000
Round Mountain Water & Sanitation District Water System Improvements Project	\$120,000		\$120,000
Rotational Land Following-Water Leasing Program -Lower Arkansas Super Ditch Company	\$150,000		\$150,000
Upper Big Sandy Water Balance	\$45,000		\$45,000
Model Transfers- Agriculture to Urban, Arkansas Basin	\$23,860		\$23,860
Arkansas Headwaters Diversion Structure Improvement Project		\$57,955	\$57,955
City of Las Animas Water System Improvements	\$100,000	\$200,000	\$300,000
Colorado State Parks Zebra Mussel Response		\$1,000,000	\$1,000,000
Geospatial decision support system for integrated water mgmt	\$100,000	\$500,000	\$600,000
Telemetry data collection platforms at six reservoirs plus flow control equipment and gauging at six reservoir outlet channels & nine streams w/in the upper Ark River basin	\$75,000	\$210,332	\$285,332
Demonstration of Membrane Zero Liquid Discharge Process for Drinking Water Systems (Joint Appl. with SP & Metro)	\$25,000	\$233,333	\$258,333
John Martin Wetlands and Neenoshe Reservoir Nonconsumptive Needs Quantification	\$148,975		\$148,975
Upper Arkansas Water Conservancy District Hydrologic Water Balance Study		\$180,000	\$180,000
City of Pueblo - Bedload/Sediment Collection and Removal Technology - Fountain Creek	\$75,000	\$150,000	\$225,000
Flaming Gorge Project Task Force Assessment	\$20,000		\$20,000
Stakeholders' Cooperative Mgmt Analysis for the Upper Arkansas River Basin	\$42,000		\$42,000
Flathead chub movement associated with the Clear Springs Ranch diversion structure in Fountain Creek	\$7,000	\$28,000	\$35,000

## SPOTLIGHT



### CITY OF GRAND JUNCTION— JUNIATA RESERVOIR ENLARGEMENT PROJECT

The City of Grand Junction's Juniata Reservoir Enlargement Project included an engineering evaluation, design plans, and construction for modification of an existing spillway. The project has provided an additional 412 ac-ft of storage capacity for the City of Grand Junction. The project cost totaled \$194,586 with \$25,000 from the Gunnison Basin WSRA Account, \$72,000 from the Statewide WSRA Account and \$97,586 from the City of Grand Junction Water Fund. Expanding the water storage in Juniata reservoir from 6,868 ac-ft to 7,280 ac-ft has given the City of Grand Junction additional drought protection. In addition, the project has improved the water quality in the reservoir. The project was completed in November 2009, representing an ideal use of the Water Supply Reserve Account, as the cost of the increased storage was only \$472 per acre foot.

## WSRA Projects Approved by the CWCB

Name of Water Activity	Basin Account	Statewide Account	Total
<b>Colorado Basin Total</b>	<b>\$950,171</b>	<b>\$2,402,900</b>	<b>\$3,353,071</b>
Energy Development Water Needs Assessment (Joint Application with Yampa)		\$150,000	\$150,000
Enlargement of Eagle Park Reservoir		\$250,000	\$250,000
Roaring Fork Watershed Assessment	\$40,000		\$40,000
Upper Colorado Endangered Fish Recovery Alternatives (10,825)		\$200,000	\$200,000
Vail Ditch Project		\$1,500,000	\$1,500,000
Bull Creek Reservoir No. 5 Spillway Adequacy Analysis	\$50,000		\$50,000
Basalt WCD - Missouri Heights	\$25,000		\$25,000
Grand County Stream Flow Management Plan	\$100,000		\$100,000
Old Dillon Reservoir	\$100,000		\$100,000
Fraser Sedimentation Basin	\$60,000	\$127,900	\$187,900
Roaring Fork Watershed Assessment - Phase 2	\$40,000		\$40,000
Feasibility and Design Assessment of Off-Channel Reservoir Sites in the Crystal River Watershed	\$40,000		\$40,000
Battlement Reservoir #3 Dam Reconstruction to Enhance Recreational & Environmental Opportunities	\$80,000		\$80,000
Colorado Basin Nonconsumptive Needs Quantification	\$315,171		\$315,171
Solicitation of stakeholders input and advice through a Colorado River Basin edition of Headwater Magazine Colorado	\$25,000		\$25,000
Grand River Ditch Pipeline	\$25,000		\$25,000
Gypsum - L.E.D.E. Ditch and Reservoir Reconstruction Project	\$50,000	\$175,000	\$225,000
<b>Southwest Basin Total</b>	<b>\$1,049,446</b>	<b>\$3,790,000</b>	<b>\$4,839,446</b>
Dry Gulch Reservoir/San Juan Reservoir Land Acquisition		\$1,000,000	\$1,000,000
Goodman Point: Pipeline Environmental Assessment	\$7,700		\$7,700
Goodman Point Phase 2	\$20,000	\$240,000	\$260,000
Jackson Gulch Reservoir Expansion Project	\$61,735		\$61,735
Bauer Lakes Water Co. Dam Outlet Structure Upgrade	\$40,000		\$40,000
La Plata West Rural Water Supply System	\$100,000	\$1,000,000	\$1,100,000
Town of Sawpit – Water System Engineering/Planning	\$25,000		\$25,000
MVIC Summit Irrigation Company feasibility study	\$39,300		\$39,300
Happy Scenes Water System Upgrades	\$50,000		\$50,000
La Plata Archuleta WD: Water System Master Planning	\$100,000		\$100,000
Molas Lake Ditch Rehabilitation and Diversion Structures	\$95,000		\$95,000
Lower Blanco River Restoration Project	\$100,000	\$150,000	\$250,000
Florida Mesa Canal Companies	\$100,000		\$100,000
Red Mesa Dam IDA and EAP	\$29,000		\$29,000
Park Ditch Company Improvements	\$85,000		
Town of Sawpit - Domestic Water System Construction	\$25,000		
La Plata Archuleta Water District - Permitting		\$400,000	\$400,000
Animas River Needs Assessment	\$57,000		\$57,000
Mancos River Diversion Project, Phase I	\$24,753		\$24,753
Protecting Irrigated Agricultural Lands and Water Rights for Agricultural Production	\$31,500		\$31,500
Florida Mesa Canal Companies - Canal Seepage Reduction Project		\$225,000	\$225,000
Town of Norwood - Raw Water System Update and Future Needs Study	\$58,458		\$58,458
Florida Mesa Canal Companies - Canal Seepage Reduction Project		\$775,000	\$775,000



## WSRA Projects Approved by the CWCB

Name of Water Activity	Basin Account	Statewide Account	Total
<b>Gunnison Basin Total</b>	<b>\$938,665</b>	<b>\$861,660</b>	<b>\$1,800,325</b>
Lake San Cristobal Controlled Outlet Structure	\$35,000		\$35,000
Safety and Serviceability Needs Inventory for Reservoirs in the Leroux Creek Drainage Basin	\$60,000		\$60,000
Orchard City Water Reservoir Project	\$60,000	\$380,000	\$440,000
Off-System Raw Water Storage Project 7 Water Authority/Uncompahgre Valley Water Users Association	\$56,700		\$56,700
Paonia-Feldman Diversion Reconstruction	\$48,000	\$62,700	\$110,700
Sedimentation Management Study For Paonia Reservoir	\$79,000	\$230,000	\$309,000
Overland Reservoir Dam Expansion/Restoration		\$68,000	\$68,000
Phase II Engineering for Lake San Cristobal Outlet Modification	\$75,265		\$75,265
Lake San Cristobal Outlet Structure Modification--Phase III		\$120,960	\$120,960
Ridgway Ditch and Lake Otonawanda Improvement Project	\$109,500		\$109,500
Juniata Reservoir Spillway Modification	\$97,000		\$97,000
Hartland Diversion Dam Fish Passage Feasibility Study	\$22,100	\$0	\$22,100
City of Ouray: Development of Augmentation Supplies	\$50,000	\$0	\$50,000
75 Ditch Diversion Improvements and Feature Enhancements	\$46,100		\$46,100
Lake San Cristobal Outlet Structure	\$150,000		\$150,000
Hanson Reservoir Outlet Rehabilitation	\$50,000		\$50,000
<b>Metro Basin Total</b>	<b>\$1,041,409</b>	<b>\$1,818,125</b>	<b>\$2,859,534</b>
Chatfield Reallocation EIS/FR (Joint Appl. with South Platte)	\$103,000		\$103,000
Zero Liquid Discharge Pilot Study	\$200,000	\$200,000	\$400,000
Parker Water and San. And Colo. State University Joint Project on the Rural/Urban Farm Model	\$150,000		\$150,000
Upper Mountain Counties Water Needs Assessment	\$43,587		\$43,587
Solicitation of Stakeholder Input through a South Platte Edition of Headwaters	\$16,019		\$16,019
South Metro Water Supply Authority - Regional Aquifer Supply Assessment	\$100,540		\$100,540
South Platte River Recreation and Habitat Feasibility Study	\$150,000		\$150,000
Demonstration of Membrane Zero Liquid Discharge Process for Drinking Water Systems (Joint Appl with SP & Ark)	\$50,000	\$233,333	\$283,333
Lost Creek Aquifer Recharge and Storage Study	\$80,000		\$80,000
South Metro Aquifer Recharge Pilot Study		\$425,000	\$425,000
DCWRA - Feasibility Study for BOR Funding from the National Rural Water Supply Act	\$100,000	\$500,000	\$600,000
Flaming Gorge Project Task Force Assessment	\$20,000		\$20,000
South Metro Water Supply Authority - Aquifer Recharge Pilot Study		\$125,000	\$125,000
Douglas County Water Resource Authority - Rotary Sprinkler Nozzle Retrofit		\$250,000	\$250,000
Rural Douglas County groundwater-level monitoring network	\$28,263	\$84,792	\$113,055
<b>North Platte Basin Total</b>	<b>\$869,715</b>	<b>\$311,027</b>	<b>\$1,180,741</b>
New Pioneer Ditch Diversion Reconstruction Project	\$116,000		\$116,000
Town of Walden Water Supply Improvement Project	\$385,000		\$385,000
Effects of Mtn pine beetle and forest mgmt on water quantity, quality, and forest recovery N.P. and Upper CO River basins	\$212,306	\$164,618	\$376,923
Identification and assessment of important wetlands in N.P. River watershed	\$86,000	\$96,000	\$182,000
Monitoring the effects of weather conditions on the evapotranspiration in N.P. river basin	\$50,409	\$50,409	\$100,818
North Park Irrigated Meadow Conservation Program – Phase I	\$20,000		\$20,000

## WSRA Projects Approved by the CWCB

Name of Water Activity	Basin Account	Statewide Account	Total
<b>Rio Grande Basin Total</b>	<b>\$1,035,450</b>	<b>\$2,961,400</b>	<b>\$3,996,850</b>
Alamosa River In-stream Flow Project	\$64,500		\$64,500
Preliminary Design Multi-use Rio Grande Reservoir Rehabilitation and Enlargement		\$288,000	\$288,000
Rio Grande Basin Conservation Reserve Enhancement Program	\$36,750		\$36,750
Romero-Guadalupe Channel Rectification Project	\$83,700		\$83,700
Rio Grande Initiative	\$200,000	\$1,300,000	\$1,500,000
Santa Maria and Continental Reservoirs: Rehabilitation and Multiple Use Studies	\$50,000	\$141,700	\$191,700
2008 Rio Grande Riparian Stabilization Project	\$35,000	\$250,000	\$285,000
Platoro Reservoir Restoration	\$50,000	\$200,000	\$250,000
Conejos River and North Branch Diversion and Stabilization	\$50,000	\$333,700	\$383,700
Rio Grande Reservoir Multi-Use Rehabilitation: Refinement and Enhancement of Reservoir Reoperation and Optimization Model	\$100,000		\$100,000
El Codo Ditch Diversion and Rehabilitation	\$65,000	\$0	\$65,000
Lower Willow Creek Restoration Project	\$50,000	\$200,000	\$250,000
Sangre de Cristo Trinchera Diversion Canal Restoration	\$50,000	\$150,000	\$200,000
Rio Grande Conservation Reserve Enhancement Program (CREP) Phase II - Implementation	\$31,500		\$31,500
Shortfall Request - Sangre de Cristo Trinchera Diversion Canal Restoration	\$54,000		\$54,000
2009 Rio Grande Riparian Stabilization Project - Phase 4	\$50,000	\$98,000	\$148,000
Educating Today to Balance Tomorrow's Water Supplies & Needs	\$25,000		\$25,000
San Luis Peoples Ditch Upgrade and Rehabilitation Project - Phase I	\$40,000		\$40,000
<b>South Platte Basin Total</b>	<b>\$1,113,857</b>	<b>\$2,213,423</b>	<b>\$3,327,280</b>
Chatfield Reallocation EIS/FR (Joint Appl. with Metro)	\$27,000		\$27,000
Clear Creek Water Banking/High Altitude Storage	\$52,000		\$52,000
Ovid Reservoir Comprehensive Feasibility Study	\$176,000		\$176,000
Lower South Platte Wetland Initiative Phase I South Platte River, CO		\$278,476	\$278,476
Stage Discharge Data Loggers and Telemetry	\$48,800		\$48,800
Upper Mountain Counties Water Needs Assessment	\$130,763		\$130,763
Weld County School Dist RE1 Wetland Partnership	\$42,110		\$42,110
Solicitation of Stakeholder Input through a South Platte Edition of Headwaters	\$16,019		\$16,019
S.P. Water protection and restoration		\$825,552	\$825,552
Arickaree River Well retirement program, Republican River basin, CO.	\$19,984	\$79,936	\$99,920
Halligan Seaman Water Mgmt project share vision planning model	\$25,435	\$76,305	\$101,740
Demonstration of Membrane Zero Liquid Discharge Process for Drinking Water Systems (Joint Appl. with Metro & Ark)	\$25,000	\$233,333	\$258,333
Lost Creek Aquifer Recharge and Storage Study	\$80,000		\$80,000
Central South Platte Wetland Partnership	\$93,769		\$93,769
FMRICo Recharge & Wetlands Project	\$250,000	\$420,000	\$670,000
NCWCD - Data Logger and Telemetry Installation Project	\$46,000		\$46,000
Colorado Ag Meteorological Network	\$20,000		\$20,000
Lower South Platte Water Cooperative South Platte Basin	\$60,977	\$200,000	\$260,977
Development of a decision support model for Identifying and Ranking Waterfowl and Wildlife Related Recharge Projects along the South Platte		\$99,821	\$99,821



## WSRA Projects Approved by the CWCB

Name of Water Activity	Basin Account	Statewide Account	Total
<b>Yampa Basin Total</b>	<b>\$1,073,374</b>	<b>\$259,813</b>	<b>\$1,333,187</b>
Energy Development Water Needs Assessment (300,000 Joint Application see Colorado)		\$150,000	\$150,000
Morrison Creek Reservoir Feasibility Study	\$49,500		\$49,500
Agricultural Water Needs Assessment	\$201,410		\$201,410
Common Data Repository	\$106,600		\$106,600
Sparks Reservoir	\$16,000		\$16,000
Town of Yampa Water Facilities Plan and storage tank up-grades	\$61,062		\$61,062
Sandwash basin coalbed methane production depletive effects on water resources	\$20,000	\$98,835	\$118,835
CFWE - Headwaters Magazine - January 2010	\$20,000		\$20,000
Community Agricultural Alliance - Development and Implementation of Water Forums, Workshop, and/or Tours	\$10,000		\$10,000
Bear Reservoir Company - Stillwater Reservoir Seepage Project	\$189,000		\$189,000
Yellow Jacket Water Conservancy District - Water Storage Feasibility	\$220,800		\$220,800
Yampa White Basin Nonconsumptive Needs Assessment Watershed Flow Evaluation Tool	\$169,002		\$169,002
Improvement of lysimeter operations and consumptive use quantification in high-altitude, irrigated meadows in the YWG basin	\$10,000	\$10,978	\$20,978

### Arkansas Valley Conduit

APPLICANT: Southeastern Colorado Water Activity Enterprise  
APPROVED: March 2007  
STATUS: In Progress  
WSRA FUNDS: \$200,000 (Statewide Account)  
MATCHING FUNDS: \$212,000 (plus past study cost of up to \$140,000)

#### DESCRIPTION:

The Arkansas Valley Conduit (Conduit) was incorporated as an original component of the Fryingpan-Arkansas (Fry-Ark) Project, but never constructed due to the inability of the local constituents to pay 100% of the costs as required by the Bureau of Reclamation. The Southeastern Colorado Water Conservancy District which manages the Fry-Ark Project has created the Southeastern Colorado Water Activity Enterprise (Enterprise) in part to help construct the Conduit. The Conduit is designed to bring higher quality water to the communities east of Pueblo that have had growing issues with water quality since the inception of the Project. Currently, 13 of these entities are under Active Enforcement Orders from the Colorado Department of Public Health. The Conduit will provide for the delivery of the 12% of Fry-Ark water that is dedicated to these communities (an average of about 6,202 acre-feet). The Enterprise is seeking to leverage the WSRA Funds along with local matching funds to secure \$675,000 of EPA funding for the Conduit's pre-design development work.

### Long-term Management of Non-native Phreatophyte Trees and Mapping Project (Tamarisk)

APPLICANT: Southeastern Colorado Water Conservancy District  
APPROVED: March 2007  
STATUS: Complete  
WSRA FUNDS: \$50,000 (Statewide Account)  
MATCHING FUNDS: \$17,000 cash and in-kind

#### DESCRIPTION:

Southeastern Colorado Water Conservancy District is developing a Strategic Plan for the Long-Term Management of Non-Native Phreatophyte Trees that includes the completion of a mapping project to inventory the infestation level in the Basin. Non-native phreatophytes trees (Tamarisk, Russian olive and Siberian elm), have infested much of the riparian lands and are moving into the upland areas causing serious impacts to the limited water resources in the Arkansas River Basin (currently estimated at almost 60,000 acre-feet). The planning and mapping project is designed to develop a comprehensive basin-wide approach, without which control efforts will be largely ineffective. A specific goal is to develop a strategic long-term management plan to efficiently and effectively implement control, riparian restoration, monitoring, and maintenance measures. To compliment the Plan a comprehensive database will be developed to assist property owners and land managers in

determining proper control, restoration, monitoring, and long-term maintenance methods for a particular infestation level and land situation. This database will be available on a website enabling the District and other entities to track the progress of the Plan's implementation.

### Upper Black Squirrel Creek Aquifer Recharge Investigation

APPLICANT: El Paso County Water Authority  
APPROVED: March 2007  
STATUS: Complete  
WSRA FUNDS: \$45,200 (Basin Account)  
MATCHING FUNDS: \$70,000

#### DESCRIPTION:

This project evaluates and refines the existing knowledge of the alluvial aquifer system in the Upper Black Squirrel Creek Designated Groundwater Basin to assess the potential for aquifer recharge and storage implementation. Existing municipal supply systems could access recharged water, representing a substantial cost savings over new construction. Agricultural interests could be restored, enhanced and/or sustained by thoughtful management of the recharge and recovery administration. Geographic, geologic, hydrologic, and water quality data was collected and analyzed to evaluate the recharge potential, storage capacity, and water quality impacts in the study area. Previous studies have identified sizable storage potential due in part to a significant drawdown of the aquifer. The project's second phase further details a select site or sub-basin for potential pilot project implementation. The project also sought to validate the potential for significant non-evaporative storage in order to justify infrastructure development to deliver agricultural water generated from rotational fallowing.

### Groundwater Aquifer Recharge Conference

APPLICANT: El Paso County Water Authority  
APPROVED: March 2007  
STATUS: Complete  
WSRA FUNDS: \$24,721 (Basin Account)  
MATCHING FUNDS: None

#### DESCRIPTION:

This project was originally included as a part of the Upper Black Squirrel Aquifer Recharge Investigation Project detailed above. Due to CWCB concerns that the conference was not adequately included in the original scope of work it was divided into a separate project. The project consists of a policy conference to review the economic and legal issues affecting the use of alluvial aquifers for underground storage in Colorado. Conjunctive use of surface and ground water has long been recognized by water resource experts as technically feasible. Aquifer recharge programs are becoming increasingly common in Colorado. However, depending on the geology and designation of the ground water system and various administrative considerations a number of economic and legal issues have not been fully explored. This conference sought to examine those and other issues.



### Fountain Creek Vision Task Force

**APPLICANTS:** Pueblo and El Paso Counties  
**APPROVED:** May 2007  
**STATUS:** Complete  
**WSRA FUNDS:** \$75,000 (Basin Account)  
**MATCHING FUNDS:** \$43,800

**DESCRIPTION:**

The Fountain Creek Vision Task Force is the creation of El Paso County and Pueblo County, with the help of the Lower Arkansas Valley Water Conservancy District and the El Paso County Water Authority. The Task Force consists of over 200 members from various entities and communities in the watershed that represent a wide range of interests. This project seeks to develop a detailed “Strategic Plan for Fountain Creek Watershed” which identifies consumptive and non-consumptive water needs in the basin along with methods and projects for addressing those needs. The plan leverages existing studies into specific solutions to meet the needs and problems in the watershed. It is a consensus-based document, agreed to by the diverse members of the Consensus Committee, and includes projects both within jurisdictions as well as several that cross jurisdictions. The Strategic Plan was vetted and improved by members of the affected and invested communities and will become the shared community roadmap for the future of Fountain Creek.

### Round Mountain Water & Sanitation District Water System Improvements Project

**APPLICANT:** Round Mountain Water and Sanitation District  
**APPROVED:** May 2007  
**STATUS:** Complete  
**WSRA FUNDS:** \$120,000 (Basin Account)  
**MATCHING FUNDS:** \$150,000 (applicant) and \$380,000 (DOLA grant)

**DESCRIPTION:**

A recent evaluation of the public water system for the Towns of Silver Cliff and Westcliffe, served by the Round Mountain Water & Sanitation District, identified major shortcomings that demand immediate attention. Shortcomings include water pressure below State guidelines, insufficient fire flow, inadequate chlorine contact time, and critically low system storage during peak times. System improvements are necessary to not only provide for the health, safety, and welfare of the citizens of these towns, but also to allow for expansion. The project includes drilling a new water supply well with a new pump, electrical supply, treatment building and equipment, and chlorine contact chamber. The District also installed a new water main from the well site to the existing system to create a new pressure zone. The new zone has a variable frequency booster pump station, a generator back up and electrical supply, new water line looping, and an additional water storage tank.

### Rotational Land Fallowing - Water Leasing Program - Lower Arkansas Super Ditch Company

**APPLICANT:** Lower Arkansas Water Conservancy District  
**APPROVED:** January 2008  
**STATUS:** Complete  
**WSRA FUNDS:** \$150,000 (Basin Account)  
**MATCHING FUNDS:** \$68,735

**DESCRIPTION:**

The Lower Arkansas Valley Water Conservancy District was created in 2002 to serve the Lower Arkansas River Basin from above Pueblo Reservoir to the Kansas State line. The Rotational Land Fallowing and Water Leasing Program is designed to create an alternative to the traditional acquisition and transfer of water rights by M & I water providers seeking to meet increasing demands. The non-structural project is an entirely voluntary program that links irrigators desiring to lease water with municipalities and other water users with unmet demands. The program also seeks to acquire and hold for agricultural, municipal, and other uses, water rights that might otherwise be sold and permanently transferred out of the Basin. The flexibility of the program ultimately seeks to maintain land in irrigation that might otherwise be dried up while operating entirely within existing Colorado water law and absent injury to any vested, conditional, or contractual water rights. As such the program seeks to maximize the short and long term value of irrigation water in the valley by providing a viable alternative to conventional “buy and dry” projects. To implement the program irrigators will create an independent “Super Ditch Company” to lease water made available by the fallowing of irrigated land. Irrigators between Pueblo and John Martin Reservoirs may participate at their discretion. Land irrigated by participants may be fallowed on a rotational basis to match hydrology with lease demands.

### Upper Big Sandy Water Balance

**APPLICANT:** Upper Big Sandy Ground Water Management District  
**APPROVED:** January 2008  
**STATUS:** Complete  
**WSRA FUNDS:** \$45,000 (Basin Account)  
**MATCHING FUNDS:** \$5,000

**DESCRIPTION:**

This project quantifies the use and supply of alluvial ground water within the Upper Big Sandy Ground Water Management District and creates a water balance to assist the District in developing long-term management policies, especially in regard to well pumping and maximum levels of sustainable pumping (safe yield). The Water Balance provides the District with a technical basis upon which they can approve or deny new well permits, and therefore allow

the District to plan for the current and future use of the alluvial ground water. Additionally, this project could lead to a dynamic ground water model to help planning efforts for future droughts. The study assesses consumptive and non-consumptive water needs and compares the needs against the available water supply via a water balance assessment approach. The study also examines how a lowered water table may affect threatened species, wetlands, and other environmental or recreational amenities. The project compares the needs with the annual recharge to determine sustainability and will compare the water in storage to determine if water table lowering is expected.

### **Model Transfers - Agriculture to Urban, Arkansas Basin**

APPLICANT: Southeastern Colorado Water Conservancy District

APPROVED: January 2008

STATUS: Complete

WSRA FUNDS: \$23,860 (Basin Account)

MATCHING FUNDS: None

#### DESCRIPTION:

This project is designed by the Water Transfers Committee of the Arkansas Basin Roundtable to develop a portfolio of prototypes to address issues and mutual benefits associated with transfers of water from agriculture. The Water Transfers Committee members represent a wide swath of Arkansas Basin Roundtable agricultural and urban interests. The Committee identified specific transfer alternatives and mitigation options to enhance rural economic viability and agricultural modernization. Outside advisors assisted as needed for input and review, reporting periodically to the roundtable. The project includes work sessions led by a facilitator, interim reports, and a final report. The reports outline a broad range of alternatives considered by the committee resulting in a matrix categorizing the alternatives, listing positive and negative aspects, measures to mitigate negative aspects, and identification of the best alternatives for subsequent experimentation, demonstration, and/or academic research.

### **Arkansas Headwaters Diversion Structure Improvement Project**

APPLICANT: Greater Arkansas River Nature Association

APPROVED: March 2008

STATUS: Complete

WSRA FUNDS: \$57,954.50 (Statewide Account)

MATCHING FUNDS: \$59,804

#### DESCRIPTION:

Water-based recreation within the Arkansas Headwaters Recreation Area has been recognized as a critical non-consumptive water need in the Arkansas Basin. This engineering study provides design guidelines and structural analysis of four existing diversion structures to improve

water delivery efficiency, boater safety, fisheries management, and the recreational experience of visitors to the Arkansas Headwaters Recreation Area. The four water diversion structures are located between the towns of Granite and Canon City and include: the Granite Water Diversion Structure, the Helena Water Diversion Structure, the Hydraulic Water Diversion Structure, and the Oil Creek Water Diversion Structure. Updating these structures will create more efficient water delivery for the intended water users at all water levels, improve the public safety of recreational boaters, and improve the fishery by allowing safe passage aquatic species both up and down the river corridor during critical time periods such as the spawning season. The design drawings, modeling, and design reports provide the background necessary to ultimately reconstruct these diversions.

### **City of Las Animas Water System Improvements**

APPLICANT: City of Las Animas

APPROVED: March 2008

STATUS: Complete

WSRA FUNDS: \$300,000 (\$100,000—Basin Account; \$200,000—Statewide Account)

MATCHING FUNDS: \$2,022,000 (\$400,000 Applicant, \$1,6022 Grants)

#### DESCRIPTION:

The water treatment plant (WTP) of the City of Las Animas will be stretched beyond its capacity with the doubling in size of the local correctional facility. Furthermore, the city needs to have the facilities in place to develop the raw water it is entitled to in addition to conveying said raw water to its water treatment plant. To address these needs the City of Las Animas conducted a comprehensive Preliminary Engineering Report to evaluate its water system. The report identified a number of necessary improvements including: the addition of a third reverse osmosis (RO) train in the WTP, re-drilling of an existing well, and installation of a new parallel transmission line to convey raw water to the WTP. The facilities will: provide the city additional WTP capacity required to meet demands; eliminate old, brittle, and failing piping throughout the distribution system; and enable the city to operate and maintain their water system more cost effectively. This will bring an economic boost to an area suffering from years of natural disasters, economic hardship and the transfer of water rights out of the basin.

### **Colorado State Parks Zebra Mussel Response**

APPLICANT: Colorado State Parks

APPROVED: March 2008

STATUS: Complete

WSRA FUNDS: \$1,000,000 (Statewide Account)

MATCHING FUNDS: Over \$3,000,000

#### DESCRIPTION:



The goal of this project is to minimize the spread of zebra mussels in Colorado. Zebra mussels were confirmed by the Division of Wildlife to be present and reproducing in Lake Pueblo in January 2008. These invasive mussels have caused dramatic ecological changes and economic impacts in other states and other countries. They are small bi-valve (two shelled) mollusks like a clam, but with the unique ability to firmly attach to hard substances underwater, including pipes and conduits. They reproduce sexually and release microscopic larvae by the millions. Since zebra mussels are extremely difficult to eradicate, efforts around the country focus on containment in infested water bodies and prevention in water bodies not yet affected. Modeled after successful programs in other states, the State Parks program at Lake Pueblo includes: public education, revised boating policies, comprehensive boat inspections, boat decontamination, intensive sampling, and modeling. Expedited financial assistance defrayed the costs of additional staffing to implement the program in time for the 2008 boating season.

### **Geospatial Decision Support System for Integrated Water Management in the Arkansas River Basin**

APPLICANT: Colorado State University  
 APPROVED: September 2008  
 STATUS: In Progress  
 WSRA FUNDS: \$600,000 (\$100,000—Basin Account; \$500,000—Statewide Account)

MATCHING FUNDS: Unknown

DESCRIPTION:

This project furthers the Arkansas Basin Roundtable's needs assessment by providing technical studies, assistance, and analysis of water quality issues within the Arkansas River Basin. This data collection and analysis will potentially be used when the Arkansas Decision Support System is implemented by the CWCB in the near future. As such, the applicants have amended the scope of work to develop a product that would maximize benefits to the water users and future CWCB DSS efforts in the basin. The project includes: assessing data needs for stream-aquifer system modeling in the basin, identifying and compiling existing data, gathering select new data, developing a database and GIS-based webpage, complete descriptive analysis of data gathered, and final recommendations on outstanding data needs for system characterization and model support.

### **Telemetry Data Collection Platforms at Six Reservoirs Plus Flow Control Equipment and Gauging at Six Reservoir Outlet Channels & Nine Streams Within the Upper Arkansas River Basin**

APPLICANT: Upper Arkansas Water Conservancy District

APPROVED: September 2008  
 STATUS: In Progress  
 WSRA FUNDS: \$285,332 (\$75,000—Basin Account; \$210,332—Statewide Account)

MATCHING FUNDS: \$529,884

DESCRIPTION:

The Upper Arkansas Water Conservancy District (District) proposes to install telemetry data collection platforms at six reservoirs and flow control equipment and related gauges at 15 locations, which include the outlet channels for the six reservoirs and nine other locations in the Upper Arkansas Basin. The structural water activity will generate data that will be used to better manage water within the District's 2-million-acre service area at the headwaters of the Arkansas River. Many of the locations are remote and difficult to access during the winter. The telemetry platforms will allow data collection at times that otherwise would be very difficult or impossible. Additionally, there are very few existing gauging stations in the District. The additional gauging stations installed for this project will give the District much needed information to better manage its resources, as well as information that will be useful to many other entities, including the CWCB.

### **Demonstration of Membrane Zero Liquid Discharge Process for Drinking Water Systems**

APPLICANT: Colorado Department of Public Health and Environment – Water Quality Control Division (Fiscal Agent: Water Environment Research Foundation)

APPROVED: September 2008  
 STATUS: Contracting  
 WSRA FUNDS: \$800,000—**joint application:**  
 \$25,000—Arkansas Basin Account;  
 \$25,000—South Platte Basin Account;  
 \$50,000—Metro Basin Account;  
 \$700,000—Statewide Account

MATCHING FUNDS: \$325,000

DESCRIPTION:

Membrane treatment for municipal drinking water supply (including reverse osmosis and nanofiltration) is the best technology for producing potable water from lower quality/impacted sources that will meet, and often exceed, regulatory requirements. Currently, many sources of water in the Arkansas and South Platte River Basins exceed the regulatory water quality requirements and/or have high levels of total dissolved solids that are unacceptable to consumers. Due to the uncertainty about the availability of feasible disposal options for the membrane concentrate in Colorado many utilities have been reluctant to undertake membrane projects. Zero liquid discharge (ZLD) is a sustainable disposal option that represents a long-term solution to concentrate disposal for utilities that need membrane treatment to produce safe drinking water. The proposed

project includes two pilot projects at two sites (Brighton and La Junta) with two different water quality issues (nitrate and selenium, respectively). The pilot projects will develop site specific cost and performance data to help alleviate current technical and financial uncertainties. Deliverables include various technical memorandum, an experimental plan, design drawings, pilot plant equipment, capital and operating costs under multiple conditions, analysis of water samples, analysis of solids sampling, process schematics and water and energy balances, and a final report. Though the CDPHE was the original applicant, the application specified that the contracting entity and project management would be provided by the non-profit American Water Works Association Research Foundation (AwwaRF) in addition to \$100,000 of matching funds. Due to AwwaRF's funding problems, they are no longer able to participate in the project or provide matching funds. In its place the CDPHE has secured an identical commitment of participation and matching funds from the WaterReuse Foundation (WaterReuse). WaterReuse is an educational, nonprofit public benefit corporation (501(c)(3)) that conducts applied research on behalf of the water and wastewater community for the purpose of advancing the science of water reuse, recycling, reclamation, and desalination.

### **John Martin Wetlands and Neenoshe Reservoir Nonconsumptive Needs Quantification**

APPLICANT: Lower Arkansas Water Conservancy District  
APPROVED: May 2009  
STATUS: In Progress  
WSRA FUNDS: \$148,975 (Basin Account)  
MATCHING FUNDS: \$43,250

#### DESCRIPTION:

The Lower Arkansas Valley Water Conservancy District seeks to further quantify nonconsumptive needs within the basin. The objectives of the nonconsumptive needs quantification are to 1) Identify flow needs to support wetlands west of John Martin reservoir that support critical environmental and recreational bird habitat, 2) Identify lake levels needed to support habitat of federally listed shore birds, Least Tern and Piping Plover, near Neenoshe Reservoir, and 3) Under a separate scope of work prepare a river restoration plan for 44 miles of Fountain Creek. This scope of work includes the development of the appropriate methodologies that will be most useful to quantify the needed water for objectives one (1) and two (2). Historical data will be collected, including hydrologic and hydraulic data available from USGS, NWIS and other sources, wetland studies, and wildlife species data. Applicant will then conduct a gap analysis to help determine data collection needs. Project will focus on surveys of habitat, plant species, soil type, wildlife, and hydrology indicators. GPS data and photo documentation will also be collected.

### **UAWCD Hydrologic Water Balance Study**

APPLICANT: Upper Arkansas Water Conservancy District  
APPROVED: September 2009  
STATUS: In Progress  
WSRA FUNDS: \$180,000 (Statewide Account)  
MATCHING FUNDS: Approximately \$220,000

#### DESCRIPTION:

This study seeks to quantify the surface water and groundwater components of the water budget (especially groundwater recharge) and to characterize the interaction between surface and groundwater. Study results can be used to estimate the effects in water use changes on the availability and sustainability of groundwater resources. The major tasks of the project include: data compilation; data collection; data analysis; reporting. Due to growth pressures in the upper basin a better understanding of the connection between the ground and surface water hydrology will allow better management of the basin's water.

### **Bedload/Sediment Collection and Removal Technology - Fountain Creek**

APPLICANT: City of Pueblo  
APPROVED: September 2009  
STATUS: In Progress  
WSRA FUNDS: \$190,000 (\$40,000—Basin Account; \$150,000—Statewide Account)  
MATCHING FUNDS: \$5,000

#### DESCRIPTION:

This project will install and monitor the success of a Bedload Monitoring Collector system to be placed in Fountain Creek approximately ½ mile upstream of the confluence with the Arkansas River. The project will assess changes in the water quality and any reductions in downstream sediment deposition as well as the creek's ability to manage high flow conditions. The improvements involve the placement of a pre-cast concrete sediment collector within the bed of the creek. The collector will serve as a research tool to gage the transport rates of sediment captured by a large scale collector and to verify the system's ability to remove and classify by granule size the sediment for the beneficial re-use by the City of Pueblo. This demonstration project will be conducted for a one year period with monitoring and testing completed at specific times and a variety of flow conditions. The project includes monitoring to assess the success of the project in relationship to establishing sediment transport modeling criteria, removal of contaminants from Fountain Creek, impacts to sediment and potential benefits in reduction of erosion and the re-establishment of a stable creek channel.

## Flaming Gorge Project Task Force Assessment

**APPLICANT:** El Paso County Water Authority  
**APPROVED:** May 2010  
**STATUS:** In Progress  
**WSRA FUNDS:** \$40,000—joint application:  
 \$20,000—Arkansas Basin Account  
 \$20,000—Metro Basin Account

**MATCHING FUNDS:** NONE

**DESCRIPTION:**

This project assesses the viability of forming a task force, similar to the Fountain Creek Vision Task Force, to inform a Flaming Gorge Project. The Assessment will review constituent agendas, supply alternatives, demand management, environmental impacts and project development strategies to determine if a collaborative task force model is viable. Keystone Center will prepare a written Assessment Summary, including a recommendation whether to proceed to the convening of a task force. If the recommendation is not to convene, the Summary will identify the obstacles to a successful convening or suggest alternatives to a task force approach. If the recommendation is favorable, Keystone Center will develop a protocol for the task force and convene the preliminary Task Force session.

## Stakeholder’s Cooperative Management

### Analysis for the Upper Arkansas River Basin

**APPLICANT:** Southeastern Colorado Water Conservancy District  
**APPROVED:** July 2010  
**STATUS:** In Progress  
**WSRA FUNDS:** \$33,600 (Basin Account)  
**MATCHING FUNDS:** \$8,400

**DESCRIPTION:**

The Voluntary Flow Management Program developed in 1990 for the Upper Arkansas is considered a model throughout Colorado and the country and has allowed for Colorado’s most vibrant rafting economy. After 15 years of operating, the addition of Chaffee County’s recreational in-channel diversion, and other water management agreements and objectives, many stakeholders believe that flows could be managed better to meet the needs of many stakeholders. This project is a stakeholder supported investigation of past and current river operations in the upper the Arkansas River basin. This analysis will identify historic management strategies used during high, average, and low river flow years and assess the impacts of those strategies. Then, based on stakeholder inputs, a limited number of new management strategies to enhance impacts on fishery, recreational, agricultural and landowner components will be developed and assessed. The study will focus on water supplies in the upper Arkansas River basin, especially as it relates to the operations involving transmountain diversions, municipal upstream exchanges from Pueblo Reservoir and Fountain Creek, releases from Turquoise and Twin Lakes Reservoirs,

and storage levels in Pueblo Reservoir. Input from the stakeholders will be analyzed in the context of a river operations analysis that identifies the legal and institutional framework in which all management alternatives must be considered.

## Fountain Creek Fish Marking and Monitoring Study

**APPLICANT:** Fountain Creek Watershed Greenway and Flood Control District  
**APPROVED:** September 2010  
**STATUS:** Contracting  
**WSRA FUNDS:** \$35,000 (\$8,000—Basin Account; \$28,000—Statewide Account)

**MATCHING FUNDS:** NONE

**DESCRIPTION:**

This project involves the study of the movement of the Flathead Chub, which is state species of special concern. Colorado Springs Utilities received a non-consumptive statewide WSRA grant for the design and planning of a fish passage for an 8’ diversion structure located on Clear Springs Ranch, a Colorado Springs Utilities owned property in El Paso County. This application will fund the study of this fish, specifically where it is and how it moves up and down Fountain Creek in relation to the fish passage. It will aid in the planning of the fish passage design and the future monitoring of Colorado Springs Ranch diversion structure as well as other impediments along Fountain Creek.



### Energy Development Water Needs Assessment

APPLICANT: City of Grand Junction  
APPROVED: March, 2007  
STATUS: Phase I Draft Report Complete;  
Phase II In Progress  
WSRA FUNDS: \$300,000 (Statewide Account—**joint application with Yampa/White Basin**—\$150,000 from each basin's allocation)

MATCHING FUNDS: \$0

#### DESCRIPTION:

The Phase I study estimates the water demands needed to support the extraction and production of energy in four sectors in northwest Colorado including natural gas, coal, uranium, and oil shale. The Colorado and Yampa/White Roundtables are seeking to use data and information from this study, in conjunction with the Statewide Water Supply Initiative (SWSI) and other appropriate sources, to assist with the development of a basin-wide consumptive and nonconsumptive water supply needs assessment. This study provides data and information necessary to plan for meeting those needs and using unappropriated waters where suitable. The study concludes that oil shale development, along with the associated power production, could require tremendous amounts of water, up to 378,300 acre-feet annually. Phase 2 will address potential sources of water supply and include new water projects, if needed, to meet the water demands forecasted in Phase 1. Phase 2 will also quantify the net consumptive use of water supplies contemplated for use in the energy sectors, including addressing the timing, location, and magnitude of return flows resulting from water use attributable to energy development.

### Enlargement of Eagle Park Reservoir

APPLICANT: Eagle Park Reservoir Company  
APPROVED: March 2007  
STATUS: Complete  
WSRA FUNDS: \$250,000 (Statewide Account)  
MATCHING FUNDS: \$118,707

#### DESCRIPTION:

The reservoir enlargement will provide additional water during late summer, fall and winter months to meet growing water supply needs in Eagle County. The Eagle Park Reservoir is located in Eagle County in the headwaters of the East Fork of the Eagle River near the Climax Mine. The reservoir is an off channel reservoir which is tributary to the East Fork of the Eagle River. The reservoir is located on property formerly owned by the Climax Molybdenum Company at the Climax Mine and was originally used to store mine tailings. As part of the mine reclamation process, Climax completed the removal of tailings deposits from the reservoir in 1996 and converted the facility to a fresh water storage reservoir. The EPRC purchased the Eagle Park Reservoir and associated real property and water rights, located in Eagle County, Colorado at the Climax Mine, in 1998 for irrigation, municipal, industrial and environmental water supply purposes. The Eagle Park Reservoir is operated to replace out-of-priority water diversions and depletions

caused by downstream municipal water supply systems that serve Vail, Avon and other communities in Eagle County and by snowmaking at the Vail and Beaver Creek Ski Areas. The project will raise the elevation of the existing spillway, by 2.5 feet to provide an additional 153.3 acre-feet of storage capacity.

### Roaring Fork Watershed Assessment Phase I

APPLICANT: Ruedi Water and Power Authority  
APPROVED: March 2007  
STATUS: Complete  
WSRA FUNDS: \$40,000 (Basin Account)

MATCHING FUNDS: \$75,000

#### DESCRIPTION:

The Watershed plan provides a comprehensive review of the 51 identified plans and studies conducted in the Roaring Fork Watershed. This helps determine the connections between different aspects of local water resources and identify key data gaps that affect the ability to make informed decisions. The watershed plan is intended to provide a comprehensive picture of overall demand for water in the valley and projected current and future water supplies. Other major elements of the plan include community outreach, water issues discussion, identification of acute threats, and recommended immediate actions and projects.

### Upper Colorado Endangered Fish Recovery Alternatives Analysis (10825)

APPLICANT: Colorado River Water Conservation District  
APPROVED: March 2007  
STATUS: Draft Report Complete; Gathering Public Comments  
WSRA FUNDS: \$200,000 (Statewide Account)  
MATCHING FUNDS: \$0

#### DESCRIPTION:

The Upper Colorado River Endangered Fish Recovery Program was developed to aid the recovery of four endangered species of fish in the Colorado River. A Programmatic Biological Opinion requires Colorado to provide 10,825 acre-feet of water per year to a 15-mile reach near Palisade, Colorado during low flow years in summer and fall months. This commitment is equally divided between East and West Slope water users. Currently, the 10825 water is provided on a temporary basis by Denver Water (from Williams Fork Reservoir) and the Colorado River Water Conservation District (from Wolford Mountain Reservoir). Permanent agreements for a water source are required by December of 2009. After review of 25 alternatives, providers identified a preferred alternative that would release 5,425 acre feet of water from Ruedi Reservoir each year. An additional 5,400 acre feet would be released from Granby Reservoir during the summer to optimize habitat in the upper Colorado River. Also, excess capacity in Green Mountain Reservoir would be used to re-time the Granby's releases as necessary. Both East Slope and West Slope water providers fully support this alternative.

## Acquisition of Vail Ditch by Grand County

### Interests

**APPLICANT:** Grand County  
**APPROVED:** March 2007  
**STATUS:** Complete  
**WSRA FUNDS:** \$1,500,000 (Statewide Account)  
**MATCHING FUNDS:** Approximately \$1,500,000

#### DESCRIPTION:

This project provides new water supplies to the headwaters of the Fraser River near Winter Park to address critical consumptive and non consumptive water needs. Rapid growth in the area necessitates water supply certainty. Denver Water and the Municipal Subdistrict of the Northern Colorado Water Conservancy District seek to develop supplies from their respective Moffat and Windy Gap transmountain water. As a result stream flows will more often approach critically low levels. The Vail Ditch water supplies are strategically located to convey water through Denver's Moffat Tunnel. With the use of Denver's system these supplies can be moved to the uppermost Fraser River benefiting stream flow and human uses from Winter Park on downstream. The project purchases shares of the Grand County Irrigated Land Company (GCILC) from a willing seller. The project also initiates a process with GCILC to determine potential impacts, conduct a Granby Mesa Hydrogeology Evaluation to characterize surface water and groundwater interactions, and determine cooperative solutions for Grand County's and Denver's water supply interests in the Fraser River.

## Bull Creek Reservoir No. 5 Spillway Adequacy

### Analysis

**APPLICANT:** Bull Creek Reservoir Canal & Power Company  
**APPROVED:** September 2007  
**STATUS:** Complete  
**WSRA FUNDS:** \$50,000 (Basin Account)

**MATCHING FUNDS:** \$0

#### DESCRIPTION:

This project consists of engineering work related to a dam break hydrology and spillway sizing analysis of Reservoir No. 5. This is needed to maintain the low hazard classification of two of the Company's upstream reservoirs, Reservoir No. 1 and No. 2. A feasibility study performed in May 2006 identified excessive environmental and financial costs associated with upgrading Reservoirs number 1 and 2 to meet State Engineer Office (SEO) specifications. The spillway analysis of reservoir No. 5 will likely indicate the need for an enlarged spillway. The cost of construction a new spillway for Reservoir No. 5 is estimated to be significantly cheaper than rehabilitating the upstream reservoirs. Without improvements to upstream reservoirs or enlarging the spillway, a fill restriction will be executed by the SEO due to safety concerns. The grant will also include funding for 404

permitting, wetlands delineation, biological evaluations, a management indicator species study, and processing a Special Use Permit application for the construction activity.

## Grand County Stream Flow Management Plan (SMP), Phase 3

**APPLICANT:** Grand County  
**APPROVED:** May 2008  
**STATUS:** In Progress  
**WSRA FUNDS:** \$100,000 (Basin Account)  
**MATCHING FUNDS:** \$296,546

#### DESCRIPTION:

This report presents scientifically-based recommendations of environmental stream flow, to support non-consumptive water uses. The recommended flows represent estimates that optimize conditions for a given reach and specific use. Ultimately the goal of this and subsequent phases is to develop and implement a Stream Management Plan that is protective of aquatic habitat and other non-consumptive water use, while retaining flexibility for current and future water provider operations. It is recognized that not all recommended flows for all uses on all reaches can be achieved at all times. The Phase 3 study goal is to perform stream assessments and analysis for restoration opportunities and the development of a master plan for implementing restoration projects along the Fraser and the Upper Colorado River. This phase will also include continued coordination on development of alternative flow operations that might help achieve recommended flows developed in Phase 2.

## Old Dillon Reservoir Enlargement

**APPLICANT:** Summit County  
**APPROVED:** March 2008  
**STATUS:** Complete  
**WSRA FUNDS:** \$100,000 (Basin Account)  
**MATCHING FUNDS:** \$49,360

#### DESCRIPTION:

Dillon and Silverthorne have limited existing raw water storage, which makes the development of this reservoir enlargement project critical to protect the towns from the possibility of drought and potential pollution in Straight Creek and Blue River watersheds. This reservoir will also provide security and flexibility in the use of the parties' rights in the Clinton Gulch Reservoir and Dillon Reservoir. 96, 20, and 150 acre-feet are planned on being stored by the Town of Dillon, Town of Silverthorne, and Summit County respectively. The work being undertaken with this grant is to help fund the NEPA and permitting components of the work and also to fund preliminary engineering work including a wildland hydrology study, probable maximum flood study, and a dam break analysis.

### Fraser River Settling Pond

APPLICANT: East Grand Water Quality Board  
APPROVED: March 2008  
STATUS: In Progress  
WSRA FUNDS: \$187,900 (\$60,000—Basin Account;  
\$127,900—Statewide Account)  
MATCHING FUNDS: \$60,000

#### DESCRIPTION:

This structural water project makes improvements to a previously designed sediment pond with the same goal: to capture sand from current and historical maintenance of Berthoud pass (estimated at nearly 5,000 tons), as well as natural erosion of the mountainside, before the sediment pollutes the Fraser River. Improvements to the pond design will include creating a D shaped berm structure to slow the velocity of the river in the pond area to allow for sediment deposition before the water flows through Denver Water's diversion dam. In the fall, this pond will be drained for maintenance via improvements included in the project plan to a previously installed diversion pipe, and sediments will be removed to a Grand County gravel pit.

### Missouri Heights Aquifer Study

APPLICANT: Basalt Water Conservancy District  
APPROVED: September 2007  
STATUS: In Progress  
WSRA FUNDS: \$25,000 (Basin Account)  
MATCHING FUNDS: \$25,000

#### DESCRIPTION:

This study is intended to address the limitations of a previous study, providing a more detailed understanding of the influences of development on the Missouri Heights aquifer. In order to accomplish this, the District plans to establish six monitoring well sites equipped with continuous recording devices. Additionally, the District will install a remote precipitation gage on Missouri Heights. Data will be collected at these sites for a period of five years. At the end of the five year study period the data will be analyzed and summarized in a report by Resource Engineering, Inc. This report will provide a valuable tool for a number of public and private entities in the Roaring Fork Valley. Specifically, the report will accomplish the following: 1) help the District assess its ability to adequately augment water allotment contract holders on Missouri Heights; 2) assist the Division of Water Resources in administering and protecting vested water rights on or influenced by Missouri Heights, including Colorado Water Conservation Board's instream flow water rights on the Roaring Fork River; and 3) facilitate planning for future development and water use on Missouri Heights.

### Roaring Fork Watershed Assessment Phase 2

APPLICANT: Ruedi Water and Power Authority  
APPROVED: May 2008  
STATUS: In Progress  
WSRA FUNDS: \$40,000 (Basin Account)  
MATCHING FUNDS: \$56,000

#### DESCRIPTION:

Phase II will include a set of Goals and Objectives to be developed through citizen input and in consultation with local governments and water massagers. The project will yield a set of findings on critical issues raised by the data developed in the Roaring Fork Watershed Plan and Phase I of the watershed assessment. Although the exact nature of those findings are not yet determined, they might address such issues as 1) the potential impact of increased trans-basin diversions on local water quantity and quality; 2) the projected impacts of residential and commercial growth and changing land uses on local water resources; 3) local wildlife habitat wildlife populations or ecosystem components that might be threatened due to changing water uses; 4) use trends in areas of domestic water use, agriculture, recreation and instream uses, commercial and industrial uses, and conservation; and 5) trends in water quality. In addition the Plan will include recommendations for future water management policies and activities to be submitted for the consideration of local water managers and governments.

### Feasibility and Design Assessment of Off-Channel Reservoir Sites in the Crystal River Watershed

APPLICANT: West Divide Water Conservancy District  
APPROVED: September 2008  
STATUS: Complete  
WSRA FUNDS: \$40,000 (Basin Account)  
MATCHING FUNDS: \$15,000

#### DESCRIPTION:

The feasibility assessment and the preliminary design of three small off-channel reservoir sites located within the Crystal River watershed were cooperatively developed by West Divide and the property owners to study how to develop in-basin augmentation water supplies, provide supplemental late season irrigation water, and provide water for instream flow maintenance of the Crystal River. The project helps address an IPP from SWSI augmentation issues in the Crystal River drainage. The Crystal River water supplies are insufficient to satisfy irrigation residential and instream flow demands. The lower portion of the river is regularly dry during late summer. Many existing residential water users located in unincorporated areas do not have a legal water supply. West Divide currently provides augmentation water to about 20 existing water users in the Crystal River watershed extending from locations near the Town of Carbondale to above the Town of Redstone. In 2004 the Division of Water Resources administratively determined that the Crystal River portion of the District regional augmentation program service area could no longer be operated with-



out injury to senior water rights. In addition it is currently very difficult for other rural residents in the area to obtain well permits or a legal water supply.

### **Battlement Reservoir #3 Dam Reconstruction to Enhance Recreational & Environmental Opportunities**

**APPLICANTS:** Grand Valley Anglers Chapter of Trout Unlimited & Federation of Fly Fishers

**APPROVED:** November 2008

**STATUS:** Contracting

**WSRA FUNDS:** \$80,000 (Basin Account)

**MATCHING FUNDS:** \$320,000

**DESCRIPTION:**

The proposed water activity will enhance recreational and environmental opportunities with dam reconstruction of Battlement Reservoir #3. The Battlement Reservoirs are a chain of seven historic reservoirs located in a montaine setting at 10,000 feet elevation in the White River National Forest, seven miles south of Battlement Mesa, Colorado. A lack of reservoir maintenance due to the inaccessibility of the site to motorized equipment resulted in an environmental benefit for the reservoir's highly productive fisheries. The Battlement Reservoirs became very popular with anglers that desired a pristine back-country experience. Battlement Reservoir #3, the largest reservoir (408.67 acre-feet) breached during spring run-off in 1983. This breach resulted in major damage to the Battlement Creek channel as well as County roads downstream of the reservoirs. The community supported the use of the Battlement Reservoirs, so a process to restore the reservoir complex as a viable fishery began. Reconstruction of Battlement Reservoir #3 will include: 1) removal of the nonworking outlet structure; 2) construction of a permanent hardened spillway that will maintain a constant water level in the Reservoir; 3) outslipping the downstream slope of the dam; and 4) revegetation of disturbed areas. The dam will be reconstructed to meet current dam safety standards.

### **Colorado Basin Nonconsumptive Needs Quantification**

**APPLICANT:** Northwest Colorado Council of Governments

**APPROVED:** March 2009

**STATUS:** In Progress

**WSRA FUNDS:** \$315,171 (Basin Account)

**MATCHING FUNDS:** \$25,000

**DESCRIPTION:**

The study will conduct a basin-wide modeling approach using the Watershed Flow Evaluation Tool paired with site specific quantification, which will be used to verify the model. The site-specific quantification of instream flow needs for the Colorado River will be between Kremmling,

Colorado and No Name, Colorado. The Watershed Flow Evaluation Tool will be completed for the entire Colorado River Basin to focus future site specific and water management efforts. This study will assist the Colorado Basin Roundtable in assessing its nonconsumptive needs by quantifying flows within the basin. In addition, the site specific work closely ties to the development of Wild and Scenic alternatives on the mainstem of the Colorado River. The study will provide enough data that nonconsumptive flow quantifications can be incorporated into Phase II of the Colorado River Water Availability Study (CRWAS). An important component is outreach to water suppliers.

### **Solicitation of Stakeholder Input and Advice Through Publication of a Colorado River Basin Edition of Headwaters Magazine**

**APPLICANT:** Colorado Foundation for Water Education

**APPROVED:** September 2010

**STATUS:** In Progress

**WSRA FUNDS:** \$25,000 (Basin Account)

**MATCHING FUNDS:** \$18,211

**DESCRIPTION:**

This project seeks to educate Roundtable stakeholders in the Colorado basin about the basins' geography, water supply and environmental challenges, water management agencies and different user groups through a Headwaters publication. The issue will help the Roundtable achieve their goal of communicating with basin stakeholders to better solicit their input for needs assessments and project planning. Headwaters magazine is the Foundation's most widely available and well-known educational resource. The Foundation distributes 7,000 copies to residents of Colorado and the West. Once a year, the magazine features a river basin in Colorado and discusses in detail the challenges the basin faces, the agencies and people responsible for managing water resource affiliated issues, and the many success stories already accomplished.

### **Grand River Ditch Pipeline**

**APPLICANT:** Grand River Ditch Company

**APPROVED:** September 2010

**STATUS:** Contracting

**WSRA FUNDS:** \$25,000 (Basin Account)

**MATCHING FUNDS:** OVER \$300,000

**DESCRIPTION:**

Approximately 60 feet of a retaining wall that protects the Grand River Ditch collapsed due to an extended high-water season in the spring runoff period. The wall has been in place for over 100 years. The river runs very close to the

ditch bank on the north side of the river and is at risk of failure as the river moves ever closer and the ditch seeps and slides into the river. The proposal is to pipe the damaged section, riprap and install rock jetties to divert some of the energy away from the proposed pipe. The pipeline will prevent ditch seepage and saturation of the bank between the ditch and the river. The project consists of a concrete water control structure, about 1400 feet of two 48 Inch pipes and related rock protection of both the pipe and structure. Without controlling the seepage from the ditch the bank will saturate having the potential to repeat the damage with debris and rocks sliding back into the river.

### **Flathead L.E.D.E. Ditch and Reservoir Reconstruction Project**

APPLICANT: Town of Gypsum

APPROVED: September 2010

STATUS: Contracting

WSRA FUNDS: \$225,000 (\$50,000—Basin Account and  
\$175,000—Statewide Account)

MATCHING FUNDS: OVER \$610,000

#### DESCRIPTION:

The Town of Gypsum owns the LEDE Ditch and LEDE Reservoir, which is located in the headwaters of Gypsum Creek, south of Gypsum. The original ditch and reservoir water rights are decreed absolute for irrigation uses up to 947 acre feet of storage. The existing LEDE Reservoir capacity is 431 acre feet. Gypsum seeks to increase capacity to accommodate continued agricultural irrigation, and for future water supplies to Gypsum Creek and the Town. Further, the ditch and reservoir require upgrades for aging facilities and to ensure compliance with state dam safety regulations, which were updated in 2007.

**Lake San Cristobal Controlled Outlet**

**Structure**

APPLICANTS: Upper Gunnison Water Conservancy District and Hinsdale County  
 APPROVED: May 2007  
 STATUS: Complete  
 WSRA FUNDS: \$35,000 (Basin Account)  
 MATCHING FUNDS: None

DESCRIPTION:

Hinsdale County and the Upper Gunnison River Water Conservancy District (UGRWCD) explored the feasibility of constructing a new permanent control structure at the outlet of Lake San Cristobal. The new structure allows for more controlled releases to regulate the lake level and prevent failure of the structure during flood events. The additional stored water resulting from the project will be used primarily as augmentation water within the Lake Fork of the Gunnison River. Other beneficial uses may include agriculture, recreation, and releases for instream flows. The feasibility study estimates the firm yield of the additional 960 acre-feet of storage and develop an engineering report to support the water right application in the pending water rights case (case no. 03CW108). The study also analyzes the current and future market for water impounded by the structure. As upstream augmentation source, Lake San Cristobal could augment out of priority depletions caused by growth within the Lake Fork basin rather than utilizing downstream sources such as Blue Mesa Reservoir. A number of CWCB instream flow water rights could also benefit both directly and indirectly from this project.

**Safety and Serviceability Needs Inventory for Reservoirs in the Leroux Creek Drainage Basin**

APPLICANT: Leroux Creek Water Users Association  
 APPROVED: May 2007  
 STATUS: In Progress  
 WSRA FUNDS: \$60,000 (Basin Account)  
 MATCHING FUNDS: \$10,000

DESCRIPTION:

The Leroux Creek Water Users Association (LCWUA) is an irrigation company in Delta County with 29 small reservoirs in the Leroux Creek Drainage. Built in the early 1900's, the reservoirs serve as the primary water supply for over 4,500 acres of valuable orchard, vineyard, and hay land which produces more than \$3.5 million in direct economic benefits. The system's water storage also provides domestic water for the towns of Hotchkiss, Rogers Mesa, and Hanson Mesa. The reservoirs range in size from 10 acre-feet to 920 acre-feet, with dam heights up to 52 feet. LCWUA has initiated a program of identifying and prioritizing rehabilitation/upgrade needs in order to enhance the safety and reliability of the dams within their system. The project involves conducting a preliminary inventory of the

needs for 28 of the dams (one has been excluded due to its recent rehabilitation). Needs will be assessed and categorized as: outlet works, seepage, slope stability, spillway/flood hydrology, and general dam condition.

**Orchard City Water Reservoir Project (Task 1 – 3)**

APPLICANT: Town of Orchard City  
 APPROVED: May 2007  
 STATUS: Complete  
 WSRA FUNDS: \$60,000 (Basin Account)  
 MATCHING FUNDS: \$56,694

DESCRIPTION:

This project involves the design of an approximately 500 acre-foot off-channel reservoir to serve the municipal/domestic needs of Orchard City. Prior to the completion of the final engineering design an alternative analysis for determining the most cost effective structure was performed. The overall project includes: alternative analysis; geotechnical investigations; kick-off and progress meetings; final design work and documents per State requirements; engineer's construction cost estimate; bid process support. The final reservoir design will enable the subsequent construction of the reservoir in a timely, cost effective, and safe manner. Following completion of reservoir design the applicants sought assistance with funding for project construction from the WSRA Statewide fund in September 2007.

**Orchard City Water Reservoir Project (Remaining Tasks)**

APPLICANT: Town of Orchard City  
 APPROVED: September 2007  
 STATUS: Complete  
 WSRA FUNDS: \$480,000 (Statewide Account)  
 MATCHING FUNDS: \$678,000

DESCRIPTION:

The recent drought has exposed several serious deficiencies in the water supply system of the Town of Orchard City. In response, the town has been forced to evaluate its water rights (both in quantity and type), storage, collection and delivery system, and treatment plant. Most of the Town's supply comes from relatively junior direct flow agricultural rights. These rights are made even more vulnerable by a complicated exchange into the different drainage where the treatment plant is located. With no reservoirs or storage rights the Town has no backup supply in the event of a drought, and no way to store excess flows when available. In addition to changing a key water right to include storage the town has completed design work on an off-channel reservoir of about 500 acre-feet and has obtained the necessary land. The reservoir provides: 100 days of backup supply; a second supply source for redundancy and security; an emergency winter supply; wildfire protection; and flexibility to lease or trade existing agricultural supplies to local farmers.



### Off-System Raw Water Storage Reservoir Study

APPLICANTS: Project 7 Water Authority and Uncompahgre Valley Water Users Association

APPROVED: September 2007

STATUS: Complete

WSRA FUNDS: \$56,700 (Basin Account)

MATCHING FUNDS: None

#### DESCRIPTION:

The Project 7 Water Authority (P7) and Uncompahgre Valley Water Users Association (UVWUA) examined the feasibility of constructing a new raw water storage reservoir to augment the existing Fairview Reservoir to provide a more reliable source of domestic water to the valley. Fairview Reservoir is owned and operated by P7, but the water rights are owned by UVWUA. Since system deliveries come from the Gunnison Tunnel and South Canal, the reservoir also provides backup supplies in the event of tunnel closures. The proposed new reservoir to be located on BLM and/or private land in the vicinity of Fairview Reservoir would have a capacity sufficient to supply P7 customers with domestic water for up to one full year. The feasibility study examines several potential sites for suitability and availability of a reservoir of up to 10,000 acre-feet. A detailed evaluation and comparative analysis of the potential sites was performed to identify the best reservoir location.

### Paonia – Feldman Diversion Reconstruction Project

APPLICANT: North Fork River Improvement Association

APPROVED: September 2007

STATUS: Complete

WSRA FUNDS: \$110,700 (\$48,000—Basin Account; \$62,700—Statewide Account)

MATCHING FUNDS: \$76,316

#### DESCRIPTION:

This project consists of a feasibility study and final construction of an efficient, low-maintenance concrete head gate and low-head rock weir for two ditches. The new structure is designed to deliver the ditches full decreed amount while conserving water, improving use efficiencies, reducing the need for bulldozers in the channel, and decreasing suspended sediment. In addition, the structure allows fish migration and boat passage across the diversion; both of which are now prevented by the existing diversion structure. The Paonia and Feldman diversions are on either side of the North Fork of the Gunnison River, adjacent to the Town of Paonia. The uncontrolled diversions formerly used a rock and debris structure created by bulldozing the river bed resulting in considerable erosion and sedimentation issues. The new structure reduces maintenance, ensures full diversion, and also greatly benefits the stream by enhancing the fishery, water quality, and riparian system.

### Sedimentation Management Study for Paonia Reservoir

APPLICANTS: North Fork Water Conservancy District (NFWCD) and Fire Mountain Canal and Reservoir Company (FMCC)

APPROVED: September 2007

STATUS: In Progress

WSRA FUNDS: \$309,000 (\$79,000—Basin Account; \$230,000—Statewide Account)

MATCHING FUNDS: \$10,000

#### DESCRIPTION:

According to the most recent sediment survey in 2002, the 21,000 acre-foot Paonia Reservoir had lost 24% of its capacity to sedimentation. There are no other irrigation options for the farms and ranches in this area and, without some action, there will be a devastating impact on existing agricultural water users. Along with the significant reduction in storage capacity, the sedimentation delta is approaching the intake structure of the dam's outlet, which could result in serious operational and environmental problems. Therefore, there is a compelling need to evaluate a range of sedimentation mitigation options and identify the best and most cost effective methods for insuring reservoir sustainability and a continued full supply of water from the Paonia Reservoir project. The objective of this study is to investigate sediment management options for Paonia Reservoir to: remove a portion of the historically accumulated sediment, reduce the rate of sedimentation, and identify operational and management practices to extend the life of the reservoir.

### Overland Reservoir Dam Expansion and Restoration

APPLICANT: Overland Ditch and Reservoir Company

APPROVED: September 2007

STATUS: In Progress

WSRA FUNDS: \$68,000 (Statewide Account)

MATCHING FUNDS: None

#### DESCRIPTION:

The Overland Ditch and Reservoir Company (Overland) seeks technical assistance for permitting, feasibility studies, and yield analysis of its reservoir dam expansion and restoration project. Overland needs to expand the dam and reservoir to store 971 acre-feet of water under a 1902 conditional storage decree. Without expansion the conditional storage will eventually be lost to a more junior decree, which would likely be subject to 1922 Colorado River Pact. The current tasks involve the completion of engineering necessary for permit applications and approvals, including reservoir yield analysis, mitigation designs, and a USFS special use permit. The current proposed dam expansion and restoration project will increase the storage capacity to 7,171 acre feet and allow perfection of the 971 acre-foot conditional right, thereby protecting the water for the State of Colorado.

**Lake San Cristobal Outlet Modification Project – Phase II**

APPLICANT: Upper Gunnison Water Conservancy District  
 APPROVED: July 2008  
 STATUS: In Progress  
 WSRA FUNDS: \$75,265 (Basin Account)  
 MATCHING FUNDS: None

DESCRIPTION:

The Lake San Cristobal Outlet Modification Project is intended to replace an annually-placed rock wall with a permanent outlet structure. This structure would maintain the historical storage regime that has taken place for over 50 years. The proposed outlet would allow for more controlled releases while eliminating the need to annually place and remove rocks at the lake's outlet. In addition, the new outlet structure would allow development of a local plan of augmentation to benefit the environment via the Instream Flow Right along the Lake Fork of the Gunnison and reduce the reliance on Blue Mesa Reservoir as a downstream source of augmentation water. The current phase of the project includes the hazard classification report preparation, preliminary review and approval by the Colorado State Engineer (SEO), all other permit requirements, and the geotechnical, design, and hydrology reports.

**Lake San Cristobal Outlet Modification Project – Phase III**

APPLICANT: Upper Gunnison Water Conservancy District  
 APPROVED: September 2008  
 STATUS: In Progress  
 WSRA FUNDS: \$120,960 (Statewide Account)  
 MATCHING FUNDS: None

DESCRIPTION:

The Lake San Cristobal Outlet Modification Project is intended to replace an annually-placed rock wall with a permanent outlet structure. This structure would maintain the historical storage regime that has taken place for over 50 years. The proposed outlet would allow for more controlled releases while eliminating the need to annually place and remove rocks at the lake's outlet. In addition, the new outlet structure would allow development of a local plan of augmentation to benefit the environment via the Instream Flow Right along the Lake Fork of the Gunnison and reduce the reliance on Blue Mesa Reservoir as a downstream source of augmentation water. The current phase of the project includes the completion of final design documents and construction cost estimates. This work involves preparation of the technical specifications, design drawings and details, and applying for and obtaining construction approval of the outlet control structure from the Colorado State Engineer. The Consultant shall see the application through to construction approval by the State.

**Ridgway Ditch and Lake Otonawanda Improvement Project**

APPLICANT: Town of Ridgway  
 APPROVED: March 2009  
 STATUS: In Progress  
 WSRA FUNDS: \$109,500 (Basin Account)  
 MATCHING FUNDS: \$27,380

DESCRIPTION:

The Town of Ridgway is seeking technical assistance regarding design, cost estimates, and permitting associated with the enlargement of its municipal reservoir and rehabilitation of the associated diversion structure. The Ridgway Ditch and Lake Otonawanda Improvement Project will help meet the demands of projected growth in the Town of Ridgway. The project will also provide augmentation supplies necessary to meet calls by senior users that threaten the reliability of the Town's water supply in dry years. The current phase of the project includes an engineering feasibility study on the expansion of storage in Lake Otonawanda via dredging and bentonite amendment. The study will include an analysis of outflow infrastructure necessary for direct releases to the Town's water treatment plant. The study would identify permitting and environmental issues, preliminary concept design, and preliminary engineer's cost for project construction. The study also includes a redesign of the Town's diversion and head gate structure above the reservoir. A previous study estimated seepage loss from the ditch to be approximately 35 to 40 percent, providing an opportunity for huge efficiency gains.

**Juniata Reservoir Spillway Modification**

APPLICANT: City of Grand Junction Water Enterprise Fund  
 APPROVED: March 2009  
 STATUS: Complete  
 WSRA FUNDS: \$97,000 (Basin Account)  
 MATCHING FUNDS: \$97,586

DESCRIPTION:

This project involves construction to raise the spillway on Juniata Reservoir. Design components, which are part of this project, have already been completed and were approved by the State Engineers Office, Colorado Water Resources Dam Safety Division. Design components included: a geotechnical investigation and structural evaluation of the dam, hydrologic study of the tributary basin, and hydraulic evaluation of the emergency spillway. The resulting design report, supported by geotechnical and hydrologic evaluations, including construction plans and specifications, demonstrate that the proposed storage enlargement will have no adverse impacts on the continued safe operation of the reservoir and comply fully with Rule 5 of the Colorado "Rules and Regulations for Dam Safety and Dam Construction," dated 2007, as adopted by the Colorado SEO. Raising the spillway three feet will allow for the additional stor-

age of 445 acre feet of water. This additional storage will serve many purposes. This first and most important will be drought protection. The 445 acre feet of additional storage represents 7.5% of annual water demands in the City of Grand Junction domestic water system.

### **Agricultural Water Needs Assessment and Water Supply Analysis**

APPLICANT: Upper Gunnison River Water Conservancy District (UGRWCD)

APPROVED: March 2009

STATUS: Contracting

WSRA FUNDS: \$120,560 (Basin Account)

MATCHING FUNDS: \$12,400

#### DESCRIPTION:

This study will identify agricultural water needs and shortages in the Gunnison River Basin. The following objectives are to be accomplished: To interview, on a sub-basin level, water users and other sources of local information for agricultural physical and legal water supply issues during the most recent drought period, 2000 – 2007. Based on the results of those interviews, refine and update estimates of current agricultural water demands, supplies, and shortages for the Gunnison River Basin, including the State's Decision Support System (DSS) models and updated data.

### **Hartland Diversion Dam Fish Passage Feasibility Study**

APPLICANT: Painted Sky Resource Conservation and Development Council, Inc.

APPROVED: May 2009

STATUS: Complete

WSRA FUNDS: \$22,100 (Basin Account)

MATCHING FUNDS: \$1,000

#### DESCRIPTION:

This feasibility study of the Hartland Diversion Dam will include a conceptual design for fish and/or boater passage, an up-to-date cost estimate of construction and permitting costs, and analysis of any environmental compliance requirements pursuant to potential Army Corps of Engineers jurisdiction over the project. Requested funds will not be used to physically alter the diversion structure, but will only assess cost and methods for doing so. Painted Sky proposes to study and design a structure in conjunction with the existing Hartland Diversion Dam, which enables upstream fish passage while preserving the current volume of water diverted by the structure for private use. Pending successful completion of the study and design, Painted Sky has been informed that approximately \$700,000 has been allocated to construct the fish passage structure; however, requested funds in this proposal are required to bring the project to a "Shovel-Ready" status, in order to access stimulus funds for project implementation.

### **Development of Augmentation Supplies**

APPLICANT: City of Ouray

APPROVED: May 2009

STATUS: In Progress

WSRA FUNDS: \$50,000 (Basin Account)

MATCHING FUNDS: \$87,129

#### DESCRIPTION:

The City of Ouray is seeking technical assistance regarding the purchase of water rights from Red Mountain Ditch, a framework for interruptible water supply contracts with irrigators in the Uncompahgre River Basin, and the feasibility of enlarging the Ouray Hydropower Plan Reservoir to store these water rights. Although the City of Ouray has fairly senior water rights dating from 1881 and 1885 and adjudicated in 1904, in severe droughts such as 2002 and 2003, water calls were placed on those rights by senior agricultural producers in both the Upper and Lower Uncompahgre River. For this reason, the Division 4 Engineer requested the City of Ouray to procure augmentation supplies to protect the City's water rights during dry years. The City would like to minimize the impact to agriculture, and will only need augmentation supplies during very dry years, enabling interruptible supply agreements to be a viable solution. A small storage reservoir will allow the storage and redistribution of the historical consumptive use credits from the interruptible supply contracts to meet the City's depletion pattern. Representatives of the City have already met with owners of senior irrigation water rights in the Upper Uncompahgre Basin and have identified willing participants. The use of an existing hydropower facility provides a multi use option that enables the generation of revenue during periods when augmentation supplies are not needed.

### **75 Ditch Diversion Improvements and Feature Enhancements**

APPLICANT: Gunnison River Festival

APPROVED: May 2010

STATUS: Contracting

WSRA FUNDS: \$46,100 (Basin Account)

MATCHING FUNDS: \$110,584

#### DESCRIPTION:

This project involves the construction of a multi-purpose structure on the Gunnison River in Gunnison, Colorado at the location of the 75 Ditch diversion, which is the oldest water right in the Gunnison Basin. These water rights were adjudicated in 1906 and have an 1875 appropriation date. The holistic design of this structure will improve the year-round delivery of water to the 75 Ditch, eliminating the annual instream disturbances currently caused by the use of heavy machinery to manipulate river substrate to ensure water delivery during low flows. In 2009, the Colorado Water Conservation Board provided the initial funding (through a severance tax grant) to have Recreational Engineering and Planning of Boulder, Colorado create a preliminary design and cost estimate used to develop this proposal. Due to the channel width, stream gradient and diversion characteristics, this is an ideal location for a multi-purpose



structure. Additionally, this reach of the Gunnison White-water Park currently poses a safety risk to commercial and private boaters at low flow conditions.

### **Lake San Cristobal Outlet Structure**

APPLICANT: Lake San Cristobal Water Activity  
Enterprise  
APPROVED: May 2010  
STATUS: Contracting  
WSRA FUNDS: \$150,000 (Basin Account)  
MATCHING FUNDS: \$432,660

#### DESCRIPTION:

This grant request funding will be used to install a structure at the outlet of Lake San Cristobal for water storage augmentation. This project will also allow the Lake San Cristobal Water Activity Enterprise to monitor and enhance river flow for fisheries and maintain wetlands. Lake San Cristobal is Colorado's second largest natural lake and is located on the Lake Fork of the Gunnison River in Hinsdale County, Colorado. It is located approximately 3.5 miles SE of Lake City. The existing outlet structure consists of large boulders placed in the stream channel at the lake's outlet. The boulders are removed by Hinsdale County Road and Bridge staff during the spring runoff, approximately April to June, each year to allow runoff flow to enter the Lake Fork.

### **Hanson Reservoir Outlet Rehabilitation**

APPLICANT: Leroux Creek Water Users Association  
APPROVED: July 2010  
STATUS: Contracting  
WSRA FUNDS: \$50,000 (Basin Account)  
MATCHING FUNDS: OVER \$50,000

#### DESCRIPTION:

The Hanson Outlet Rehabilitation project involves replacing an existing downstream outlet valve with a new upstream valve on Hanson Reservoir, one of 28 reservoirs owned and operated by Leroux Creek Water Users Association (LCWUA). The Leroux Creek Dam Inventory study was funded by the Gunnison Basin Roundtable (GBRT) to identify and prioritize safety issues and maintenance needs on the reservoirs. This study identified problems with the Hanson outlet. After consulting with the State Dam safety Engineer for Division 4, this outlet issue became the number one priority for LCWUA. Inspection of the outlet and original dam plans indicated the existence of an older abandoned valve buried in the embankment some 20 feet upstream of the current outlet valve. This buried valve has developed some leakage around the stem which is producing a wet area on the dam face. The Dam Safety Engineer has indicated the need to repair this problem or face restrictions on dam operations.

### Upper Mountain Counties Water Needs

#### Assessment

APPLICANTS: Clear Creek County on Behalf of the Upper Mountain Counties Water Needs Consortium

APPROVED: May 2008

STATUS: In Progress

WSRA FUNDS: \$174,350—**joint application:**  
\$43,587—Metro Basin Account  
\$130,763—South Platte Basin Account

MATCHING FUNDS: \$8,070

#### DESCRIPTION:

In March 2008 the four upper mountain counties in the South Platte headwaters (Park, Jefferson, Clear Creek, and Gilpin) formed the Upper Mountain Counties Water Needs Consortium. The purpose of the Consortium is to “perform a study to accurately identify water needs, available water supplies and any shortages that may exist in the Upper Mountain Counties and identify projects and or actions that may be needed to address any shortages.” The needs assessment seeks to determine the long term availability of ground water in the fractured and faulted bedrock aquifers of the study area and evaluate if the use of ground water at build-out can be sustained. The study will use historical precipitation data (1950 to present), recharge related to this precipitation, and data on increased ground water use to analyze hydrologic variation over the period during wet, average, and dry years. The project will provide a more accurate assessment of the water demands in the study area which are highly dependent upon ground water in fractured and faulted bedrock aquifers.

### Solicitation of Stakeholder Input Through a South Platte Edition of Headwaters

APPLICANT: Colorado Foundation for Water Education

APPROVED: July 2008

STATUS: Complete

WSRA FUNDS: \$32,038—**joint application:**  
\$16,019—Metro Basin Account  
\$16,019—South Platte Basin Account

MATCHING FUNDS: \$10,900

#### DESCRIPTION:

This project entails the creation of a special South Platte Edition of CFWE’s Headwaters Magazine to provide a tool for Metro and South Platte Basin Roundtable members to actively solicit input from affected local governments and stakeholders on their needs assessment and proposed projects and methods for meeting those needs. Headwaters magazine is CFWE’s most widely available and well-known educational resource, distributed to over 6,000 residents of Colorado and the West. The project is intended to educate Basin Roundtable stakeholders about the basin’s geography, water supply, environmental challenges, water management agencies (including the IBCC and Roundta-

bles), and water needs. CFWE will provide support to Basin Roundtable members in their outreach efforts by providing materials and assisting in their distribution, and attending a limited number of speaking engagements on behalf of the Basin Roundtable to discuss the contents of the issue.

### Demonstration of Membrane Zero Liquid Discharge Process for Drinking Water Systems

APPLICANT: Colorado Department of Public Health and Environment, Water Quality Control Division

APPROVED: September 2008

STATUS: Contracting

WSRA FUNDS: \$800,000—**joint application:**  
\$25,000—Arkansas Basin Account;  
\$25,000—South Platte Basin Account;  
\$50,000—Metro Basin Account;  
\$700,000—Statewide Account

MATCHING FUNDS: \$325,000

#### DESCRIPTION:

See description under Arkansas Basin section.

### Lost Creek Aquifer Recharge and Storage Study

APPLICANT: Lost Creek Groundwater Management District

APPROVED: January 2009

STATUS: In Progress

WSRA FUNDS: \$160,000—**joint application:**  
\$80,000—Metro Basin Account  
\$80,000—South Platte Basin Account

MATCHING FUNDS: \$13,000

#### DESCRIPTION:

This study seeks to compile, collect, and analyze hydrologic, aquifer property, and water quality data to characterize the ground water resources in the Lost Creek alluvial aquifer. The study will also evaluate geographic, infrastructure, and land ownership/use information for the purposes of assessing the potential for aquifer recharge and storage implementation. To address the needs of in-basin water rights holders and assist the management district in their decision-making processes, the study will: 1. Characterize the configuration and extent of the alluvial aquifer within the Lost Creek basin; 2. Compile and present current and historic ground-water levels and water level trends; 3. Characterize the amount of natural recharge and estimate the available storage capacity in the alluvial aquifer; 4. Determine hydraulic and storage properties of the alluvial aquifer; 5. Present the spatial relationship with the underlying Denver Basin bedrock aquifers; 6. Characterize the land use and ownership; and 7. Identify the existing water delivery infrastructure.

### South Platte River Recreation and Habitat Feasibility Study

APPLICANT: Greenway Foundation  
 APPROVED: September 2008  
 STATUS: Complete  
 WSRA FUNDS: \$150,000 (Basin Account)  
 MATCHING FUNDS: None

DESCRIPTION:

The Greenway Foundation will perform a feasibility study identifying habitat and recreation improvement alternatives associated with future instream flow expectations. The objective of the habitat improvements would be to increase native riparian vegetation and increase the abundance of aquatic life habitat. The location type and quality of existing habitat and riparian vegetation will be identified through field reconnaissance. Proposed improvement options would be developed to complement the existing habitat and vegetation. Biological physical and hydrological characteristics will be examined and improvement options will be identified based on stakeholder input. The feasibility study will also identify required permits to implement the proposed improvements. The study consists of 3 tasks: 1) data acquisition and site reconnaissance; 2) assessment of opportunities & challenges; 3) conceptual design for the study area.

### South Metro Water Supply Authority Regional Aquifer Supply Assessment

APPLICANT: South Metro Water Supply Authority  
 APPROVED: July 2008  
 STATUS: Complete  
 WSRA FUNDS: \$100,540 (Basin Account)  
 MATCHING FUNDS: Unspecified In-kind

DESCRIPTION:

The purpose for the South Metro Water Supply Authority Regional Aquifer Supply Assessment study is to more accurately evaluate the likely impacts of continued reliance on the non-renewable groundwater supplies in the south Metro Denver area and to explore more coordinated regional management of this precious resource. This project intends to develop a better understanding of the aquifer characteristics relevant to well production artificial recharge and conjunctive use within the south Metro area through the collection of additional data from SMWSA providers. This study will also undertake a detailed assessment of aquifer drawdown due to pumping in the south Metro area by evaluating information from previous studies and updating with additional information collected from SMWSA providers. The project will also characterize the unit cost of producing potable groundwater in the south Metro area including costs for pumping water treatment annual operations and maintenance, evaluate whether the unit costs vary geographically, and/or over time through the year, and use this information to assess ways of optimizing operations to increase aquifer

sustainability. Finally this project will identify potential locations to conduct a regional ASR demonstration project within the south Metro area.

### Parker Water & Sanitation District and Colorado State University Joint Project on the Rural/Farm Model

APPLICANT: Parker Water & Sanitation District  
 APPROVED: September 2007  
 STATUS: Complete  
 WSRA FUNDS: \$150,000 (Basin Account)  
 MATCHING FUNDS: \$882,353

DESCRIPTION:

The study is designed to provide additional renewable water supplies to the PWSA service area in Douglas County, which is dependent on non-renewable Denver Basin water. This 3-year study includes a controlled research by CSU on a farm in Loan County that is owned by PWSA (Hurst Farm). Various crops will be planted by CSU and these plots will be irrigated in different patterns to assess the crop's ability to thrive under varying irrigation practices, e.g., irrigating alfalfa prior to its first cutting, letting it grow without irrigation through the second cutting, and then irrigating it again prior to the third cutting. In this way, CSU will develop a database on the most efficient irrigation practices for various crops where the crop can still thrive under a lower irrigation volume. The difference between the reduced irrigation volume and the historic irrigation volume related to consumptive use could then be made available for transfer to PWSA for municipal use. Additionally, three to five on-farm demonstrations will be conducted, along with economic studies to assess the potential trickle-down effect from changes in the farm economy.

### Zero Liquid Discharge Pilot Study

APPLICANT: East Cherry Creek Valley Water & Sanitation District  
 APPROVED: September 2007  
 STATUS: Complete  
 WSRA FUNDS: \$400,000 (\$200,000—Basin Account; \$200,000—Statewide Account)  
 MATCHING FUNDS: \$150,000

DESCRIPTION:

The ZLD pilot plant study will evaluate two RO membrane based technologies to concentrate the residual stream from a typical municipal brackish water RO system. The first technology, called VSEP, uses vibrations at the face of the RO membrane to prevent mineral scales from forming on the membrane, and subsequently preventing the flow of water through the membrane. The second technology uses high pressure seawater RO membranes to reduce the volume of the concentrate, and uses ion exchange to remove ions that would form mineral scales on the membrane face. The study includes disposal options if a water stream is still



present. This study will provide information on the technical feasibility, costs, operational consideration, and energy consumption of these two zero liquid discharge processes.

### **Chatfield Reservoir Reallocation Environmental Impact Statement and Feasibility Report**

APPLICANT: The Greenway Foundation  
APPROVED: March 2007  
STATUS: Complete  
WSRA FUNDS: \$130,000—**joint application:**  
\$103,000—Metro Basin Account  
\$27,000—South Platte Basin Account

MATCHING FUNDS: \$206,000

#### DESCRIPTION:

The purpose of the Chatfield Reallocation Feasibility Study is to investigate the potential for the reallocation of storage from the flood control to multi-purpose use, to formulate plans of improvement, and to obtain approval of higher Corps authority. The Feasibility Study, which will consist of an environmental impact statement (EIS) and a feasibility report (FR), will include an analysis of existing and alternative operations of Chatfield Reservoir individually, and to the extent necessary for the hydrologic studies, systemically with Cherry Creek and Bear Creek reservoirs. The Feasibility Study will estimate potential changes to downstream flows and to reservoir pool elevations as well as the potential consequences to water supplies, flood damages, recreation opportunities, water quality and fish and wildlife habitat. Historical streamflow records will be utilized to test effects of different flood control and water supply regulation scenarios. The EIS/FR is equally cost shared with the local non-federal sponsor (CWBC) through a feasibility study cost share agreement (FCSA).

### **Aquifer Recharge Pilot Study**

APPLICANT: South Metro Water Supply Authority  
APPROVED: September 2009 (\$425,000) and  
September 2010 (\$125,000)  
STATUS: Contracting  
WSRA FUNDS: \$550,000 (Statewide Account)  
MATCHING FUNDS: \$85,000

#### DESCRIPTION:

This project will determine if aquifer recharge is a viable strategy to help meet municipal and industrial water needs in the South Metro area. Much of the municipal and industrial uses for the South Metro area comes from non-tributary groundwater supplies found in the Denver Basin bedrock aquifers. Due to population growth demand on groundwater has led to aquifer water level declines of as much as 30 feet. The applicant will test several aquifer locations by artificially recharging water of varying water quality into the aquifers. The applicant will retrofit existing wells to determine the suitability of that location for aquifer storage and recovery (ASR). The pilot will help understand the effects differing aquifer attributes and source waters

have on ASR. Pilot-scale testing is being requested because aquifers vary significantly in their hydraulic characteristics to accept recharge water and to react chemically with injected water. Such unknowns and costs of pilot-scale field studies have inhibited local water providers from embarking on this activity.

### **Feasibility Study for Bureau of Reclamation Funding from the National Rural Water Supply Act**

APPLICANT: Douglas County Water Resource  
Authority  
APPROVED: September 2009  
STATUS: Contracting  
WSRA FUNDS: \$600,000 (\$100,000—Basin Account;  
\$500,000—Statewide Account)

MATCHING FUNDS: Up to \$1,125,000 (potential 1:1 federal match and \$450,000 in local match)

#### DESCRIPTION:

The proposed project will develop a feasibility study to connect existing water infrastructure of the Douglas County Water Resource Authority members to help with the delivery of surface water to the region. Examples of existing infrastructure include ECCV Barr Lake and other pipelines, and the infrastructure of Parker, Castle Rock, Castle Pines, Castle Pines North, Centennial, Roxborough, and others. The purpose of the study is to examine alternatives to meet the goals of reducing the region's reliance on Denver Basin Groundwater and to meet their growing municipal and industrial needs and to finalize the alignments and specifications of this shared infrastructure project. The feasibility study will include detailed engineering, public participation, alternatives, and environmental consequences.

### **Flaming Gorge Project Task Force Assessment**

APPLICANT: El Paso County Water Authority  
APPROVED: May 2010  
STATUS: In Progress  
WSRA FUNDS: \$40,000—joint application:  
\$20,000—Arkansas Basin Account  
\$20,000—Metro Basin Account

MATCHING FUNDS: NONE

#### DESCRIPTION:

See description under Arkansas Basin section.

### **Rotary Sprinkler Nozzle Retrofit**

APPLICANT: Douglas County Water Resource  
Authority  
APPROVED: September 2010  
STATUS: Contracting  
WSRA FUNDS: \$250,000 (Statewide Account)  
MATCHING FUNDS: \$87,500

#### DESCRIPTION:

Rotary Sprinkler Nozzles are thirty percent more efficient in outdoor irrigation activities than traditional spray nozzles commonly in use in the project area. This project proposes to retrofit 1,000 homes with existing spray heads with rotary sprinkler nozzles to reduce water used by the project participants. Accompanying public outreach will create interest in the retrofit project, and this interest can be used to encourage more widespread adoption over time of retrofits as effective, comfortable water resource conservation practices in the project area. High school students will be hired to perform the 1,000 retrofits as part of a summer jobs program in the Memorial Day to Labor Day timeframe over the summer of 2011. Their work will be supervised by adults experienced in this type of work. Not only will the rotary sprinkler nozzles be retrofitted, but they will also be aimed to avoid over-spraying and watering sidewalks. Irrigation controllers will be reset to reflect the proper application rates of the rotary sprinkler nozzles. Impact metrics will be collected to assure proper installation of the rotary sprinkler nozzles. Members of DCWRA are water providers who can read the meters of the yards receiving the retrofits, and measure and confirm actual water saved through this retrofit program.

### **Rural Douglas County Groundwater Level**

#### **Monitoring Network**

APPLICANT: Rural Water Authority of Douglas County

APPROVED: September 2010

STATUS: Contracting

WSRA FUNDS: \$113,055 (\$28,263—Basin Account and  
\$84,792—Statewide Account)

MATCHING FUNDS: \$60,880

#### DESCRIPTION:

The primary objective of this study is to establish a county wide groundwater-level monitoring network for the long-term monitoring of the water resources of Douglas County, Colorado. The network will consist of approximately 30 existing wells throughout the county. Water levels will be measured monthly in all wells and five sites will be equipped with pressure transducers for continuous monitoring. Water levels measured from wells in the network will provide an assessment of the current water resource and provide the basis from which to monitor long-term changes of the hydrologic system.

### **New Pioneer Ditch Diversion Reconstruction Project**

APPLICANT: Silver Spur Land and Cattle

APPROVED: March 2008

STATUS: Complete

WSRA FUNDS: \$116,000 (Basin Account)

MATCHING FUNDS: \$48,000

DESCRIPTION:

This project involved the reconstruction of the diversion structure for the New Pioneer Ditch. The ditch irrigates up to 950 acres with multiple senior water rights from the Canadian River. However, due to degradation of the diversion structure, the diversion structure could not seal off the river resulting in difficulties meeting its deliveries and regulating flows. Extreme bank erosion at the diversion location had degraded agricultural land and added a large amount of sediment to the river resulting in water quality issues and potential listing on the Clean Water Act Section 303(d) list of impaired waters. The current structure did not allow fish passage to upstream spawning areas. This project constructed a low-head diversion structure capable of diverting the entire river, if necessary to implement a call, while allowing for more accurate and efficient regulation of diversions. Streambank improvements upstream and downstream of the structure stabilized the structure, reduced bank erosion, and act as a fish and recreational boat passage.

### **Town of Walden Water Supply Improvement Project**

APPLICANT: Town of Walden

APPROVED: July 2008

STATUS: In Progress

WSRA FUNDS: \$385,000 (Basin Account)

MATCHING FUNDS: None

DESCRIPTION:

The Town of Walden Water Supply Improvement Project includes multiple components to enhance the physical and legal reliability of the system. The project will enable full diversion of the Town's senior 1.0 cfs right (the Hi Ho Ditch water right) via a new collection gallery adjacent to the Michigan River, along with rehabilitating the existing dam and diversion structure in the Michigan River. The project also includes decreeing the Town's two junior municipal wells as alternate points of diversion of the Hi Ho Ditch water right and changing the use of the Town's Walden Reservoir shares to include municipal and augmentation use. Due to degradation, the current diversion structure cannot divert the full 1.0 cfs water right, and results in seasonal water quality issues that impact the water treatment system and water taste. The collection gallery would allow natural filtering of the water to improve water quality. The Town had to restrict water use significantly in the drought year of 2002 because water was not physically available from the river and the wells, even though its Hi Ho Ditch right was in priority.

### **Effects of Mountain Pine Beetle and Forest Management on Water Quantity, Quality, and Forest Recovery**

APPLICANT: United States Forest Service, Rocky Mountain Research Station

APPROVED: September 2008

STATUS: In Progress

WSRA FUNDS: \$376,923 (\$212,306—Basin Account; \$164,618—Statewide Account)

MATCHING FUNDS: In-Kind Staffing and Equipment

DESCRIPTION:

The proposed research addresses the effects of disturbance and management of the Mountain Pine Beetle on North Platte and Upper Colorado River water resources, both quantity and quality. This study will compare how four management alternatives commonly used in beetle-killed pine forests influence snow accumulation, streamflow, water quality, soil productivity, and forest recovery. The management alternatives result in distinct amounts of above-ground structure, surface roughness and soil disturbance. The No Action option retains standing snags, downed wood, and maximum surface roughness. Logging conducted using the Watershed Protection option retains logging residue to maintain roughness and avoid soil disturbance. In contrast, the Fuel Reduction option removes slash, and the Forest Regeneration option combines slash reduction and mechanical scarification to enhance seedling establishment. Assessment of these management alternatives will improve decisions on how to sustain delivery of clean water and forest productivity from lands impacted by mountain pine beetle. The project promotes collaboration in forest and water management activities between the US Forest Service, Colorado State Forest Service, and basin interests statewide where beetle infestation is occurring and management strategies are needed.

### **Identification and Assessment of Important Wetlands in the North Platte River Watershed**

APPLICANT: Colorado State University

APPROVED: September 2008

STATUS: In Progress

WSRA FUNDS: \$182,000 (\$86,000—Basin Account; \$96,000—Statewide Account)

MATCHING FUNDS: \$10,000

DESCRIPTION:

This project will provide the North Platte Basin Roundtable with data to support the non-consumptive needs assessment with regard to its wetland resources. The North Platte Basin has large, contiguous wetlands that are important to threatened species (e.g. boreal toads, cutthroat trout), migratory animals, and several globally rare riparian and wetland plant communities. The project will identify and assess the health of the North Platte's watershed as indicated by the condition of its wetlands. Survey areas will be prioritized by the roundtable with a focus on private lands. Surveys will take place on private lands only with written permis-



sion of the landowner. The wetlands surveyed will be mapped based on ecological criteria, not jurisdictional criteria as defined by the US Army Corps of Engineers. The proposed project will provide an increased understanding of the watershed's wetlands leading to more effective protection of the area's waters.

### **Monitoring the Effects of Weather Conditions on Evapotranspiration in the North Platte River Basin**

**APPLICANT:** Colorado Climate Center, Colorado State University

**APPROVED:** September 2008

**STATUS:** In Progress

**WSRA FUNDS:** \$100,818 (\$50,409—Basin Account; \$50,409—Statewide Account)

**MATCHING FUNDS:** Volunteer data collection

#### DESCRIPTION:

This is a data collection project intended to give the North Platte Basin Roundtable, as well as the CWCB and Colorado's water resource community, a better idea of how the weather conditions of North Park affect evapotranspiration (ET) from irrigated hay meadow grasses. Currently there have been several years of data collection in the basin using a Class A evaporation pan in the town of Walden and a lysimeter at the Refuge south of town. This project will considerably enhance the initial monitoring effort by establishing a network of complete year-round weather stations to continuously monitor and report weather conditions from three distinctly different locations in the Basin. Using well-documented physically-based techniques, the weather data will be used to compute grass reference ET on a daily and potentially hourly basis. Three "atmometers" (small low cost instruments that directly measure ET) will also be acquired to provide independent measurements at these same locations. The results will be displayed, compared, and posted continuously on a crop water use website managed and maintained by the Colorado Climate Center at CSU. The results will be integrated with the ongoing lysimeter and pan evaporation measurements to give a much more comprehensive assessment of ET in the basin than what is currently available. In addition, seven additional atmometers will be acquired and provided to volunteers in additional areas of the basin.

### **North Park Irrigated Meadow Conservation Program – Phase I**

**APPLICANT:** Ducks Unlimited, Inc.

**APPROVED:** May 2010

**STATUS:** In Progress

**WSRA FUNDS:** \$20,000 (Basin Account)

**MATCHING FUNDS:** \$41,338

#### DESCRIPTION:

The North Park Irrigated Meadow Conservation Program is a multi-partner effort to restore and enhance irrigated meadows in Jackson County, Colorado. The Program addresses both consumptive and nonconsumptive needs by rehabilitating water-delivery systems in the Park. Irrigators benefit by increasing efficiencies and the acreage under irrigation allowed under the North Platte Decree. Waterfowl will benefit by increasing the quantity and quality of breeding habitats in the North Platte Basin (NPB). This application is for the first phase of the program which will assess candidate projects. This assessment will detail water availability, irrigation infrastructure condition, wetland habitat condition, wildlife value, project impact assessments and the necessary project permitting in order to provide the information subsequently required by potential funders of project construction.

### **Terrace Reservoir Hydrologic Model, Survey, and Mapping Project**

APPLICANT: Alamosa Riverkeepers  
APPROVED: March 2007  
STATUS: Complete  
WSRA FUNDS: \$64,500 (Basin Account)  
MATCHING FUNDS: None

DESCRIPTION:

The Terrace Reservoir Hydrologic Model, Survey and Mapping project is a critical component of the Alamosa River Instream Flow Project. The complete Alamosa River Instream Flow Project includes: (1) Acquiring senior irrigation water rights on the Alamosa River; (2) Improving the Terrace Reservoir spillway to remove the State-imposed storage restriction (2,000 acre-feet); (3) Transferring the irrigation water rights to the CWCB for storage in Terrace Reservoir and instream flows in the Alamosa River; and (4) Operating Terrace Reservoir to store and release CWCB flows in accordance with an instream flow program. The project resulted from the Summitville Mine disaster and conclusions reported in CWCB's *Alamosa River Watershed Restoration Master Plan and Environmental Assessment Final Report*. The hydrologic model, site survey, mapping are the first step of the project. The Alamosa Riverkeepers is partnering on the project with the Terrace Irrigation Company which owns and operates Terrace Reservoir.

### **Preliminary Design Rio Grande Reservoir Multi-Use Rehabilitation and Enlargement**

APPLICANT: San Luis Valley Irrigation District  
APPROVED: March 2007  
STATUS: Complete  
WSRA FUNDS: \$288,000 (Statewide Account)  
MATCHING FUNDS: None

DESCRIPTION:

The San Luis Valley Irrigation District (District) owns and operates Rio Grande Reservoir, the only on-stream, main stem reservoir on the Rio Grande in Colorado. The Reservoir's current storage capacity is approximately 54,000 acre-feet, primarily for irrigation use within the District. The District recently completed an initial report on a potential reservoir enlargement which concluded that the dam height could most likely be raised by about 10 feet, yielding an additional 10,000 acre-feet of storage. The additional storage could help: better meet Colorado's Rio Grande Compact obligations; reregulate flows for instream and riparian needs; store augmentation water for domestic and commercial development; increase the conservation pool for fish habitat and flood control; and redesign the outlet works for safer water delivery. The proposed study and design work will examine the project's engineering, environmental, water use, and legal issues.

### **Rio Grande Basin Conservation Reserve Enhancement Program**

APPLICANT: Colorado Rio Grande Restoration Foundation  
APPROVED: May 2007  
STATUS: Complete  
WSRA FUNDS: \$36,750 (Basin Account)  
MATCHING FUNDS: None

DESCRIPTION:

The unsustainable use of water in the San Luis Valley, affecting the aquifer, local economy, wetlands, and hydrological conditions, calls for immediate and targeted actions to reverse the trend. This project involves the development of a proposal to the USDA's Conservation Reserve Enhancement Program (CREP) to benefit Sub-district No. 1 of the Rio Grande Water Conservation District. The project ultimately seeks a CREP Agreement requesting enrollment of approximately 40,000 acres of irrigated cropland in the San Luis Valley of the Rio Grande Watershed in Colorado. The CREP program will provide a strong financial incentive to remove lands from irrigation in order to address water shortages in the confined and unconfined aquifers of the valley. Upon completion and USDA approval of the CREP Proposal and the CREP Agreement, and upon full implementation, this project will place 40,000 acres of previously cropped land into native vegetation and reduce water consumption within Subdistrict No. 1 by approximately 60,000 acre feet per year. A fully implemented CREP in Subdistrict No. 1 will make a substantial contribution to its goals of significantly reducing consumptive use within the Closed Basin. The program seek to leverage approximately sixty million federal dollars to provide cost-share, incentives, and annual rental payments to producers that enroll in the CREP program.

### **Romero Guadalupe Channel Rectification Project**

APPLICANT: Romero Irrigation Company  
APPROVED: September 2007  
STATUS: Complete  
WSRA FUNDS: \$83,700 (Basin Account)  
MATCHING FUNDS: \$88,600

DESCRIPTION:

This project by the Romero Irrigation Company (Romero) and Guadalupe Main Ditch Company (Guadalupe), two of the oldest ditch companies on the Conejos River, addresses consumptive and non-consumptive needs of the ditch companies and the Conejos River, while reducing potential flooding in the town of Guadalupe, and enhancing fish habitat and riparian areas. Based on design work by the NRCS, the project involves stabilizing the Conejos River by reshaping and improving the condition of the channel, placing of J-Hook vane structures, creating rock weirs, and stream bank restoration. The channel restoration will: better accommodate flood flows, maintain a stable width to depth ration, allow for the conveyance of suspended solids,

ensure the stability of structures during flood events, improve water quality, and help the State meet its Compact obligation.

### Rio Grande Initiative

APPLICANT: Rio Grande Headwaters Land Trust  
 APPROVED: March 2008  
 STATUS: Complete  
 WSRA FUNDS: \$1,500,000 (\$200,000—Basin Account;  
 \$1,300,000—Statewide Account)  
 MATCHING FUNDS: \$8,857,385

DESCRIPTION:

The *Rio Grande Initiative* is a collaborative, community-based effort to protect as much of the key private lands and their senior surface water rights as possible, along the Rio Grande corridor, through voluntary, incentive-based means. Conserving the historic water use patterns along the river through this project is a key element of the Rio Grande Basin Round Table's commitment to creating water sustainability for their basin, protecting the economic base of agriculture, and sustaining wildlife including proactively addressing critical issues of endangered species in the corridor. These historic use patterns are at risk due to increasing development pressure and potential conversion of senior surface rights for other uses. The purchase of permanent conservation easements on land and associated water rights, will help sustain the economic and environmental benefits of traditional water uses in locations and patterns that are critical to the basin and the State's administration of the Rio Grande and its Compact. Funds will be used toward the purchase of conservation easements on three to four high priority properties on the Rio Grande. This activity simultaneously meets both consumptive needs of traditional water users and non-consumptive water needs of the environment, wildlife and recreation.

### Santa Maria and Continental Reservoirs: Rehabilitation and Multiple Use Studies

APPLICANT: Santa Maria Reservoir Company  
 APPROVED: September 2008  
 STATUS: In Progress  
 WSRA FUNDS: \$191,700 (\$50,000—Basin Account;  
 \$141,700—Statewide Account)  
 MATCHING FUNDS: \$18,300

DESCRIPTION:

The Continental Reservoir is a critical piece of the Santa Maria Reservoir Company system, but has been operating with a 15,000 acre-foot storage restriction due to safety issues. The Reservoir was constructed in 1910 and is operated in conjunction with the Santa Maria Reservoir (SMR). A deteriorated conveyance system between the two reservoirs also limits the amount of available water. The reservoirs store irrigation water, Rio Grande Compact water, San Luis Valley Water Conservancy District water, CDOW water, and trans-

mountain water, along with providing flood control benefits. Although Santa Maria has a designed capacity of 43,000AF, maximum storage in recent years has been 15,000AF. The Project will conduct engineering, hydrological, and hydraulic studies of all structures in the system to identify the best approach for removing dam storage restrictions and increasing efficiencies. This will allow the reservoir to hold and control additional Rio Grande Compact water; improve SMR's ability to hold and more effectively manage irrigation water; increase the System's value in flood control and its ability to respond in times of drought; increase SMR's options and ability to serve third parties; and greatly improve and enlarge fisheries, riparian areas, and wildlife habitat.

### 2008 Rio Grande Riparian Stabilization Project

APPLICANT: Colorado Rio Grande Restoration Foundation  
 APPROVED: September 2008  
 STATUS: In Progress  
 WSRA FUNDS: \$285,000 (\$35,000—Basin Account;  
 \$250,000—Statewide Account)  
 MATCHING FUNDS: \$356,000

DESCRIPTION:

A 2001 Study, completed with CWCB funding, assessed 91 miles of the Rio Grande from the town of South Fork to the Alamosa/Conejos County line. This Study analyzed the condition of specific reaches of the Rio Grande, and determined that a major cause of the deterioration in water quality and fishery conditions was due to increased sediment loading in the river. Continuing the implementation of the recommendations contained in the 2001 Study, this project will stabilize and restore twelve miles of riparian areas in Alamosa County, involving a minimum of five land owners. The project seeks to improve water quality, wildlife habitat, and the fishery by reducing stream bank instability and sediment loading. Though many reaches of the Rio Grande need restoration, this project focuses on some of the most degraded reaches of the river.

### Platoro Reservoir Restoration

APPLICANT: Conejos Water Conservancy District  
 APPROVED: September 2008  
 STATUS: In Progress  
 WSRA FUNDS: \$250,000 (\$50,000—Basin Account;  
 \$200,000—Statewide Account)  
 MATCHING FUNDS: \$250,000

DESCRIPTION:

This project involves the engineering and construction of replacement butterfly valves on the Platoro Reservoir dam. It is part of a larger project that included other funding sources to repair, replace, and upgrade components of the reservoir. The project will help keep the Platoro Reservoir facility in working order so that Colorado can continue to



meet its obligations under the Rio Grande Compact and provide for: flood control, irrigation, river fishery, endangered species protection, dam safety, and recreation for the 100,000-acre District service area. The project will restore the Reservoir to its full operating functionality to sustainably meet the agricultural demands of the District and therefore optimize existing and future water supplies. The project will ultimately help preserve agriculture in the region and ensure both the quantity and the quality of water in the Conejos by the safe and proper regulation of flows from the Reservoir.

### **Conejos River and North Branch Diversion and Stabilization**

APPLICANT: Manassa Land and Irrigation Company  
APPROVED: September 2008  
STATUS: Complete  
WSRA FUNDS: \$383,700 (\$50,000—Basin Account\*  
\$333,700—Statewide Account)  
MATCHING FUNDS: \$98,000

#### DESCRIPTION:

This project involves reconstructing an important diversion structure and headgate system on the Conejos River. It will optimize water supply and improve the Conejos' ability to fulfill its Compact obligation to downstream states (40% of the total Compact obligation). The deteriorated structure is almost 100 years old and requires frequent maintenance due to floating debris, log jams, high sediment load, bank erosion, and streambank instability. These maintenance issues produce operational difficulties, poor water quality due to bank instability; degradation of fisheries; losses of Rio Grande Compact waters during high flows; and flooding. Twelve ditch companies rely upon the diversion to irrigate a total of 22,204 acres, with excess flows returning to the main channel where they contribute to fulfilling Colorado's Rio Grande Compact obligation. The project also involves re-shaping the channel, stabilizing the streambank, and enhancing riparian areas in the vicinity of the structures.

### **Rio Grande Reservoir Multi-Use Rehabilitation: Refinement and Enhancement of Reservoir Reoperation and Optimization Model**

APPLICANT: San Luis Valley Irrigation District  
APPROVED: November 2008  
STATUS: In Progress  
WSRA FUNDS: \$100,000 (Basin Account)  
MATCHING FUNDS: None

#### DESCRIPTION:

The project refines and enhances the Reservoir Reoperation and Optimization Model that was developed as part of the Phase 2 study of the rehabilitation and utilization of Rio Grande Reservoir for multi-use purposes. The model provides the ability to analyze potential storage and releases from a rehabilitated Rio Grande Reservoir for various multi-use purposes. It is designed to allow the user to allocate a portion of Reservoir storage to a particular use, for example Rio

Grande Compact (Compact) Storage, and then to analyze a variety of release patterns from that storage account to determine the effect of those various release patterns on streamflows. Input on the subject model improvements has been received from the Division 3 Engineer, the Rio Grande Water Users Association, Trout Unlimited, The Nature Conservancy, the Rio Grande Wetlands Initiative, and the Basin Roundtable. The project will assist various entities in refining the model to provide desired information on storage potential and dynamics and/or the environmental effects of the storage and release patterns on streamflows.

### **San Antonio River - El Codo Ditch Diversion and Rehabilitation**

APPLICANT: El Codo Ditch Company  
APPROVED: May 2009  
STATUS: Complete  
WSRA FUNDS: \$65,000 (Basin Account)  
MATCHING FUNDS: \$23,445

#### DESCRIPTION:

For the past 20 years agricultural productivity along the lands of the El Codo Ditch Company (ECDC) has been declining due to the effects of the deterioration, improper placement and poor design of the existing rock structure at the diversion. The deteriorated diversion structure and dam has made diversion of the ECDC water rights difficult to regulate in time and amount. It has also resulted in severe erosion of the main channel and caused repeated flooding in nearby farms and communities. Phase I will address the severe erosion immediately upriver of the diversion where waters of the San Antonio threaten to overtop the river bank. Phase II will replace the problematic rock diversion structure in the main channel of the San Antonio with an NRCS-engineered concrete structure.

### **Lower Willow Creek Restoration Project**

APPLICANT: Mineral County Fairgrounds Association  
APPROVED: September 2009  
STATUS: Complete  
WSRA FUNDS: \$250,000 (\$50,000—Basin Account;  
\$200,000—Statewide Account)  
MATCHING FUNDS: \$1,310,000

#### DESCRIPTION:

Historic mining practices over the last century have heavily impacted the lower Willow Creek watershed, near Creede, CO in terms of impaired water and habitat quality. The project will use WSRA funds towards restoring and stabilizing 3,700 linear feet of Lower Willow Creek. This includes finalizing the restoration design and reconstructing 3,700 linear feet of Lower Willow Creek. Approximately 52 acres of floodplain area will be restored. WSRA funding will serve as important match money to leverage the recently approved \$398,770 Section 319 grant. These funds will combine with other sources in a \$1.56 million project to restore the function of Lower Willow Creek as a natural flowing stream. The \$1.56 million budget for the Lower

Willow Creek Restoration project involves reconstructing the entire Lower Willow Creek up to the downstream limit of the Mineral County Fairgrounds property.

### **Sangre de Cristo Trinchera Diversion Canal Restoration**

**APPLICANT:** Trinchera Irrigation Company  
**APPROVED:** September 2009 (\$200,000) and January 2010 (\$54,000)  
**STATUS:** In Progress  
**WSRA FUNDS:** \$254,000 (\$104,000—Basin Account; \$150,000—Statewide Account)  
**MATCHING FUNDS:** \$46,500

**DESCRIPTION:**

The Sangre de Cristo Trinchera Diversion Canal is a 24,000-foot concrete-lined segment of the Trinchera Irrigation Company (TIC) system. This project seeks to replace 2,125 linear feet of that concrete lining. The Canal lining was installed in 1976 and is badly deteriorated, causing the canal to operate at 50% of capacity, drastically reducing delivery of decreed water rights. Normally, 98% of Trinchera Creek’s flows before irrigation season are stored in Mountain Home Reservoir. However, due to the reduced capacity of the canal, TIC must prematurely release water from the reservoir, causing shortfalls in late summer and early fall when the need is greatest. This forces irrigators to use groundwater for supplemental irrigation. The proposed project seeks to restore the capacity of the canal to its original capacity of over 100cfs.

### **Rio Grande Conservation Reserve Enhancement Program (CREP) Phase II - Implementation**

**APPLICANT:** Colorado Rio Grande Restoration Foundation  
**APPROVED:** September 2009  
**STATUS:** In Progress  
**WSRA FUNDS:** \$31,500 (Basin Account)  
**MATCHING FUNDS:** None

**DESCRIPTION:**

Groundwater levels within the Closed Basin area of the San Luis Valley are declining causing reduced surface flows, increased agricultural pumping costs, and threatening the basin’s objective of maintaining a sustainable water supply. Phase I of this Project was funded with a previous WSRA grant of \$36,750 (basin funds) to develop a proposal and a subsequent agreement requesting enrollment of approximately 40,000 acres of irrigated cropland in Subdistrict No. 1 of the Rio Grande Basin, to create the Rio Grande Conservation Reserve Enhancement Program (Rio Grande CREP). The CREP is a Federal-State-Local partnership administered by the United States Department of Agriculture - Farm Service Agency (USDA-FSA) through the au-

thority of the 2002 Farm Bill (Conservation Title). This Phase II proposal completes the final negotiations and contracts of Phase I, finalizes the required “Programmatic Environmental Assessment”, and sets in motion the Rio Grande CREP process by eliciting voluntary participation of water users in the program to fallow land and decrease groundwater use. An approved CREP in Subdistrict No. 1 will leverage approximately \$94,000,000 federal dollars to provide cost-share, incentives, and annual rental payments to producers in the program.

### **2009 Rio Grande Stabilization Project – Phase 4**

**APPLICANT:** Colorado Rio Grande Restoration Foundation  
**APPROVED:** May 2010 (\$50,000) and September 2010 (\$98,000)  
**STATUS:** Contracting  
**WSRA FUNDS:** \$148,000 (\$50,000—Basin Account; \$98,000—Statewide Account)

**MATCHING FUNDS:** \$352,000

**DESCRIPTION:**

The proposed project (Phase 4) is a riparian stabilization project on the Rio Grande in Alamosa County. The purpose of the project is to address the causes of deterioration of river function as identified in a study funded by the CWCB in 2001 (2001 Study). The 2001 Study analyzed the condition of 91 miles of the Rio Grande and determined the deterioration in water quality and fishery conditions was due to increased sediment loading. This was caused by unstable stream banks, which resulted from deteriorated conditions of the riparian zone and changing river flow patterns. From the 2001 Study, recommendations were developed to improve the river’s functions. Restoration work focuses on a multi-faceted approach using proven techniques such as bioengineering, rock and wooden structures, revegetation, bank-full benches, and grazing best management practices.

### **Educating Today to Balance Tomorrow’s Water Supply Needs**

**APPLICANT:** Rio Grande Watershed Conservation and Education Initiative  
**APPROVED:** May 2010  
**STATUS:** Contracting  
**WSRA FUNDS:** \$25,000 (Basin Account)  
**MATCHING FUNDS:** \$163,900

**DESCRIPTION:**

This project helps residents, youth, landowners, and water stakeholders of the Rio Grande basin to better understand the current demands and future needs of the water in the Rio Grande Basin over a two year period. This is part of a broader scope of general water education throughout the valley. It will encourage informed and rational discussions

and decision-making regarding local water usage. Among other things this project will: provide in-service water education training for 60 teachers; conduct the 5<sup>th</sup> annual summer “Water Festival” that attracts 300 students; hold summer camps open to valley youth ages 6-13 years old; initiate a series of landowner workshops with learning experiences for small landowners centered on conservation planning.

### **San Luis Peoples Ditch Upgrade and Rehabilitation Project – Phase I**

APPLICANT: San Luis Peoples Ditch Company

APPROVED: May 2010

STATUS: Contracting

WSRA FUNDS: \$40,000 (Basin Account)

MATCHING FUNDS: \$102,000

#### DESCRIPTION:

This project is Phase I of a broader upgrade and rehabilitation project. The Peoples Ditch, or "acequia", is a gravity-fed irrigation system in the oldest community in Colorado. The People's Ditch holds the first adjudicated water rights granted by a court decree in Colorado, dating to April 10, 1852. The majority of shareholders are descendants of the original founders of the acequia and some have owned family shares for nine generations. Phase I addresses the most immediate area of concern through the replacement of the Rito Seco crossing diversion structure behind a residential area. This diversion structure was built in 1945. The concrete walls have deteriorated, are cracked and crumbling. The culvert has rust holes and is leaking water, the water gates jam and is difficult to open and close. During a cloud burst in the summer of 2009, this crossover structure which diverts excess water into the Culebra River failed, causing severe flooding of residential areas in San Luis and the inability of the Peoples Ditch to divert decreed water rights.

**Chatfield Reservoir Reallocation  
Environmental Impact Statement and  
Feasibility Report**

APPLICANT: The Greenway Foundation  
 APPROVED: March 2007  
 STATUS: Complete  
 WSRA FUNDS: \$130,000—**joint application:**  
 \$103,000—Metro Basin Account  
 \$27,000—South Platte Basin Account  
 MATCHING FUNDS: \$206,000

DESCRIPTION:

See Metro Basin section for description.

**Clear Creek Water Banking and High Altitude  
Storage**

APPLICANT: Clear Creek County  
 APPROVED: May 2007  
 STATUS: Complete  
 WSRA FUNDS: \$52,000 (Basin Account)  
 MATCHING FUNDS: None

DESCRIPTION:

Clear Creek County created a high-altitude water storage bank to provide water for basin-wide needs, improving both water quality and quantity. Since 2000, the County has been working on engineering analyses and legal issues to evaluate potential reservoir sites and acquire water rights. The County recently filed for conditional storage rights and a basin-wide augmentation plan. The current project involves comparing the County’s nine conditional storage sites with respect to environmental risks, geologic hazards, permitting processes, construction costs, coordination on federally owned lands, etc. The scope of work centers around collecting and analyzing additional engineering information regarding the proposed reservoirs. A matrix analysis was used as a comparison tool to rank each site. This ranking system allows the County to develop a planned approach in the development of the reservoirs based on geographic need within the County, environmental issues, water administration issues, construction costs, and geologic hazards.

**Ovid Reservoir Comprehensive Feasibility  
Study**

APPLICANT: District 64 Reservoir Company  
 APPROVED: September 2007  
 STATUS: In Progress  
 WSRA FUNDS: \$176,000 (Basin Account)  
 MATCHING FUNDS: Approximately \$1,000,000

DESCRIPTION:

The Ovid Reservoir Comprehensive Feasibility Study is the first phase of the reservoir project encompassing technical

work, modeling, and permit applications. The reservoir is strategically located in the lower river, providing a number of opportunities to supply augmentation, meet agricultural and municipal needs, assist with compact administration, and aid Colorado’s participation in endangered species recovery efforts. A detailed evaluation of possible operating scenarios will be outlined for dry year, wet year and average year hydrologic conditions along with various policy scenarios including implications of the Platte River Recovery Implementation Program obligations. A detailed review of preliminary engineering for the reservoir will also be performed to identify regulatory or technological changes. In addition, the study will explore issues and opportunities of a potential partnership with the Julesburg Irrigation District for the use of the Peterson Ditch. If the project proves to be feasible, the study will identify funding options for Phase II.

**Lower South Platte Wetland Initiative Phase I**

APPLICANT: Ducks Unlimited, Inc.  
 APPROVED: September 2007  
 STATUS: Complete  
 WSRA FUNDS: \$278,476 (Statewide Account)  
 MATCHING FUNDS: \$500,255

DESCRIPTION:

This project is designed to develop three wetland recharge projects along the lower South Platte River in Morgan, Logan and Sedgwick Counties. Water will be diverted into wetlands in the winter when it is legally available and allowed to infiltrate into the alluvial aquifer, and eventually back to the river channel. Detailed modeling has been performed to assure that recharge water returns to the river at the predicted time. Recharge projects have become a widely accepted and dependable technique for meeting the demands of water users along the river. River management of recharge projects has permitted many junior water rights holders to continue operating legally. Aside from retiming legally available flows, wetland recharge projects provide significant benefits to migrating and wintering birds in the important flyway of the lower South Platte. More than 20 species of migratory birds and 27 species of waterfowl of national importance depend on such wetlands. In addition, the wetlands will be utilized for waterfowl hunting which contributes significantly to the local economies. Recharge credits from the wetlands will benefit the Platte River Recovery Program as well as numerous municipal and agricultural collaborators.

**Stage Dischargers Data Loggers and  
Telemetry Installation Project**

APPLICANTS: Northern Colorado Water Conservancy  
 District, Lower South Platte Water  
 Conservancy District, and Colorado  
 Division of Water Resources  
 APPROVED: January 2008



STATUS: In Progress  
WSRA FUNDS: \$48,800 (Basin Account)  
MATCHING FUNDS: In-Kind Services

DESCRIPTION:

This project involves the installation of stage discharge data loggers and cell phone modems on diversion structures and return flow augmentation structures to provide real time flow information. The principle focus will be on structures on the mainstem of the South Platte downstream of Denver and upstream of Kersey (District 2). Data loggers and telemetry has already been set up on most major diversion structures downstream of Kersey in a cooperative program between Northern Water, LSPWCD, and DWR with some support from the Colorado Water Conservation Board (CWCB) funding of the DWR's hydrography program. Project costs include only equipment as in-kind services will be used for installation in coordination with the various ditch companies by DWR, LSPWCD and/or Northern Water representatives. In addition, these agencies will set up necessary networking to transfer, store and present the information on the Internet. The project will provide an excellent complement to the State's existing diversion and stream gage satellite program and is also complimentary to the work being done for the Colorado Decision Support System in obtaining better data concerning river flows and diversions.

### Upper Mountain Counties Water Needs

#### Assessment

APPLICANTS: Clear Creek County on Behalf of the Upper Mountain Counties Water Needs Consortium  
APPROVED: May 2008  
STATUS: In Progress  
WSRA FUNDS: \$174,350—**joint application:**  
\$43,587—Metro Basin Account  
\$130,763—South Platte Basin Account  
MATCHING FUNDS: \$8,070

DESCRIPTION:

See Metro Basin section for description.

### Weld County School District RE1 Wetland Partnership

APPLICANT: Ducks Unlimited, Inc.  
APPROVED: July 2008  
STATUS: In Progress  
WSRA FUNDS: \$42,109.90 (Basin Account)  
MATCHING FUNDS: \$160,000

DESCRIPTION:

This project involves the creation of a model, high quality recharge wetland near the South Platte River in Weld County, Colorado. Low-level embankments will pool water secured from two sources, one right procured by the Central Colorado Water Conservancy District for their augmentation plan and another right to be procured by the

Weld County School District (WCSD) to meet their substitute supply needs. This pooled water will recharge the South Platte River alluvial aquifer and, provide approximately 2 acres of wetland habitat for waterfowl during the migration and wintering periods. The project's primary purpose is to secure a reliable water supply for the WCSD to irrigate school grounds, sport fields, and other facilities in Gilcrest, Platteville, and other communities of southern Weld County. The project will also allow DU and CCWCD to test the working relationships necessary to successfully deliver a planned multi-million dollar expansion of the wetland recharge partnership into the middle reaches of the South Platte River in Colorado. DU ultimately seeks to have this project serve as a demonstration of the utility of wetland recharge projects in meeting water supply needs, providing habitat for wildlife, especially waterfowl, and the strength of consumptive-nonconsumptive partnerships.

### Solicitation of Stakeholder Input through a South Platte Edition of Headwaters

APPLICANT: Colorado Foundation for Water Education  
APPROVED: July 2008  
STATUS: Complete  
WSRA FUNDS: \$32,038—**joint application:**  
\$16,019—Metro Basin Account  
\$16,019—South Platte Basin Account  
MATCHING FUNDS: \$10,900

DESCRIPTION:

See Metro Basin section for description.

### South Platte Water Protection and Wetland Restoration

APPLICANT: Ducks Unlimited, Inc.  
APPROVED: September 2008  
STATUS: In Progress  
WSRA FUNDS: \$825,552 (Statewide Account)  
MATCHING FUNDS: Approximately \$2,000,000

DESCRIPTION:

This project focuses on the protection of existing and future water rights on properties contributing to the SWSI objectives and the Platte River Recovery Program. The project seeks to restore wetlands on these properties while providing long-term protection via conservation easements for multiple uses and benefits. Similar to other land trusts, DU works with willing landowners to purchase conservation easements on properties of value for waterfowl and other wildlife. These properties and associated DU projects also benefit the public by providing higher water quality, retiming water through wetland recharge, and enhancing waterfowl hunting opportunities and economic impacts. The project will compliment the Tamarack Ranch, a significant component of the Platte River Recovery Program. The project will also provide for a wide range of non-consumptive uses while retiming river flows to harness surpluses for augmentation use in dry months.

**Arickaree River Well Retirement Program**

APPLICANT: The Nature Conservancy of Colorado  
 APPROVED: September 2008  
 STATUS: In Progress  
 WSRA FUNDS: \$99,920 (\$19,984—Basin Account;  
 \$79,936—Statewide Account)  
 MATCHING FUNDS: \$471,920

DESCRIPTION:

The Nature Conservancy (TNC) is working with the Republican River Water Conservation District (RRWCD) to retire 3 active irrigation wells near the Arickaree River in Yuma County. TNC is also assessing the value of retiring 2 permitted but inactive irrigation wells in the immediate vicinity as part of this effort. CSU researchers have determined that these five wells are part of a group of wells that if permanently retired would provide significant flow benefits to the 16 mile “live” reach of the Arickaree River. The “live” reach supports perhaps the best remaining population of brassy minnow in Colorado along with a number of native plains fish, including the plains minnow, orange throated darter, and red shiner. The targeted wells also lie upstream of the proposed curtailment zones for compact compliance. Well retirements upstream of the curtailment zones will supplement river flows, thus increasing the Arickaree’s contribution to Colorado’s compact obligations and reducing the likelihood of any required curtailments.

**Halligan Seaman Water Management Project:  
 Shared Vision Planning Model**

APPLICANT: City of Greeley  
 APPROVED: September 2008  
 STATUS: Complete  
 WSRA FUNDS: \$101,740 (\$25,435—Basin Account;  
 \$76,305—Statewide Account)  
 MATCHING FUNDS: \$271,109

DESCRIPTION:

The City of Greeley is working with the City of Fort Collins, North Poudre Irrigation Company, CSU, and the Nature Conservancy to move forward on the Halligan Seaman Water Management Project via a Shared Vision Planning (SVP) model. The SVP model is a collaborative stakeholder process intended to bring about more effective permitting for water projects. This SVP effort is proposed to improve streamflows on the North Fork and mainstem of the Cache la Poudre River above the confluence with the North Fork. The SVP Work is related to the ongoing review of two Section 404 permits to expand storage at two existing reservoirs on the North Fork to provide the water supply needed for future population growth and some agricultural production. Preferred alternatives have been identified as the expansion of Halligan Reservoir in 2010 and the expansion of Seaman Reservoir in 2030. The SVP study will consider only sub-alternatives that avoid or minimize

negative environmental impacts. It will incorporate operational, hydrologic, water rights, and flow recommendations, as well as criteria for ecological and biological components into a river flow regime in order to fully assess reservoir operations alternatives in the context of the required NEPA permitting process. The SVP uses traditional US Army Corps of Engineers planning principles but modifies them to include earlier and more intensive collaboration with wide variety of stakeholders. If successful, SVP could become a model for other water projects in the United States.

**Demonstration of Membrane Zero Liquid  
 Discharge Process for Drinking Water Systems**

APPLICANT: Colorado Department of Public Health and Environment, Water Quality Control Division  
 APPROVED: September 2008  
 STATUS: Contracting  
 WSRA FUNDS: \$800,000—**joint application:**  
 \$25,000—Arkansas Basin Account;  
 \$25,000—South Platte Basin Account;  
 \$50,000—Metro Basin Account;  
 \$700,000—Statewide Account

MATCHING FUNDS: \$325,000

DESCRIPTION:

See description under Arkansas Basin section.

**Lost Creek Aquifer Recharge and Storage  
 Study**

APPLICANT: Lost Creek Groundwater Management District  
 APPROVED: January 2009  
 STATUS: In Progress  
 WSRA FUNDS: \$160,000—**joint application:**  
 \$80,000—Metro Basin Account  
 \$80,000—South Platte Basin Account

MATCHING FUNDS: \$13,000

DESCRIPTION:

See Metro Basin section for description.

**Central South Platte Wetland Partnership**

APPLICANT: Ducks Unlimited, Inc.  
 APPROVED: March 2009  
 STATUS: In Progress  
 WSRA FUNDS: \$150,000 (Basin Account)  
 MATCHING FUNDS: \$565,000

DESCRIPTION:

The Central South Platte Wetland Partnership (CSPWP) creates high-quality recharge wetlands in the South Platte River (SPR) Basin of Weld and Morgan Counties. Members of the

partnership will provide direct diversion rights designated for recharge to meet a variety of beneficial uses corresponding to the objectives and recommendations identified in both SWSI Phase I and SWSI Phase II. Recharge wetlands as part of a program to augment SPR flows through the alluvial aquifer have become a widely accepted and dependable technique for meeting the demands of water users along the river. The partnership includes the Central Colorado Water Conservancy District (CCWCD), the United States Fish and Wildlife Service (USFWS), the United States Department of Agriculture (USDA), and private landowners. The CSPWP has identified three sites that will provide both quality wetland habitat for waterfowl and other wildlife species and strong river augmentation sources. The three wetland sites include: the Welker Augmentation Project, the Haren Wetland Development, and the Peckham Augmentation Site.

### **Fort Morgan Reservoir and Irrigation Company Recharge and Wetlands Project**

APPLICANT: Fort Morgan Reservoir and Irrigation Company (FMRICo)  
APPROVED: September 2009  
STATUS: In Progress  
WSRA FUNDS: \$670,000 (\$250,000—Basin Account; \$420,000—Statewide Account)  
MATCHING FUNDS: Up to \$2,000,000

#### DESCRIPTION:

This is a structural water project to both divert water under a junior water right when available for recharge and augmentation use, and to re-divert and re-time augmentation credits that result from more senior recharge projects at certain times when these credits are not needed for direct augmentation use. It is estimated that this project will develop and use approximately 500-1,000 acre feet per year of new water and 1,500 acre feet of re-timed augmentation credits. The applicant believes that this project will yield approximately 2,000 to 2,500 acre-feet of additional water available for beneficial use in the basin. While conducting these water supply operations, this project will also benefit waterfowl in the basin by providing additional wetland habitat. To assist in the design and installation of the wetlands and operations, the applicant has teamed up with Ducks Unlimited. Initial investigation has led DU to conclude that this project will be very beneficial to wintering and migrating waterfowl in the South Platte basin.

### **Data Logger and Telemetry Installation Project**

APPLICANT: Northern Colorado Water Conservancy District  
APPROVED: July 2010  
STATUS: Contracting  
WSRA FUNDS: \$46,000 (Basin Account)  
MATCHING FUNDS: In-kind Services

#### DESCRIPTION:

This project installs stage discharge data loggers and cell phone modems on diversion structures and return flow augmentation structures to provide real time flow information. In addition, the project will allow the installation of combined meter/data loggers on wells close to the river that are pumped as ditch alternate points or to recharge during free river periods or when credits are available in the river. The well meters have data loggers built in and can be paired with telemetry in the future. The principal focus will be on structures on the Big Thompson drainage, District 4, and the main stem of the South Platte downstream of Kersey and upstream of the state line, District 1 and 64. Data loggers and telemetry allow for continuous information for users and water administrators concerning flows. Even users not directly benefiting from obtaining equipment on their diversions will be benefited because these users will have real time information concerning other diversions. The project provides an excellent complement to the State's existing diversion and stream gage satellite program and is also complementary to the work being done for the Colorado Decision Support System in obtaining better data concerning river flows and diversions.

### **Colorado Agricultural Meteorological Network (CoAgMet)**

APPLICANT: Colorado Climate Center, Colorado State University  
APPROVED: July 2010  
STATUS: Contracting  
WSRA FUNDS: \$20,000 (Basin Account)  
MATCHING FUNDS: Yes, unspecified

#### DESCRIPTION:

This project supports both new and ongoing efforts to better understand and track consumptive use of water resources in northeastern Colorado through the careful monitoring of weather conditions. The Colorado Climate Center (CCC) and Northern Colorado Water Conservancy District (NCWCD) operate a network of weather stations in Colorado to help schedule irrigation applications, more accurately track evapotranspiration and crop water use, and observe long term trends and variations in crop water use in Colorado. In this one-year project, the CCC will identify the ten best weather stations in the South Platte and Republican River basins that best complement the existing network. These ten stations located from the foothills eastward to the Nebraska border will be fully serviced, calibrated and maintained to assure a rich dataset accessible to both agricultural and water professionals, research scientists and the general public.

### **Lower South Platte Water Cooperative Organizational Analysis**

APPLICANT: Lower South Platte Water Conservancy District  
APPROVED: September 2010  
STATUS: Contracting  
WSRA FUNDS: \$260,977 (\$60,977—Basin Account, \$200,000—Statewide Account)

MATCHING FUNDS: Approx. \$100,000

DESCRIPTION:

This project will research, analyze and formulate best fit alternatives for the organizational structure of a potential Water Cooperative in the area of the Lower South Platte River. The initial formation of a new organization would encompass water users within Water Districts 1 and 64 (Kersey to the CO-NE Stateline). The Water Cooperative, if successfully implemented would help manage and retime excess augmentation water available within the area via leases and exchange operations (using current water law, existing water rights, and new water right applications). In addition, the Water Cooperative could potentially serve as an organization to help manage members' direct flow and reservoir water, via leases and exchange operations (using alternative agriculture transfer methods and existing and new change of use water rights) without injury to other water rights. This grant will help analyze water law and water rights issues related to the Water Cooperative in order to identify and prevent injury to other water rights within the basin from the operations described above. This project will also research and determine the best fit for operational planning for the Water Cooperative.

### **Development of a Decision Support Model for Identifying and Ranking Waterfowl and Wildlife Related Recharge Projects along the South Platte River**

APPLICANT: Ducks Unlimited, Inc.

APPROVED: September 2010

STATUS: Contracting

WSRA FUNDS: \$99,821 (Statewide Account)

MATCHING FUNDS: Approximately \$20,000

DESCRIPTION:

This project seeks to develop a strategic approach to the development of multipurpose wetland recharge projects. It is anticipated that this approach will serve as a model that can be applied to other river basins or geographic areas in Colorado. This project will develop a process and tool (or decision support model) that will be used in locating future water conservation wetland projects in the South Platte basin between Denver and the Colorado-Nebraska stateline. There are many factors that influence decisions regarding the most favorable locations for future wetlands. Some of these factors are more important than others and they vary geographically. These are factors that DU has considered in previous projects and will consider in the context of the decision support model. In addition, the project will use the new tool to produce a map showing areas in the South Platte basin targeted for future water conservation wetlands. Finally, the project will lay the foundation for a program to provide financial and technical assistance to agricultural producers who are interested in constructing water conservation wetlands.



### Dry Gulch /San Juan Reservoir Land

#### Acquisition

APPLICANT: San Juan Water Conservancy District

APPROVED: March 2007

STATUS: In Progress

WSRA FUNDS: \$1,000,000 (Statewide Account)

MATCHING FUNDS: \$8,100,000

#### DESCRIPTION:

This project seeks WSRA funds to assist the San Juan Water Conservancy District (District) with the initial purchase of the Phase I land acquisition for the San Juan/Dry Gulch Reservoir. The land is necessary for reservoir development to provide an additional 12,000 to 35,000 acre-feet of storage capacity to accommodate water needs related to growth and drought in the District. Negotiations for the purchase of the property have been ongoing for over two years. Project partners include the Town of Pagosa Springs and Archuleta County. WSRA funding allows the District to begin purchase of the property for the reservoir in 2007. Due to rapid growth rates within the District, projected increases in demand necessitate reservoir completion by 2015. However, depending on construction timing, economic conditions, water demands, and costs the reservoir may likely be conducted in two phases with 12,000 acre-feet initially followed by the remaining 23,000 acre-feet in phase II.

### Goodman Point Water Association Pipeline Environmental Assessment

APPLICANT: Goodman Point Water Association

APPROVED: March 2007

STATUS: Complete

WSRA FUNDS: \$7,700 (Basin Account)

MATCHING FUNDS: Approximately \$23,000

#### DESCRIPTION:

This project involves the development of an Environmental Report (ER) and a Preliminary Engineering Report (FER) for the extension of two of the Montezuma Water Company's domestic lines into the Goodman Point area. It encompasses approximately 12 square miles in Montezuma County about 10 miles northwest of Cortez. The project will provide the capacity to serve about 100 taps and include a lift pump for the elevation gain along with a water storage tank. The reports are necessary to: negate damage to the environmental resources and cultural resources; develop a preliminary "blueprint" of the project engineering aspects; fulfill USDA-Rural Development requirements to qualify for grant/loan funding; and will be a positive factor in future requests for construction funding from the Southwest Roundtable and other potential funding sources. This project will bring domestic water to Goodman Point where residents current haul water. It will be a challenge to obtain sufficient funds for construction to make the project affordable to the average household of Goodman Point.

### Goodman Point Water Association

#### Phase 2

APPLICANT: Goodman Point Water Association

APPROVED: September 2007

STATUS: In Progress

WSRA FUNDS: \$260,000 (\$20,000—Basin Account;

\$240,000—Statewide Account)

MATCHING FUNDS: \$1,772,000

#### DESCRIPTION:

This application is for the domestic water construction project contemplated by the Goodman Point Water Association (GPWA) Pipeline Environmental Assessment previously funded by the WSRA in the amount of \$7,700. The project involves the extension of two of the Montezuma Water Company's domestic lines into the Goodman Point area, encompassing approximately 10 miles of water line and covering approximately 12 square miles in Montezuma County about 10 miles northwest of Cortez. The project will provide the capacity to serve about 100 taps and include a lift pump for the elevation gain along with a water storage tank. Due to the large cost of the project, small number of residents, and low median household income, the success of the project depends largely on grant funding. The GPWA has also received a USDA Rural Development grant of \$1,522,580 and loan of \$250,000. Even with all funding secured GPWA members are responsible for \$13,275 per tap. The project will significantly increase the health and safety of the Goodman Point residents by providing a stable water supply, reducing the contamination risks inherent in water hauling, and providing much greater fire protection.

### Jackson Gulch Reservoir Expansion Project

APPLICANT: Mancos Water Conservancy District

APPROVED: July 2007

STATUS: Complete

WSRA FUNDS: \$61,735 (Basin Account)

MATCHING FUNDS: \$18,000

#### DESCRIPTION:

This project consists of a feasibility level study by the Bureau of Reclamation for increasing the storage capacity of the Jackson Gulch Reservoir by raising the dam a total of 5'. The existing reservoir is an off stream storage facility at 7830' MSL with a capacity of 10,000 a-f behind a rock-faced earthen dam with almost 5 miles of inlet/outlet canals. The study defines structural needs for the dam and related features. The study also determines the additional water that can be stored, construction cost estimates, and impacts that must be mitigated. Water stored in the Jackson Gulch Expansion Project will be available for multiple uses, including: irrigation, wildlife, municipal and industrial, mitigation, environmental, hydro power, recreation, fire protection. Due to drought and a growing population in the valley additional stored water is in high demand. This project has received broad support from other entities in the valley.

**Bauer Lake Water Company Dam Outlet Structure Upgrade**

APPLICANT: Bauer Lake Water Company  
 APPROVED: March 2008  
 STATUS: In Progress  
 WSRA FUNDS: \$40,000 (Basin Account)  
 MATCHING FUNDS: \$70,000

DESCRIPTION:

The Bauer Lake Water Company is a small reservoir and irrigation company with 24 shareholders. The proposed project involves fixing the old corrugated outlet pipe at Bauer Lake (capacity of 1532 acre-feet). The new stronger liner would allow the pipe to be pressurized to full lake head pressure (not currently possible) allowing members at the top of the pipe to reliably receive water. The project also includes improvements to the measurement and discharge controls of the structure. The current structure does not allow for accurate deliveries resulting in either failure to deliver or waste overflows down the creek along with potential safety issues. The new self regulating system would eliminate overflow waste (estimated at roughly 20%).

**La Plata West Rural Water Supply System**

APPLICANT: La Plata West Water Authority  
 APPROVED: March 2008  
 STATUS: Complete  
 WSRA FUNDS: \$1,100,000 (Basin Account)  
 MATCHING FUNDS: \$510,000

DESCRIPTION:

The La Plata West Water Authority (LPWWA) is managing the design and construction of a critically needed rural domestic water system to serve residents in southwestern La Plata County, and potentially northern San Juan County, New Mexico and the Ute Indian Tribes. The LPWWA was formed in November 2007 by the Animas La Plata Water Conservancy District and the La Plata Water Conservancy District. The LPWWA is designing a practical and economically viable rural water supply system that will integrate the interests of several entities in the region and provide reliable domestic supply utilizing allocated Animas-La Plata (ALP) water. Funding from this grant will be used for engineering, permitting, planning, and construction costs for an intake structure in Lake Nighthorse that will eventually serve the water supply system. The growth and development of the southwestern La Plata County is limited by the lack of a reliable water supply, poor quality of groundwater, and a lack of water delivery systems. The proposed water supply will be the Animas La Plata Reservoir via 700 acre-feet purchased from the designated depletions of the Animas La Plata Water Conservancy District. Other potentially invested parties with ALP water and could also use the intake structure to access their allocated water.

**Town of Sawpit Water Distribution Improvement Project**

APPLICANT: Town of Sawpit  
 APPROVED: March 2008  
 STATUS: Complete  
 WSRA FUNDS: \$25,000 (Basin Account)  
 MATCHING FUNDS: \$6,700

DESCRIPTION:

The Town of Sawpit is pursuing WSRA funds for surveying and engineering to replace its aging domestic water distribution lines. Sawpit is a small town located in San Miguel County, about 10 miles west of the Town of Telluride. Sawpit’s water distribution system is 100 years old, as such, water pipes are rusty and prone to leaks. Maintenance on the distribution lines is an issue as lines are not mapped and many of the water mains are located on private property. Although current water quality is in compliance with state standards, water quality and quantity will likely be an issue in the near future as rust induced line leaks increase the likelihood of water quality degradation and supply interruption. The Town estimates that they have between 5,000 and 10,000 feet of distribution line that needs to be replaced. The Town will work with Buckhorn Geotech, Inc. to complete a survey of existing water lines, design improvements, determine cost estimates, prepare preliminary and final design drawings, and bid documents for the project.

**MVIC – Summit Irrigation Company Feasibility Study**

APPLICANT: Summit Reservoir and Irrigation Company  
 APPROVED: September 2008  
 STATUS: In Progress  
 WSRA FUNDS: \$39,300 (Basin Account)  
 MATCHING FUNDS: None

DESCRIPTION:

This project Phase 1 of a technical and legal review of the potential for combining the operations of two private irrigation companies, the Montezuma Valley Irrigation Company (MVIC) and the Summit Reservoir and Irrigation Company. It will analyze the benefits and drawbacks of the merger based on water rights and water planning. It will also provide a platform for shareholders in both companies to evaluate if the concept of merger warrants additional study. This task will include an engineering review of historic diversions and irrigable acreage to determine system efficiency and changing patterns. Interviews with both companies’ shareholders will be performed to identify concerns. Results may identify benefits and/or liabilities from a merger or acquisition. It may also identify potential for changes in the decrees that could be used to improve system operations. An engineering report will be produced that summarizes the findings. The resulting review will give a recommendation on a potential merger or acquisition.

### Happy Scenes Water System Upgrade

APPLICANT: Happy Scenes Water System Number 1

APPROVED: November 2008

STATUS: Complete

WSRA FUNDS: \$50,000 (Basin Account)

MATCHING FUNDS: \$87,100

DESCRIPTION:

The Happy Scenes Water System serves potable water to the Happy Scenes Subdivision, located north of Vallecito Reservoir, in La Plata County, Colorado. The System serves 60 taps and an estimated population of 160 people. Currently, the System's water supply consists of two springs which flow into separate collection boxes and pump houses. Historically, the systems were operated independently but were physically tied together to provide redundancy for repairs. Recently, however, the Colorado Department of Public Health and Environment (CDPHE) officially recognized it as one system, since the sources can be jointly used. As one system, the population is great enough to classify the system as a Public Water System, with new criteria for water quality testing and treatment. The treatment and testing of this water will be cost prohibitive. Therefore, the system has drilled a new well, and is in the process of designing a small treatment system, with chlorination as the primary treatment. The overall project consists of designing the system (per CDPHE regulations), and purchase and installation of equipment. The WSRA funds will help with Task 5 consisting of treatment and pump equipment installation.

### Water System Master Planning

APPLICANT: La Plata Archuleta Water District

APPROVED: November 2008

STATUS: Complete

WSRA FUNDS: \$100,000 (Basin Account)

MATCHING FUNDS: None

DESCRIPTION:

The La Plata Archuleta Water District seeks WSRA funds to develop a Water System Master Plan. The District was formed in August 2008 to finance, construct, operate, and maintain a public water system for a four hundred square mile service area in La Plata and Archuleta Counties. The District will eventually serve approximately 6,000 taps (residential and commercial) with 2,000 AF of water. Due to Tabor restrictions on mill levy elections such funds will not be potentially available to the District until the spring of 2010. The WSRA funds will help the District to begin the pre-construction work which will also provide information to the voters for a mill levy election in November of 2009. The proposed Master Plan will determine the best development plan for the water system that considers alternative water sources and treatment plant locations, alternative pipeline routes, updated financial plan, and construction staging. The plan will address the general order of facility development and the areas to receive water. The Master Plan will also include public involvement and as well as numerous Board meetings.

### Molas Lake Ditch Rehabilitation and Diversion Structures

APPLICANT: Town of Silverton

APPROVED: January 2009

STATUS: In Progress

WSRA FUNDS: \$95,000 (Basin Account)

MATCHING FUNDS: Approximately \$1,100,000

DESCRIPTION:

The improvements to the Molas Lake Ditch and diversion structures are part of a broader project to rehabilitate Molas Lake, which provides water storage to Silverton and other entities. The ditch and diversion improvements are required to meet Federal and State requirements for the conveyance and measurement of water into and out of Molas Lake. The purpose of the project is to perfect an augmentation water supply for the Town of Silverton, while protecting and enhancing the recreational features of Molas Lake Park. Though not the subject of the current application the other components of the project are complete and include: significant improvements to the Molas Lake Dam to increase water storage, meeting State requirements, campground enhancements and re-vegetation at the adjacent park, mitigation of wetlands, and filing for additional water storage rights for Molas Lake to include augmentation uses. Although permitting and engineering for the Molas Ditch is complete, the rise in construction costs, combined with unanticipated permitting and legal expenses has left the ditch and diversion improvements unfunded. Silverton is seeking funds to assist with the construction, inspections, and final permitting submittals of the Molas Lake Ditch rehabilitation and diversion structures.

### Lower Blanco River Restoration Project

APPLICANT: Lower Blanco Property Owners Association

APPROVED: March 2009 (Basin Account);  
September 2009 (Statewide Account)

STATUS: Complete

WSRA FUNDS: \$250,000 (\$100,000—Basin Account;  
\$150,000—Statewide Account)

MATCHING FUNDS: Over \$284,000

DESCRIPTION:

The Lower Blanco River Restoration Project seeks to restore the environmental and recreational values that were severely impacted since a major portion of the river's historic flow was diverted in 1971 to New Mexico to meet Upper Colorado River Basin Compact obligations via the San Juan-Chama Diversion Project. In response to these impacts the CWCB procured an instream flow right of 21 cfs on the Lower Blanco River. The CWCB also funded a river restoration demonstration project on the river in 1992. By 2002, the project had successfully restored approximately 2.75 miles of the river. Since then, 2.25 additional miles of river restoration have been accomplished with funding assistance from the NRCS, the Southwest Conservation District, and the San Juan Water Conservancy Board. This project seeks to continue the successful restoration



work on the remaining 4.0 miles of river by leveraging WSRA funds with NRCS funds, CWCB Fish and Wildlife Resources Fund, Archuleta County funds, and applicant contributions. The project will narrow the active channel and shape new point bars and deeper pools for improved aquatic habitat. Rock structures will be built to improve self-scouring pool forms, and to direct the flow of water into existing irrigation diversion headgates. Riparian vegetation plantings will enhance shade and terrestrial habitat conditions. Evaporation loss of water will be reduced, as will summer water temperatures. Terrestrial cover for wildlife will be improved, and the riparian area will provide better habitat for a variety of terrestrial and amphibian species, including the spotted leopard frog, a species of concern.

**Ditch Loss, Hydropower, and Monitoring Improvement Program**

APPLICANT: Florida Mesa Canal Companies (Florida Canal, Florida Farmers Ditch, Florida Enlargement Ditch, and the Florida Co-operative Ditch Company)  
 APPROVED: March 2009  
 STATUS: In Progress  
 WSRA FUNDS: \$100,000 (Basin Account)  
 MATCHING FUNDS: Approximately \$300,000

DESCRIPTION:

This project involves: ditch loss studies; the installation of gauging station telemetry, water measuring devices, and automated gates; and a hydropower feasibility study. The seepage loss studies determine locations of losses below the main inlet canal structures to identify and target high seepage areas for future lining and piping project prioritization and guidance. The ditch and canal companies seek to use the seepage studies to help prioritize lining projects identified in the FWCD Water Conservation and Management Plan and USBR Study. The second task involves the installation of three water measuring devices, seven real-time telemetry sites, and three automated gates. The new equipment will reduce administrative waste, help identify areas with water losses, and assist with canal and ditch operations during changing water conditions. The third task involves a feasibility study to examine the development of hydropower resources for additional revenue generation to the companies.

**Red Mesa Dam Incremental Damage Analysis (IDA) and Emergency Action Plan (EAP)**

APPLICANT: Red Mesa Dam and Reservoir Company  
 APPROVED: May 2009  
 STATUS: In Progress  
 WSRA FUNDS: \$29,000 (Basin Account)  
 MATCHING FUNDS: \$3,000

DESCRIPTION:

The proposed activity consists of both structural (Incremental Damage Analysis - IDA) and non-structural (Emergency Action Plan - EAP) analyses necessary for the continued safe operation of the applicant’s Red Mesa Dam at the current fully-decreed storage capacity. The IDA is intended to identify the minimum Inflow Design Flood (IDF) required for sizing a spillway compliant with the “Rules and Regulations for Dam Safety and Dam Construction” issued by the Colorado State Engineer’s Office (SEO). The existing spillway has been identified as hydrologically inadequate for a High Hazard dam. Revision and improvement of the Emergency Action Plan is also required by the SEO, as the existing plan is out of date and insufficient for a High Hazard dam. Due to similarities in the IDA and EAP inundation analyses and mapping processes, inclusion of EAP development within the proposed project will also result in overall cost savings to the company.

**Park Ditch Improvements**

APPLICANT: Park Ditch Company  
 APPROVED: July 2009  
 STATUS: Complete  
 WSRA FUNDS: \$85,000 (Basin Account)  
 MATCHING FUNDS: \$132,375

DESCRIPTION:

This project entails three critical improvements to the Park Ditch necessary to ensure a reliable water supply and delivery of full water rights. The improvements include: head gate replacement, repair and piping of the ditch through an area prone to landslides, and piping of the ditch through a section prone to blowouts. During sudden high flows the structure cannot adequately control the intake volume, which contributes to ditch failure in some areas, and lost water and irrigable land. In addition, the structure collects excessive debris which blocks flows and makes maintenance difficult and hazardous. A 500 foot section of the Park Ditch, located on a steep slope above U.S. Highway 160, is vulnerable to landslides. The landslide problem was exacerbated in the 1960s when CDOT cut into the toe of the slope to widen the highway. The most recent slope failure occurred in the spring of 2008, blocking the ditch and affecting highway operations. A 690 ft. section of the Park Ditch has a history of blowouts. In recent years, structures have been built below this section. Piping this section of the ditch eliminates the chances for a blowout event and thus protects the private structures below.

**Domestic Water System Construction**

APPLICANT: Town of Sawpit  
 APPROVED: July 2009  
 STATUS: Contracting  
 WSRA FUNDS: \$25,000 (Basin Account)  
 MATCHING FUNDS: Approximately \$325,000

DESCRIPTION:



The Town of Sawpit needs to replace its water distribution system and storage tank. The Town previously received \$25,000 from the Southwest Basin Roundtable for surveying and engineering for this project. Sawpit's current water distribution system was constructed in the 1940's without any regulatory oversight using steel pipe salvaged from nearby abandoned mines and mills. It was installed without proper trench preparation and compaction of bedding or backfill material. As a result of the system's inadequate construction and age the town has had increasing problems with line breaks and leakages, along with mounting risks of cross contamination. In addition, Sawpit's storage tank is in disrepair and inadequately sized for State requirements to allow sufficient chlorine contact and system reserve.

### La Plata Archuleta Water District Permitting

APPLICANT: La Plata Archuleta Water District

APPROVED: September 2009

STATUS: In Progress

WSRA FUNDS: \$400,000 (Statewide Account)

MATCHING FUNDS: None

#### DESCRIPTION:

The La Plata Archuleta Water District (District) was formed in 2008 to finance, construct, operate and maintain a public water distribution system for a four hundred square mile service area in La Plata and Archuleta Counties. The District's approved Service Plan includes 4,000 taps, or 9,720 people, by 2030. A previously approved Southwest Basin WSRA grant for \$100,000 is being used to develop the Master Plan (Task 3 of pre-construction activities) in conjunction with grant funds from Southwestern Water Conservation District (\$40,000) and CDPHE (\$10,000). Following development and approval of the Master Plan the permitting required to construct the facilities must begin. Permitting is required to address environmental impacts, cultural resource impacts, water treatment plant design, La Plata County permits, and other issues. Permit applications will be based upon the master plan and designs, and will include numerous federal, state and local permits, such as a LPC Conceptual Development Plan Permits and consecutive Class II Construction Permits, US Army Corps of Engineers 404 Permit (nationwide or individual permit yet to be determined), Colorado Department of Public Health and Environment Public Drinking Water permitting activities and others necessary to address environmental and cultural resource compliance.

### Animas River Needs Assessment

APPLICANT: San Juan Resource Conservation and Development - Animas Watershed Project

APPROVED: September 2009

STATUS: In Progress

WSRA FUNDS: \$57,000 (Basin Account)

MATCHING FUNDS: \$11,430

#### DESCRIPTION:

The proposed study would provide essential information to

the ongoing development of a Watershed Management Plan for the Animas River. The study seeks to: collect and analyze chemical, biological, and geomorphic data as well as identifying pollution sources and opportunities for their remediation. Data will be used to address water quality impacts to beneficial and designated uses in the basin including: municipal, agricultural, recreational, and environmental. The study will follow the format of a recent project on the Animas River in New Mexico from the Colorado/New Mexico border to the confluence with the San Juan River. That project was completed in 2006 and involved a synoptic sampling effort to characterize pollution sources, impairment locations, and water quality restoration opportunities. The work resulted in a GIS database that stakeholders use to identify impaired reaches and target remediation efforts. This proposed needs assessment will create a comparable dataset for the Colorado portion of the Animas River.

### Mancos River Diversion Project, Phase I

APPLICANT: Mancos Conservation District

APPROVED: November 2009

STATUS: In Progress

WSRA FUNDS: \$24,753 (Basin Account)

MATCHING FUNDS: \$34,950

#### DESCRIPTION:

The Mancos Conservation District is preparing a watershed assessment as part of a comprehensive Mancos River Watershed Plan. The plan seeks to work with irrigation companies and landowners to restore the river system. The initial assessment has identified several priorities. The first priority involves ongoing improvements to aging irrigation infrastructure. This infrastructure is causing degradation of the river channel, inefficient and poorly measured water delivery, and ongoing maintenance issues. A major portion of this degradation occurs at ditch diversion sites. The second priority is attaining greater instream flows in the summer due to irrigation diversions. A team of experts including, the local water commissioner, ditch owners, and an ecologist have collaborated to examine various options for irrigation system improvement and river restoration. The proposed project identifies the tasks necessary to reconstruct six of the worst ditch diversion structures. The project involves surveys, structure design, cost estimates, and mapping. In addition, the project includes a decree analysis by the Colorado Water Trust to explore the potential of developing instream flow rights on critical stream reaches of the Mancos River.

### Protecting Irrigated Agricultural Lands, and Agricultural Water Rights for Agricultural Production

APPLICANT: Mancos Valley Resources, Inc.

APPROVED: November 2009

STATUS: In Progress

WSRA FUNDS: \$31,500 (Basin Account)

MATCHING FUNDS: NONE

### DESCRIPTION:

This project creates a program, or an achievable plan for the creation of a program, that will assist non-profit organizations and local communities in the Southwestern Colorado Basin in conserving irrigated agricultural lands as working agricultural lands, and their associated agricultural water rights. Protection and conservation of the natural environment, including protection of open space, is an important part of conserving southwestern Colorado's water supplies and promoting its economic and agricultural health, but assuring that protected lands remain in active agricultural use is not currently part of such conservation efforts. The goal of a program identified through this grant will be to assure that irrigated agricultural lands are protected as working agricultural lands, rather than simply as open space, and to make such lands more affordable for the next generation of farmers and ranchers. Keeping such lands in working agricultural production will help assure a local food and fiber production and will help assure that agricultural water rights remain in agricultural use.

### **Canal Seepage Reduction Program**

**APPLICANT:** Florida Mesa Canal Companies  
(Florida Canal, Florida Farmers Ditch,  
Florida Enlargement Ditch, and the  
Florida Co-operative Ditch Company)

**APPROVED:** November 2009 (\$225,000) and  
September 2010 (\$775,000)

**STATUS:** Contracting

**WSRA FUNDS:** \$1,000,000 (Statewide Account)

**MATCHING FUNDS:** Approximately \$200,000

### DESCRIPTION:

A previous phase of the project included: a ditch loss study; the installation of gauging station telemetry, water measuring devices, and automated gates; and a hydropower feasibility study. The current application involves the design and installation of canal lining in strategic sections of the system identified by the recently completed ditch loss study. The conveyance system of the Florida Mesa Canal Companies suffers from heavy seepage and administrative waste. A 1988 U.S. Bureau of Reclamation (USBR) Study calculated this waste to be 8,400 acre-feet per year. Florida Water Conservancy District (FWCD) water monitoring program records indicate that over the last seven years system losses have averaged 24 percent, or 11,600 AF per year. This project includes: the engineering design, defining project sections from the ditch loss study, providing for preliminary environmental permitting (wetlands delineations and archeological surveys), preliminary engineering design, final engineering design, preparation of project plans and specifications, and services during bidding, construction of canal and ditch lining and the acquisition of water rights.

### **Raw Water System Update and Future Needs Study**

**APPLICANT:** Town of Norwood

**APPROVED:** January 2010

**STATUS:** In Progress

**WSRA FUNDS:** \$58,458 (Basin Account)

**MATCHING FUNDS:** \$7,000

### DESCRIPTION:

The Town of Norwood water supply comes from a system of open ditches, springs and storage reservoirs. Ongoing problems with water quality over the past several decades, including an incidence of E. coli bacteria and resulting boil water orders, as well as problems with disinfectant residuals, have persisted. As a result, Norwood is working on obtaining funding to upgrade the existing water system, an approximately \$7.5 million dollar project. This project will help Norwood update its Raw Water Master Plan to guide the critical water system improvements.

### Energy Development Water Needs Assessment

APPLICANT: City of Grand Junction  
APPROVED: March 2007  
STATUS: Phase I Draft Report Complete;  
Phase II in Progress  
WSRA FUNDS: \$300,000 (Statewide Account—joint  
Application with Colorado Basin—  
\$150,000 from each basin)

MATCHING FUNDS: \$0

#### DESCRIPTION:

See Colorado Basin section for description.

### Sand Wash Basin Coalbed Methane Production Depletive Effects on Water Resources Study

APPLICANT: Moffat County  
APPROVED: November 2008  
STATUS: In Progress  
WSRA FUNDS: \$118,835 (\$20,000—Basin Account;  
\$98,835—Statewide Account)

MATCHING FUNDS: \$2,000

#### DESCRIPTION:

The Sand Wash Basin is structural basin in northwest Colorado that contains coal-bearing sedimentary sequences similar to those hosting coalbed methane (CBM) in the Piceance, Raton and San Juan Basins. Although CBM development in the Sand Wash Basin has not been as extensive as in the three other basins there is indication of increased interest by industry. According to Colorado's Oil & Gas Conservation Commission (OGCC), 2006 records indicated there were 46 CBM well permits in the basin representing all CBM production up to that date. There were 12 additional permits recorded for 2007 and seven so far for January 2008. OGCC personnel further indicate that water production from existing CBM wells in the basin has been substantial suggesting that there could be impacts to surface and groundwater resources. Given the likelihood of increased CBM production in the Sand Wash Basin the Colorado Geological Survey believes it would be in the best interest of the state to assess potential impacts of CBM production on both surface and ground water early on as CBM development evolves. Because CBM development could be at the early stages in the Sand Wash Basin, this study includes a component to gather baseline data which could be used to evaluate possible impacts from CBM development as it progresses over time.

### Town of Yampa Water Facilities Plan and Storage Tank Upgrades

APPLICANT: Town of Yampa  
APPROVED: September 2008  
STATUS: In Progress  
WSRA FUNDS: \$61,062 (Basin Account)  
MATCHING FUNDS: \$15,626

#### DESCRIPTION:

The Town is beginning to feel growth pressures from both the Vail Valley to the South and Steamboat Springs area to the North. This study will give the Town a complete picture of its current water rights status of its current water infrastructure address identified storage needs and make recommendations on how to deal with legal engineering and financial water issues associated with growth in the near to medium term. The study updates study completed in 1981 with current state of practice in the water industry, realities of growth pressures, water issues in the Yampa Valley, and to design a treated water storage tank to meet the needs of residences now and in the near future. The Town of Yampa needs to evaluate its water supply in a way to insure all the components from water rights to delivery systems work together. This study will help the Town of Yampa plan for and move toward a resilient water future.

### Sparks Reservoir Geotechnical and Preliminary Feasibility Study

APPLICANT: Vermillion Ranch Limited Partnership  
APPROVED: July 2008  
STATUS: In Progress  
WSRA FUNDS: \$16,000 (Basin Account)  
MATCHING FUNDS: \$3,000

#### DESCRIPTION:

The Sparks Reservoir geotechnical and preliminary feasibility study investigates geotechnical issues related to the dam embankment and emergency spillway of the Sparks Reservoir location and determine the preliminary feasibility based on those results. The Sparks Reservoir is a Conditional storage water right located on Talimantes creek in the far northwestern corner of Colorado. The reservoir is intended to serve agriculture irrigation and other decreed rights. Changing climatic conditions, both drought and earlier than normal runoff patterns have greatly impacted the ability to have a dependable water supply. This study will serve to update the existing preliminary reservoir design costs based on the current construction cost environment and incorporate any design changes based on the geotechnical study. The studied shortfall was identified in SWSI.

### Agricultural Water Needs Assessment

APPLICANT: Moffat County  
APPROVED: January 2008  
STATUS: In Progress  
WSRA FUNDS: \$201,410 (Basin Account)  
MATCHING FUNDS: None

#### DESCRIPTION:

The study identifies agricultural water needs and shortages in the Yampa, White, and Green River Basins and identifies projects to satisfy those needs. The study will refine and update previous estimates based off the Colorado Decision Support System Models, using high altitude coefficients. It will also assess the impacts of climate change on agricultural water availability, and reveal the impact to agriculture

water if conditional water rights in the White River are used. It will identify water supply development alternatives, and finally help identify the role of return flows in available agricultural water. The project intends to identify partnering opportunities with energy, recreation, and other uses.

### **Common Data Repository and Water Resource Assessment for the Upper Yampa River Basin**

**APPLICANTS:** City of Steamboat Springs and Routt County

**APPROVED:** January 2008

**STATUS:** In Progress

**WSRA FUNDS:** \$106,600 (Basin Account)

**MATCHING FUNDS:** Approximately \$50,000

**DESCRIPTION:**

While the water quality in the upper Yampa Basin is generally recognized as superior in quality, but the “2028 report” published in 2002 identified several areas that need more information. The section was placed on the monitoring and evaluation list. In low water years the Division of Wildlife has been forced to put restrictions on the River through the City of Steamboat Springs due to temperature and subsequent dissolved oxygen problems. The project consolidates existing water quality data in the upper Yampa River Basin from the headwaters of the Yampa and Elk Rivers to a point below the confluence with Elkhead Creek in a web accessible format. An evaluation of that data into a published report on Basin water quality will follow. With that information, a plan for additional data needs and public outreach will be completed. This project will answer questions related to impacts from population growth, various development activities, and natural sources of water constituents on the quality of water in the upper Yampa Basin.

### **Morrison Creek Reservoir Feasibility Study**

**APPLICANT:** Upper Yampa Water Conservancy District

**APPROVED:** July 2007

**STATUS:** Complete

**WSRA FUNDS:** \$49,500 (Basin Account)

**MATCHING FUNDS:** None

**DESCRIPTION:**

Morrison Creek Water & Sanitation District serves a fast growing area which contains the largest number of platted and un-built lots in Routt County. Currently served only by wells, a gravity fed water supply is desired to serve customers in this region. After evaluating the diversion of water from Morrison Creek into Stagecoach Reservoir, the Upper Yampa Water Conservancy District (UYWCD) determined that the excavation and channel work that would be required is problematic. Preliminary information from the Division of Engineers indicates a yield of 11,164 acre-feet. Concept planning shows a potentially suitable dam site be-

low the confluence of Morrison and Silver Creeks that could provide approximately 5,000 acre-feet of storage. The study would conduct preliminary work regarding water quality, geotechnical and environmental planning. The UYWCD will evaluate the suspended sediment load and its treatment potential as a potable water source.

### **Headwaters Magazine - January 2010**

**APPLICANT:** Colorado Foundation for Water Education

**APPROVED:** September 2009

**STATUS:** Complete

**WSRA FUNDS:** \$20,000 (Basin Account)

**MATCHING FUNDS:** \$22,938

**DESCRIPTION:**

The applicant intends to educate Roundtable stakeholders in the Yampa and White basins about the basins’ geography, water supply and environmental challenges, water management agencies and different user groups through a Headwaters publication. The issue will help the Roundtable achieve their goal of communicating with basin stakeholders to better solicit their input for needs assessments and project planning. In addition, it is paired with a direct outreach grant application, ensuring that the publication will be used to directly inform citizens.

### **Development and Implementation of Water Forums, Workshop, and/or Tours**

**APPLICANT:** Community Agriculture Alliance, Inc.

**APPROVED:** September 2009

**STATUS:** In Progress

**WSRA FUNDS:** \$10,000 (Basin Account)

**MATCHING FUNDS:** \$2,675

**DESCRIPTION:**

The applicant intends to help residents and water stakeholders of the Yampa and White basins to better understand the current demands and future needs of the water in the Yampa-White-Green Basins. It will encourage informed and rational discussions and decision-making regarding our local water usage through the development of a minimum of four forums, workshop and/or tours, each open and accessible to the public.

### **Stillwater Reservoir Seepage Project**

**APPLICANT:** Bear River Reservoir Company

**APPROVED:** September 2009

**STATUS:** In Progress

**WSRA FUNDS:** \$189,000 (Basin Account)

**MATCHING FUNDS:** \$20,000

**DESCRIPTION:**

The reduction of seepage from Stillwater reservoir will improve storage efficiency and has the potential to reduce the need to develop additional unappropriated waters in the



upper basin. The reservoir, located in Garfield County at the headwaters of the Bear River, is used primarily for native grass hay irrigation in Routt County and for municipal water owned by the Town of Yampa. The Bear River Reservoir Company provides water to eighteen agricultural users on a basis of 5,175 shares each of which corresponds to one acre-foot of water when the reservoir is full. This project involves: the installation of a new steel outlet flume; engineering and geologic evaluation to determine the most cost effective way to reduce seepage; preparation of the State Engineer Repair Application to be submitted to the U.S. Forrest Service for review and permitting; and seepage repair.

### **Yellow Jacket Water District Water Storage Feasibility Study**

APPLICANT: Yellow Jacket Water Conservancy District  
APPROVED: January 2010  
STATUS: Contracting  
WSRA FUNDS: \$220,800 (Basin Account)  
MATCHING FUNDS: \$55,200

#### DESCRIPTION:

This Feasibility Study will assess the Yellow Jacket water portfolio and identify water rights and three potential storage sites eligible for in-depth analysis resulting in the recommendation of one final water storage site for a Yellow Jacket Water Storage Project. The Feasibility Report will include critical analysis and recommendations including preliminary environmental review, preliminary design and build costs, implementation time line. The Feasibility Report will also assess realistic funding mechanisms including public and private partnerships. In addition, this process will yield a tangible contemporary assessment of Yellow Jacket water rights and alternative water rights.

### **Yampa-White Basin Nonconsumptive Needs Assessment Watershed Flow Evaluation Tool**

APPLICANT: The Nature Conservancy  
APPROVED: January 2010  
STATUS: In Progress  
WSRA FUNDS: \$169,002 (Basin Account)  
MATCHING FUNDS: None

#### DESCRIPTION:

The Yampa-White Basin has completed Phase I of its non-consumptive needs assessments as required by HB05-1177. Phase I was a focus area map showing areas in the Yampa-White Basin where environmental and recreational activity occur. The effort described in this statement of work will utilize the Watershed Flow Evaluation Tool (WFET) that was piloted by the Colorado Water Conservation Board (CWCB) during 2009 to further assess and quantify the Yampa-White Basin's nonconsumptive needs. The WFET provides a framework for examining ecological risk related to flow conditions at a watershed or regional level. The WFET will use hydrology predicted by CWCB's Colorado

Decision Support System (CDSS) models and ecological risk relationships developed as part of the CWCB pilot as starting point for this effort. The benefit of using the WFET as part of the nonconsumptive needs assessment for the Yampa-White Basin is that it allows for a cost effective estimate of the ecological and recreational risk related to flow and can develop a range of flows for the environmental and recreational focus reaches in the basin.

### **Improvement of Lysimeter Operations and Consumptive Use Quantification in High-Altitude, Irrigated Meadows in the Yampa /White Basin**

APPLICANT: Colorado Climate Center (with Colorado Division of Water Resources)  
APPROVED: September 2010  
STATUS: Contracting  
WSRA FUNDS: \$20,978 (\$10,000—Basin Account, \$10,978—Statewide Account)  
MATCHING FUNDS: \$25,560

#### DESCRIPTION:

This project improves lysimeter data collection in the Yampa Basin. Historically, compensating lysimeters have been operated in the Yampa Basin by the Colorado Division of Water Resources. However, the validity of the DWR data has been questioned due to its failure to accurately represent meadow irrigation operations and adherence to potential evapotranspiration (ET) measurement criteria (water is limited in the lysimeter). This study will install new bucket type lysimeters and a full automated weather station on the Carpenter Ranch owned by the Nature Conservancy. This will allow for operation of the lysimeters to closely mimic the irrigation environment of the Yampa basin. Four lysimeter plots will be installed - two will be seeded with grass-reference vegetation and two will be seeded with vegetation representative of the surrounding irrigated meadow. This will allow for direct determination of crop coefficients that could be applied to any future weather-based calculations of grass-reference ET.

**House Bill 2005-1177 (HB 05-1177):** The Colorado Water for the 21<sup>st</sup> Century Act provides a permanent forum for broad-based water discussions in the state. It creates two new structures: 1) the Interbasin Compact Committee, and 2) the Basin Roundtables. There are nine Basin Roundtables based on Colorado's eight major river basins and the Denver metro area.

**Interbasin Compact Committee (IBCC):** A 27-member committee established to facilitate conversations between basins and to address statewide issues. The IBCC is made up of two representatives from each roundtable, six governor appointments, a member each from both the Senate and House Agriculture Committees, and the Director of Compact Negotiations.

**Basin Roundtable (BRT):** The nine Basin Roundtables bring over 300 citizens into water discussions across the state. The diversity of Basin Roundtable membership broadens the range of stakeholders who are actively participating in Colorado's water decisions. The Basin Roundtables are each made up of a set of designated members (county, municipal, and water district representation), ten at-large members (agricultural, recreational, domestic water provider, industrial, environmental, and water right holder representation), non-voting members, agency liaisons, and the CWCB board member from that basin.

**Colorado Department of Natural Resources (DNR):** The department oversees parks, forests, wildlife, water resources, geology, mining, and soil management. DNR's mission is to develop, preserve and enhance the state's natural resources for the benefit and enjoyment of current and future citizens and visitors.

**Colorado Water Conservation Board (CWCB):** An agency within DNR, which was created in 1937 for the purpose of aiding in the protection and development of the waters of the state. The agency is responsible for water project planning and finance, stream and lake protection, flood hazard identification and mitigation, weather modification, river restoration, water conservation and drought planning, water information, and water supply protection.

**Intrastate Water Management & Development Section (IWMD):** HB06-1385 created CWCB's IWMD Section, which implements the Statewide Water Supply Initiative, the Water Supply Reserve Account, develops reconnaissance level water supply alternatives, tracks and supports water supply projects and planning processes, and supports the IBCC and BRTs.

**Statewide Water Supply Initiative (SWSI):** In 2003, the CWCB commissioned SWSI, an 18-month study to explore, basin by basin, existing water plans, supplies, and existing and project demands through 2030, as well as a range of potential options to meet that demand.

**Water Supply Reserve Account (WSRA):** In 2006, to help address Colorado's future water needs, the Colorado General

Assembly passed Senate Bill 06-179, which establishes the WSRA. The WSRA provides money for grants to complete water activities. Water activities are broadly defined and include water supply and environmental projects and/or studies. Requests for monies from the WSRA must be approved by the local Basin Roundtables. Once approved by the Basin Round table the request is forwarded to the CWCB to evaluate and make decisions regarding funding.

**Nonconsumptive Needs Assessment (NCNA):** HB 05-1177 indicated that each roundtable should produce a nonconsumptive, or environmental and recreational, water supply needs assessment.

**Watershed Flow Evaluation Tool (WFET):** A tool piloted in Colorado to assist in the quantification of nonconsumptive needs.

**Identified Projects & Processes (IPPs):** A term developed in SWSI to specify planned methods to meet water supply needs by water providers.

**Municipal and Industrial (M&I):** A term referring to the water needs of cities and towns throughout Colorado.

**Self Supplied Industrial (SSI):** A term referring to those industries that typically provide their own water, such as power plants and snowmaking facilities.

**Colorado Division of Water Resources (DWR):** An agency within DNR providing water rights administration.

**Decision Support System (DSS):** A general term referring to a tool that integrates a broad set of data and modeling to allow for better decision making at a regional scale.

**Colorado Decision Support System (CDSS):** A water management system developed by the CWCB and DWR. The goal of this system is to assist in making informed decisions regarding historic and future use of water.

**Basin Needs Decision Support System (BNDSS):** Formerly known as the IPP database, the BNDSS will provide a database for consumptive and nonconsumptive projects and methods and assist in calculating the water supply gap.

**Colorado River Water Availability Study (CRWAS):** Examines what water may be available within the Colorado River Basin in the future. The study models future hydrologies based off tree ring and climate change data. It then considers what water is available to meet existing and future demands.

**Department of Local Affairs (DOLA):** The Department works in cooperation with local communities to help build on the strengths, unique qualities and priorities of Colorado. It does so through financial and technical assistance, emergency management services, property tax administration and programs addressing affordable housing and homelessness.





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