DRAFT

PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR CONSERVATION RESERVE ENHANCEMENT PROGRAM RIO GRANDE COLORADO

Prepared for:
State of Colorado
Department of Natural Resources, Division of Water Resources
1313 Sherman Street, Room 818
Denver, CO 80203

June 2012

This page intentionally left blank.

Cover Sheet

Proposed Action: The United States Department of Agriculture (USDA), Commodity Credit Corporation and the State of Colorado have agreed to implement the Rio Grande Conservation Reserve Enhancement Program (CREP), a component of the Conservation Reserve Program. USDA is provided the statutory authority by the provisions of the Food Security Act of 1985, as amended (16 United States Code 3830 et seq.), and the Regulations at 7 Code of Federal Regulations (CFR) 1410. The Farm Service Agency (FSA) proposes to implement the CREP Agreement with the State of Colorado. CREP is a voluntary land conservation program for agricultural landowners.

Type of Document: Programmatic Environmental Assessment

Lead Agency: USDA, FSA

Sponsoring Agency: Colorado Department of Natural Resources, Division of Water Resources

Cooperating Agency: None

Further Information:

State of Colorado
Attn: Kathryn Radke
Division of Water Resources
1313 Sherman Street, Room 818
Denver, CO 80203

Comments: This Programmatic Environmental Assessment was prepared in accordance with USDA FSA National Environmental Policy Act (NEPA) implementation procedures found in 7 CFR 799, as well as the NEPA of 1969, Public Law 91-190, 42 United States Code 4321-4347, 1 January 1970, as amended. The public comment period for this project is June 14 through July 15, 2012. Comments may be submitted to the address above. A public meeting is scheduled for:

June 21, 2012, 6:00pm to 8:00pm
The Ramada
333 Santa Fe Ave.
Alamosa, CO
(719) 589-5833

This page intentionally left blank.

EXECUTIVE SUMMARY

INTRODUCTION

The United States (U.S.) Department of Agriculture Farm Service Agency (FSA) proposes to implement a Conservation Reserve Enhancement Program (CREP) Agreement within the Rio Grande Basin in the State of Colorado. This Programmatic Environmental Assessment (PEA) has been prepared to analyze the potential environmental consequences associated with implementation of the Proposed Action or No Action Alternative.

The Rio Grande Basin is located in the south central portion of Colorado and drains approximately 8,000 square miles. The Rio Grande Basin is one of the oldest potato growing regions in the country and is also important for the production of alfalfa hay and small grains.

Due to the limited amount of precipitation, agriculture in this area is heavily dependent on center pivot sprinkler systems to irrigate cropland. The water supply system in the area contains a deep confined aquifer and a shallower unconfined aquifer separated by a series of clay layers. The water levels of the aquifer system are declining. The Rio Grande Water Conservation District (RGWCD) was created in 1967 to assist the State of Colorado with water management activities in the Rio Grande Basin. The RGWCD works with agricultural producers with regards to water management and water conservation within the Rio Grande Basin. Irrigated agriculture is the largest water use in the Rio Grande Basin, consuming over 85 percent of all water used.

The proposed CREP would occur within Special Improvement District No. 1 of the RGWCD (Subdistrict No. 1) which contains portions of Alamosa, Rio Grande, and Saguache Counties. This area (part of the San Luis Valley) is considered high alpine desert and is bounded on the east by the Sangre de Cristo Mountains and on the west by the San Juan Mountains.

PROJECT PURPOSE AND NEED

The purpose of the Proposed Action is to implement the proposed Rio Grande CREP Agreement for the State of Colorado. The Rio Grande CREP Proposal is needed to reduce the water demands and help restore long-term sustainability of water resources in the Rio Grande Basin. The Rio Grande CREP Proposal would also restore wetlands and enhance wildlife habitat, improve streamflows, and contribute to the improvement of the confined and unconfined aquifer within the Rio Grande Basin.

PROPOSED ACTION AND NO ACTION ALTERNATIVE

Proposed Action

FSA proposes to implement a CREP Agreement (Agreement) in the Rio Grande Basin in the State of Colorado. The Agreement would enroll up to 40,000 acres of irrigated cropland within portions of Alamosa, Rio Grande, and Saguache Counties. The Proposed Action would include establishing CRP contracts with producers of eligible lands in order to implement approved Conservation Practices (CPs). Those CPs include: CP2, Native Grasses and Legumes; CP4D, Permanent Wildlife Habitat – Noneasement; CP9, Shallow Water Areas for Wildlife; CP23, Wetland Restoration; and CP23A, Wetland

Restoration, Non-Floodplain. Producers would receive technical and financial assistance for installing and maintaining the practices as well as annual rental payments for lands enrolled in the program and other incentives where applicable. The primary objectives of the Rio Grande CREP are to conserve water, reduce soil erosion, improve water quality, and enhance wildlife habitat. Additional energy conservation benefits are also expected.

There are approximately 163,000 acres of irrigated land within the total CREP Area. An additional Focus Area has also been established in Rio Grande County around certain streams in the Rio Grande Basin. Reducing irrigation and agricultural production in this area would provide the greatest benefit to the aquifer and increase streamflows; therefore, to maximize participation producers in the Focus Area would be eligible for additional financial incentives. Within the Focus Area, there are approximately 16,000 acres of irrigated land. The proposed Agreement has a goal of enrolling up to 6,000 acres within the Focus Area.

No Action Alternative

Under the No Action Alternative, the Agreement would not be implemented. The Conservation Reserve Program (CRP) and other conservation programs would continue to be available to producers; however, the additional benefits of the proposed Agreement would not be realized. Conditions of the aquifer would likely continue to decline ultimately hindering long-term sustainability of the water supply in this area.

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

The PEA addresses the following resource areas: biological resources (wildlife, vegetation, and special status species); water resources (ground water, surface water, water quality, and wetlands); earth resources (geology, topography, and soils); cultural resources; recreation; air quality; socioeconomics; and environmental justice. A summary of the potential environmental consequences to each of these resources is provided below.

Biological Resources

Overall, implementation of the Proposed Action would have beneficial impacts to biological resources. Restoring agricultural lands to more natural states under the five approved CPs would increase native vegetation, restore and enhance wetland and riparian habitat, and other habitat important to local wildlife. Improving these habitats would increase wildlife diversity, especially game species. The reduction in chemical inputs and nutrients to surface waters would improve water quality and have beneficial impacts to fisheries in the immediate and downstream areas. Site-specific evaluation and the required conservation planning process prior to enrolling land in CREP would identify special status species or critical habitat. Consultation with U.S. Fish and Wildlife Service or Colorado Parks and Wildlife would occur as appropriate to establish conservation measures to protect special status species.

Water Resources

The Agreement would have long term beneficial impacts to water resources within the Rio Grande Basin and areas downstream. Enrolling land in CREP and installing CPs (vegetation planting, native grasses, and restoring wetlands and riparian habitat) would decrease groundwater withdrawal, reduce the

application of agricultural chemicals (pesticides and fertilizers) in the CREP Area, and reduce erosion and sedimentation, ultimately increasing groundwater storage and streamflows, improving surface water quality, and improving wetland habitat. For enrollment in CREP, a well-right holder volunteers to retire his irrigation right for a minimum period of 14-15 years, or permanently in exchange for additional compensation. Retirement of irrigated lands under CREP would allow for natural groundwater flow to resume to the rivers of the Rio Grande Basin rather than consuming the groundwater for irrigation. Implementation of CPs such as wetland restoration is expected to restore or enhance wetlands. Minimal amounts of surface water irrigated land is also expected to be enrolled, and would provide immediate beneficial impacts to surface water systems.

Soil Resources

Long-term positive impacts to soil resources are expected to occur with the implementation of any of the five proposed CPs outlined in the proposed Agreement. Removing marginal agricultural lands from production would also benefit water quality by reducing soil erosion and sedimentation caused by typical agricultural practices. During implementation of any of the CPs, there would be potential for minor, increased erosion from any tillage, planting, or earthmoving activities required. However, once the CPs are established, long-term beneficial impacts to soil resources would occur from establishment of permanent cover (over the course of the 14 to 15 year contract) and removing the need to work the soil for agricultural purposes. Permanent covers would largely entail establishment of native arid and semi-arid grasses and legumes. Decreases in wind erosion are also expected and would provide related air quality benefits.

Cultural Resources

The Proposed Action would occur on previously tilled cropland; therefore, the Howard Store, the only known structure listed on the National Register of Historic Places, would not be impacted. It is unlikely that unknown cultural resources would be impacted under the Proposed Action because areas that could be enrolled in the CREP have been under cultivation. As part of the CREP enrollment process, a site-specific evaluation would be done to determine land eligibility and the presence or potential for encountering a cultural resource. Consultation with the State Historic Preservation Officer would occur as necessary during the site-specific evaluation. In accordance with FSA policy, enrollment into CREP would be denied if a cultural resource impact was expected.

Recreation

During establishment of the CPs, there would be short-term negative impacts to local fish and game species due to construction activity. However, once the CPs are established, there would be higher quality hunting, fishing, and wildlife viewing opportunities in the Rio Grande Basin over the long-term because of the potential 40,000 acres of improved wildlife habitat.

Socioeconomics

The Proposed Action could remove 40,000 acres of agricultural land from production within the CREP Area. This would represent approximately 6 percent of the total farmland within the CREP Area. While this represents a small percentage of the total agricultural land, removing it from agricultural production

would also remove all cost inputs to that land; such as labor, agricultural chemicals, and seed. Removing the land would have a negative effect on the producers of those inputs. Given the rather small percentage of agricultural land targeted, these negative impacts would likely be minor in nature.

Over the life of the proposed Agreement, up to approximately $125 million of Federal and state funds would be given to producers that enrolled their lands. Annual rental payments and applicable incentive funds would help to offset negative impacts from loss of farm income. Additionally, removal of land from production may raise commodity prices due to reduced supply, thereby allowing local producers to collect more revenue per acre from the crops they continue to grow. There is also the potential to increase recreational uses of enrolled lands for wildlife dependent recreation, such as hunting and wildlife viewing. Improvement of wildlife habitat may lead to expenditures in recreation related goods, hunting supplies, as well as gas and lodging expenditures. Decreases in hay production may result in increases in hay shipments for livestock needs from outlying areas.

Environmental Justice

There are several environmental justice population areas in the Region of Influence (ROI). If the livelihood of any of those populations is disproportionately tied to a large CREP enrollment then there could be the potential for environmental justice impacts. Most of the proposed CREP Area in Alamosa County is considered a low-income population. The potential for minor positive and negative disproportionate impacts on low income populations exists, but would depend on where producers are located in relation to these populations.

NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed Agreement would not be implemented. Agricultural production would continue within Subdistrict No. 1 as it currently does. There would be no impacts from the No Action Alternative and baseline conditions would persist. Producers could still enroll land into CRP or other conservation programs.

CUMULATIVE IMPACTS

Cumulative impacts from implementation of the Proposed Action would generally be positive, over the life of the CREP contract (14 to 15 years). Biological resources, water, soil, and recreation would all experience beneficial impacts from implementing the Agreement. There may be slight negative socioeconomic impacts from removing agricultural lands from active production to enroll those lands in a conservation program. While the producer enrolling the land may benefit financially, land enrolled in conservation programs would not have the same positive economic impact to the local community since the indirect expenditures for the sale of goods and services to support agricultural production (seed, chemical input, equipment, etc.) would not occur.

MITIGATION MEASURES

There are no expected long-term significant negative impacts associated with implementation of the proposed Agreement. Prior to installation of CPs, producers must complete site-specific environmental evaluations which would reveal any protected resources on the property. In those site-specific instances where a wetland, threatened or endangered species, or a cultural resource may be present, consultation

with the appropriate lead agency would identify specific mitigation measures required to eliminate or reduce the negative impacts to an acceptable level. In addition, each producer must prepare an approved conservation plan to ensure protection of all valuable resources for the duration of the contract (14 or 15 years).

This page intentionally left blank.

TABLE OF CONTENTS

EXECUTIVE SUMMARY ..... **ES-I**

CHAPTER 1 INTRODUCTION **1-1**

1.1 Background **1-1**

1.1.1 Conservation Reserve Program **1-1**

1.1.2 Conservation Reserve Enhancement Program **1-1**

1.1.3 Rio Grande Basin **1-1**

1.2 The Proposed Action **1-3**

1.3 Purpose and Need **1-4**

1.4 Regulatory Compliance **1-4**

1.5 Public Involvement **1-4**

1.6 Organization of PEA **1-5**

CHAPTER 2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES **2-1**

2.1 Proposed Action **2-1**

2.1.1 Acreage and Geographic Area **2-1**

2.1.2 Conservation Practices **2-4**

2.1.3 Funding **2-5**

2.2 No Action **2-6**

2.3 Resources Eliminated from Analysis **2-6**

2.4 Evaluation of Alternatives **2-7**

CHAPTER 3 AFFECTED ENVIRONMENT **3-1**

3.1 Biological Resources **3-1**

3.1.1 Wildlife **3-1**

3.1.2 Vegetation **3-2**

3.1.3 Special Status Species **3-4**

3.2 Water Resources **3-6**

3.2.1 Ground Water **3-6**

3.2.2 Surface Water **3-7**

3.2.3 Water Quality **3-7**

3.2.4 Wetlands **3-8**

3.3 Soil Resources **3-8**

3.3.1 Geology and Topography **3-8**

3.3.2 Soils 3-9
3.4 Cultural Resources 3-9
3.5 Recreation 3-10
3.6 Air Quality 3-10
3.7 Socioeconomics 3-11
3.7.1 Non-Farm Employment and Income 3-11
3.7.2 Farm Employment and Income 3-12
3.7.3 Farm Production Expenses and Returns 3-12
3.8 Environmental Justice 3-13
3.8.1 Demographic Profile 3-13
3.8.2 Income and Poverty 3-14
CHAPTER 4 ENVIRONMENTAL CONSEQUENCES 4-1
4.1 Biological Resources 4-1
4.1.1 Alternative 1 (Preferred Alternative) 4-1
4.1.2 No Action Alternative 4-3
4.2 Water Resources 4-3
4.2.1 Alternative 1 (Preferred Alternative) 4-3
4.2.2 No Action Alternative 4-5
4.3 Earth Resources 4-5
4.3.1 Alternative 1 (Preferred Alternative) 4-5
4.3.2 No Action Alternative 4-6
4.4 Cultural Resources 4-6
4.4.1 Alternative 1 (Preferred Alternative) 4-6
4.4.2 No Action Alternative 4-6
4.5 Recreation 4-6
4.5.1 Alternative 1 (Preferred Alternative) 4-6
4.5.2 No Action Alternative 4-7
4.6 Air Quality 4-7
4.6.1 Alternative 1 (Preferred Alternative) 4-7
4.6.2 No Action Alternative 4-8
4.7 Socioeconomics 4-8
4.7.1 Alternative 1 (Preferred Alternative) 4-8

4.7.2 No Action Alternative 4-9
4.8 Environmental Justice 4-9
4.8.1 Alternative 1 (Preferred Alternative) 4-10
4.8.2 No Action Alternative 4-10
CHAPTER 5 CUMULATIVE IMPACTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES 5-1
5.1 Cumulative Impacts 5-1
5.2 Irreversible and Irretrievable Commitment of Resources 5-1
5.3 Cumulative Effects Analysis 5-3
5.4 Irreversible and Irretrievable Commitment of Resources 5-4
CHAPTER 6 MITIGATION MEASURES 6-1
CHAPTER 7 LIST OF PREPARERS 7-1
CHAPTER 8 PERSONS AND AGENCIES CONSULTED 8-1
CHAPTER 9 REFERENCES 9-1
APPENDIX A RIO GRANDE CONSERVATION RESERVE ENHANCEMENT PROGRAM A-1
APPENDIX B SITE-SPECIFIC ENVIRONMENTAL EVALUATION (FORM FSA 850) B-1
APPENDIX C AGENCY CORRESPONDENCE C-1

List of Figures

Figure 1.1-1 Rio Grande Basin 1-2
Figure 2.1-1 Proposed Rio Grande CREP Area 2-2
Figure 2.1-2 Irrigated Land within Rio Grande CREP Area 2-3
Figure 3.8-1. Low Income Populations within ROI 3-16

List of Tables

Table 2.1-1. Approved CPs for Rio Grande CREP 2-4
Table 2.1-2. Summary of Financial Incentives for Rio Grande CREP 2-5
Table 2.4-1 Evaluation of Alternatives 2-7
Table 3.1-1. Invasive Species Located within the CREP Project Area 3-4
Table 3.1-2. Federally Listed Species Potentially Occurring in the Project Area 3-4
Table 3.1-3. State Listed Species Potentially Occurring in the CREP Area 3-6
Table 3.2-1 Annual Irrigation in Rio Grande CREP Counties (2005) 3-7

Table 3.2-2 Completed Wells in CREP Counties (2009) 3-7

Table 3.3-1 Soils within Subdistrict No. 1 3-9

Table 3.7-1. Farm Labor as a Percentage of Total Production Expenses 3-12

Table 3.7-2. Per Farm Production Expense, Profits, and Return Per Dollar of Expenditure 3-12

Table 3.7-3. Average Value of Land and Buildings, and Machinery and Equipment, per Farm 3-13

Table 3.8-1. Demographic Profile of Census Tracts within Subdistrict No. 1 3-14

Table 3.8-2. Median Household Income and Poverty Rate within Subdistrict No. 1 3-14

ACRONYMS AND ABBREVIATIONS

CDPH	Colorado Department of Public Health
CDW	Colorado Division of Wildlife (recently renamed Colorado Parks and Wildlife)
CDWR	Colorado Division of Water Resources
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO_2	Carbon Dioxide
CP	Conservation Practice
CPW	Colorado Parks and Wildlife
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CWCB	Colorado Water Conservation Board
EIS	Environmental Impact Statement
EO	Executive Order
EQIP	Environmental Quality Incentive Program
ESA	Endangered Species Act
FSA	Farm Service Agency
GHG	Greenhouse Gas
GSWCP	Ground and Surface Water Conservation Program
NAAQS	National Ambient Air Quality Standards
NASS	National Agricultural Statistics Service
NAWQA	National Water Quality Assessment
NDIS	Natural Diversity Information Source
NEPA	National Environmental Policy Act
NPS	National Park Service
NRCS	Natural Resources Conservation Service
O_3	Ozone
PEA	Programmatic Environmental Assessment
PIP	Practice Incentive Payment
$PM_{2.5}$	Particulate Matter less than 2.5 Microns
PM_{10}	Particulate Matter less than 10 Microns
RGWCD	Rio Grande Water Conservation District
ROI	Region of Influence
SIP	State Implementation Plan
U.S.	United States
USACE	U.S. Army Corps of Engineers
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Survey
VOC	Volatile Organic Compound

This page intentionally left blank.

CHAPTER 1 INTRODUCTION

The United States (U.S.) Department of Agriculture (USDA) Farm Service Agency (FSA) proposes to implement a Conservation Reserve Enhancement Program (CREP) Agreement within the Rio Grande Basin in the State of Colorado (Appendix A). This Programmatic Environmental Assessment (PEA) has been prepared to analyze the potential environmental consequences associated with implementation of the Proposed Action or No Action Alternative.

1.1 BACKGROUND

1.1.1 Conservation Reserve Program

The FSA administers the Conservation Reserve Program (CRP), the Federal government's largest private land environmental improvement program. CRP is a voluntary program that supports the implementation of long-term conservation measures designed to improve the quality of ground and surface waters, control soil erosion, and enhance wildlife habitat on environmentally sensitive agricultural land. The environmental impact of CRP was originally studied in the 2003 Programmatic Environmental Impact Statement (EIS) (USDA 2003). Changes to CRP as set forth by the Farm Security and Rural Investment Act of 2008 (Farm Bill) were addressed in the 2010 Supplemental EIS (USDA 2010). The Final Supplemental EIS was published on June 18, 2010 and provides FSA decision makers with programmatic level analyses that provide a context for the state specific PEAs.

1.1.2 Conservation Reserve Enhancement Program

The CREP was established in 1997 under the authority of CRP to address agriculture related environmental issues by establishing conservation practices (CPs) on agricultural lands using funding from State, Tribal, and Federal governments as well as non-government sources. CREP addresses high priority conservation issues in defined geographic areas such as watersheds. Producers who enroll their eligible lands in CREP receive financial and technical assistance for establishing CPs on their land as well as annual rental payments through a 14 or 15 year contract. Once eligible lands are identified, site-specific environmental reviews and consultation with and permitting from other Federal agencies are completed as appropriate (Appendix B). Eligible land criteria are set forth by the Farm Bill of 2008 and detailed in the FSA Handbook: *Agricultural Resource Conservation Program for State and County Offices* (2-CRP, Revision 5).

Participants are required to prepare a conservation plan that details the establishment and maintenance of CPs to ensure the goals of CREP are met throughout the life of the contract. For some CPs, a wildlife conservation plan must also be developed to ensure the practices meet their intended goals.

1.1.3 Rio Grande Basin

The Rio Grande Basin is located in the south central portion of Colorado and drains approximately 8,000 square miles (Figure 1.1-1). The Rio Grande Basin is one of the oldest potato growing regions in the country and is also important for the production of alfalfa hay and small grains (CDWR 2009a).

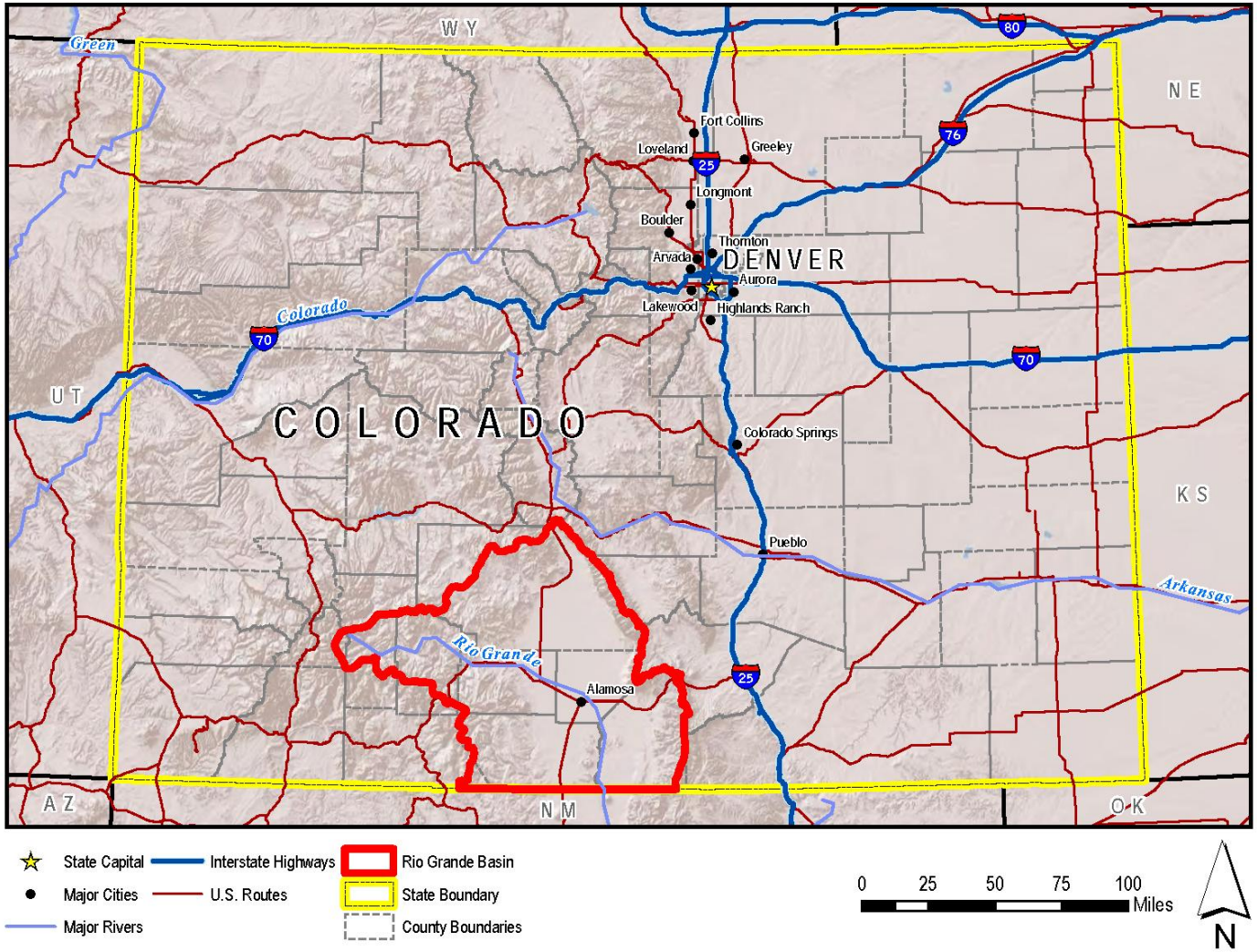


Figure 1.1-1 Rio Grande Basin

Due to the limited amount of precipitation, agriculture in this area is heavily dependent on center pivot sprinkler systems to irrigate cropland. The water supply system in the area contains a deep confined aquifer and a shallower unconfined aquifer separated by a series of clay layers. The water levels of the aquifer system are declining. The Rio Grande Water Conservation District (RGWCD) was created in 1967 to assist the State of Colorado with water management activities in the Rio Grande Basin. The RGWCD works with agricultural producers with regards to water management and water conservation within the Rio Grande Basin. Irrigated agriculture is the largest water use in the Rio Grande Basin, consuming over 85 percent of all water used (CDWR 2009a).

The proposed CREP would occur within Special Improvement District No. 1 of the RGWCD (Subdistrict No. 1) which contains portions of Alamosa, Rio Grande, and Saguache Counties. This area (part of the San Luis Valley) is considered high alpine desert and is bounded on the east by the Sangre de Cristo Mountains and on the west by the San Juan Mountains. In terms of acreage, the major crops are forage (land used for all hay and haylage, grass silage, and greenchop), vegetables harvested for sale, potatoes, barley for grain, and wheat for grain (NASS 2007). Table 1.1-1 provides total cropland, crop sales, average farm size, and irrigated land by county and for all of Colorado for comparison. The data presented in this table is for the total county, including land outside the CREP Area. There were 2,867,957 acres of irrigated land in Colorado during 2007 which resulted in 10,477,792 acre-feet of annual water consumption (CDWR 2010).

Table 1.1-1. Agricultural Statistics for Alamosa, Rio Grande, and Saguache Counties (2007)

County	Total Cropland (acres)[1]	Crop Sales (average per farm)[1]	Average Farm Size (acres)[1]	Irrigated Land (acres)[1]
Alamosa[2]	91,098	$272,297	599	94,030
Rio Grande	114,370	$200,146	459	102,792
Saguache	118,229	$324,528	1,187	103,292
Colorado	*11,483,936*	*$53,473*	*853*	*2,867,957*

Sources:

[1] NASS 2007. Data provided is for total county including land outside the CREP Area.

[2] Irrigated land in NASS data includes irrigated pastureland which is why the irrigated land in Alamosa County exceeds Total Cropland.

1.2 THE PROPOSED ACTION

The Proposed Action is to implement a CREP Agreement for the Rio Grande Basin in Colorado. Specifically, the Rio Grande CREP seeks to retire up to 40,000 acres of irrigated cropland within portions of Rio Grande, Alamosa, and Saguache counties and establish CPs to conserve water, improve water quality, reduce soil erosion, and enhance wildlife habitat. Eligible producers would receive financial and technical assistance in exchange for removing cropland from active agricultural production under a long term contract of 14 or 15 years. Producers that enroll acres would also have the option of retiring water rights permanently. The Commodity Credit Corporation would offer special irrigated rental rates for the CRP contracts established under this project.

1.3 PURPOSE AND NEED

The purpose of the Proposed Action is to implement the proposed Agreement for the State of Colorado. The proposed Agreement is needed to reduce the water demands and help restore long-term sustainability of water resources in the Rio Grande Basin. The proposed Agreement would also facilitate the enhancement of riparian, wetland, and upland habitat, improve streamflows, and contribute to the improvement of the confined and unconfined aquifer within the Rio Grande Basin.

1.4 REGULATORY COMPLIANCE

This PEA has been prepared to satisfy the requirements of the National Environmental Policy Act (NEPA) (Public Law 91-190, 42 U.S. Code 4321 et seq.); implementing regulations adopted by the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1500-1508); and FSA implementing regulations, Environmental Quality and Related Environmental Concerns – Compliance with NEPA (7 CFR 799). The intent of NEPA is to protect, restore, and enhance the human environment through well-informed Federal decisions. A variety of laws, regulations, and Executive Orders (EOs) apply to actions undertaken by Federal agencies and form the basis of the analysis presented in this PEA. Those regulations include, but are not necessarily limited to:

- Endangered Species Act (ESA)
- Migratory Bird Treaty Act
- Clean Water Act
- Clean Air Act
- National Historic Preservation Act
- Archaeological Resources Protection Act
- Pollution Prevention Act
- EO 11988, Protection of Floodplains
- EO 11990, Protection of Wetlands

1.5 PUBLIC INVOLVEMENT

In accordance with NEPA, a Federal agency must coordinate with other Federal and state agencies with an interest in the Proposed Action or resources potentially affected by that action as well as concerned public. The proposal for establishing a CREP in the Rio Grande Basin began in 2007. The State of Colorado, through Subdistrict No. 1, distributed information to the public, interested parties, and other state agencies, and presented the proposal at several conferences and meetings of agricultural and conservation groups. In addition, a CREP survey was conducted to determine public interest in the program and to solicit feedback on reasonable incentives to be included to make the program more attractive to producers. All comments and feedback were considered in the development of the proposal. The proposed Agreement was developed in coordination with several Federal and state agencies and stakeholders to include:

- Colorado Department of Natural Resources
    - Local Division No. 3, Colorado Division of Water Resources (CDWR)

    - Colorado Parks and Wildlife (CPW)
- Subdistrict No. 1
- State of Colorado Department of Health's Division of Water Quality Control
- Colorado State University Cooperative Extension Service
- Local Ground Water Management Districts
- Rocky Mountain Bird Observatory
- The Nature Conservancy
- Rio Grande Headwaters Land Trust
- U.S. Fish and Wildlife Service (USFWS)

In accordance with NEPA, the Draft PEA was made available for public and agency review for a period of 30 days (14 June to 16 July 2012). Paper copies of the document were available in the respective county FSA offices as well as the CDWR office and on the World Wide Web on two separate sites. A Notice of Availability was published in the *Valley Courier* newspaper on 14 June 2012 announcing the availability of the Draft PEA as well as an invitation to a public meeting.

A public meeting will be held during the public comment period for the Draft PEA to solicit comments on the potential impacts associated with the proposed Agreement as determined by the Draft PEA. The meeting will be held on June 21, 2012 at the Ramada Alamosa, Alamosa, Colorado. Input received at this public meeting will be considered to the extent practicable during the development of the Final PEA.

1.6 ORGANIZATION OF PEA

This PEA assesses the potential impacts of the Proposed Action and the No Action Alternative on potentially affected environmental and economic resources.

- **Chapter 1** provides background information relevant to the Proposed Action, and discusses its purpose and need.
- **Chapter 2** describes the Proposed Action, alternatives considered, and the No Action Alternative.
- **Chapter 3** describes the baseline conditions (i.e., the conditions against which potential impacts of the Proposed Action and alternatives are measured) for each of the potentially affected resources.
- **Chapter 4** describes the potential environmental consequences to the resources described in Chapter 3.
- **Chapter 5** describes cumulative impacts.
- **Chapter 6** describes mitigation measures**.**
- **Chapter 7** list the preparers of this document
- **Chapter 8** lists the persons and agencies consulted.
- **Chapter 9** contains references.

This page intentionally left blank.

CHAPTER 2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

FSA proposes to implement a CREP Agreement (Agreement) in the Rio Grande Basin in the State of Colorado (Appendix A). The Agreement would enroll up to 40,000 acres of irrigated cropland within portions of Alamosa, Rio Grande, and Saguache Counties. The Proposed Action would include establishing contracts with producers of eligible lands in order to implement approved CPs. Producers would receive support for the costs of installing and maintaining the practices as well as annual rental payments for lands enrolled in the program. The primary objectives of the Rio Grande CREP are to:

- Reduce soil erosion from approximately 681,252 tons to approximately 149,487 tons per year on all acres enrolled in CREP.
- Establish up to 40,000 acres of habitat for numerous wildlife species, including several aquatic and wetland dependent species that are declining due to habitat degradation.
- Reduce fertilizer and pesticide application by approximately 20 percent over the CREP Area and eliminate the need for herbicides and fertilizer on all enrolled acres.
- Establish up to 40,000 acres of native vegetation throughout the CREP Area.
- Restore and enhance up to 750 acres of degraded wetlands.
- Reduce agricultural use of the confined and unconfined aquifer in the Rio Grande Basin by approximately 60,060 acre-feet of ground water per year (12 percent water savings within CREP Area and 5 percent savings within entire Basin).
- Increase streamflows in streams associated with the CREP Area.
- Reduce energy consumption at all enrolled farms from reduced irrigation.
- Reduce the percentage of ground water test wells containing nitrogen levels above U.S. Environmental Protection Agency (USEPA) standards.

2.1.1 Acreage and Geographic Area

The proposed CREP Area is within the Subdistrict No. 1, which includes portions of Alamosa, Rio Grande, and Saguache Counties within the Rio Grande Basin (Figure 2-1). Under the Agreement, up to 40,000 acres of irrigated cropland would be enrolled in the program. There are approximately 163,000 acres of irrigated land within the total CREP Area (Figure 2-2). A Focus Area has also been established in Rio Grande County around certain streams in the Rio Grande Basin. Reducing irrigation and agricultural production in this area would provide the greatest benefit to the aquifer and increase streamflows; therefore, to maximize participation producers in the Focus Area would be eligible for additional financial incentives (discussed in Section 2.1.3). Within the Focus Area, there are approximately 16,000 acres of irrigated land. The Agreement has a goal of enrolling up to 6,000 acres within the Focus Area.

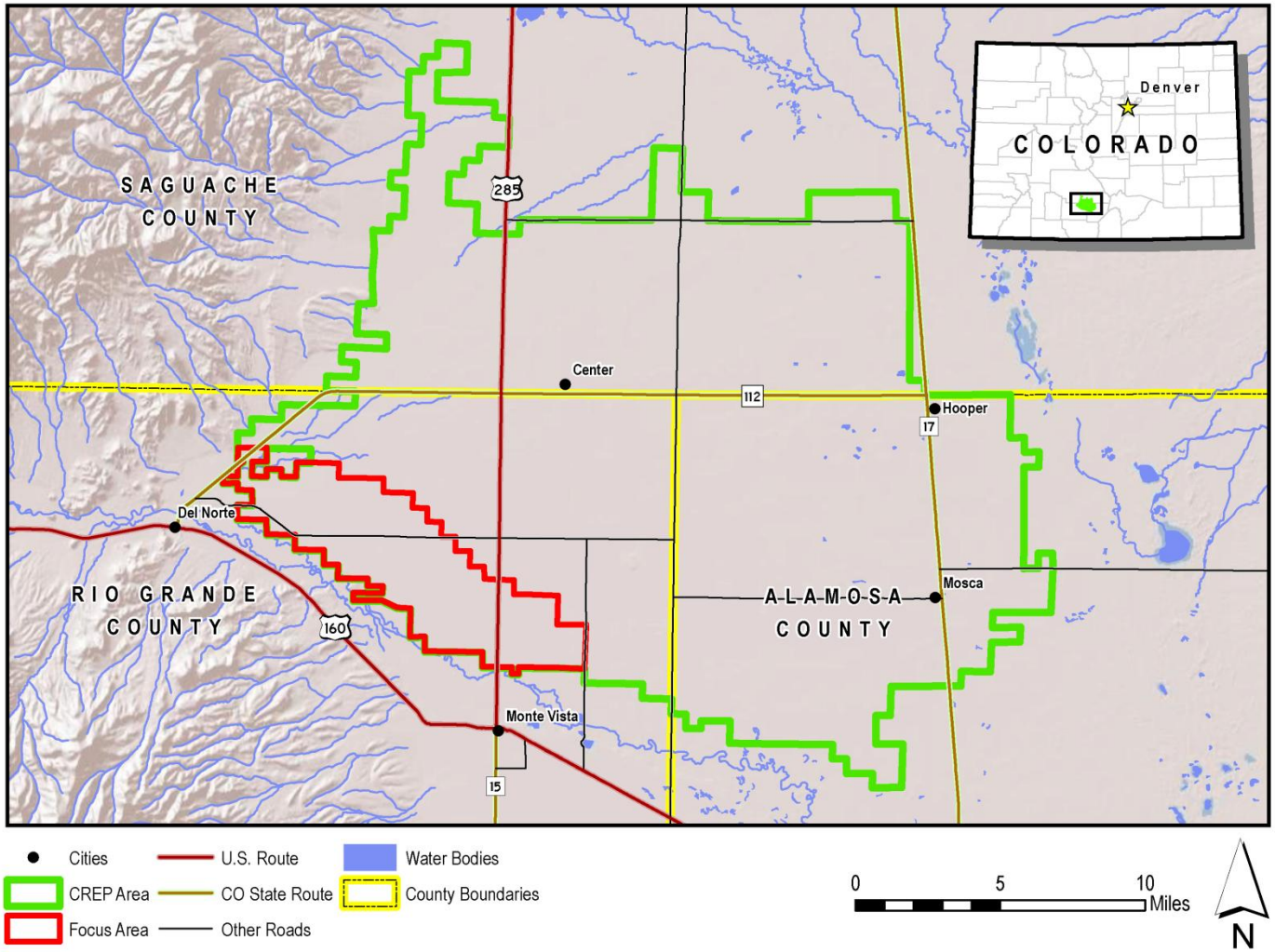


Figure 2.1-1 Proposed Rio Grande CREP Area

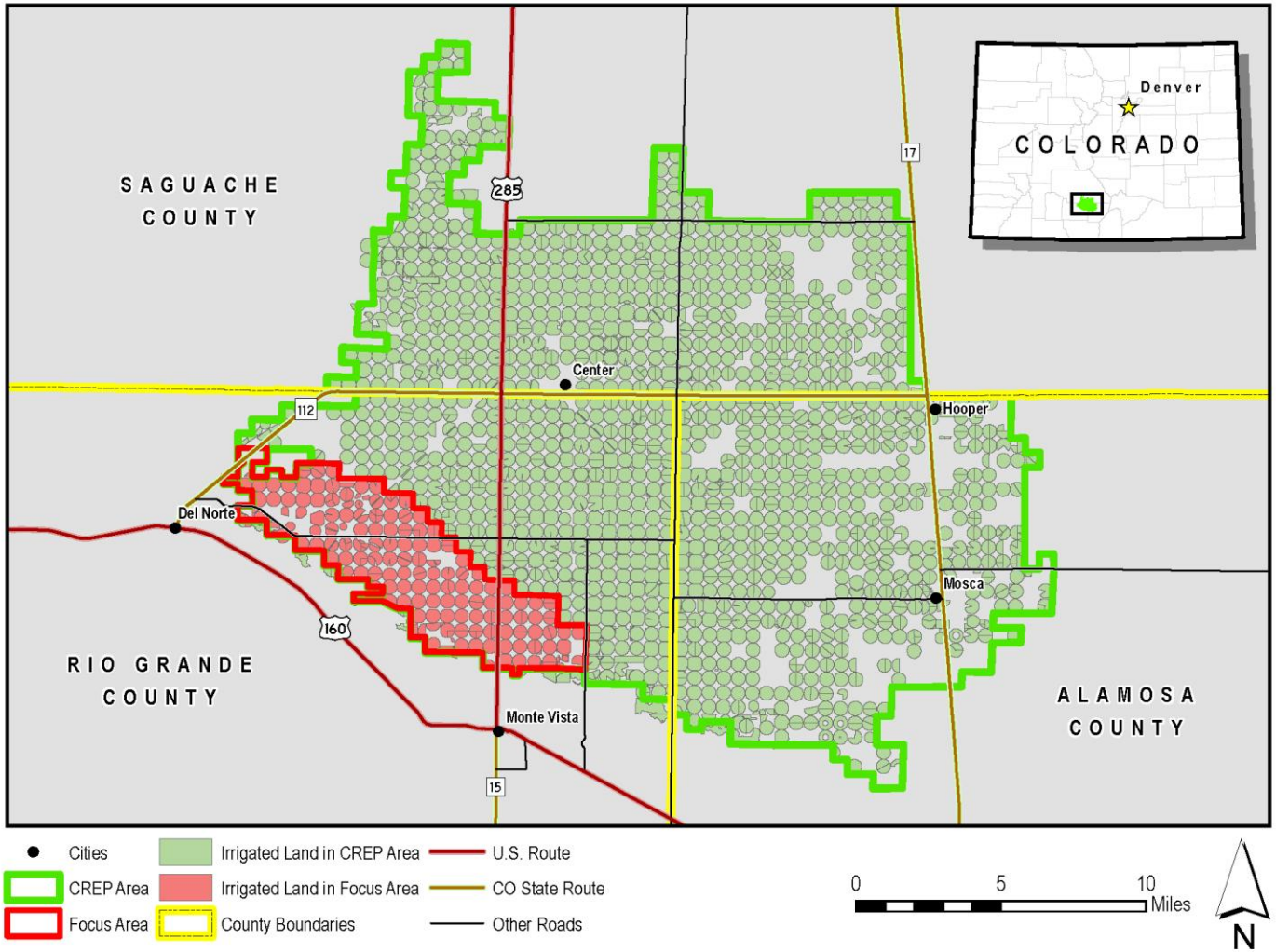


Figure 2.1-2 Irrigated Land within Rio Grande CREP Area

2.1.2 Conservation Practices

The approved CPs for the Rio Grande CREP Proposal are provided in Table 2.1-1. Also provided in Table 2.1-1 are the estimated acreages to be enrolled by practice. The actual acres enrolled and the CPs established would be determined by FSA and Natural Resources Conservation Service (NRCS) technical staff through an assessment of the best practice for a particular enrollment area. A full description of each practice can be found in FSA Handbook: *Agricultural Resource Conservation Program for State and County Offices* (2-CRP, Revision 5).

Table 2.1-1. Approved CPs for Rio Grande CREP

Practice	Brief Description/Purpose	Estimated Acreage to Be Enrolled
CP2, Native Grasses and Legumes	Establish new or maintain existing vegetative cover of native grasses that would enhance environmental benefits.	37,000
CP4D, Permanent Wildlife Habitat - Noneasement	Establish new or maintain existing permanent wildlife habitat cover to enhance environmental benefits for the wildlife of the designated or surrounding areas.	
CP9, Shallow Water Areas for Wildlife	Develop or restore shallow water areas to an average depth of 6 to 18 inches for wildlife. In the Rio Grande CREP Area, the shallow water area must provide a source of water for wildlife for a minimum of 4 months of the year. This CP must include an adequate buffer area of perennial vegetation to protect the water quality and provide wildlife habitat.	3,000
CP23, Wetland Restoration	Restore the functions and values of wetland ecosystems that have been devoted to agricultural use. This practice is applicable for eligible cropland within the 100-year floodplain of a permanent river or stream.	
CP23A, Floodplains Restoration	Restore the functions and values of wetland ecosystems that have been devoted to agricultural use. This practice is applicable for eligible cropland outside the 100-year floodplain or playa lakes.	
	Total	40,000

Preparation of lands for the installation of CPs may include the following approved actions as determined by FSA or NRCS technical staff:

- Planting of temporary vegetative cover;
- Application of nutrients, minerals, and seed;
- Application of approved herbicides and pesticides;
- Installation of permanent water source for wildlife;
- Grading, leveling, and filling;
- Planting of tree and shrub seedlings;
- Installation of animal damage control devices such as tree shelters, netting, and plastic tubes;
- Breaking tile (or thin layers of clay) to restore natural water flows;
- Installation of dams, levees, dugouts, or dikes, if needed to develop or restore shallow water areas; and

- Installation of structures designed to regulate flow such as pipe, chutes, and outlets.

Temporary irrigation during the first three years of enrollment in order to establish a viable grass stand would be allowed, but not to exceed 1.5 acre feet per acre total for the first three years. Also, in accordance with FSA National policy, maintenance of the CPs would be required for the duration of the contract as well as periodic management of the CPs as described in the Conservation Plan. The maintenance and management practices would be done to ensure the goals and benefits of the CP are being met.

2.1.3 Funding

The estimated cost for implementing the Rio Grande CREP is approximately $125 million, assuming all 40,000 acres are enrolled. Proposed funding sources would be 80 percent Federal funds and 20 percent non-Federal funds. Enrolled producers would enter into 14 or 15 year contracts that stipulate implementation of approved CPs to receive financial assistance in the form of one-time cost-share payments for the installation of CPs, cost-share payment for practice management, annual per acre rental payments, and incentive payments where applicable. Higher incentive payments are available for producers within the Focus Area. For CP9, CP23, and CP23A, producers would be eligible for Practice Incentive Payments (PIPs) in accordance with National policy.

Irrigated agricultural practices on the enrolled acres would be discontinued for at least the term of the contract. The water that was historically used to irrigate crops on enrolled lands would be retired. The producer may choose to retire their water rights for the duration of the contract or permanently. Higher incentive payments would be provided to those producers that permanently retire their water rights. For purposes of this PEA, it is estimated that no more than 25 percent of producers that enroll acres would permanently retire their water rights. Table 2.1-2 provides a summary of the potential financial incentives under the Rio Grande CREP.

Table 2.1-2. Summary of Financial Incentives for Rio Grande CREP[1]

	Non-Focus Area	Focus Area
Maximum Acres to Be Enrolled	34,000	6,000
Annual Rental Payment (per acre)[2]	$150	$160
Installation and Management of CPs[3]	Cost Share	Cost Share
CP9, CP23, and CP23A[3]	PIP	PIP
Focus Area Incentive Payment (one-time, per acre)	n/a	$100
Focus Area Seeding Incentive Payment (one-time, per acre)	n/a	50% cost share not to exceed $100
Temporary Retirement of Water Right (per acre)	$22	$33
Permanent Retirement of Water Right (per acre)[4]	$44	$66
Permanent Retirement of Water Right Incentive Payment (one-time, per acre)	$200	$200

Notes:

1 All retirement of water right payments and incentive payments (with the exception of PIPs) would be paid using non-Federal funds.

2 Annual rental payment for the Rio Grande CREP Area is estimated, this rate has not yet been finalized by FSA. An additional $10 per acre would be paid with non-Federal funds within the Focus Area.

3 Cost share assistance for installation and management of CPs and PIPs would be in accordance with National policy.

4 Per acre payments for permanent retirement of water right would be paid only for the duration of the contract.

2.2 NO ACTION

Under the No Action Alternative, the Agreement would not be implemented. CRP and other conservation programs would continue to be available for producers; however, the additional benefits of the proposed Agreement would not be realized. Conditions of the aquifer would continue to decline ultimately hindering long-term sustainability of the water supply in this area.

2.3 RESOURCES ELIMINATED FROM ANALYSIS

CEQ regulations (40 CFR 1501.7) state that the lead agency shall identify and eliminate from detailed study the issues which are not important or which have been covered by prior environmental review, narrowing the discussion of these issues in the document to a brief presentation of why they would not have a dramatic effect on the human or natural environment. In accordance with this regulation, the following resources have been eliminated from further analysis in this PEA:

Traffic and Transportation. Implementing the Agreement would not increase or decrease the demand for state-wide or local transportation nor would it have any effect on current traffic conditions.

Noise. Implementing the Agreement would not permanently increase ambient noise levels at or adjacent to the CREP Area. Increased noise levels associated with implementing or maintaining CPs would be minor, temporary, and similar to existing noise on active farms.

Human Health and Safety. Implementing the Agreement would not appreciably effect human health and safety. While installation of CPs would pose a safety risk, this risk would be the same if the land remained in active agricultural production.

Coast Zones/Coastal Barriers. As Colorado is a land-locked state, there are no coastal zones or coastal barriers within or near the proposed CREP Area.

Other Formally Classified Lands. The proposed CREP Area does not include any Wild and Scenic Rivers, National Natural Landmarks, Wilderness Areas, National Forests, National Parks, National Monuments, or National Grasslands. In addition, these areas would not be eligible for enrollment in CREP; therefore, the action does not have any potential to impact these types of areas.

2.4 EVALUATION OF ALTERNATIVES

A brief summary of the potential impacts for the Proposed Action and the No Action Alternative are provided in Table 2.4-1. Section 4.0 provides the full analysis for each of these resource areas.

Table 2.4-1 Evaluation of Alternatives

Resource Section	Alternative 1 (Preferred)	No Action Alternative
Biological Resources	• Short-term impacts to wildlife (in the form or disturbance or displacement) from construction activities associated with installing CPs are expected. • Long-term benefits to wildlife, including protected species, are expected from the increase and enhancement of wildlife habitat. • Improved water quality from the decrease in agricultural run-off would have a long-term positive impact to local fisheries as well as downstream. • Protected species would not be impacted. The site-specific evaluation would identify the presence of a protected species or critical habitat; consultation would occur with U.S. Fish and Wildlife Service (USFWS) or CPW as appropriate to ensure their protection.	• The additional long-term benefits to biological resources would not occur under the No Action Alternative. Producers would still be able to enroll lands in other conservation programs.
Water Resources	• Reducing irrigation in the CREP Area would have long-term beneficial impacts to ground water quantity and quality, and streamflows. • Reducing chemical inputs and nutrients in runoff would improve local surface water conditions. • CPs 9, 23, and 23A would directly improve or enhance wetlands and riparian areas.	• While producers would still be able to enroll lands in other conservation programs, the additional benefits to water resources from the Rio Grande CREP would not be realized. Agricultural production would continue to deplete ground water for irrigation, and degrade water quality and riparian habitats.
Soil Resources	• Establishing permanent cover would stabilize soils on enrolled acres and reduce erosion potential. Reducing erosion would also reduce sedimentation in nearby surface waters and improve water quality. • Temporary impacts to earth resources would occur during establishment of CPs from tilling and grading activities; however, this disturbance would be similar in nature to the existing agricultural disturbance. • No impacts to topography or geology are expected.	• Continuing active agricultural production would continue to routinely disturb soils and make the land susceptible to erosion. Producers would still be able to enroll lands in other conservation programs.
Cultural Resources	• No impact to cultural resources is expected to occur. • Site-specific evaluation would determine if an area has a higher potential to encounter an unknown cultural resource. Consultation with the State Historic Preservation Officer would occur as appropriate during the evaluation. • In accordance with FSA policy as found in 1-EQ, enrollment would not be approved if a cultural resource impact would occur.	• Continuing active agricultural production would not affect cultural resources.
Recreation	• Long-term benefits to water quality and improving wildlife habitats would have long-term beneficial impacts to recreation in the CREP Area.	• Continuing active agricultural production would not affect recreation in the CREP Area.

Resource Section	Alternative 1 (Preferred)	No Action Alternative
Socioeconomics	• Implementing the Rio Grande CREP would potentially provide up to $125 million to the local area in the form of annual rental payments, cost share, and incentives where applicable. • While a producer may likely incur a positive financial impact, those same positive impacts would not likely flow down to the local economy. Removing agricultural land from active production would have corresponding decreases in farm expenditures (seed, chemicals, equipment, etc.). • Conversely, it has been noted that decreasing the agricultural supply in an area could have corresponding increases in commodity prices.	• The No Action Alternative would not change the existing socioeconomic conditions.
Environmental Justice	• Almost all of Alamosa County within the proposed CREP Area is considered a low-income population. Removing large areas of active agricultural production for CREP in this county may have greater economic impacts to the low-income populations.	• Continuing active agricultural production would not represent an environmental justice concern.

CHAPTER 3 AFFECTED ENVIRONMENT

This chapter provides a description of the existing environment that could be affected by the proposed Agreement. Resource areas potentially affected and included in this analysis include:

- Biological Resources (Wildlife, Vegetation, and Special Status Species)
- Water Resources (Ground Water, Surface Water, Water Quality, and Wetlands)
- Earth Resources (Geology, Topography, and Soils)
- Cultural Resources
- Recreation
- Air Quality
- Socioeconomics
- Environmental Justice

3.1 BIOLOGICAL RESOURCES

Biological resources include plant and animal species and the habitats within which they occur. For this analysis, these resources are divided into three categories: wildlife, vegetation, and special status species. Vegetation and wildlife refer to the plant and animal species, respectively, both native and introduced, which characterize a region. Special status species are those species that are protected under federal or state laws.

The affected environment for biological resources is the area encompassed by the proposed Agreement as well as directly downstream from the area. The Agreement includes part of the following counties: Alamosa, Rio Grande, and Saguache.

3.1.1 Wildlife

Wildlife and fisheries refer to the animals and fish that inhabit the project area and the habitats in which they live. Fisheries include areas directly downstream from the CREP Area. CPW has legal authority over Colorado's fish and wildlife, which includes a total of 960 native species of mammals, birds, fish, reptiles, amphibians, mollusks, and crustaceans. Approximately 186 species are pursued recreationally through activities such as hunting and fishing, and are classified as game species. Non-game species are also of interest for uses such as nature study, photography, and bird watching. Colorado manages wildlife at the species, subspecies, and population level, as well as managing the various habitats important to them (CDW 2005).

The rich and diverse wildlife community in the Rio Grande Basin includes 19 amphibians and reptiles, over 260 bird species, and approximately 32 mammals (CDWR 2009a). Common amphibian and reptiles found in the project area includes the western chorus frog (*Pseudacris triseriata*), plains spadefoot (*Spea bombifrons*), western terrestrial garter snake (*Thamnophis elegans*), and fence lizard (*Sceloporus undulatus*) (NDIS 2012). Many of the amphibian and reptile species would be found in the various wetland areas located throughout the project area, or along the Rio Grande on the southern boundary of the area.

Numerous birds species are found throughout the CREP Area, including a wide variety of wetland-dependent species. The Rio Grande Basin is the most important duck breeding area in Colorado. Additionally, the nest densities of some waterfowl species have been shown to be higher than any other major duck producing habitat in the U.S. (CDWR 2009a). Dabbling ducks comprise over 90% of the breeding and molting duck population, with mallards (*Anas platyrhynchos*) making up approximately one third of this population. In addition to ducks, other important waterfowl in the region include sandhill cranes (*Grus canadensis*). The Rocky Mountain population of sandhill cranes migrate through the Rio Grande Basin every spring and fall with up to 20,000 cranes making the migration (CDWR 2009a).

The most common large mammal that would occur in the CREP Area is the mule deer (*Odocoileus hemionus*). Common predators include coyotes (*Canis latrans*) and red fox (*Vulpes vulpes*). Numerous small mammals found in the project area include Colorado chipmunk (*Tamias quadrivittatus*), deer mouse (*Peromyscus maniculatus*), desert cottontail (*Sylvilagus audubonii*), and western harvest mouse (*Reithrodontomys megalotis*) (NDIS 2012).

While there are few streams or rivers that occur within the CREP Area, the Rio Grande occurs immediately south of the area. Within this waterbody, numerous fish species are present. Common species include red shiner (*Cyprinella lutrensis*), fathead minnow (*Pimephales promelas*), and longnose dace (*Rhinichthys cataractae*) (Natureserve 2012).

Many of the species within the project area have responded to the changes brought on by settlement and agricultural development. The changes from a true high elevation desert consisting of numerous wetlands to an area with intensive ground water pumping for agricultural production have had significant impacts on the wildlife population in the area. Some changes have enhanced habitat as a staging or stop-over area for migrating birds (e.g. sandhill cranes) by creating a readily available food supply. However, irrigated agriculture has had a significant change on streamflows in rivers and streams and has reduced or eliminated many significant wetland complexes. The depletion of the aquifer has reduced or eliminated wetlands which has affected shorebird and waterfowl habitat (CDWR 2009a).

3.1.2 Vegetation

Ecoregions are defined as areas of relatively homogenous ecological systems that contain similar soils, vegetation, climate, and geology. North America is divided into four levels of ecoregions and these ecoregions are further divided into divisions and provinces. The proposed CREP Area is within the Dry Domain Ecoregion, Temperate Steppe Division, and Great Plains-Palouse Dry Steppe Province (Bailey 1995). The CREP Area is located in an “island” of the Temperate Steppe Division and Great Plains-Palouse Dry Steppe Province as it is within the San Luis Valley. On all sides of the CREP Area, the habitat changes to Temperate Desert Division and Southern Rocky Mountain Steppe Province.

A Dry Domain Ecoregion is defined as an area where annual losses of water through evaporation at the earth’s surface exceed annual gains from precipitation. Due to the resulting water deficiency, no permanent streams originate in this ecoregion (USFS 2012). Vegetation native to this domain includes a variety of species adapted to low precipitation conditions.

The Temperate Steppe Division is defined as areas with a semiarid climatic regime in which evaporation usually exceeds precipitation. Summers are warm to hot and winters are cold and dry. Vegetation is typically shortgrass prairie and semi desert and typical steppe vegetation consists of shortgrass species with scattered shrubs and low trees. Groundcover is typically sparse and soil is usually exposed. Trees are not typically present (Bailey 1995).

Within the Great Plains-Palouse Dry Steppe Province, the area is further divided into Sections. The CREP Area is located within the North Rio Grande Basin Section. The landforms in this Section include valley, lowland, and elevated plains and hills. Elevations range from 6,875 to 8,800 feet (2,100 to 2,680 meters). Precipitation ranges from 6 to 20 inches annually with less than half of the precipitation falling during winter. Temperature averages 39 to 57 degrees Fahrenheit. The growing season of this Section ranges from 100 to 140 days. Vegetation in this Section consists primarily of grasses, forbs, and shrubs. Common grasses include grama (*Bouteloua* spp.), galleta (*Pleuraphis* spp.), and sand dropseed (*Sporobolus cryptandrus*). The most common shrubs include sagebrush (*Artemisia* spp.) and rabbitbrush (*Chrysothamnus* spp.) (USFS 1994).

Within the CREP Area, the rangeland vegetation is extremely diverse and can be categorized into 13 separate habitats: Loamy Foothills, Rocky Foothills, Basalt Hills, Limy Bench, Mountain Outwash, Alkali Overflow, Salt Flat, Salt Meadow, Wet Meadow, Sand Hammock, Sandy Bench, Valley Sand, and Deep Sands. Portions of the natural vegetation in the San Luis Valley consist of deep rooted plants (phreatophytes) and plants adapted to living in dry conditions (xerophytes). Within the CREP Area, there are also numerous wetland types. These wetlands provide an important habitat for numerous species of wildlife in the region. Areas around perennial sources of water are often dominated by cottonwoods (*Populus* spp.) and willow species (*Salix* spp.). Native grasses, shrubs, and forbs are common in the understory of these areas. On upland sites, greasewood (*Sarcobatus vermiculatus*) and rabbitbrush with sparse stands of alkali sacaton (*Sporobolus airoides*) and inland saltgrass (*Distichlis spicata*) are the most common plants (CDWR 2009a).

Within the CREP Area, 10 species of invasive or noxious weeds have been mapped (Table 3.1-1) (Colorado Department of Agriculture 2012). Most of these plants originated in Europe or Asia and were introduced accidentally or were planted as ornamentals that have escaped. Invasive or non-native plants can spread at alarming rates and can displace native plant populations because the insects, diseases, or animals that would normally control them are not found in North America.

Table 3.1-1. Invasive Species Located within the CREP Project Area	
Common Name	**Scientific Name**
Whitetop	*Cardaria draba*
Nodding plumeless thistle	*Carduus nutans*
Russian knapweed	*Acroptilion repens*
Canadian thistle	*Cirsium arvense*
Field bindweed	*Convolvulus arvensis*
Russian olive	*Elaeagnus angustifolia*
Broadleaved pepperweed	*Lepidium latifolium*
Butter and eggs	*Linaria vulgaris*
Eurasian watermilfoil	*Myriophyllum spicatum*
Saltcedar	*Tamarix ramosissima*

3.1.3 Special Status Species

Special status species refer to those species that are protected under the ESA or similar State laws. If associated with a Federally protected species, habitat is designated by the USFWS as critical habitat since it is essential for the recovery of the species. Like those species, critical habitat is also protected by the ESA.

Within the CREP Area, the USFWS has identified 9 threatened or endangered species that may occur or be impacted by actions in the area. Additionally, there are 5 species that are listed as candidate species. The threatened, endangered, and candidate species are presented in Table 3.1-2 below (USFWS 2012).

Table 3.1-2. Federally Listed Species Potentially Occurring in the Project Area.			
Common Name	**Scientific Name**	**Status**	**Potential Occurrence in Project Area?**
Gunnison sage-grouse	*Centrocercus minimus*	Candidate	Yes
Mexican spotted owl	*Strix occidentalus lucida*	Threatened	No
Southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered	Yes
Yellow-billed cuckoo	*Coccyzus americanus*	Candidate	Yes
Bonytail chub	*Gila elegans*	Endangered	No
Colorado pikeminnow	*Ptychocheilus lucius*	Endangered	No
Greenback cutthroat trout	*Oncorhynchus clarki spp. Stomias*	Threatened	No
Humpback chub	*Gila cypha*	Endangered	No
Razorback sucker	*Xyrauchen texanus*	Endangered	No
Rio Grande cutthroat trout	*Oncorhynchus clarki virginalis*	Candidate	Yes
Uncompahgre fritillary butterfly	*Boloria acrocnema*	Endangered	No
Black-footed ferret	*Mustela nigripes*	Experimental population, non-essential	No
Canada lynx	*Lynx canadensis*	Threatened	No
Gunnison's prairie dog	*Cynomys gunnisonii*	Candidate	Yes
North American wolverine	*Gulo gulo luscus*	Candidate	No

Of the species listed in Table 3.1-2, suitable habitat is present for only five of the species. The Mexican spotted owl requires mature or old-growth forests that occur in dense stands. This habitat is lacking in

the CREP Area. The bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker are found in the Colorado River and its tributaries. While these species do not occur in the CREP Area, water depletion activities in the region may impact them. The Uncompahgre fritillary butterfly only occurs at high elevations above 12,400 feet. Black-footed ferrets depend almost exclusively on prairie dogs as a food source and use its burrows for shelter and denning. No known populations occur in the CREP Area. Both the Canada lynx and wolverine require deep, persistent snow cover and are typically found in high elevation forests. Habitat for either does not exist in or near the CREP Area (USFWS 2012).

The Gunnison sage grouse requires a variety of habitats such as large expanses of sage with a diversity of grasses and forbs and healthy riparian ecosystems. This species is highly dependent on sagebrush as a source of food. In the fall and winter months the leaves of sagebrush is one of its only foods. Housing and human development, livestock grazing, water diversion projects, and increased deer and elk populations have all contributed to the loss of habitat for the Gunnison Sage-grouse (CDW 2010). This species was listed as a candidate under the ESA in 2010.

The southwestern willow flycatcher breeds in relatively dense tree and shrub communities associated with rivers, lakes, reservoirs, and certain wetlands. The southwestern willow flycatcher is known to breed in areas of the San Luis Valley. Loss and modification of riparian habitat and nest parasitism by brown-headed cowbirds (*Molothrus ater*) are the two primary causes of decline for this species. Diversion of water, groundwater pumping, dam construction, and re-channelization and alteration of riparian habitat have impacted nearly 90% of the historical range of this species. It was listed as endangered under the ESA in 1995 (CDWR 2009a).

The yellow-billed cuckoo also occurs primarily in riparian and some wetland habitats within the San Luis Valley. Declines in this species numbers are primarily due to human impacts on mature cottonwoods and willows in the riparian habitat and deforestation in its tropical winter range. This species is currently listed as a candidate species (CDWR 2009a).

The Rio Grande cutthroat trout is listed as a candidate species under the ESA. This subspecies is presumed to have occurred in the colder reaches of the Rio Grande drainage in Colorado and New Mexico. Habitat in Colorado included many streams and rivers in the Rio Grande system above 7,200 feet elevation. The decline of this species is primarily due to habitat degradation and competition with non-native trout that have been introduced into the system. Detrimental habitat alteration has occurred from improper livestock grazing, logging, irrigation, dewatering of streams, and siltation. Water temperatures have also increased over time due to man's hydrological modifications, negatively impacting the species habitat and ability to reproduce (CDWR 2009a).

The State of Colorado also lists and protects rare species in Colorado. These designations include endangered, threatened, and species of special concern. Within or near the CREP Area, 26 species that are protect by the State potentially occur (Table 3.1-3) (CDW 2011). These include two amphibians, 11 birds, eight fish, four mammals, and one reptile. Nine of these are also listed under the ESA as threatened, endangered, or candidates. While no plant species listed under the ESA are located within the CREP Area, 24 have a rank of S1 (critically imperiled) or S2 (imperiled) within the Alamosa-Trinchera watershed (Natureserve 2012).

Table 3.1-3. State Listed Species Potentially Occurring in the CREP Area		
Common Name	**Scientific Name**	**State of Colorado Status**
Boreal toad	*Bufo boreas boreas*	Endangered
Northern leopard frog	*Rana pipiens*	Species of Special Concern
Southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered
Bald eagle	*Haliaeetus leucocephalus*	Species of Special Concern
Mexican spotted owl	*Strix occidentalis lucida*	Threatened
Burrowing owl	*Athene cunicularia*	Threatened
Greater sandhill crane	*Grus canadensis tabida*	Species of Special Concern
Ferruginous hawk	*Buteo regalis*	Species of Special Concern
Gunnison sage grouse	*Centrocercus minimus*	Species of Special Concern
American peregrine falcon	*Falco peregrinus anatum*	Species of Special Concern
Western snowy plover	*Charadrius alexandrinus*	Species of Special Concern
Long-billed curlew	*Numenius americanus*	Species of Special Concern
Bonytail chub	*Gila elegans*	Endangered
Razorback sucker	*Xyrauchen texanus*	Endangered
Humpback chub	*Gila cypha*	Threatened
Colorado pikeminnow	*Ptychocheilus lucius*	Threatened
Rio Grande sucker	*Catostomus plebeius*	Endangered
Rio Grande chub	*Gila pandora*	Species of Special Concern
Rio Grande cutthroat trout	*Oncorhynchus clarki virginalis*	Species of Special Concern
Canada lynx	*Lynx canadensis*	Endangered
Townsend's big eared bat	*Corynorhinus townsendii pallescens*	Species of Special Concern
Botta's pocket gopher	*Thomomys bottae rubidus*	Species of Special Concern
Northern pocket gopher	*Thomomys talpoides macrotis*	Species of Special Concern
Midget faded rattlesnake	*Crotalus viridis concolor*	Species of Special Concern

3.2 WATER RESOURCES

For this analysis, water resources include groundwater, surface water, water quality, and wetlands. The Clean Water Act, the Safe Drinking Water Act, and the Water Quality Act are the primary Federal laws that protect the nation's waters including lakes, rivers, aquifers, and wetlands. In addition, the states of Colorado, New Mexico, and Texas are party to the Rio Grande Compact, which governs the use of waters of the Rio Grande and its tributaries.

3.2.1 Ground Water

The predominant source of groundwater supply within the Rio Grande Basin is below the San Luis Valley within two aquifers, the Unconfined and the Confined Aquifers (CDPH 2011). Table 3.2-1 provides the irrigated cropland acres within the counties contained in the CREP Area and the most current data on the amount of water applied for irrigation. The data shown in the table is for the entire county, not just the CREP Area. These data were compiled from the Estimated Use of Water in the U.S., a series of reports that are compiled by U.S. Geological Survey (USGS) every five years (2005 is the most current data available). Over 1.6 million acre-feet of water (surface water and groundwater) was used for irrigation in all of the CREP counties in 2005.

Table 3.2-1 Annual Irrigation in Rio Grande CREP Counties (2005)				
County	Irrigated Cropland Acres	Annual Irrigation (acre-feet)		
		Groundwater	Surface Water	Total
Alamosa	112,490	256,137	44,022	300,159
Rio Grande	135,690	220,209	595,049	815,258
Saguache	118,600	392,933	176,053	568,986
Total	366,780	869,280	815,123	1,684,403

Source: USGS 2005

Wells within Colorado not only irrigate over 2 million acres of cropland, but also provide municipal, domestic, commercial, and livestock water supply (CDWR 2009a). The Interbasin Compact Committee has determined that the Rio Grande Basin is "over appropriated' and has been since the 1890s (CWCB 2009).

Table 3.2-2 provides the number of completed wells through 2009 in each CREP county as well as the number of those wells with irrigation designated as the major use.

Table 3.2-2 Completed Wells in CREP Counties (2009)		
County	Total Number of Completed Wells	Irrigation Designated as Major Use
Alamosa	5,344	1,460
Rio Grande	5,200	1,456
Saguache	4,400	1,326
Total	**14,944**	**4,242**

Source: CDWR 2009b

3.2.2 Surface Water

The Rio Grande Basin covers 7,500 square miles. The Rio Grande and its tributaries collect the runoff from mountains located to the west and south. The headwaters are located in Hinsdale County, just east of the Continental Divide. Rainfall average in the central part of the basin is 6 to 9 inches per year. Rainfall in the higher mountain elevations in the form of snow ranges from 40 to 60 inches annually. The snow melt is the major source of surface water flows (CDPH 2011). Over 815,000 acre-feet of surface water was used for irrigation purposes within the CREP counties in 2005 (see Table 3.2-1).

Surface waters can be affected by sediment. Sediment is the term used to describe soil particles that can be transported by stormwater runoff, wind, or water currents. Exposed soils are vulnerable to wind and water erosion, thereby increasing the sediment load in nearby surface waters. Transported sediments may also contribute to degraded water quality if those sediments are contaminated or carry chemicals. Increased sediments in surface water also remain suspended in water, creating turbidity which affects plants and organisms living in lakes, rivers, and streams.

3.2.3 Water Quality

The USGS National Water Quality Assessment (NAWQA), conducted from 1992 to 1995, of the Rio Grande Basin detected a variety of chemicals used in human activities in ground-water samples from shallow wells (located within the top 10 to 15 feet of the water table). Chemicals detected included pesticides and volatile organic compounds (VOCs). Samples recorded from deeper ground water

underlying the Rio Grande flood plain, which is more typically used as a drinking-water source, contained one pesticide and nitrates.

The NAWQA study detected no pesticide concentrations in surface water that exceeded USEPA drinking-water standards or applicable Federal or State ambient criterion or guidelines. One or more pesticides were detected at 94 percent of the sites sampled in the Rio Grande, its tributaries, or drainages; most concentrations, however, were at or only slightly above the laboratory level of detection (Levings et al. 1998). There was no more current information available on water quality.

3.2.4 Wetlands

Wetlands are broadly considered "waters of the U.S." and are defined by the U.S. Army Corps of Engineers (USACE) as areas that are inundated and saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (USACE 1987).

Generally, wetlands in south central Colorado typically consist of riparian wetlands and playa lakes. Riparian wetlands are associated with moving water and are seasonally flooded. They generally occur as complexes of forested, scrub shrub, and emergent wetlands that are interspersed with uplands.

Playa lakes are shallow, depressional wetlands that hold water following rainstorms but eventually dry up, resulting in temporary or seasonal wetlands. They are generally round and average about 17 acres in size. Open water or wet meadow communities can occur in and around playa lakes. Because of their isolated nature, playa lakes are not considered navigable waterways and therefore are not regulated by the USACE.

3.3 SOIL RESOURCES

For the purposes of this PEA, soil resources are defined as underlying geology, topography, and soils. Topography describes the elevation and slope of the terrain, as well as other visible land features. Soils are defined as the unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants (NRCS 2012a). Soils are included in this PEA because implementation of the CPs associated with the Proposed Action could impact soil resources within Subdistrict No. 1.

3.3.1 Geology and Topography

Subdistrict No. 1 is located in the southwestern portion of the San Luis Valley, in south central Colorado. The valley is a great lowland about 150 miles long and 50 miles wide at its widest, and is bordered on the east by the linear Sangre de Cristo Range and on the west by the eastern portion of the San Juan Mountains (Upson 1971). The San Luis Valley has been divided into physiographic subdivisions. The Proposed Action would occur within the Alamosa Basin.

The Alamosa Basin is roughly triangular shaped and bordered on the west by the San Juan Mountains and on the northeast by the Sangre de Cristo Range. The southeast side is incompletely marked by the Sangre de Cristo Range and partly by the San Luis Hills. Between these hills and the southwest end of the Sangre de Cristo Range is a low, nearly flat area across which the Alamosa Basin merges imperceptibly

with two of the other physiographic subdivisions of the area: the Costilla Plains and the Culebra reentrant (Upson 1971).

The Alamosa Basin is predominately flat, with a nearly featureless floor. Most of the valley floor slopes inward on all sides toward the lowest portion near the eastern margin. On the east side, there are numerous alluvial fans. Streams entering the Alamosa Basin from the west are much longer and have more extensive drainage basins in the San Juan Mountains and have developed much broader and more gently sloping alluvial fans. The Alamosa Basin is essentially an area of alluvial deposition (Upson 1971).

3.3.2 Soils

Soils within Subdistrict No. 1 are predominately from alluvial deposits. Eight major soil series occur within Alamosa, Rio Grande, and Saguache counties. These are listed and briefly described in Table 3.3-1, below.

Table 3.3-1 Soils within Subdistrict No. 1

Soil Series	Description
Alamosa	Consists of deep, poorly to somewhat poorly drained soils that formed in moderately fine-textured mixed alluvium. Alamosa soils are on alluvial flood plains, old lake basins, or alluvial fans with slope gradients of 0 to 6 percent.
Costilla	Consists of very deep, somewhat excessively drained soils that formed in wind-reworked sandy alluvium derived from granite, gneiss, and mica schist. Costilla soils are on alluvial fans, alluvial flats, valley side slopes, and wind reworked portions of terraces. Slopes range from 0 to 20 percent.
Garita	Consists of deep, well drained soils that formed in thick calcareous very gravelly medium to moderately fine textured sediments from basalt. Garta soils are on alluvial fans and valley filling side slopes and have slopes from 0 to 25 percent.
Gunbarrel	Consists of deep, somewhat poorly drained soils formed in wind reworked alluvium from volcanic rocks containing dominant amounts of dark gray and red volcanic mixed grains. Gunbarrel soils are on floodplains, terraces, and low alluvial fans. Slopes are 0 to 3 percent.
Medano	Consists of deep, poorly drained soils formed in mixed alluvium. They are on flood plains and the lower ends of alluvial fans with slopes of 0 to 6 percent.
Mosca	Consists of very deep, well drained soils that formed in alluvium derived from igneous and metamorphic rock. Mosca soils are on alluvial flats, alluvial fans, or alluvial terraces and have slopes of 0 to 4 percent.
Norte	Consists of deep, moderately well drained to somewhat poorly drained soils that formed in calcareous moderately coarse textured alluvium overlying beds of sand and gravel. Norte soils are on terraces and fans and have slopes of 0 to 2 percent.
San Luis	Consists of deep, somewhat poorly drained soils that formed in alluvium from basalt. San Luis soils are on floodplains or valley floors and have slopes of 0 to 4 percent.

Source: NRCS 2012b.

3.4 Cultural Resources

Cultural resources are prehistoric or historic sites, buildings, structures, objects, or other physical evidence of human activity or natural landscapes that are considered important to a culture or community for scientific, traditional, religious, or other reasons.

Section 106 of the National Historic Preservation Act of 1966, as amended, and as implemented by 36 CFR Part 800, requires federal agencies to consider the effects of their action on historic properties

before undertaking a project. A historic property is defined as any cultural resource that is included in, or eligible for inclusion in, the National Register of Historic Places (NRHP). The NRHP, administered by the National Park Service, is the official inventory of cultural resources that are significant in American history, prehistory, architecture, archaeology, engineering, and culture.

The area for the proposed Rio Grande CREP contains one historic property included in the NRHP. The Howard Store in Alamosa County, which is currently utilized as the Hooper Town Hall, is a late 19th Century architectural resource (NPS 2006). There are no other historic properties that are included in, or eligible for inclusion in the NRHP in the CREP Area.

3.5 RECREATION

Recreation includes those outdoor activities that take place away from the residence of the participant. Colorado offers a wide variety of recreational opportunities to its residents. Recreational activities that are common in Colorado include hunting, fishing, wildlife viewing, camping, skiing, boating, hiking, and biking. For this PEA, recreation focuses on hunting, fishing, and wildlife viewing opportunities available to the public in the Rio Grande Basin of Colorado.

Hunting and fishing in Colorado are regulated by CPW. CPW establishes hunting seasons and bag limits for game and fish species throughout the state, and controls the distribution of hunting and fishing licenses.

Types of game that can be hunted in Colorado include big game, small game, and birds. Big game species in the state include deer, elk, pronghorn, moose, bear, and mountain lion (CPW 2012a). Small game species in Colorado include various squirrel, rabbit, fox, prairie dog, fox, skunk, and weasel, as well as beaver, bobcat, snapping turtle, coyote, marmot, prairie rattlesnake, badger, mink, pine marten, raccoon, ring-tailed cat, opossum, and muskrat. Types of birds that can be hunted in Colorado include band-tailed pigeon, chukar, crow, European starling, greater prairie-chicken, pheasant, sandhill crane, and turkey, along with various dove, sparrow, grouse, duck, goose, coot, merganser, and quail (CPW 2011). Fishable species in Colorado include arctic char, grayling, walleye, saugeye, sauger, yellow perch, tiger muskie, northern pike, bullhead, whitefish, speckled dace, sculpin, along with various, trout, salmon, bass, catfish, crappie, bluegill, and sunfish (CPW 2012b).

Areas available for public hunting in Colorado are mostly limited to state and federally owned lands. Some private lands are made available to the public for hunting through CPW's Walk-in Access Program. The CREP Area includes approximately 3,534 acres of State Trust Lands, as well as 800 acres of Bureau of Land Management public domain land. There are no State Wildlife Areas, State Parks, or Walk-in Access lands within the CREP Area.

3.6 AIR QUALITY

Air quality is the ambient air concentration of specific criteria pollutants determined by the USEPA to be of concern to the health and welfare of the public. These criteria pollutants include ozone (O_3), carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), particulate matter less than 10 microns in diameter (PM_{10}), and lead. The federal government has established ambient air quality standards (National Ambient Air Quality Standards [NAAQS]) for several

criteria pollutants (USEPA 2012a). These standards identify the maximum allowable concentrations of criteria pollutants that regulatory agencies consider safe, with an additional adequate margin of safety to protect human health and welfare.

Section 176(c) of the 1990 Clean Air Act Amendments contains the General Conformity Rule (40 CFR §§ 51.850-860 and 40 CFR §§ 93.150-160). The General Conformity Rule (updated 24 March 2010) requires any federal agency responsible for an action in a nonattainment or maintenance area to determine that the action conforms to the applicable State Implementation Plan (SIP) (USEPA 2010). Emissions of attainment pollutants are exempt from conformity analysis. Actions would conform to a SIP if their annual direct and indirect emissions would remain less than the applicable *de minimis* thresholds. Formal conformity determinations are required for any actions that would exceed these thresholds.

Greenhouse gases (GHGs) are pollutants of concern for air quality and climate change. GHGs include water vapor, carbon dioxide (CO_2), methane, nitrogen oxides, O_3, and several chlorofluorocarbons. The largest source of CO_2 emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. Total GHG emissions from a source are often expresses as a CO_2 equivalent.

GHG emissions for an action can be inventoried, based on methods prescribed by state and federal agencies. However, the specific contributions of a particular project to global or regional climate change generally cannot be identified based on existing scientific knowledge, because individual projects typically have a negligible effect. Also, climate processes are understood at only a general level.

The project area attains the NAAQS standards for all criteria pollutants (USEPA 2012b). The general conformity requirements and thresholds only apply to criteria pollutants in the Region of Influence (ROI) which are in nonattainment or maintenance of the NAAQS.

3.7 SOCIOECONOMICS

For the purposes of this PEA, socioeconomics includes investigations of farm and non-farm employment, income, and farm production expenses and returns. Data that is presented in this section is for Alamosa, Rio Grande, and Saguache counties. These three counties are considered the ROI for this socioeconomics analysis.

3.7.1 Non-Farm Employment and Income

The civilian labor force within the ROI grew from 15,773 in 2000 to 18,876 in 2010 (Colorado Department of Employment and Labor 2012). Non-farm employment provided 8,823 jobs in the ROI in 2009 (USCB 2012a). Unemployment rates within the ROI are variable by county, with Alamosa having the lowest unemployment rate of 7.8 percent in 2010 to Saguache with the highest unemployment rate of 9.5 percent. For comparison, Colorado as a whole had an unemployment rate of 8.9 percent in 2010 (Colorado Department of Employment and Labor 2012). Median household income within the ROI was substantially lower than that of Colorado ($56,456), and ranged from $30,430 in Saguache County to $39,871 in Rio Grande County (USCB 2012a).

3.7.2 Farm Employment and Income

In 2007, there were 3,820 farm workers on 948 farms within the ROI. In 2007, 774 farms within the ROI had sales of less than $250,000 classifying them as small farms, while 174 farms had sales over $250,000 classifying them as large farms. Realized net farm income was $84.8 million in 2007 within the ROI. Total government payments to farms within the ROI totaled approximately $2.06 million in 2007. Government payments showed a minor increase from 2002 when farms in the ROI received $2.04 million in government payments (NASS 2012).

3.7.3 Farm Production Expenses and Returns

Table 3.7-1 displays labor expenses, total production expenses and labor as a percent of total production expenses for farms in the ROI for 2002 and 2007. In 2007, total farm production expenses were approximately $194 million within the ROI, which was an increase of 10.2 percent from 2002 ($176 million). Based on 2007 acreage in active farm production (642,809 acres), the average cost per acre within the ROI was $104.30. Using 2007 cropland, the cost per acre of agricultural chemical inputs was $18.35.

Table 3.7-1. Farm Labor as a Percentage of Total Production Expenses

Area	2002				2007			
	Hired Farm Labor Expenses ($000)	Contract Labor Expenses ($000)	Total Production Expenses ($000)	Labor as a Percent of Total Production Expenses ($000)	Hired Farm Labor Expenses ($000)	Contract Labor Expenses ($000)	Total Production Expenses ($000)	Labor as a Percent of Total Production Expenses ($000)
Alamosa County	12,342	837	62,157	21.2%	14,806	754	66,916	23.3%
Rio Grande County	8,423	756	53,789	17.1%	7,260	1,393	57,782	15.0%
Saguache County	10,350	1,963	60,308	20.4%	9,892	5,339	69,505	21.9%
Total	**31,115**	**3,556**	**176,254**	**19.7%**	**31,958**	**7,486**	**194,203**	**20.3%**

Source: NASS 2012

Table 3.7-2 shows information on 2007 per farm expenses and profits, by county. On average, farms in the ROI were profitable in 2007; per farm average net income (profit) was $91,578. Returns on investment averaged 42 cents of profit per dollar of expense.

Table 3.7-2. Per Farm Production Expense, Profits, and Return Per Dollar of Expenditure

Area	Per Farm Production Expense ($)	Per Farm Net Income ($)	Net Income Per $ of Expenditure
Alamosa County	211,760	90,559	0.43
Rio Grande County	148,159	78,479	0.53
Saguache County	287,213	105,697	0.37
ROI Average	215,711	91,578	0.42

Source: USDA 2007

Table 3.7-3 shows the average value of land and buildings and the average value of machinery and equipment per farm within each of the counties in the ROI. The largest and most valuable farms in the ROI are located in Saguache County. Alamosa County farms have the lowest land and building value in the ROI but have higher valued farm machinery and equipment than farms in Rio Grande County.

Table 3.7-3. Average Value of Land and Buildings, and Machinery and Equipment, per Farm

Area	Average Farm Size (Acres)	Average Value of Land and Buildings ($ per Farm)	Average Value of Machinery and Equipment ($ per Farm)
Alamosa County	559	885,117	176,243
Rio Grande County	459	1,017,331	170,005
Saguache County	1,187	1,550,458	252,425

Source: NASS 2012

3.8 ENVIRONMENTAL JUSTICE

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires a Federal agency to "make achieving environmental justice part of its mission by identifying and addressing as appropriate, disproportionately high human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." A minority population can be defined by race, by ethnicity, or by a combination of the two classifications.

According to CEQ, a minority population can be described as being composed of the following groups: American Indian or Alaska Native, Asian or Pacific Islander, Black, not of Hispanic origin, or Hispanic and exceeding 50 percent of the population in an area or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population (CEQ 1997). The U.S. Census Bureau (USCB) defines ethnicity as either being of Hispanic origin or not being of Hispanic origin. Hispanic origin is further defined as "a person of Cuban, Mexican, Puerto Rican, South or Central America, or other Spanish culture or origin regardless of race" (USCB 2001).

Each year the USCB defines the national poverty thresholds, which are measured in terms of household income and are dependent upon the number of persons within the household. Individuals falling below the poverty threshold are considered low-income individuals. USCB census tracts where at least 20 percent of the residents are considered poor are known as poverty areas (USCB 1995). When the percentage of residents considered poor is greater than 40 percent, the census tract is considered an extreme poverty area.

The ROI includes Alamosa, Rio Grande, and Saguache counties; each of these counties makes up a portion of Subdistrict No. 1. Subdistrict No. 1 covers three main Census Tracts: Tract 9600 (Alamosa County); Tract 9770 (Rio Grande County); and Tract 9777 (Saguache County). Census Tracts are broken down into smaller geographic units, Census Block Groups and Census Blocks, and those geographic areas within Subdistrict No. 1 are also discussed where applicable.

3.8.1 Demographic Profile

Table 3.8-1 shows the demographic breakdown for each Census Tract within Subdistrict No. 1 and for Colorado as a whole. The population within Subdistrict No. 1 is predominately white. The largest

minority is Hispanic persons in all three tracts. The Hispanic population of tract 9600 and tract 9770 are similar, in terms of percentage, to Colorado as a whole. However, tract 9777 (Saguache County) has a significantly higher percentage of Hispanic people.

Table 3.8-1. Demographic Profile of Census Tracts within Subdistrict No. 1

Demographic Category	Geographic Location			
	Tract 9600 Alamosa Co. Count *(Percent)*	**Tract 9770 Rio Grande Co.** Count *(Percent)*	**Tract 9777 Saguache Co.** Count *(Percent)*	**Colorado** Count *(Percent)*
White	1,539 *(86.7)*	4,216 *(89.2)*	2,179 *(73.5)*	4,089,202 *(81.3)*
Black or African American	8 *(0.5)*	14 *(0.3)*	8 *(0.3)*	201,737 *(4.0)*
American Indian or Alaska Native	35 *(2)*	59 *(1.2)*	57 *(1.9)*	56,010 *(1.1)*
Asian	6 *(0.3)*	18 *(0.4)*	3 *(0.1)*	139,028 *(2.8)*
Native Hawaiian or Pacific Islander	0 *(0)*	2 *(0)*	1 *(0)*	6,623 *(0.1)*
Two or More Races	60 *(3.4)*	98 *(2.1)*	93 *(3.1)*	172,456 *(3.4)*
Hispanic	397 *(22.4)*	1,017 *(22.4)*	2,014 *(67.9)*	1,038,687 *(20.7)*
Total Population*	**1,775**	**4,729**	**2,965**	**5,029,196**

Note: The sum of all races does not equal the total population in the Census Tract since people can claim more than one race.
Source: USCB 2012b

In 2007, there were 60,684 farm operators running 36,500 farms in Colorado. In Alamosa, Rio Grande, and Saguache counties there were 948 farm operators of which: 146 were Hispanic; 1 was Black or African American; 4 were Asian; and 18 were American Indian or Alaska Native (USDA 2007). Minority operators accounted for 18 percent of all the farm operators in Alamosa, Rio Grande, and Saguache counties.

3.8.2 Income and Poverty

Table 3.8-2 shows median household income and poverty rates for the three county based Census Tracts and for Colorado. All three Census tracts have lower median income levels than the state, with tract 9777 being approximately 48 percent of the median income of the state of Colorado. A similar pattern is observed in estimated poverty rates for the Census Tracts. Poverty rates for tracts 9600 and 9770 are similar or marginally higher than the state; however, tract 9777 shows a substantially higher poverty rate than Colorado as a whole. By virtue of having a poverty rate greater than 20 percent, the entirety of Saguache County meets the Census definition of a low-income area. With respective poverty rates of 13.5 percent and 14.9 percent, Alamosa and Rio Grande Counties do not meet the Census definition of a low-income area.

Table 3.8-2. Median Household Income and Poverty Rate within Subdistrict No. 1

Category	Geographic Location			
	Tract 9600 Alamosa Co.	**Tract 9770 Rio Grande Co.**	**Tract 9777 Saguache Co.**	**Colorado**
Median Household Income	$42,667	$50,744	$27,535	$56,546
Poverty Rate	13.5%	14.9%	29.3%	13.4%

Source: USCB 2012b

While Alamosa and Rio Grande counties as a whole are not considered low-Income areas, there are Census Block groups in these counties that do exceed the 20 percent threshold. Figure 3.8-1 and Table 3.8-3 identify those Census Block Groups within the proposed Rio Grande CREP Area that contain a low-income population accounting for 20% or more of the total population. As shown on Figure 3.8-1, nearly all of the proposed CREP Area in Alamosa County contains low-income populations.

Table 3.8-3. Low-Income Populations in Proposed Rio Grande CREP Area

Census Block Group	Population	Population with Income Below Poverty Level:	Percentage of Population Below Poverty Level
Block Group 1, Census Tract 9600, Alamosa County	673	183	27%
Block Group 1, Census Tract 9601, Alamosa County	667	242	36%
Block Group 1, Census Tract 9767, Rio Grande County	1,506	357	24%
Block Group 2, Census Tract 9777, Saguache County	1,180	404	34%
Block Group 3, Census Tract 9777, Saguache County	1,116	400	36%

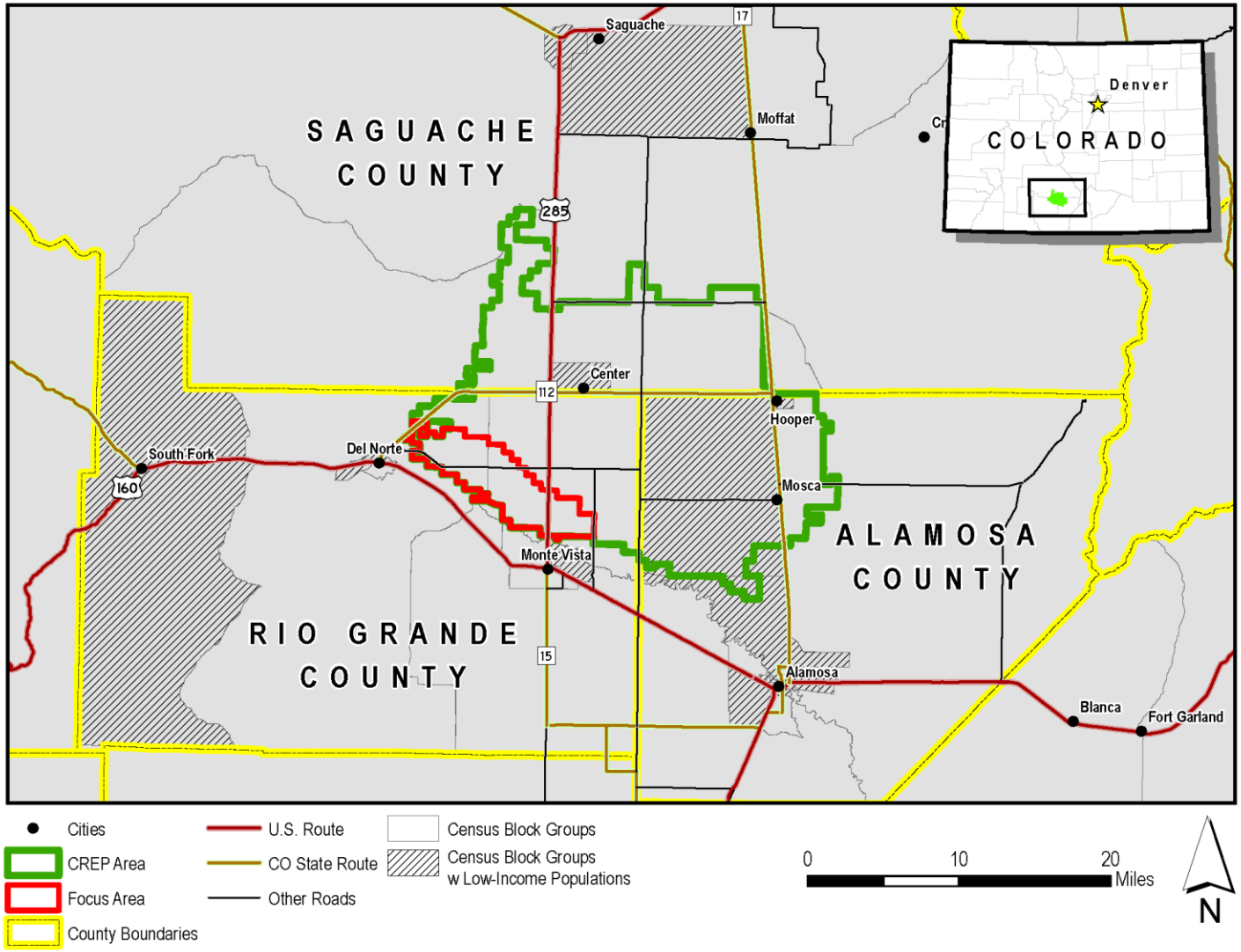


Figure 3.8-1. Low Income Populations within ROI

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

This chapter describes the potential environmental consequences to the resources described in Chapter 3. As discussed in Section 2.3, five resource areas (traffic and transportation, noise, human health and safety, coastal zones, and other formally classified lands) have been eliminated from consideration in this PEA because impacts would be negligible. Therefore, environmental consequences analyses include biological resources, water resources, earth resources, cultural resources, recreation, socioeconomics, and environmental justice.

4.1 BIOLOGICAL RESOURCES

Impacts to biological resources would be considered significant if implementation of the proposed Agreement resulted in the reduction of wildlife or fisheries populations to a level of concern, removal of land with unique vegetation characteristics, or incidental take of protected species or habitat.

4.1.1 Alternative 1 (Preferred Alternative)

Wildlife

Associated with improved habitat conditions, wildlife diversity in the proposed CREP Area would increase from implementation of the CPs. In comparison to the existing conditions on most of the eligible cropland, wildlife habitats and wildlife diversity would benefit after establishment of each CP. Wildlife would benefit primarily from establishment of permanent wildlife habitat (CP2-Native Grasses and Legumes, CP4D-Permanent Wildlife Habitat-Noneasement, and CP9-Shallow Water Areas for Wildlife), and wetland restoration (CP23 and CP23A). Grassland and ground-nesting birds generally absent from croplands would benefit primarily from establishment of grasses and habitat. Overall, approximately 40,000 acres of habitat would be created or improved from the implementation of the Proposed Action.

Increased wildlife populations, especially passerine and water birds and deer, would potentially enhance the socioeconomic value of agricultural lands for hunting, wildlife watching, and other outdoor recreational activities. However, the benefits would not be realized until a period after implementation of the proposed CREP because of the time required for development of vegetation and travel corridors. Restricting ground and vegetative disturbing CP implementation and maintenance to the periods recommended by NRCS or other technical service providers in accordance with the site specific conservation plan would have minimal impacts on nest success.

Agricultural runoff is a leading threat to aquatic biodiversity nationwide (Stein et al. 2000). Sediments and nutrients (i.e. nitrogen and phosphorus) are the primary sources of pollutants that combine to lower the water quality for species. Suspended sediments reduce water clarity and the amount of sunlight that reaches submerged vegetation. Without sunlight, photosynthesis cannot occur in aquatic vegetation and microscopic organisms. In turn, the aquatic species that depend on those organisms and vegetation as a food source suffer, thus impacting the entire system. High levels of suspended sediments also destroy spawning sites for aquatic species by covering nests and their eggs. Excess

amounts of nitrogen and phosphorus from agricultural runoff can result in poor water quality and aquatic habitat by creating dense blooms of phytoplankton and algae (Welsch 1991). These blooms become so dense that they exclude sunlight and kill submerged vegetation. The subsequent decomposition by bacteria depletes oxygen, which eventually leads to large-scale fish kills.

Fisheries in the proposed CREP Area would benefit from reduced levels of nutrient and sediment loading to surface waters from common agricultural activities. Lower nutrient concentrations in the streams would improve fish and invertebrate community health, as well as stream corridor quality. All CPs under the Proposed Action would directly or indirectly enhance terrestrial or aquatic habitats in the CREP Area and downstream. Wetland restoration would create habitats that are critical for amphibian reproduction and provide habitat for other species dependent on these systems (USEPA 2001). The proposed CPs would remove, sequester, or transform nutrients, sediments, and other pollutants from agricultural runoff by intercepting pollutants before they reach surface waters, increasing infiltration, increasing nutrient uptake by vegetation, and maintaining microbial processes that reduce pollution in water bodies through denitrification (Welsch 1991).

Vegetation

The five CPs that are proposed for implementation under the Rio Grande CREP Proposal would contribute to vegetation diversity in the CREP Area. In particular, establishment of permanent native grasses and legumes (CP2 and CP4D) and wetland restoration (CP23 and CP23A) would benefit vegetation resources in the CREP Area. These efforts would stimulate the development of natural vegetative communities in the wetland areas and adjacent uplands.

Additionally, establishment of native plant communities would help to reduce occurrences of invasive and exotic plant species. Invasive and exotic plants generally thrive in disturbed areas. Intact natural environments, such as those that would be created under the CREP, are least vulnerable to establishment of non-native species. The contract maintenance would include management measures to prevent invasive and exotic plants from reducing the success of planting efforts. Elimination of invasive and exotic plants from the CREP Area would help to ensure that the Rio Grande CREP Proposal goals are being cost-effectively accomplished. Vegetation restoration would increase biodiversity and improve water quality throughout the eligible lands proposed for enrollment.

Special Status Species

Implementation of the Rio Grande CREP Proposal would have positive impacts on protected species and their habitats. Benefits to aquatic species in this category would be realized shortly after implementation of the CPs and would increase over the long-term. Benefits to special status terrestrial species would be less in the short-term, but would be realized over time as the vegetative communities develop.

Implementation of the Rio Grande CREP Proposal would potentially have positive impacts on the protected species from the establishment of permanent native vegetation through the implementation of CPs to establish grasslands (CP2 and CP4D), shallow water areas with a buffer of perennial vegetation (CP9), and restored wetlands (CP23 and CP23A). This additional grassland (up to 37,00 acres) and wetland (up to 3,000 acres) habitat would benefit the southwestern willow flycatcher, bald eagle,

burrowing owl, greater sandhill crane, ferruginous hawk, Gunnison sage grouse, American peregrine falcon, western snowy plover, long-billed curlew, Townsend's big eared bat, Botta's pocket gopher, northern pocket gopher, and midget faded rattlesnake.

Benefits to aquatic species, such as the boreal toad, northern leopard frog, Rio Grande sucker, Rio Grande chub, and Rio Grande cutthroat trout would occur directly from the protection of habitat and improved water quality and quantity through the implementation of wetland restoration (CP23). Additionally, the establishment of native grassland areas (CP2 and CP4D) would aid in protecting water quality by creating vegetative buffers to capture runoff and reduce siltation. The four Colorado River fish species (bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker) would indirectly benefit from the proposed action as the retirement of up to 40,000 acres of irrigated farmland would potentially increase water flows where these species occur.

There is the potential for negative impacts to special status species from the implementation of the Proposed Action. Establishing the five CPs that are part of the proposed action would include a level of surface disturbance that includes grading, leveling, filling, and construction of some infrastructure. These actions would be temporary in nature and would have short-term negative impacts in the form of disturbance to any special status species in the vicinity of the action. Informal consultation with Colorado's USFWS Ecological Field Office and CPW would occur as necessary as part of the site-specific environmental evaluation prior to program enrollment.

4.1.2 No Action Alternative

Under the No Action Alternative, the Rio Grande CREP Proposal would not be implemented. Lands that would have been eligible for enrollment in CREP would remain in agricultural production or would be enrolled in CRP or another conservation program. The continued use of land for agriculture or the conversion of land to another type of agricultural production would increase susceptibility for additional loss of wildlife habitat, habitat for special status species, and invasion by exotic species. Runoff of agricultural chemicals, animal wastes, and sediment would continue to degrade water quality and habitat for native plants and animals. Additionally, agricultural lands that have been farmed for long periods lack the critical components required for regeneration of native plant communities (seed banks, microorganisms, and nutrients).

4.2 WATER RESOURCES

Impacts to water resources would be considered significant if implementation of the Proposed Action resulted in degraded surface or ground water quality, or filling of wetlands without appropriate mitigation.

4.2.1 Alternative 1 (Preferred Alternative)

Implementing the Proposed Action would result in ceasing active agricultural production on up to 40,000 acres of irrigated land within the CREP Area. Enrolling land in CREP and installing CPs (vegetation planting, native grasses, and restoring wetlands and riparian habitat) would decrease groundwater withdrawal, reduce the application of agricultural chemicals (pesticides and fertilizers) in the CREP Area, and reduce erosion and sedimentation, ultimately increasing groundwater storage and streamflows,

improving surface water quality, and improving wetland habitat. The Agreement would have long-term beneficial impacts to water resources within the Rio Grande Basin and areas downstream. The Agreement would not result in the violation of laws or regulations established to protect water resources.

Groundwater

For enrollment in CREP, a well-right holder volunteers to retire his irrigation right for a minimum period of 14-15 years, or permanently in exchange for compensation in the form of cost share, annual rental payments, and other incentive payments where applicable (domestic use of the water by the holder is preserved). Retirement of lands under CREP that use groundwater for irrigation would augment streamflows by naturally allowing groundwater to resume discharging to streams. The Agreement seeks up to 60,060 acre-feet of annual water savings through the retirement of irrigation water throughout the CREP Area.

In 2005, over 1.6 million acre-feet of water was used for irrigation in the CREP counties, of which over 860,000 acre-feet were from groundwater wells. Up to 60,060 acre-feet of savings as planned in the Agreement goals would represent a three and a half percent reduction of the total irrigation applied in 2005 and seven percent of the groundwater irrigation (see Table 3.2-1). Enrolling land into CREP and ceasing groundwater irrigation would allow for natural groundwater flow to resume to the rivers of the Rio Grande Basin rather than consuming the groundwater for irrigation.

The Agreement would allow for temporary irrigation during the first three years of the contract to aid in the establishment of a viable grass cover. This irrigation would not exceed 1.5 acre-feet per acre total for the first three years. Allowing temporary irrigation would slightly reduce the groundwater withdrawal savings during the first few years, but the long-term savings would still be recognized.

Surface Water

The surface waters of the Rio Grande Basin suffer from low water levels from surface water diversions for irrigation, extensive groundwater pumping for irrigation, and prolonged drought. Retirement of lands irrigated directly by surface water would allow the water to remain in the river, directly improving streamflows. The retirement of well rights under CREP would allow for the surface waters to replenish over time from reduced groundwater pumping. However, there would be a lagged effect between reduced groundwater pumping, subsequent replenishment of the Confined and Unconfined Aquifers, and increased streamflows in waters of the Rio Grande Basin. A minimal amount of surface water irrigated land is also expected to be enrolled, and would provide immediate beneficial impacts to surface water systems.

Water Quality

The Agreement would improve overall water quality. The decrease in irrigation would increase water storage in the aquifer thereby decreasing the concentration of naturally occurring heavy metals. Increased streamflows would dilute existing contamination and improve overall surface water quality. The decrease in active agricultural production would result in a decreased input of agricultural chemicals to nearby surface waters and groundwater sources. In addition, establishing long-term grasslands and

native vegetation would stabilize soils, decreasing erosion and sedimentation which improves local and downstream water quality.

Wetlands

Implementation of CPs such as wetland restoration and increasing riparian buffers is expected to restore or enhance wetlands and riparian habitat. The positive impacts of restoring wetlands and riparian areas would have corresponding positive impacts on biological resources including increasing vegetation diversity and habitat for protected species, which use and live in these areas (see Section 4.1 for additional discussion on impacts to Biological Resources). Activities associated with installing CPs such as vegetation clearing and soil disturbance could result in temporary and minor localized negative impacts to water quality and increased sedimentation from runoff. As with the current FSA procedures, a site specific environmental evaluation would be performed and a conservation plan developed prior to enrollment in the program. The evaluation would identify jurisdictional wetlands and establish any necessary mitigation measures to ensure their protection.

4.2.2 No Action Alternative

Under the No Action Alternative, active agricultural production would continue, thereby further degrading water quality from the application of agricultural chemicals and increased erosion and sedimentation from exposed soils. Irrigation would continue to negatively deplete groundwater sources and reduce streamflows in the Rio Grande River and its tributaries. Producers would still have the option to enroll land in CRP or another conservation program.

4.3 EARTH RESOURCES

Impacts to earth resources would be considered significant if implementation of the Proposed Action resulted in increased erosion and sedimentation, or affected topographical or unique soil conditions.

4.3.1 Alternative 1 (Preferred Alternative)

Under the Preferred Alternative, long-term positive impacts to earth resources are expected to occur with the implementation of any of the five proposed CPs outlined in the proposed Agreement. Removing marginal agricultural lands from production and establishing permanent cover would stabilize soils and have indirect benefits to water quality by reducing soil erosion and sedimentation caused by typical agricultural practices. During implementation of any of the CPs, there would be potential for minor, increased erosion from any tillage, planting, or earthmoving activities required. However, once the CPs are established long-term beneficial impacts to soil resources would occur from establishment of permanent cover (over the course of the 14 to 15 year contract) and removing the need to work the soil for agricultural purposes. Establishment of permanent cover would largely entail native arid and semi-arid grasses and legumes. Decreases in wind erosion are also expected and would provide air quality related benefits. Management activities during the life of the CP contract would have only minor impacts to soils, depending on the management activities used (i.e., light disking). There would only be the potential for minor impacts to topography if earth moving and grading were required. There would be no impacts to the underlying geology of the region; installation of the CPs would not disturb soils deeper than those previously disturbed for agricultural production.

4.3.2 No Action Alternative

Under the No Action Alternative, the Agreement would not be implemented. None of the beneficial impacts to soil resources would occur. Erosion of soils by wind and water would be expected to continue on lands that remain in agricultural production.

4.4 CULTURAL RESOURCES

4.4.1 Alternative 1 (Preferred Alternative)

Under the Proposed Action, FSA would implement an Agreement for the Rio Grande Basin with the State of Colorado. Up to 40,000 acres of irrigated cropland would be removed from production and would be improved through CPs. The Proposed Action would occur on previously tilled cropland; therefore, the only known historical structure in the CREP Area, the Howard Store, would not be impacted. It is unlikely that unknown cultural resources would be impacted under the Proposed Action because areas that could be enrolled in the CREP have been under cultivation and installation of CPs would not disturb soils deeper than those previously disturbed for agricultural production. In addition, a site-specific evaluation would occur prior to enrollment of any land in CREP that would include evaluation of cultural resources. Consultation with the State Historic Preservation Officer would occur as appropriate if FSA environmental staff determined there was a potential to encounter an archaeological resource at a specific location. In accordance with FSA policy, acres would not be accepted for enrollment if an impact to cultural resources is expected. Therefore, the Proposed Action would have no impact to cultural resources in the Rio Grande Basin.

4.4.2 No Action Alternative

Under the No Action Alternative, FSA would not implement the Agreement; therefore, cultural resources in the Rio Grande Basin would remain unchanged.

4.5 RECREATION

Impacts to recreation would be considered significant if they drastically reduced, increased, or removed available public lands designated for recreation or significantly degraded the quality of the recreation. Impacts to environmental conditions such as air, water, or biological resources within or near public recreational land in such a way to affect its use would also be considered significant.

4.5.1 Alternative 1 (Preferred Alternative)

Under the Proposed Action, FSA would implement an Agreement for the Rio Grande Basin with the State of Colorado. Up to 40,000 acres of irrigated cropland would be removed from production and would be improved through CPs. The establishment of CPs on up to 40,000 of cropland would help improve stream flow, restore wetlands, and establish appropriate natural habitat.

During establishment of the CPs, there would be short-term negative impacts to local fish and game species due to construction activity. However, once the CPs are established, there would be higher quality hunting, fishing, and wildlife viewing opportunities in the Rio Grande Basin over the long-term because of the potential 40,000 acres of improved wildlife habitat and water quality Therefore, the

Proposed Action would have long-term, beneficial impacts to wildlife-related recreational resources in the Rio Grande Basin.

4.5.2 No Action Alternative

Under the No Action Alternative, FSA would not implement the Agreement; therefore, recreational resources in the Rio Grande Basin would remain unchanged.

4.6 AIR QUALITY

Emission thresholds associated with federal Clean Air Act conformity requirements are the primary means of assessing the significance of potential air quality impacts associated with implementation of a Proposed Action under NEPA. As noted in Section 3.6, a formal conformity determination is required for federal actions occurring in nonattainment or maintenance areas when the total direct and indirect stationary and mobile source emissions of nonattainment pollutants or their precursors exceed *de minimis* thresholds. Since the proposed CREP Area is in attainment of the NAAQS, *de minimis* thresholds do not apply. However, for the purposes of this analysis, significant air quality impacts would occur if implementation of CPs or maintenance activities would directly or indirectly:

- expose people to localized (as opposed to regional) air pollutant concentrations that violate state or federal ambient air quality standards;
- cause a net increase in pollutant or pollutant precursor emissions that exceeds relevant emission significance thresholds (such as Clean Air Act conformity *de minimis* levels or the numerical values of major source thresholds for nonattainment pollutants); or
- conflict with adopted air quality management plan policies or programs.

4.6.1 Alternative 1 (Preferred Alternative)

Under Alternative 1, the Rio Grande CREP would retire up to 40,000 acres of irrigated cropland and establish CPs as described in Section 2.1.2 to improve water quality and quantity, reduce soil erosion, and enhance wildlife habitat. Implementation of the proposed CPs would result in long-term beneficial impacts to air quality, particularly with respect to reducing the amount of exposed soil which contributes to fugitive dust emissions (PM_{10} and $PM_{2.5}$).

Preparation of lands for the installation of CPs may include several approved actions (e.g., grading, leveling, and filling, and installation of structures designed to regulate water flow or restore shallow water areas), that would cause localized and temporary impacts to air quality. Potential air quality impacts from construction activities would occur from: 1) clearance combustion emissions due to the use of fossil fuel-powered equipment and vehicles, and 2) PM_{10} emissions during earth-moving activities. Construction vehicles used under Alternative 1 may consist of a mixture of graders/dozers, loaders, trucks, backhoes, water trucks, and other vehicles and equipment typically associated with agricultural production activities. Fugitive dust generated from construction activities and vehicle travel on unpaved areas would temporarily affect local air quality. However, no long-term increases in fugitive dust would occur. Particulate matter emissions would be moderated through dust reduction measures (e.g., watering of exposed soils), thereby minimizing the total quantity of fugitive dust emitted during

construction activities. Total annual GHG emissions associated with Alternative 1 would be minor and less than significant, and would disperse quickly within the CREP Area.

Air quality impacts would be expected to be short-term and minor and would be offset by the benefits to air quality with implementation of Alternative 1. In addition, best management practices would be used during construction activities to reduce air quality impacts. Therefore, no significant impacts to air quality would occur with implementation of Alternative 1.

4.6.2 No Action Alternative

Under the No Action Alternative, the Rio Grande CREP Proposal would not be implemented. Existing air quality conditions would remain unchanged. Therefore, no significant impacts to air quality would occur with implementation of the No Action Alternative.

4.7 SOCIOECONOMICS

Significance of an impact to socioeconomics varies depending on the setting of the Proposed Action, but 40 CFR 1508.8 states that indirect effects may include those that are growth inducing and others related to induced changes in the pattern of land use, population density, or growth rate. Under CEQ regulations, a socioeconomic impact, in and of itself, does not indicate that preparation of an EIS is warranted. However, a socioeconomic impact can contribute to the overall cumulative impacts of a project.

Many of the potential socioeconomic impacts would be localized and related to the potential for outmigration and reduced economic vibrancy of communities. As impacts would tend to be localized, and this PEA addresses a large, three-county area, the analysis in this PEA will be qualitative in nature.

The economic impacts associated with the CRP and the approved CPs have been outlined in other NEPA documents for USDA, namely the 2003 EIS for CRP and the 2010 Supplemental EIS for the 2008 Farm Bill changes to CRP practices (USDA 2003, 2010).

4.7.1 Alternative 1 (Preferred Alternative)

Implementation of the Proposed Action would have a number of potential impacts to socioeconomics within the ROI, both positive and negative. The Proposed Action could remove up to 40,000 acres of agricultural land from production within the ROI, approximately 6 percent of the total farmland within the ROI. While this represents a small percentage of the total agricultural land, removing it from agricultural practice would also remove all cost inputs to that land; such as labor, agricultural chemicals, and seed. Removing the land could have an adverse effect on the suppliers of those inputs. Agricultural supply companies could see a reduction in purchase of goods and there is the potential for a loss of some agricultural jobs within the ROI due to a lack of demand for farm labor. Given the rather small percentage of agricultural land targeted, adverse impacts would likely be minor in nature; but if CREP enrollment is heavy in an area that is dependent on farm production, the local economy could be impacted.

Over the life of the Rio Grande CREP Proposal, an approximate total of up to $125 million of Federal and state funds would be paid to producers that enroll their lands. Economic impacts of the Rio Grande CREP

would depend largely on what enrolling producers do after enrollment. If enrolled producers remain in local communities and maintain a similar level of local expenditures, there would likely be beneficial impacts. In those cases however, where producers who enroll leave their communities or reduce local spending, outmigration and reduced populations in the local farming communities could occur.

There is the potential of increased recreational use of enrolled lands for wildlife related recreation, such as hunting and wildlife viewing (see Section 4.5 for additional discussion on impacts to Recreation). Improvement of wildlife habitat may lead to expenditures in recreation related goods such as hunting supplies, gas, and lodging. In addition, letting land fallow can allow for soil to re-enrich, which could lengthen the sustainable economic life for which the land remains viable for production.

There is potential that removal of land from production may raise crop prices due to a reduced local supply, this possibility could lead to either a beneficial or adverse outcome. Higher crop prices may induce local producers to increase production, which could lead to improved economic activity and employment. Also the income of producers would likely increase on a revenue per acre basis. For consumers of food however, higher crop prices can be detrimental. Consumers might be induced to substitute local produce for cheaper food or, if substitutes are not chosen, the disposable income of local residents may be reduced by higher food costs and expenditures on non-food items may decline. Decreases in hay production may also result in the need for increased hay shipments for livestock needs from outlying areas.

Beneficial and adverse impacts from implementation of the Rio Grande CREP Proposal would likely vary significantly based on the location and size of enrollments. Socioeconomic analysis associated with CRP (USDA 2003, 2010) noted that local economies tend to shift to accommodate the implementation of CPs; a shifting economy could reduce the magnitude of any adverse financial impacts but could also reduce the productive capacity of some communities via increased rates of depreciation on farming equipment and a decrease in farm related skill among local labor forces. Since enrollment in conservation programs is voluntary, it has been noted that producers would not enroll land that is more economically beneficial to them if under production. Typically, land that is enrolled in CP's is land that has been marginal for production and where annual rental payments and applicable incentive payments would exceed the net revenue of that land if it were kept in production (USDA 2003). Socioeconomic impacts could lead to problematic outcomes in situations where producers reduce local expenditures or leave an area entirely.

4.7.2 No Action Alternative

Under the No Action Alternative, the Rio Grande CREP Proposal would not be implemented. There would be no changes to the socioeconomic situation within the ROI; however, producers could still enroll land in other conservation programs for financial incentives.

4.8 ENVIRONMENTAL JUSTICE

Environmental justice is achieved when everyone, regardless of race, culture, or income, enjoys the same degree of protection from environmental and health hazards and has equal access to the decision-making process. Significant environmental justice impacts would result if access to decision-making

documents was denied or if any adverse environmental effects occurred that would disproportionately affect minority or low-income populations.

4.8.1 Alternative 1 (Preferred Alternative)

Implementation of the Proposed Action would incentivize agricultural producers to voluntarily remove irrigated agricultural lands from production. Producers would be under no obligation to enroll any lands and the program would be undertaken on a completely voluntary basis. Nearby low-income and minority communities may be adversely affected by the decisions of producers. Since producer's decisions would have effects that spread beyond the boundaries of their farms, into the economies of nearby communities, the livelihoods of environmental justice populations could be affected. The potential for impacts would be greater if there were large areas of CREP enrollment in low income population areas, specifically in Alamosa County where nearly all of the proposed CREP Area is considered low-income population (see Section 3.8.2). The site-specific environmental evaluation would require an analysis of environmental justice concerns (Appendix B). The potential for minor positive and minor negative disproportionate impacts to low income populations exists, but would depend on where enrolled producers are located in relation to the low income populations.

The decision-making document (this PEA) was made available to all interested parties and the public via the Internet and within local FSA offices. In addition, a public meeting was held to provide information on the proposed Rio Grande CREP Proposal and the potential impacts associated with implementation.

4.8.2 No Action Alternative

Under the No Action Alternative, the proposed Rio Grande CREP would not be implemented. No disproportionate impacts to minority populations or impoverished areas would be anticipated.

CHAPTER 5 CUMULATIVE IMPACTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

5.1 CUMULATIVE IMPACTS

CEQ regulations stipulate that the cumulative impacts analysis within an Environmental Assessment should consider the potential environmental impacts resulting from "the incremental impacts of the action when added to past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7). Recent CEQ guidance in considering cumulative impacts involves defining the scope of the other actions and their interrelationship with the Proposed Action. The scope must consider geographical and temporal overlaps among the Proposed Action and other actions. It must also evaluate the nature of interactions among these actions.

Cumulative impacts are most likely to arise when a relationship or synergism exists between the Proposed Action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in proximity to the Proposed Action would be expected to have more potential for a relationship than those more geographically separated.

The affected environment for cumulative impacts in this PEA includes those counties where lands are eligible for enrollment in CREP: Rio Grande, Saguache, and Alamosa Counties. For the purposes of this analysis, the goals and plans of Federal programs designed to mitigate the risks of degradation of natural resources are the primary sources of information used in identifying past, present, and reasonably foreseeable actions.

5.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

In addition to the proposed CREP, Colorado maintains and implements numerous Federal programs authorized under the Farm Bill to conserve and enhance the natural resources of the area. These programs include CRP, Environmental Quality Incentive Program (EQIP) – Ground and Surface Water Conservation Program (GSWCP), Wetland Reserve Program, Wildlife Habitat Incentive Program, USFWS – Partners for Fish and Wildlife. Several state and non-profit programs are also available and include Colorado Wetlands for Wildlife Program, the Habitat Partnership Program, Preserving Colorado Landscapes, The Rio Grande Headwaters Land Trust, and Ducks Unlimited. Several Conservancy Districts and the RGWCD also provide conservation and water management support.

Conservation Reserve Program. The CRP is the largest private land environmental conservation program. This voluntary program supports the implementation of long-term conservation measures designed to improve the quality of ground and surface waters, control soil erosion, and enhance wildlife habitat on environmentally sensitive agricultural land. Landowners can receive annual rental and maintenance payments, incentive payments, and cost-share support for the establishment of conservation measures. Currently, only 410 acres within the proposed CREP Area are enrolled in CRP.

Environmental Quality Incentive Program – Ground and Surface Water Conservation Program. The EQIP supports production agriculture and environmental quality as compatible goals. The program

offers technical and financial assistance to producers and ranchers who face serious threats to soil, water, and related natural resources. The RGWCD has leveraged partial funding through the GSWCP and has provided matching contributions to provide incentives to reduce water consumption on cropland.

Wetland Reserve Program. The Wetland Reserve Program is a voluntary program which provides technical and financial assistance to landowners who enhance wetlands and retire marginal agricultural lands. Under this program, lands can be enrolled in permanent conservation easements, 30-year conservation easements, or restoration cost-share agreements. This program was not historically used in the Rio Grande Basin; however, recently several producers have participated in the program and numerous wetlands have been restored. Most of the acres enrolled in this program were non-cropland and non-irrigated.

Wildlife Habitat Incentive Program. This program offers opportunities to private and Tribal landowners to improve and protect wildlife habitat. Through the program, the NRCS provides technical and financial assistance to landowners to develop upland, wetland, riparian, and aquatic habitat areas on their property.

USFWS – Partners for Fish and Wildlife. This program restores riparian, wetland, and associated upland habitat on private land through alliances with USFWS, other agencies, and non-profit organizations.

Colorado Wetlands for Wildlife Program. CPW administers a statewide wetlands program that is locally driven through Focus Area Committees geographically distributed in areas that have been identified as critical or extremely important for wetland dependent wildlife species. Within the proposed CREP Area, most of the activities for this program have concentrated on a corridor along the Rio Grande.

Habitat Partnership Program. This program was initiated to provide pro-active habitat management on private land for the purpose of minimizing wildlife conflicts with agricultural production activities.

Preserving Colorado Landscapes. This program is a partnership between the Great Outdoors Colorado Board, The Nature Conservancy, and CPW. The program seeks to protect, through long-term or perpetual easements, significant or unique landscapes that are critical to perpetuating a species or an ecosystem.

The Rio Grande Headwaters Land Trust. The Rio Grande Headwaters Land Trust is a local, non-profit committed to working with private landowners, public agencies, and other conservation organizations to preserve the natural beauty and ecological values in Colorado's Rio Grande Basin, while promoting a strong agricultural lifestyle. The Rio Grande Initiative is one of the major projects in the CREP Area. By protecting the strategic and critical private lands along the headwaters length of the Rio Grande, the Rio Grande Initiative aims to contribute to overall water sustainability for the Rio Grande Basin.

Ducks Unlimited. Ducks Unlimited has partnered with CPW on numerous conservation easements to protect critical wetlands. The organization has also participated and lead efforts to improve irrigation channels, install structures, and restore wetlands on thousands of acres in the Rio Grande Basin.

There are five conservancy districts in the Rio Grande Basin that are active in water and soil conservation. In addition, the RGWCD was created to assist the state in water management and activities within the Rio Grande Basin as well as to provide assistance to agricultural producers.

5.3 CUMULATIVE EFFECTS ANALYSIS

The incremental impacts of the Proposed Action, when considered in combination with other past, present, and reasonably foreseeable actions, is expected to result in positive impacts to water, soils, biological resources, recreation, and air quality. The following sections summarize the cumulative effects by resource area.

Biological Resources. Many of the conservation programs available within the proposed CREP Area have a direct goal to protect and enhance wildlife habitat (CRP, Wildlife Habitat Incentive Program, Partners for Fish and Wildlife, Colorado Wetlands for Wildlife, Habitat Partnership Program, Preserving Colorado Landscapes, and Ducks Unlimited). The remaining conservation programs would also have an indirect benefit to wildlife through the restoration of native vegetation and enhancement of native habitat. The proposed Agreement would have similar goals and impacts as these programs; cumulatively CREP and the other available conservation programs would have long-term beneficial impacts to biological resources.

Water Resources. All of the conservation programs would have direct or indirect positive impacts to water quality and quantity while potentially reducing groundwater consumption. The proposed Agreement would also result in increasing water quantity and streamflows, reduce groundwater consumption for irrigation, and improve water quality from the reduction in chemicals application and stabilization of soils. Cumulatively, CREP and the other conservation programs would have long-term beneficial impacts to water resources.

Earth Resources. Implementing conservation measures that would restore native vegetation and wetlands would ultimately stabilize soils, thus reducing stormwater runoff and wind erosion potential. The proposed Agreement would also have a goal of stabilizing soils and reducing erosion potential. Cumulatively, CREP and the other conservation programs would have long-term beneficial impacts to soils.

Cultural Resources. Cultural resources could be affected by conservation activities that result in ground disturbance beyond that which was disturbed by agricultural practices. However, site-specific environmental evaluation on lands to be enrolled in any of the conservation programs would identify cultural resources of concern and develop a plan for avoiding or minimizing those potential impacts through coordination with the State Historic Preservation Office or Tribal governments as necessary. With the site-specific environmental evaluation and protection of important resources, negative cumulative impacts are not anticipated.

Recreation. Conservation programs have indirect benefits to recreational opportunities. Protection and restoration of native habitats would result in subsequent increases in fish and wildlife populations thereby improving recreational opportunities such as hunting, fishing, and wildlife watching. Cumulatively, the proposed Agreement and the other conservation programs would have incremental benefits to recreational opportunities within the Rio Grande Basin.

Air Quality. Restoring native vegetation, establishing a permanent cover, and reducing soil disturbance from agricultural practices (i.e., tilling) through any of the conservation programs would decrease the amount of dust released to the atmosphere in the Rio Grande Basin. Cumulatively, the proposed

Agreement and the other conservation programs would have incremental benefits to the regional air quality.

Socioeconomics. The conservation programs listed above generally offer monetary compensation for restoration or retirement of agricultural lands. The loss of agricultural lands may adversely affect the local economy from a small decrease in the sale of agricultural products as well as an indirect impact to farm equipment and supplies (seed, fertilizer, pesticides, and chemicals, etc.) and farm employment. There are limitations in place to ensure producers are not enrolling the same lands into more than one government program. For CRP and CREP, there is also a county limitation for not enrolling more than 25 percent of a county's cropland into conservation programs.

Environmental Justice. Enrollment in conservation programs is voluntary and the overall impacts are beneficial. There are environmental justice populations in the ROI that may be adversely impacted under certain circumstances. Cumulative impacts could occur if adverse impacts to environmental justice populations become widespread, but that would not be expected.

5.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible and irretrievable commitments are related to the use of nonrenewable resources and the effect that the use of these resources has on future generations. Irreversible effects primarily result from the use or destruction of a specific resource that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action. The Rio Grande CREP Proposal would improve natural resources, water resources, and wildlife habitat; there would be no irretrievable or irreversible resource commitments.

CHAPTER 6 MITIGATION MEASURES

The purpose of mitigation is to avoid, minimize, or eliminate significant negative impacts on affected resources. CEQ regulations (40 CFR 1508.20) state that mitigation includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

CEQ regulations state that all relevant reasonable mitigation measures that could avoid or minimize significant impacts should be identified, even if they are outside the jurisdiction of the lead agency or the cooperating agencies. This serves to alert agencies or officials who can implement these extra measures, and will encourage them to do so. The lead agency for this Proposed Action is FSA.

There are no expected long-term significant negative impacts associated with implementation of the Agreement. Prior to installation of CPs, producers must complete site-specific environmental evaluations which would reveal any protected resources on the property. In those site specific instances where a wetland, threatened or endangered species, or a cultural resource may be present, consultation with the appropriate lead agency would identify specific mitigation measures required to eliminate or reduce the negative impacts to an acceptable level. In addition, each producer must prepare an approved site-specific conservation plan to ensure protection of all valuable resources for the duration of the contract (14 or 15 years) and for those retiring their water rights permanently.

This page intentionally left blank.

CHAPTER 7 LIST OF PREPARERS

USDA FSA

Matt Ponish, National Office, Acting Director of Conservation and Environmental Program Division

Amy Braun, National Office, Environmental Compliance

Lana Nesbit, National Office, CREP Program Manager

Cardno TEC, Inc.

Dana Banwart, *Project Manager*
B.S. Biology
Years of Experience: 14

Michael Harrison, *Deputy Project Manager*
M.S. Environmental Science
Years of Experience: 8

John Lowenthal, *Environmental Analyst*
M.S. Biology
Years of Experience: 27

Chareé Hoffman, *Environmental Analyst*
B.S. Biology
Years of Experience: 13

John Stephen Anderson, *Environmental Analyst*
B.S. Environmental Science
Years of Experience: 4

Kevin Allen, *GIS Support*
B.S. Communications
Years of Experience: 8

Sharon Simpson, *Project Administration*
A.S. Science
Years of Experience: 13

This page intentionally left blank.

CHAPTER 8 PERSONS AND AGENCIES CONSULTED

USDA FSA National Office

Colorado Department of Natural Resources, Division of Water Resources

Other Federal Agencies, State Agencies, and Interested Parties

RGWCD

Colorado NRCS State Office

Colorado Department of Natural Resources

CPW

The Nature Conservancy

USFWS, Region 6

USFWS, Colorado Field Office

USDA Colorado FSA

This page intentionally left blank.

CHAPTER 9 REFERENCES

Bailey, R.G. 1995. Description of Ecoregions of the United States. 2d ed. Misc. Pub. 1391, U.S. Department of Agriculture, Forest Service. Washington D.C. p. 71-73 with separate map.

Colorado Department of Agriculture. 2012. Colorado Noxious Weed Mapping Program. http://www.colorado.gov/cs/Satellite/Agriculture-Main/CDAG/1167928184069. Accessed on May 14, 2012.

Colorado Department of Employment and Labor. 2012. Labor Market Information Gateway – Labor Force Information. Accessed at : http://lmigateway.coworkforce.com/lmigateway/ May.

Colorado Department of Public Health (CDPH). 2011. Statewide Water Quality Management Plan. Water Quality Control Division. Final Draft. June 1, 2011.

Colorado Division of Water Resources (CDWR). 2010. Cumulative Yearly Statistics of the Colorado Division of Water Resources.

_____. 2009a. Proposed Rio Grande Conservation Reserve Enhancement Program Colorado. Prepared by the State of Colorado. Edited February 6, 2009.

_____. 2009b. Cumulative Yearly Statistics of the Colorado Division of Water Resources.

Colorado Division of Wildlife (CDW). 2011. State of Colorado Threatened and Endangered List. http://wildlife.state.co.us/WildlifeSpecies/SpeciesOfConcern/ThreatenedEndangeredList/Pages/ListOfThreatenedAndEndangeredSpecies.aspx. Last update 12/21/2011. Accessed May 15, 2012.

_____. 2010. Gunnison Sage Grouse Information Page. http://wildlife.state.co.us/WildlifeSpecies/Profiles/Birds/Pages/Gunnisonsagegrouse.aspx. Accessed on May 15, 2012.

_____. 2005. Colorado's Comprehensive Wildlife Conservation Strategy.

Colorado Parks and Wildlife (CPW). 2012a. 2012 Colorado Big Game Hunting.

____. 2012b. Colorado Fishing: April 1, 2012 – March 31, 2013.

____. 2011. 2011 Colorado Small Game Hunting.

Colorado Water Conservation Board (CWCB). 2009. Statewide Water Supply Initiative Fact Sheet Rio Grande Basin. Colorado Department of Natural Resources. Colorado Water Conservation Board, Denver Colorado.

Council on Environmental Quality (CEQ). 1997. Council on Environmental Quality. Guidance under the National Environmental Policy Act.

Levings, G.W., Healy, D.F., Richey, S.F., and Carter, L.F., 1998, Water Quality in the Rio Grande Valley, Colorado, New Mexico, and Texas, 1992-95: U.S. Geological Survey Circular 1162

National Agricultural Statistical Service (NASS). 2012. QuickStats Query Generator. Accessed at: http://quickstats.nass.usda.gov/#DA0EFD2E-AA28-37EB-B32A-954C44053AE2 May.

_____. 2007. Agricultural Statistics Data for Colorado. Accessed April 2012 at http://www.nass.usda.gov.

National Park Service (NPS). 2006. National Register of Historic Places Registration Form for the Howard Store in Alamosa County, Colorado.

National Resource Conservation Service (NRCS). 2012a. What is soil? Factsheet. Accessed at http://soils.usda.gov/education/facts/soil.html May 16.

_____. 2012b. Official Soil Series Descriptions, Query Facility. USDA-NRCS Soil Survey Division. Accessed at https://soilseries.sc.egov.usda.gov/osdquery.aspx May 16.

Natural Diversity Information Source (NDIS). 2012. Known or Likely Species Occurrence for Alamosa, Rio Grande, and Saguache Counties. http://ndis.nrel.colostate.edu/wildlife.asp. Accessed on May 15, 2012.

NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: May 15, 2012).

Stein, B.A., L.S. Kutner, and J.S. Adams (eds.). 2000. Precious Heritage: the Status of Biodiversity in the United States. The Nature Conservancy and Association for Biodiversity Information. Oxford University Press, New York, NY. 299 pp.

U.S. Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y- 87-1l Department of the Army, Waterways Experiment Station, Mississippi.

U.S. Census Bureau (USCB). 2012a. Quickfacts for Colorado, Alamosa, Rio Grande, and Saguache Counties. Accessed at: http://quickfacts.census.gov/qfd/states/08000.html May.

_____. 2012b. American Community Survey 2006 – 2010. Accessed at http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t May.

_____. 2001. Overview of Race and Hispanic Origin. Census 2000 Brief.

_____. 1995. Poverty Areas. Statistical Brief. http://www.census.gov/population/socdemo/statbriefs/povarea.html. Accessed May.

U.S. Department of Agriculture (USDA). 2010. Conservation Reserve Program Supplemental Environmental Impact Statement.

_____. 2007. Census of Agriculture. County Profiles for Alamosa, Rio Grande, and Saguache Counties. Accessed at: http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/County_Profiles/Colorado May.

_____. 2003. Conservation Reserve Program Programmatic Environmental Impact Statement.

U.S. Environmental Protection Agency (USEPA). 2012a. National Ambient Air Quality Standards. http://www.epa.gov/air/criteria.html. Last updated 01 May 2012. Website accessed on 21 May 2012.

_____. 2012b. Currently Designated Nonattainment Areas for All Criteria Pollutants. http://www.epa.gov/air/oaqps/greenbk/index.html. Website accessed on 21 May 2012.

_____. 2010. General Conformity Regulatory Actions. Revisions to the General Conformity Rule. http://www.epa.gov/air/genconform/documents/20100324rule.pdf. March.

_____. 2001. Functions and Values of Wetlands. EPA 843-F-01-002c. www.epa.gov/owow/wetlands/pdf/fun_val.pdf. Accessed May 16, 2012.

U.S. Fish and Wildlife Service (USFWS). 2012. Information, Planning, and Conservation System. http://ecos.fws.gov/ipac/. Accessed May 15, 2012.

U.S. Forest Service (USFS). 2012. U.S. Forest Service. 300 Dry Domain. http://www.fs.fed.us/land/ecosysmgmt/colorimagemap/images/300.html. Accessed May 14, 2012.

_____. 1994. Ecological Subregions of the United States. Compiled by W. Henry McNab and Peter E. Avers. July 1994. http://www.fs.fed.us/land/pubs/ecoregions/. Accessed on May 14, 2012.

U.S. Geological Survey (USGS). 2005. Estimated Water Use of the United States County Level Data. Accessed from http://water.usgs.gov/watuse/data/2005/ on 21 May 21, 2012.

Upson, J.E. 1971. Physiographic Subdivisons of the San Luis Valley, Southern Colorado. New Mexico Geological Society. Twenty-Second Field Conference.

Welsch, D.J. 1991. Riparian Forest Buffers: Function and Design for Protection and Enhancement of Water Resources. NA-PR-07-91. USDA Forest Service, Northeastern Area, State and Private Forestry, Forest Service Management, Radnor, PA.

This page is intentionally left blank.

APPENDIX A
RIO GRANDE CONSERVATION RESERVE ENHANCEMENT PROGRAM

This page intentionally left blank.

Rio Grande
Conservation Reserve Enhancement Program

Colorado

Prepared by the State of Colorado

Project Co-Leader and Lead Author:
Kathryn Radke
Program Manager
Colorado Division of Water Resources
Department of Natural Resources

Project Co-Leader and Co-Author:
Tim J. Davis
Consultant
TJD/LLC

Special Improvement District #1 of the
Rio Grande Water Conservation District

Portions of Alamosa, Rio Grande, and Saguache Counties

Edited February 6, 2009

***Rio Grande River Conservation Reserve Enhancement Program*.....1**

***Section 1: Abstract*.....3**

***Section 2: Existing Conditions*.....5**

***Section 3: Agriculture Related Environmental Impacts*.....13**

***Section 4: Project Objectives*.....22**

***Section 5: Project Description*.....24**

***Section 6: Cost Analysis*.....27**

***Section 7: Monitoring Program*.....32**

***Section 8: Public Outreach and Support*.....33**

***Section 9: Compliance with Other Laws*.....33**

***Exhibit A: Project Area*.....34**

***Exhibit B: Historical Irrigated Acres*.....35**

***Exhibit C: Farm Demographics by County*.....36**

***Exhibit D: Beneficial Practices for Species within the San Luis Valley*.....38**

***Exhibit E: Change in Unconfined Aquifer Storage*.....39**

***Exhibit F: Reduced Chemical Application*..... 40**

***Exhibit G: Ground Water Pumping 1988-2004*..... 42**

***Exhibit H: Letters of Support*..... 43**

***Exhibit I: Resolution to Provide Local Funding*..... 57**

***Exhibit J: Survey Results*..... 59**

***Exhibit K: Target Area Map*..... 61**

***Exhibit L: Participant Agreements*..... 62**

***Exhibit M: NRCS 8 Digit Hydrologic Unit Code Map*..... 77**

Section 1: Abstract

The State of Colorado (State) and Special Improvement District #1 of the Rio Grande Water Conservation District (Subdistrict #1) seek to obtain federal funds through the United Sates Department of Agriculture (USDA) for the purpose of encouraging farmers within Subdistrict #1 of the Rio Grande Basin (Basin) to enroll in a voluntary Conservation Reserve Enhancement Program (CREP). This program will provide funding incentives and cost-sharing from both the USDA and local interests to participants who voluntarily enter their land into eligible conservation practices such as native vegetation establishment or wildlife conservation for a period of 14 or 15 years. The State and Subdistrict #1 will seek to enroll approximately 40,000 acres of irrigated cropland in portions of Alamosa, Rio Grande, and Saguache Counties. Of the approximately 200,000 acres of cropland irrigated by surface or ground water within Subdistrict#1, the Rio Grande Subdistrict #1 CREP (Rio Grande CREP) seeks to retire approximately 20 percent of those acres and the water associated with irrigating those acres.

Project Area and CREP Practices

The project area lies within the boundaries of Subdistrict #1 in the San Luis Valley (Valley) of south-central Colorado. The Valley is considered a high alpine desert and is bounded on the east by the Sangre de Cristo Mountains and on the west by the San Juan Mountains. The entire valley varies from 40 to 65 miles wide east to west and is about 100 miles from north to south. The Valley has been farmed for over 150 years, where the primary irrigated crops include potatoes, small grains, alfalfa, and high market value vegetables such as spinach, lettuce, and carrots. There are minimal dryland crops in the Valley due to insufficient precipitation. The water levels of the aquifer system within the Valley are currently declining, which is negatively affecting surface flows and increasing operating and pumping costs for producers.

The project area lies north of the Rio Grande and east of a line extending north of the City of Alamosa (please refer to Exhibit A for a map of the project area). The project area encompasses approximately 385 square miles which is five percent of the total land area in the Valley. Irrigation in the project area approximates 33 percent of all irrigated land in the Valley. Conservation practices applied within Subdistrict #1 through the Rio Grande CREP would include:

- CP-2 Establishment of Permanent Native Grasses
- CP-4D Permanent Wildlife Habitat, Non-easement
- CP-9 Shallow Water Areas for Wildlife
- CP-23 Wetland Restoration
- CP-23A Playa Lake Restoration

A Conservation Priority Area (CPA) will be established in portions of all three counties within Subdistrict #1 (Alamosa, Rio Grande, and Saguache) included in this proposal. The CPA will focus on water quantity, water quality, and wildlife habitat concerns within Subdistrict #1.

Estimated Project Specifications

The project would accept a total of approximately 40,000 acres of irrigated cropland. Exhibit B provides historical irrigated acres by county in the Valley through the year 2006. Landowners participating in the Rio Grande CREP would receive the irrigated rental rates for any qualified irrigated acreage they enroll. Surface irrigated cropland (pivot corners) adjacent to eligible ground water pivot irrigated cropland will be eligible for surface irrigated rental rates if all other CREP enrollment criteria are met. Dryland pivot corners do not exist within the project area and therefore are not included as eligible in this proposal. The 15 year cost of enrolling 40,000 irrigated acres is estimated at $125 million, to be funded approximately 80 percent by federal and 20 percent by non-federal locally driven sources.

Agriculture in Subdistrict #1 of the Rio Grande Basin

The Valley is one of the major potato growing regions in the country and is also extremely important for the production of alfalfa hay and small grains. Due to the limited amount of precipitation, agricultural

producers in the Valley are heavily dependent on center pivot sprinkler systems to irrigate their crops. According to the Colorado Agricultural Statistics (2006), approximately 750 farms have almost 200,000 acres under irrigation in the project area. Major crops are winter and spring wheat (six percent), barley (18 percent), oats (15 percent), alfalfa (46 percent), and potatoes (31 percent).

Agricultural producers in the Valley face a number of complicated resource related issues primarily related to water quantity but also water quality, soil erosion, and declining habitat for certain wildlife species. The Valley water supply is a complex system containing a deep confined aquifer separated from a shallower unconfined aquifer by a series of clay layers. Irrigation in the Valley and in the project area is dependent upon the conjunctive use of ground water and surface water. The water levels of the aquifer system are declining and soils in parts of the Valley have become highly alkaline. Additionally, in some areas of the Valley ground water has become highly mineralized from concentration of salts.

The Rio Grande Conservation Reserve Enhancement Program

The unsustainable use of water and a continued drought affecting the aquifer, the local economy, wetlands, and hydrology of the Basin requires immediate and targeted actions to reverse the trend. Thus, several local soil and water conservation districts, state agencies, and local producers have set ambitious goals to reduce consumptive water use in the Rio Grande Watershed and reverse the decline of the aquifer. Incentive and cost-share programs such as the CREP will provide vital assistance in helping Subdistrict #1 sustain its water resource and improve wetland habitat, without disastrously impacting its local economy and social structure. The incentive based actions in Subdistrict #1 through this CREP implementation and the subsequent retirement of irrigation on 40,000 acres will provide producers with a valuable tool to voluntarily address critical resource issues.

Under 14 or 15-year contracts, the Rio Grande CREP will enable eligible producers to enroll in the program, convert enrolled acres to permanent habitat, forego irrigation on those acres, and receive financial and technical assistance from the USDA and Subdistrict #1. No other program exists that can provide the financial and technical resources through collaborative federal-state-local partnerships necessary to address water management and other resource issues so critical to Subdistrict #1, the Valley, and the State.

Section 2: Existing Conditions

The Basin is of local, statewide, and national significance (Figure 1). The Rio Grande system drains approximately 8,000 square miles in south central Colorado. Two important historical water occurrences in the Valley include the Mexican Water Treaty and the Rio Grande Compact. The Mexican Water Treaty of 1906 established the United States' obligation to Mexico and the Rio Grande Compact of 1938 established Colorado's downstream water obligations to New Mexico and Texas. Farmers began growing potatoes in the Valley in 1875, making it one of the oldest potato growing regions in the country. In 2001, fresh potatoes contributed $200 million to the Valley's gross agricultural receipts, or approximately 63 percent of total receipts. Irrigated agriculture is the largest water use in the Basin, consuming over 85 percent of all water used. Water within the Basin also supplies drinking water to several small municipalities in the region, including Alamosa (population of 8,488), Center (population of 2,300), Manassa (population of 1,029), Monte Vista (population of 4,635), and San Luis (population of 734). A Hydrologic Unit Code (HUC) map is included as Exhibit M.

Figure 1 – Rio Grande Basin (Colorado)

Current Land Uses within the Rio Grande Basin

Land use patterns in the Basin in Colorado have remained relatively stable over recent years. Data provided in this analysis and in the following several tables was taken from Census of Agriculture, County Data for Colorado surveys conducted from 1987 through 2002. The data covers all counties within the Basin including Alamosa, Conejos, Costilla, Hinsdale, Mineral, Rio Grande, and Saguache Counties. Hinsdale and Mineral Counties have less than one percent of the total irrigated cropland within the Basin. These two counties are dominated by pasture and rangeland managed for cattle and other livestock grazing. The majority of the project area targeted in this CREP proposal lies within Alamosa, Rio Grande, and Saguache Counties.

Table 1 shows irrigated land in the entire Valley counties, including land outside the project area. Generally, the irrigated acreage has been stable in the Valley but technological improvements and crop efficiencies have increased to the detriment of the aquifers.

Table 1 - Irrigated Land in the San Luis Valley (acres)

County	1987	1992	1997	2002
Alamosa	108,029	97,297	99,858	93,968
Conejos	104,542	117,364	121,320	59,209
Costilla	30,859	41,604	41,072	34,866
Hinsdale	1,749	1,682	2,789	1,549
Mineral	1,055	1,057	279	(D)
Rio Grande	116,779	113,954	133,894	89,241
Saguache	136,553	125,839	199,940	91,025
Total	499,566	498,797	599,152	369,858**
Colorado (statewide)	3,013,773	3,169,839	3,374,233	2,590,654

*Source: USDA NASS 2002

** 2002 Data reflects the lack of surface water due to the severe drought. Subsequent years with adequate surface water have returned irrigated cropland to approximately 600,000 acres.

Table 2 shows the land in farms and ranches for the seven Rio Grande counties, including land outside the project area. The trend indicates a fairly stable agricultural base over the time period analyzed. The land in farms and ranches for of the State Colorado as well as the individual counties in the Valley appear to show similar trends; the Valley accounts for approximately five percent of all farmed land and ranches in Colorado.

Table 2 – Land in Farms and Ranches in the Rio Grande Basin (acres)

County	1987	1992	1997	2002
Alamosa	209,556	207,448	179,963	204,640
Conejos	301,699	304,592	261,012	267,708
Costilla	292,125	330,826	355,789	354,067
Hinsdale	9,899	9,021	9,391	8,681
Mineral	12,033	15,539	(D)	4,436
Rio Grande	221,155	219,612	225,919	170,999
Saguache	472,194	462,086	472,222	477,003
Total	1,518,661	1,549,124	1,504,296	1,487,534
Colorado	34,048,433	33,983,029	32,349,832	31,093,336

*Source: USDA NASS 2002

Table 3 describes total cropland in the Valley and the State. Total cropland acres have remained fairly stable, consistent with that seen on a statewide basis. Disclosure concerns (D) in Costilla, Hinsdale, and Mineral counties have little effect on the entire Basin due to the limited cropland acres in those counties.

Table 3 - Total Cropland Acres in the Rio Grande Basin

County	1987	1992	1997	2002
Alamosa	107,738	107,509	97,858	111,194
Conejos	125,997	137,625	125,537	138,281
Costilla	(D)	(D)	(D)	69,789
Hinsdale	1,959	(D)	2,305	4,197
Mineral	(D)	(D)	189	322
Rio Grande	119,875	120,482	132,329	110,868
Saguache	154,526	147,437	137,403	173,446
Total	510,095	513,053	495,621	608,097
Colorado	10,988,853	10,933,484	10,787,080	11,530,700

*Source: USDA NASS 2002

Farm Demographics

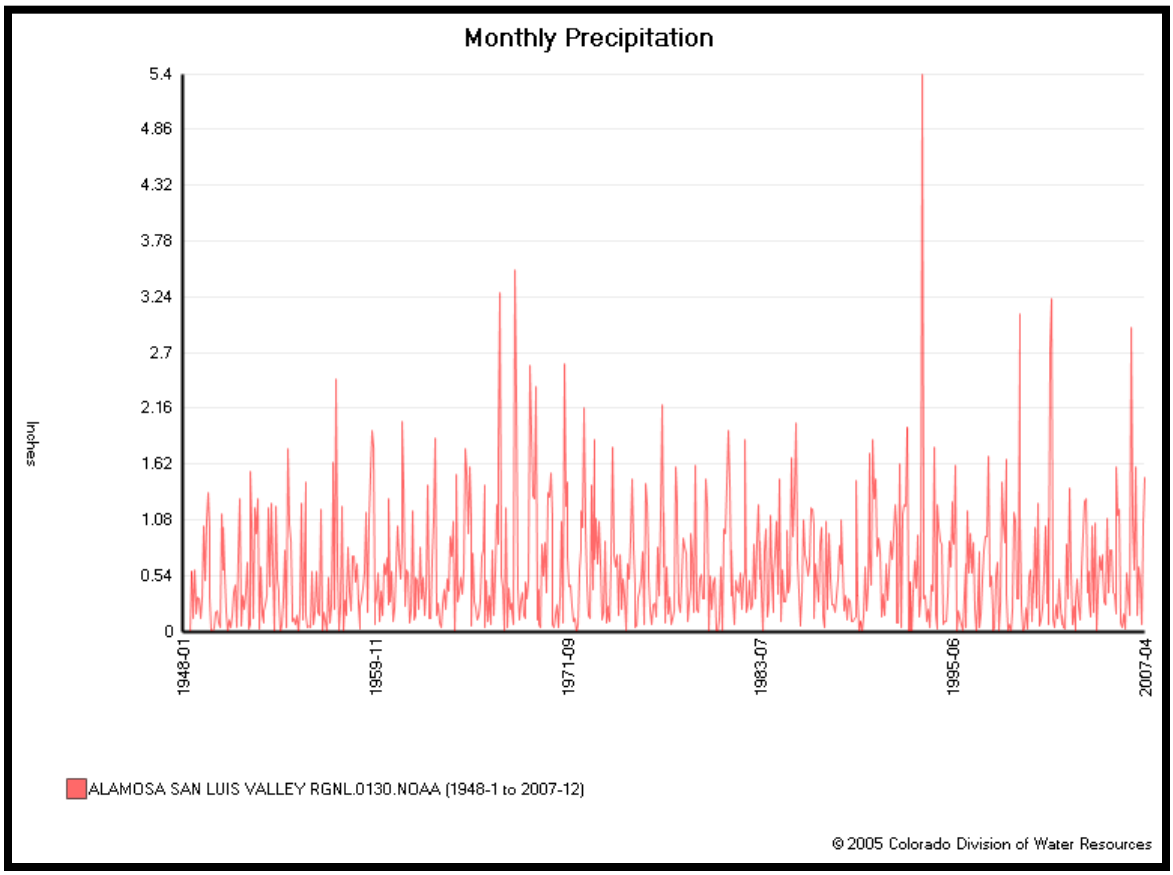
There are approximately 1,656 farms averaging 868 acres in size within the Basin. Approximately 987 of the total farms contain harvested cropland. Among the over 600,000 total cropland acres within the entire Basin, alfalfa (145,000 acres), potatoes (65,000 acres), barley (38,000 acres), and wheat (12,500 acres) are the predominant crops grown. Total cropland acres by county are detailed in Table 3. Farm demographics by county are detailed in Exhibit C.

Relevant Environmental Factors

Precipitation: The Valley is an arid, open, relatively flat region with a treeless floor situated in the south central portion of Colorado, west of the San Juan Mountains and east of the Sangre de Cristo Mountains. Elevation varies between 7,500 to 8,000 feet and is bounded by the mountains ranges to the east and west, acting as both geographic and geologic boundaries. On average, this region receives between seven to 10 annual inches of precipitation, with most of the precipitation occurring in the summer. The majority of the precipitation that makes it to the valley floor is lost to evaporation from the soil or is transpired by native vegetation before it can percolate downward to recharge the ground water. Recharge from precipitation occurs mostly during infrequent snowmelt or high rainfall events when water available from precipitation is high, antecedent soil moisture are high, and ET rates are relatively low.

The National Oceanic and Atmospheric Administration (NOAA) weather trends for the area located within Alamosa, Rio Grande, and Saguache County show varying precipitation levels. The second half of the last century witnessed precipitation trends that fluctuate significantly between years. For example, in September 2001, annual precipitation levels recorded at the Alamosa San Luis Regional Airport were 10.72 inches; by 2002, levels had decreased to 3.95 inches; and by 2006, 7.37 inches of precipitation were recorded. Graph 1 displays the precipitation patterns for the years 1948 to 2007.

Graph 1: Precipitation at Alamosa San Luis Valley Regional Airport 1948-2007



Soil & Geology: The Valley is part of the Rio Grande Rift, a continental-scale structure which extends from the Upper Arkansas Valley through the Valley and extending south through New Mexico and into Chihuahua, Mexico. The Valley is referred to as a graben, or a down-dropped block of the earth's crust, surrounded on the west side of the San Juan Mountains and on the east side by a major fault at the edge of the Sangre de Cristo range. The Valley is unique in that it is the only true valley rift in Colorado, which is formed by extensional forces that pull apart the earth's crustal sediments in a roughly east-west direction. The deepest formations in the Valley were deposited before rifting began, in the Oligocene Epoch approximately 35 million years ago. At the beginning of the Paleocene Era, approximately 65 million years ago, the Valley was a highland situated on ancient granite. Many of the hydrologically important layers were deposited due to the formation of the Valley and the uplift of the surrounding mountain ranges to the west and east.

The geology of the Valley is complex and there are several separate geographic regions, including the Northern San Luis Valley, Conejos and Alamosa River Valleys, San Luis Hills, and Costilla County. Each region's layering and soil characteristics are unique and have an important role in ground water occurrence and movement. For example, in areas that contain coarse sand or gravel soils, such as on the western Rio Grande fan and alluvial fans of the Sangre de Cristos, water is easily transmissible past the root zone of vegetation and thus little moisture is lost to evapotranspiration. However, areas similar to

the valley floor are made up of less permeable heavier textured soils and therefore a significant portion of water is lost to evapotranspiration.

The Valley grew in depth of over millions of years, filling with sediments and layers of volcanic rock from the nearby mountains. These sediments and spaces between the volcanic rocks eventually became saturated with water and made up the aquifers of the Valley. The aquifer system is generally comprised of a shallow unconfined aquifer and a deeper, confined aquifer. The shallowest aquifer is called the unconfined aquifer and is composed primarily of coarse material such as sand and gravel that have a high hydraulic conductivity, with depths of about 100 feet. Below the unconfined aquifer in the central portion of the Valley are a group of relatively impermeable clay layers referred to as the blue clay series, ranging in depth from 35 feet on the west side of the Valley to 125 feet on the east. Ground water recharges the pore spaces in the aquifers by percolation from surface streams, leakage through canals, and recharge from the mountains.

The blue clay layers are characterized by low permeability and beneath these layers the confined aquifer is located. Water flows from wells completed in the confined aquifer due to natural artesian pressure. The deeper aquifer system is composed of several water-saturated layers that can be identified by their different lithology and hydrologic characteristics. Regardless of these distinct characteristics, geologic and geophysical evidence shows these layers are hydraulically connected as well as being connected to the unconfined aquifer. Further, pursuant to *Alamosa-La Jara v. Gould* (674 P2.d at 914-Colo.1984), "to varying degrees, the surface streams, the unconfined aquifer, and the confined aquifer are hydraulically connected." Since the first drilled artesian well in 1887, confined aquifers have played an important role in the development of center pivot irrigation. The confined aquifer system is heavily used for artesian wells. Artesian wells are typically drilled to depths greater than 100 feet.

Vegetation Patterns: Rangeland vegetation in the Valley is extremely diverse and can be categorized into thirteen ecosystem habitats: Loamy Foothills; Rocky Foothills; Basalt Hills; Limy Bench; Mountain Outwash; Alkali Overflow; Salt Flat; Salt Meadow; Wet Meadow; Sand Hammock; Sandy Bench; Valley Sand; and Deep Sands. Portions of the Valley's natural vegetation consist of phreatophytes and xerophytes, occupying approximately one third of the valley floor. These sites occur in areas where depth to water below the land surface is 12 feet or less. This community includes several wetland types, including wet meadows, marshes, playa lakes, and alkali ponds. These habitat complexes have become increasingly important for numerous wetland wildlife species in the Valley. Several of these wetland types are also evident on slopes of the alluvial fans as well as in uncultivated areas bordering the central part of the Valley.

The numerous perennial stretches of the river systems are typical of a forest and wetlands habitat complex dominated by cottonwood and several species of willow. Native grasses, shrubs and forbs are common in the understory of these sites. Upland sites on heavier soils consist of greasewood, rabbit brush, and sparse stands of alkali sacaton and inland saltgrass. These sites are extremely dry and are generally dominated by a high percentage of bare ground. The sand dunes are a complex, fragile, and dynamic system which are influenced by wind, water, vegetation, and the surrounding terrain. Few plants grow on the dunes; however blowout grass and Indian ricegrass are species that have adapted to this unique environment.

Water Resources: The Valley is considered a high altitude desert, as it receives less than eight inches of precipitation per year. An extremely important source of water is from the surface water inflows in the form of runoff during spring snowmelt from the surrounding mountains. Agricultural activities account for more than 85 percent of the Basin water consumption with an estimated 630,000 acres under irrigation. Approximately 6,000 wells over 50 gallons per minute are located within the Valley, 3,156 within Subdistrict #1. There are approximately 200,000 irrigated acres within Subdistrict #1.

The Rio Grande exits through the southern part of the Valley at the Colorado-New Mexico border. Approximately thirty five miles northeast of Alamosa, the Valley includes an area that is a closed depression, with no surface water outlets. Surface water is this area originates from runoff out of the Sangre de Cristo mountain range, soaks into alluvial fans, and then the ground water migrates toward the lowest point in the depression near San Luis Lake. The Rio Grande and its tributaries, including the Closed Basin, drain approximately 8,000 square miles in Colorado. This Closed Basin is approximately 3,000 square miles in the northern section of the Valley and does not drain naturally into the Rio Grande.

Ground water is produced from two major aquifers within the Valley. The unconfined aquifer can be up to 200 feet deep and the substrate material consists of unconsolidated clay, silt, sand, and gravel. The unconfined aquifer can be found less than 12 feet from the ground surface and is easily accessed by wells. The unconfined aquifer functions similar to a surface reservoir with a pattern of rising levels in the spring and early summer caused by recharge from streams, canals, and early irrigation season return flows. Surface water increases are followed by a decline as the streamflow declines and ground water is pumped, largely for agricultural purposes. The unconfined aquifer is the principle source of ground water for irrigation, supplying 80 percent of all large capacity wells yielding more than 300 gallons per minute.

The confined aquifer ranges from 100 feet to almost 19,000 feet deep and is in a stratum made up of sediment inter-layered with volcanic rock. As water accumulates in this confined aquifer, water pressure builds and eventually breaks the impermeable layers creating artesian seeps. Wells were drilled into the confined aquifer starting in 1887 and have played a key role in the development of center-pivot irrigation in the Valley. There are approximately 1,333 large-capacity irrigation wells tapping the confined aquifer.

The Rio Grande Canal, the dominant surface water supply system in the Valley, consisting of 210 miles of canals and laterals, was constructed from 1881 through 1884. It furnishes water to 120,000 acres of land in Alamosa, Rio Grande, and Saguache Counties diverting approximately thirty percent of the Rio Grande water. Surface flood irrigation was the only method of delivering water to the field from the 1880s to the early 1960s. Well construction began in earnest in the 40's and 50's. These wells were typically used as supplemental supplies to surface water systems. By the 1960's and 1970's these center pivot irrigation systems replaced much of the surface flood systems by accessing the available water in the aquifer. Center pivot irrigation systems created a more efficient way to irrigate fields, connecting directly to the well. Today there are irrigators who use both surface and ground water through their center pivot irrigation system (via a mixing pond) or by recharging their surface water.

Wildlife and Species of Concern: Wetland habitats in the Valley support a diverse array of wildlife species, including thirteen wetland dependant breeding birds that are listed as rare or imperiled within the state. The Valley is the most important duck breeding area in Colorado, where waterfowl nest densities in some parts of the Valley have been shown to be higher than any other major duck producing habitat in the United States. Dabbling or "puddle ducks" comprise over 90 percent of the breeding and molting duck population, with mallards making up about one-third of the entire breeding population. The Rocky Mountain population of Sandhill Cranes depends on the Valley for critical migration habitat each spring and fall. Over 20,000 Sandhill Cranes forage in the Valley on their way to and from their summer and winter range. The Southwestern Willow Flycatcher is federally listed as endangered and is known to occur in Cottonwood and Willow riparian habitats in the Valley. A Habitat Conservation Plan is currently being drafted by several groups in the Valley to address these concerns.

Two species of fish, the Rio Grande Sucker and the Rio Grande Cutthroat Trout, inhabit the some of the streams within the Valley. Although historically thought to be fairly abundant in the Valley, the Rio Grande Sucker apparently only occurs in a few tributaries of the Rio Grande. In 1993, based on

extensive research and sampling, the Colorado Wildlife Commission passed a regulation designating the Rio Grande Sucker as a state endangered fish in Colorado. The Rio Grande Cutthroat Trout once ranged over much of the upper Basin in southern Colorado and New Mexico. Currently in Colorado, the species occur on private and public land in eight geographic management units in the Valley. The Colorado Division of Wildlife (CDOW) completed a comprehensive Conservation Plan for the Rio Grande Cutthroat Trout in 2004.

The rich and diverse wildlife community in the Valley includes 19 amphibians and reptiles, over 260 bird species, and approximately 320 mammals. Table 5 provides a partial list of species found in the region. Beneficial practices for species within the Valley are listed in Exhibit D.

Table 5 – Partial Species List for the San Luis Valley

(For complete list, see Natural Diversity Information system Website at http://ndis.nrel.colostate.edu)

Common Name	Scientific Name	Occurrence	Abundance
Northern Leopard Frog	Rana pipiens	Known to occur	Uncommon
American Peregrine Falcon	Falco peregrinus anatum	Known to occur	Unknown
Bald Eagle	Haliaeetus leucocephalus	Known to occur	Unknown
Barrow's Goldeneye	Bucephala islandica	Known to occur	Unknown
Black-necked Stilt	Himantopus mexicanus	Known to occur	Rare
Blue-winged Teal	Anas discors	Known to occur	Fairly Common
Bufflehead	Bucephala albeola	Known to occur	Unknown
Canvasback	Aythya valisineria	Known to occur	Rare
Cinnamon Teal	Anas cyanoptera	Known to occur	Common
Clark's Grebe	Aechmophorus clarkii	Known to occur	Fairly Common
Common Merganser	Mergus merganser	Known to occur	Uncommon
Ferruginous Hawk	Buteo regalis	Known to occur	Rare
Gadwall	Anas strepera	Known to occur	Fairly Common
Greater Sandhill Crane	Grus canadensis tabida	Known to occur	Unknown
Greater Scaup	Aythya marila	Known to occur	Unknown
Greater White-fronted Goose	Anser albifrons	Known to occur	Unknown
Greater Yellowlegs	Tringa melanoleuca	Known to occur	Unknown
Green-winged Teal	Anas crecca	Known to occur	Common
Gunnison Sage Grouse	Centrocercus minimus	Known to occur	Casual/Accidental
Lesser Scaup	Aythya affinis	Known to occur	Rare
Lesser Yellowlegs	Tringa flavipes	Known to occur	Unknown
Little Blue Heron	Egretta caerulea	Known to occur	Unknown
Long-billed Curlew	Numenius americanus	Known to occur	Unknown
Long-billed Dowitcher	Limnodromus scolopaceus	Known to occur	Unknown
MacGillivray's Warbler	Oporornis tolmiei	Known to occur	Rare
Mallard	Anas platyrhynchos	Known to occur	Abundant
Northern Pintail	Anas acuta	Known to occur	Fairly Common
Osprey	Pandion haliaetus	Known to occur	Casual/Accidental
Common Name	**Scientific Name**	**Occurrence**	**Abundance**
Pied-billed Grebe	Podilymbus podiceps	Known to occur	Fairly Common
Redhead	Aythya americana	Known to occur	Uncommon

Ring-necked Duck	Aythya collaris	Known to occur	Unknown
Ruddy Duck	Oxyura jamaicensis	Known to occur	Fairly Common
Sandhill Crane	Grus canadensis	Known to occur	Unknown
Short-eared Owl	Asio flammeus	Known to occur	Rare
Snowy Plover	Charadrius alexandrinus	Known to occur	Casual/Accidental
Sora	Porzana carolina	Known to occur	Uncommon
Southwestern Willow Flycatcher	Empidonax traillii extimus	Known to occur	Rare
Swainson's Hawk	Buteo swainsoni	Known to occur	Fairly Common
Whooping Crane	Grus americana	Known to occur	Unknown
Gray Fox	Urocyon cinereoargenteus	Known to occur	Rare
Gunnison's Prairie Dog	Cynomys gunnisoni	Known to occur	Fairly Common
Mule Deer	Odocoileus hemionus	Known to occur	Common
Western Spotted Skunk	Spilogale gracilis	Known to occur	Rare
Midget Faded Rattlesnake	Crotalus viridis concolor	Known to occur	Uncommon
Milk Snake	Lampropeltis triangulum	Likely to occur	Unknown
Short-horned Lizard	Phrynosoma hernandesi	Known to occur	Uncommon
Variable Skink	Eumeces gaigeae	Known to occur	Uncommon
Western Rattlesnake	Crotalus viridis	Known to occur	Uncommon
Western Terrestrial Garter Snake	Thamnophis elegans	Known to occur	Locally Common

Section 3: Agriculture Related Environmental Impacts

Magnitude of Agriculture Related Environmental Impacts

Water Quantity: The confined and unconfined aquifers are over-appropriated, with current rates of withdrawal exceeding their ability to recharge, resulting in a ground water overdraft or mining of the aquifers. Additionally, surface streams may have been impacted by this unsustainable use of the aquifers. The confined aquifer and its unique artesian pressure characteristics play an important hydrological role to the stream systems in the Valley. There is a scientifically proven hydraulic connection between the aquifers and streams in the Valley. Thus, withdrawals from the confined aquifer may impact stream flows, as well as the unconfined aquifer. Further, the confined aquifer provides hydraulic support for surface streams; if the water level declines considerably and/or the historical pattern becomes skewed to the point that the artesian pressure is permanently lowered, the surface streams may be significantly impacted. This would cause reduced streamflow, water level decline in the unconfined aquifer, and a dry up of wetlands created by the shallow unconfined aquifer.

The discovery of the confined aquifer in 1887 spawned the ground water development in the Valley. By the year 1891, 2,000 artesian wells were drilled; by 1958, that number increased to 7,500. By the 1930's large scale ground water development for irrigation began in the unconfined aquifer, increasing from 176 wells in 1936 to 1,300 wells in 1952. In 1972 the Colorado State Engineer placed a moratorium on well permits for new appropriations of ground water from the confined aquifer and the unconfined aquifer outside the boundaries of the Closed Basin. In 1981, the moratorium was expanded to new appropriations in the unconfined aquifer within the Closed Basin.

Irrigation makes up the majority of ground water use in the Valley; a much smaller amount is used for commercial, domestic, and municipal use. In 1998, an estimated 628,000 acre-feet were pumped for irrigation, compared to 8,000 acre-feet for domestic purposes. Water levels in the unconfined aquifer generally decline in the area where pumping is occurring for seasonal irrigation and rise once seasonal irrigation ceases. With levels falling on average one foot annually, irrigators have suffered rising pumping costs and diminished well productivity.

Water Quality: The Colorado Department of Agriculture's Groundwater Protection Program provides ground water quality monitoring results in a comprehensive database by year and geographic location, tracking pesticides and inorganic compounds including nitrate–nitrogen. Nearly 17.9 percent of monitoring wells sampled throughout the Valley from 1991-2006 failed to meet EPA drinking water standards for NO_3 content. The main project area counties had several wells that failed the EPA standard. Specifically, Alamosa County had 10 wells, Rio Grande County had eight wells, and Saguache County had five wells that exceeded the nitrate standard.

Soil Erosion: The primary cause of erosion in the Valley is through wind, which is most prevalent during the months of March, April, and May. Water erosion is a factor in some regions of the Valley, but more as a result of early or swift snow melt. Isolated water erosion as a result of extreme rain events is rare in the Valley due to the minimal precipitation that reaches the valley floor. Wind erosion can exceed four tons/acre under severe circumstances throughout a large portion of the Valley whereas water erosion seldom would total 0.3 ton/acre on similar soil types and the same cropping patterns and management practices.

Residue cover, field size, crop rotation intensity, and frequency of tillage operations all affect the rate and severity of wind erosion. Residue cover or the amount of dead and decaying vegetation on the soil surface is the most important factor affecting wind erosion. The amount of residue, either standing up

or lying down on the field is important to protecting the fragile soils of the Valley form wind erosion. Cropping patterns that include potatoes or vegetables also contribute significantly because little residue remains on the soil after these crops are harvested. The most problematic factor contributing to soil erosion is establishing spring crops following low residue crops of potatoes or vegetables. Excessive tillage during the spring months also reduces residue from previous small grain crops to a level that permits excessive erosion. Post-harvest tillage on any cropping rotation leaves little over-winter residue and leaves soils susceptible to erosion throughout the fall and winter.

Water erosion is primarily effected by the degree of slope and the length of the slope of the land. Most of the cropland area of the Valley is relatively flat with some gentle slopes being farmed on the perimeters of the cropland region. As mentioned previously, water erosion within the Valley is negligible due to the rather limited precipitation and the relatively flat terrain. Residue cover is also a major factor and contributes significantly to reducing water erosion by providing ground cover and accelerating water infiltration rates of the soil.

Wildlife: The Rio Grande riparian, wetland, and stream ecosystems are extremely productive and important to wildlife and humans alike. Key vegetation communities include Cottonwood and Willow along most of the stream and river corridors. A wide array of wetland complexes occur throughout the Valley. Agricultural and urban encroachment, improper grazing practices, irrigation water diversions, intensive irrigation, and the lack of periodic overbank flooding are a few issues that have been identified as being detrimental to the habitat and should be addressed to help improve conditions for the numerous species of wildlife inhabiting the Valley.

Thousands of waterfowl also pass through and nest in and around the numerous wetlands throughout the Valley. Twice a year people gather to view the spectacular migration of Sand Hill cranes through the Valley. The cranes gather, stage, and feed on waste grains and wetland plants for several weeks before continuing on their journey south to their wintering grounds or north to their breeding grounds.

The Colorado Wildlife Commission listed the Rio Grande Sucker as state endangered and the CDOW has developed a recovery plan for the species within the Valley. It is currently known only in general terms what role habitat alterations played in the decline of the Rio Grande Sucker. A variety of habitat modifications in the Valley in the late 1800s and early 1900s preceded the decline, however it has been suggested that subtle, long-term degradation of aquatic habitats can lead to a population decline especially with species that have unique habitat requirements. In New Mexico, it has been suggested that degradation of stream banks, loss of concealment cover, reduced flows, and poor water quality may limit Rio Grande Sucker populations.

The Rio Grande Chub is considered a sensitive species in tributaries within the Valley. Rio Grande Chub populations in Colorado have been reduced from historic levels and have likely been extirpated in the mainstem Rio Grande, occurring only in tributary streams. The primary threats to the Rio Grande Chub generally result from man-made events. Water diversion projects have changed and reduced the flow regime in both tributary and mainstem rivers and streams. Construction of diversion structures and reservoirs has degraded and fragmented habitat and created passage barriers. Other factors influencing the decline of this species include land use changes, local development, improper grazing, and the introduction of competing non-native fish.

The entire historic range of the Rio Grande Cutthroat Trout will probably never be known due to the lack of early distribution information. The subspecies is presumed to have occurred in the colder reaches of the Rio Grande drainage in Colorado and New Mexico. Rio Grande Cutthroat Trout habitat in Colorado included many streams and rivers in the Rio Grande system above 7,200 feet elevation. This

subspecies population has been reduced to a small portion of their historic range primarily due to habitat degradation and competition with non-native trout that have been introduced into the system. The detrimental habitat impacts include improper livestock grazing, logging, irrigation, dewatering of streams and siltation. Water temperatures have also increased over time due to man's hydrological modifications, negatively impacting the species habitat and ability to reproduce. A major threat to Rio Grande Cutthroat Trout occurred when non-native salmonids were introduced creating competition for food and habitat.

The Southwestern Willow Flycatcher breeds in relatively dense tree and shrub communities associated with rivers, lakes, reservoirs, and certain wetlands. In addition to parts of Texas, New Mexico, Arizona, California, Nevada, and Utah, the Southwest Willow Flycatcher is known to breed in the Valley of southwestern Colorado. The subspecies was listed as endangered in 1995. It is estimated that only 900 to 1100 pairs exist in the wild. Loss and modification of riparian habitat and nest parasitism by Brown-headed Cowbirds are the two primary causes of decline for this bird. Diversions of surface water, ground water pumping, dam construction and re-channelization and alteration of riparian habitat have impacted almost 90 percent of the Southwest Willow Flycatcher's historical habitat. Vegetation control along streams, changes in water and soil chemistry, and establishment of non-native invasive plants are also thought to have contributed to the decline. The Southwest Willow Flycatcher was listed as endangered by the U.S. Fish and Wildlife Service in 1995.

Another declining species that occurs in the riparian and some wetland habitat within the Valley is the Yellow-billed Cuckoo. Declines in this species have been precipitous in many areas since the early 1980s, primarily due to human impacts on mature deciduous Cottonwoods and Willows in the riparian habitat and deforestation in its tropical winter range. The southwestern population that occurs in the Valley is specialized on mature riparian forests consisting of large Cottonwoods and Willows. The southwestern population of the Yellow-billed Cuckoo is currently under petition to be listed as an endangered species.

Many of the species within the Valley have responded to the changes brought on by settlement and agriculture. The initial changes from a true high elevation desert with numerous wetlands to an area with intensive ground water pumping for agricultural production has had significant impacts on the wildlife population in the area. Some changes have enhanced habitat as a staging or stop-over area for Sandhill Cranes by creating a food supply. However, irrigated agriculture has had a significant change on streamflows in rivers and streams and has reduced or eliminated many significant wetland complexes. The depletion of the aquifer has reduced or eliminated wetlands which has affected shorebird and waterfowl habitat. A reduction in ground water pumping is theorized to improve streamflows and enhance the wetland complexes important to numerous wildlife species in the Valley.

Past and Projected Future Trends in Agricultural Impacts

Water Trends: The first irrigation ditch built in the Valley also has the distinction of being associated with the first recorded water right in Colorado history, the San Luis People's Ditch. As communities were established in the area, more ditches were constructed to accommodate modest farming in the region. In the 1880s, several larger canal systems were constructed and in 1881 the Rio Grande Canal, the largest in the Valley, was started. Today, major canals of the Rio Grande can divert almost 4,500 cubic feet per second, having a significant impact on the flow of the river. Drought, inefficient irrigation procedures, and water conflicts in the late 1880s and early 1900s caused salt and alkali conditions that waterlogged soils in some regions of the Valley. Water shortages and soil problems created less water for farmers in New Mexico and beyond. In 1889, an International Boundary Commission was established for the purpose of developing a plan to negotiate water supplies between the United States and Mexico.

Further, the signing of a treaty between the United States and Mexico in 1906 allowed Mexico to receive 60,000 acre-feet of water annually.

The Rio Grande Compact was signed in 1938 and ratified in 1939, requiring Colorado to deliver water to the State of New Mexico and subsequently, the State of Texas. The Closed Basin Project was created to assist toward delivery of downstream obligations under the Rio Grande Compact. Approximately 174 wells take water from the unconfined aquifer and transfer it to the Rio Grande for downstream use, covering the depletions caused by pumping wells. Population growth along the Front Range from Denver to Colorado Springs and Pueblo prompted innovative attempts to transfer water from the Valley to these major cities.

Surface flood irrigation continued through the early 1960s in the Valley, at which time center pivot irrigation systems started to replace most of the surface flood irrigation. This created a reliance on ground water supplies. Pivot irrigation permitted larger fields to be farmed and increased the production of potatoes, alfalfa, barley, and vegetables. Lower quantities of water often times contribute to water quality problems such as salt leaching and excess compounds such as nitrates. For example, water from the unconfined aquifer may contain salts, which tend to build up in the soils as they are brought to the surface for irrigation. Further, the Colorado Department of Agriculture's Groundwater Protection Program reported that nearly 17.9 percent of monitoring wells sampled throughout the Valley from 1991-2006 failed to meet EPA drinking water standards for NO_3 content. Specifically, Alamosa County had 10 wells, Rio Grande County had eight wells, and Saguache County had five wells that exceeded the nitrate standard.

Irrigated agriculture is the largest water use in the Valley, consuming approximately 85 percent of the annual use. There are approximately 6,000 wells in the Basin. Irrigated agriculture uses an estimated average of two million acre feet of water annually, of which an estimated 800,000 acre-feet comes from ground water pumping. Conditions that led to the current water table declines include significant decreases in snow fall and precipitation, drought conditions, and near historic maximum water use. Ground water pumping has not only impacted the unconfined aquifer levels; intensive ground water pumping for agriculture and prolonged drought have also contributed to a reduction in surface water streamflows in all of the streams and tributaries within the Basin.

Pumping from the unconfined aquifer and confined aquifer depletes surface streams; different regions within the Valley will have varying effects on the surface streams. Pumping from confined aquifers depletes the stream flow in several ways, such as discharge from springs, attributable to the reduction in artesian head in the confined aquifer (withdrawals from the confined aquifer exceed the long-term recharge to that aquifer). Additionally, a reduction in artesian pressure reduces the amount of water entering the unconfined aquifer from the confined aquifer, reducing the supply to the unconfined aquifer and eventually to the surface streams. Exhibit E displays the significant change in unconfined aquifer storage from the years 2002-2007.

Agricultural Trends: The production of specialty crops, potatoes, and high market value vegetables such as spinach, lettuce, and carrots have been the mainstay of the commercial agricultural economy in the Valley. The first settlers of the Valley migrated from northern New Mexico in the 1850s and settled along the narrow creeks and cultivated subsistence crops. Anglo-Americans, mostly from the Midwest settled the remainder of the Valley on 160 acre homesteads beginning in the 1870s. The first sizable demand for wheat, barley, and potatoes occurred in the late 1890s and were distributed to Pueblo and Denver. With the development of ground water irrigation from the 1960s through the 1980s, agriculture changed drastically in the region. According to the United States Department of Agriculture's National

Agricultural Statistics (2002), 25 percent of the total land area of the Valley (1,487,534 acres) is dedicated to agriculture, with 41 percent of that acreage being in cropland (608,097acres).

Economic Trends: The Valley raises some high value crops, including potatoes, lettuce, and malting barley. As is illustrated in Table 6, potatoes are the primary crop in terms of value of sales. The Valley produces 92 percent of Colorado's potatoes, 81 percent of the State's spring wheat, 73 percent of the barley, 30 percent of the oats, 76 percent of the spinach, 73 percent of the lettuce, and 46 percent of the carrots. The Valley is ranked in the top five potato producing areas in the United States, both in acres planted and production.

Table 6- Value of Sales by Irrigated Crop for Rio Grande Basin Counties (2001)

CROPS	*Total Production of Irrigated Crops*	*Value of Irrigated Crop Sales (million $)*	*Percent of Total*
Total		1,133.35	100.00%
Notable Contributors			
Potatoes (CWT)	112,255,000	$1,043.97	92.11%
Hay (Ton)	606,950	$60.70	5.36%
Barley Grain (BU)	5,880,000	$16.46	1.45%
All Wheat (BU)	3,552,000	$9.59	0.85%
Oats Grain (BU	1,385,500	$2.63	0.15%

*Jenny Thorvaldson and Dr, James Pritchett, Cooperative Extension, Colorado State University 2005

Annual value of sales and services of the Valley is $1,845 million, with agriculture industries comprising $392 million (over 20 percent) of this value. The Valley accounts for nearly one percent of the state's employment and the average unemployment rate in 2005 was seven percent. There are limited economic alternatives to agriculture in the Valley and the counties in this region are heavily dependent on agriculture for their economic base. Table 7 lists the major industrial sectors of the Valley.

Table 7- Rio Grande Economic Demographics (2002 IMPLAN data)

Industry	Value of Sales (million $)	Percent of Total
Notable Contributors (Sectors)		
Government and non-NAICs	$271	14.7 %
Cattle ranching and farming	$184	10.0 %
Construction	$169	9.2 %
Health and social services	$138	7.5 %
Retail trade	$116	6.3 %
All other crop farming	$111	6.0 %
Agriculture and forestry support activities	$97	5.3 %
Manufacturing	$90	4.9 %
Wholesale trade	$65	3.5 %
Finance and insurance	$62	3.4 %
Total	**$1,845**	**100.0 %**

***Source: Jenny Thorvaldson and Dr. James Pritchett, Cooperative Extension, Colorado State University 2007**

Despite the region's heavy reliance on agriculture, a 40,000 acre CREP is projected to only marginally impact the region's overall economy, as evidenced by Table 8. The total net economic impact amounts to eight percent of the total value of sales, 12 percent of all agricultural sales, and 13 percent of irrigated crop sales in the Valley.

Local governments would be impacted primarily through reduced property tax revenue, beginning upon the expiration of CREP contracts and only on those acres enrolled in CREP that elected to retire the water perpetually. Those acres where the irrigation water on the CREP acres were only retired for the term of the CREP contract would not impact property tax revenue. It is difficult to determine how many producers will elect to retire irrigation water perpetually, but estimations are that perpetual water retirement will occur only on about 50 percent of the total 40,000 acre program. The issue of a declining aquifer will occur and without addressing the decline through programs such as CREP, continued irrigation on all acres will likely become decreasingly cost effective for each producer. Reductions in irrigation without CREP would likely hasten the impact on local property taxes. Sale tax impacts would not approach property tax impacts.

Table 8: Anticipated Economic Impacts of Retiring 40,000 Irrigated Acres through CREP (thousand $)

Impact	Direct	Indirect	Induced	Total
Total Effect on Outflows	**-$126,279**	**-$14,220**	**-$14,607**	**-$155,106**
Notable Impacts				
Irrigated Crops	-$126,279	-$231	-$43	-$126,553
Wholesale Trade	$0	-$3,447	-$460	-$3,908
Agriculture & Forestry Support	$0	-$2,401	-$4	-$2,405
Owner-Occupied Dwellings [1]	$0	$0	-$2,355	-$2,355
Monetary & Depository Credit Institutions	$0	-$725	-$678	-$1,403
Hospitals	$0	$0	-$1,052	-$1,052
Eating & Drinking Places	$0	-$42	-$992	-$1,035
Commercial Machinery Repair & Maintenance	$0	-$899	-$8	-$907
Power Generation & Supply	$0	-$298	-$537	-$835
Other State & Local Government [2]	$0	-$429	-$394	-$823
Physicians, Dentists, etc.	$0	$0	-$799	-$799
Real Estate	$0	-$245	-$507	-$753
Inflows from CREP Rent at $150/acre	**$6,000**	**$676**	**$694**	**$7,370**
Net Economic Impact	**-$120,279**	**-$13,544**	**-$13,913**	**-$147,736**

***Source: Dr. James Pritchett, Cooperative Extension, Colorado State University 2007**
[1] This sector represents home-ownership
[2] This sector does not include State and Local Government electric utilities or passenger transportation

Nature of Health Related Agricultural Impacts

As previously stated, nearly 18 percent of the Basin monitoring wells did not meet EPA standards for nitrates (NO_3). Reduced irrigation can be expected to improve ground water quality by (1) reducing agricultural chemical applications, and (2) increasing the relative amount of natural aquifer recharge, thereby decreasing contaminant levels.

Other Efforts to Address Agricultural Impacts through State and Federal Programs Federal Programs (USDA)

Federal Programs

Environmental Quality Incentive Program – Ground and Surface Water Conservation Program (GSWCP): The Rio Grande Water Conservation District has leveraged partial funding through the Ground and Surface Water Conservation Program (GSWCP) and has provided match dollars to provide incentives to reduce water consumption on cropland. The value of the water retirement portion of this program was not realized as dryland crops are not feasible in the Valley due to limited amount of precipitation during the growing season. Other practices provided through the GSWCP have proven somewhat effective, however the water conservation efforts represents only a small fraction of what must be accomplished to begin stabilizing the aquifer.

Conservation Reserve Program (CRP): The Conservation Reserve Program (CRP) has not been used in the Valley except for a few small acre continuous practices. Again, the lack of dryland cropland and the value of the irrigated cropland make participation in general CRP sign-ups almost non-existent.

Wetland Reserve Program (WRP): The Wetlands Reserve Program (WRP) was not historically used in the Valley for a variety of reasons. Most recently, several producers have participated in the program and numerous wetlands have been restored using funds from this program. Most of the acres enrolled through WRP were non-cropland and non-irrigated. Although the wetland restoration and enhancement on these acres are extremely important to the wildlife species in the area, the enrolled acres did little to address the declining aquifer in the Valley.

Wildlife Habitat Incentive Program (WHIP): The Wildlife Habitat Incentive Program (WHIP) is an extremely popular program administered by NRCS and has been used in some instances to improve habitat for a number of declining species within the area. Again, although the program is effective in addressing certain wildlife habitat concerns, it cannot address the declining aquifer.

U.S. Fish and Wildlife Service – Partners for Fish and Wildlife: The Partners for Fish and Wildlife Program administered by the U.S. Fish and Wildlife Service is extremely active in the Valley. The Partners Program has been involved working with landowners, other agencies, and non-profit organizations assisting in the enhancement of riparian, wetland, and associated upland habitat on private land in the Valley. The Partners Program is very active in the Intermountain West Joint Venture and the Wetlands Initiative.

State Programs

Colorado Wetlands for Wildlife Program: The Colorado Division of Wildlife administers a statewide wetlands program that is locally driven through Focus Area Committees geographically distributed in areas that have been identified as critical or extremely important for wetland dependant wildlife species. These Focus Committees are made up of representatives from state and federal agencies and non-profit conservation organizations with an interest in wetland and riparian habitat conservation. The San Luis Valley Focus Committee covers the entire Valley and has been actively protecting and restoring critical wetlands and riparian areas in the Basin. This effort has been primarily focused on agricultural hay and pasture land on lands with senior surface water rights. The major activities have been associated with a corridor along the Rio Grande River. Although these efforts have improved wetland habitat along the Rio Grande, they have not significantly contributed to the conservation of ground water.

The Habitat Partnership Program (H.P.P.): The Habitat Partnership Program, also administered by CDOW, was initiated in 1990 to provide pro-active habitat management on private land for the purpose of minimizing wildlife conflicts with agriculture production activities. The H.P.P. is administered through nineteen geographically distributed and locally led committees and is one of the first in the state. This group has been active developing and implementing plans to minimize wildlife conflicts related to vegetables and potatoes.

Preserving Colorado Landscapes (P.C.L.): Preserving Colorado Landscapes is a partnership between the Great Outdoors Colorado Board (lottery funds), The Nature Conservancy (T.N.C.), and CDOW. Preserving Colorado Landscapes seeks to protect, through long-term or perpetual easements, significant or unique landscapes that are critical to perpetuating a species or an ecosystem. P.C.L. has been active in the Valley for several years and has protected several critical parcels.

Conservancy Districts: The Valley has five conservancy districts, Rio Grande, Center, Mosca-Hoover, Conejos County, and Costilla, representing most of the geographic regions of the Basin, including the Rio Grande Water Conservation District. These Districts are active in water and soil conservation throughout the Valley.

Rio Grande Water Conservation District: The Rio Grande Water Conservation District was created in 1967 to assist the state in water management activities within the Rio Grande Basin. The Rio Grande Water Conservation District has also worked with agriculture producers to assist with water management activities related to water conservation within the Basin. The Rio Grande Water Conservation District has recently approved Subdistrict #1's Plan for Water Management to address declining water levels in the Unconfined Aquifer located in portions of Alamosa, Saguache, and Rio Grande Counties. The overall objective of the Plan for Water Management will be to provide water management alternatives within the Subdistrict #1 through economic-based incentives that promote conservation and management of irrigation water. The goals of the Subdistrict #1 are to develop programs and incentives that, when implemented, will cause ground water levels in the unconfined aquifer of the Closed Basin to recover to a sustainable level. This will require a reduction in ground water pumping for irrigation and improved water management practices throughout the Subdistrict #1.

The Rio Grande Headwaters Land Trust (RiGHT): The Rio Grande Headwaters Land Trust is a local non-profit committed to working with private landowners, public agencies, and other conservation organizations to preserve the natural beauty and ecological values in Colorado's San Luis Valley, while promoting a strong agricultural lifestyle. As of January, 2008, RiGHT has a portfolio of 15 conservation projects in the San Luis Valley totaling 10,385 acres. Twelve of the projects are located within the three counties targeted by this CREP proposal. In December, 2007 RiGHT was awarded a $7.4 million legacy grant from Great Outdoors Colorado (GOCO) for its collaborative project, The Rio Grande Initiative. In March of 2008, an additional $1.5 million was awarded from the Colorado Water Conservation Board's Water Supply Reserve Account, with unanimous support from the Rio Grande Basin Round Table. These grants will be used to further the objectives of both the Rio Grande Initiative and this CREP proposal. By protecting the strategic and critical private lands along the headwaters length of the Rio Grande River, this effort aims to contribute to overall water sustainability for the valley. As the local land trust, RiGHT collaborates with state and national conservation partners including the Nature Conservancy, Ducks Unlimited, the trust for Public Land, Colorado Cattleman's Agricultural Land Trust, Colorado Open Lands, and others to achieve conservation of key private lands in the San Luis Valley.

Ducks Unlimited (DU): Ducks Unlimited have had a strong conservation presence in the San Luis Valley for a number of years. They have partnered with the Colorado Division of Wildlife on numerous conservation easements to protect critical wetlands. DU has participated and lead efforts to improve irrigation channels, install structures, and restore wetlands on thousands of acres within the San Luis Valley. A number of their current projects are designed to protect valuable waterfowl nesting areas, as well as protect and enhance critical habitat for endangered species such as the Southwestern Willow Flycatcher.

Section 4: Project Objectives

Objectives Overview:

The primary objectives of the Rio Grande CREP are:

1) Reduce soil erosion from approximately 681,252 tons to approximately 149,487 tons per year on all acres enrolled in CREP, a savings of approximately 531,765 tons per year.

2) Establish a minimum of 40,000 acres of habitat for numerous wildlife species, including several aquatic and wetland dependant species that are declining due to habitat degradation.

3) Reduce fertilizer and pesticide application by approximately 20 percent over the total project area and eliminate the need for herbicides and fertilizer on all enrolled acres (see Exhibit F for specific amounts).

4) Establish a minimum of 40,000 acres of native vegetation throughout the project area.

5) Restore and enhance a minimum of 750 acres of degraded and inefficient wetlands.

6) Reduce agricultural use of the confined and unconfined aquifer in the Basin by approximately 60,060 acre-feet of ground water per year equaling approximately a 12 percent water savings within the project area and approximately five percent within the entire Basin in Colorado.

7) Increase streamflows in streams associated within the project area.

8) Reduce energy consumption from an average of 144,704 kilo-watt per hour (kW-hr) to less than 5,000 k-W per pivot for the first year or two on all pivots enrolled in the CREP. Subsequent year's energy consumption will be reduced to zero for all pivots enrolled in the CREP. Total energy savings for the term of the CREP contracts will approach six million k-W hr.

9) Reduce the percentage of ground water test wells containing nitrogen (NO_3) levels above EPA standards.

Targeting ground water conservation will enhance riparian, wetland, and upland habitat, improve streamflows, and contribute to the improvement of the confined and unconfined aquifer within the project area. The benefits of this program will not only be realized within the project area boundaries, but will influence the downstream habitat throughout the Basin in Colorado and downstream states. Voluntary, incentive-based conservation programs have proven to be the most cost-effective tools in addressing specific resource concerns. The CREP has proven to be successful in achieving water quantity and water quality benefits in other states and in the Republican River Basin in Colorado. It is generally accepted that the partnership between USDA, states, and other partners created through CREP provides the most efficient return for investment than any other tool available to achieve a multitude of objectives.

Conserve Ground and Surface Water

As previously mentioned, terrestrial and aquatic wildlife habitat will be enhanced, not only through the voluntary land retirement and the associated curtailment of irrigation on the 40,000 acres, but through increased streamflows, enhanced wetland and riparian areas, and the creation of a more diverse and rich habitat within the region.

Full implementation of the project will reduce depletions to the aquifer by as much as five percent. Within Subdistrict #1, producers consume an average of about 18 acre-inches of water per acre of land irrigated. The total ground water use reduced based on these figures indicate a total reduction of approximately 60,000 acre-feet of annual ground water pumping. Due to the nature of the aquifers within the Basin, it is anticipated that this reduction alone could provide a significant contribution to reversing the aquifer's decline. As a comparison, this savings represents approximately one hundred twenty percent (120%) of the current storage in Rio Grande Reservoir which is one of the largest reservoirs in the Basin. Average annual ground water pumping within the entire Basin is roughly 1.2 million acre feet. Ground water pumping only within the Subdistrict from 1988 through 2004 is illustrated in Exhibit G.

Assuming that 15 percent of accepted CREP acres are irrigated by surface water, streamflows will increase proportionally. While reduction of ground water pumping will provide long-lasting beneficial impacts to the aquifers and future incremental benefits to streamflow, reducing surface water diversions in Colorado will provide many immediate benefits:

- Improved riparian habitat in Colorado;
- Added water availability – and thus improved wildlife habitat and recreational activity – in downstream federal reservoirs; and
- Reduced fertilizer- and pesticide-contaminated return flows.

Improve Water Quality

The relatively high conductivity of aquifers in certain areas of the Valley leads to the potential for transport of contaminants from source areas to points of use. This conductivity, paired with low natural recharge availability, makes the area sensitive to herbicide contamination. The higher relative recharge availability of nitrate-laden surface water irrigation may further impact ground water quality in the Basin. Improved ground water quality, therefore, has been included as a program objective. As previously mentioned, the Colorado Department of Agriculture's Groundwater Protection Program reported that nearly 17.9 percent of monitoring wells sampled throughout the Valley from 1991-2006 failed to meet EPA drinking water standards for NO_3 content. Specifically, Alamosa County had 10 wells, Rio Grande County had eight wells, and Saguache County had five wells that exceeded the nitrate standard.

Section 5: Project Description

The Rio Grande CREP proposal aims to coordinate federal, state, and local efforts that address varying natural resource issues throughout the project area. Retirement of irrigated cropland is vital to the long-term sustainability of water resources in the Valley and mitigating economic impacts to this highly agricultural reliant region will require cooperative planning and funding. All irrigated acres enrolled in the Rio Grande CREP will require water retirement for a minimum of fifteen years and many acres will be retired in perpetuity. Technical staff will work with landowners and solicit outside expertise to determine the conservation practice that provides the most benefit and has the highest likelihood of success on each subject acre.

Proposed CRP Conservation Practices

The Rio Grande CREP is proposed to include, but not be limited to the following practices:

- CP-2 Permanent Native Grasses
- CP-4D Permanent Wildlife Habitat-Noneasement
- CP-9 Shallow Water Areas for Wildlife
- CP-23 Wetland Restoration
- CP-23A Playa Lake Restoration

Not more than eighteen inches of water may be applied to ensure grass establishment in the first three years following cover crop planting. Upon establishment of an adequate grass stand, irrigation will not be necessary after year three. If it is determined that an adequate grass stand has not been established, irrigation may be required until a successful stand is established. Determination for irrigation needs for cover crop and grass establishment will be determined by NRCS or Technical Service Provider (TSP). Mid-contract management practices will be applied as recommended by technical staff. Emergency and managed haying and grazing may be permitted, as necessary to maintain grass stand vigor. These practices may not be widely implemented in the project area due to the 25% reduction in the CRP rental rate.

Proposed Acres

Forty thousand acres of irrigated cropland would lie entirely within the Subdistrict #1 boundary. A county acre limitation does not appear to be warranted based on public input at several meetings. If enrollment appears to be skewed toward one of the three counties, a cap may be placed on that county at a later date.

The Subdistrict #1 will provide greater incentives to those acres closer to targeted streams and those acres that through hydrological study results can provide the greatest benefit to the aquifer. The proposal also recommends federal incentives for approved wetland, and Playa Lake conservation practices, per national CRP directives.

Project Implementation Period and Success Probability

This proposed project would be implemented through continuous sign-up as approved by FSA. The success of the project will be determined by the level of producer participation, geographic distribution of acres that maximizes streamflow and aquifer levels while mitigating economic impacts and progress toward program objectives, particularly the retirement of ground water. The Subdistrict #1 will work with NRCS staff to provide technical assistance to producers on the implementation and management practices applied through the program. Subdistrict #1 will work with FSA to ensure that non-federal

funding sources are providing at least 20% of the program costs as required. Stream proximity and aquifer benefits will be vital to the success of this program and Subdistrict #1 will work to ensure that participation levels in these areas meet the minimum needs to achieve the objectives. The Subdistrict #1 will work with CDWR staff to provide adequate contract compliance documentation to USDA staff.

Application Flow Chart

Producer makes application with FSA (CRP-2C). App. includes FSA-578, aerial photos, and well permit or water decree

FSA determines producer eligibilty, explains program policy and practice requirements. FSA forwards CRP-2C to NRCS and R.G. Subdistrict #1.

FSA, NRCS or TSP conduct site visit to determine practice viability, need.feasibility, soil type, and other technical requirements.

R.G. Subdistrict #1 and CDWR review diversion records, permit, and/or water decree. Render opinion to FSA on eligible acres and other water related criteria.

FSA determines acreage and calculates payment incentives. R.G. Subdistrict #1 determines acreage and calculates payment incentives.

FSA completes CRP-1 and obtains producer signatures. FSA notifies producer of acceptance and completes paid-for measurement service.

NRCS and State complete conservation plan and NEPA evaluation. R.G. Subdistrict #1 obtains plan approval from NRCS and/or Soil Conservation District

FSA approves conservation plan and NEPA evaluation. FSA provides signed CRP-1 to producer

FSA and R.G. Subdistrict #1 disburse signing incentive payment as applicable

Producer completes practice installation per conservation plan.

NRCS conducts on-site review of installation. Certifies AD-862, approving installation.

Producer submits to FSA signed AD-245, invoices, and receipts for cost-share verification

FSA and R.G. Subdistrict #1 disperse eligible cost-share and Practice Incentive Payments to producer. Producer conveys water right to R.G. Subdistrict #1 or Request to Cancel a Wel Permit. In case of latter, producer seals well as required.

FSA and R.G. Subdistrict #1 disburse annual rental payments beginning in October of the following Federal Fiscal Year.

R.G. Subdistrict #1, CDWR, and other non-federal partners annually provide monitoring and compliance reviews to NRCS and FSA.

FSA-Farm Service Agency; NRCS -Natural Resources Conservation Service; R.G. Subdistrict #1- Rio Grande Water Conservation District Subdistrict #1; CDWR- Colorado Division of Water Resources

Section 6: Cost Analysis

Table 11 – Total Estimated Project Costs

Source	Costs	Percent of Total
Federal Funds	$ 94,495,000	75%
Non-federal incentives and cost-share	$ 27,345,565	22%
Non-federal in-kind contributions	$4,000,000	3%
Total Project Costs	$ $125,840,565	100%

Non-federally Funded Costs

Incentives and Cost-Sharing: The non-federal funding for incentives and cost-sharing will be provided by Subdistrict #1, who will have the authority to assess fees within the Subdistrict boundaries, as outlined in the Plan for Water Management. In 2010, Subdistrict # 1 projects to raise nearly $2,500,000 specifically for the CREP from its fee assessments. Additional annual fee assessments will also be applied to the CREP for water retirement and annual rental incentive payments, including incentives for voluntary perpetual water retirement (please see Resolution in Exhibit I). Using Subdistrict #1's proposed incentive structure and estimating the location of acres in column two; the Subdistrict's costs are calculated in Table 12.

Table 12a – Subdistrict #1 of the Rio Grande Water Conservation District Estimated Payments for 15 Year Water Retirements

	Estimated number of acres	RGWCD Subdistrict #1 Annual Rental Payments	RGWCD Subdistrict #1 15 year rental costs	RGWCD Subdistrict #1 One-time Target Area bonus pymt/acre	RGWCD Subdistrict #1 Total Target Area Bonus Payment	RGWCD Subdistrict #1 One-time seeding bonus pymt/acre	RGWCD Subdistrict #1 Total Seeding Bonus Payment	RGWCD Subdistrict #1 Annual Water Retirement (per acre)	RGWCD Subdistrict #1 15 year Water Retirement	Total RGWCD Subdistrict #1 Contributions for 15 Year Water Retirements
Non-target area	17,033	$0.00	$0.00	$0.00	$0.0			$22	$5,620,890	$5,620,890
Target Area	2,967	$10.00	$445,050	$100.00	$296,700	$100.00	$296,700	$33	$1,468,665	$2,507,115
Totals	20,000		$445,050		$296,700		$296,700		$7,089,555	$8,128,005

* See Exhibit K –Map showing target area

Table 12b – Subdistrict #1 of the Rio Grande Water Conservation District Estimated Payments for Permanent Water Retirements

	Estimated number of acres	RGWCD Subdistrict #1 Annual Rental Payments	RGWCD Subdistrict #1 15 year rental costs	RGWCD Subdistrict #1 One-time Target Area bonus pymt/acre	RGWCD Subdistrict #1 Total Target Area Bonus Payment	RGWCD Subdistrict #1 One-time seeding bonus pymt/acre	RGWCD Subdistrict #1 Total Seeding Bonus Payment	RGWCD Subdistrict #1 Annual Water Retirement	RGWCD Subdistrict #1 15 year Water Retirement	RGWCD Subdistrict #1 Perp. Water Retirement-One-time Bonus-per ac.	Total RGWCD Subdistrict #1 Perp Water Retirement Bonus	Total RGWCD Subdistrict #1 Contributions for Perm. Water Retirements
Non-target area	17,033	$0.0	$0.0					$44	$11,241,780	$200.00	$3,406,600	$14,648,380
Target area*	2,967	$10.00	$445,050	$100.00	$296,700	$100.00	$296,700	$66	$2,937,330	$200.00	$593,400	$4,569,180
Totals	**20,000**		$445,050		$296,700		$296,700		$14,179,110		$4,000,000	$19,217,560

* See Exhibit K –Map showing target area

Table 13 – United States Department of Agriculture Estimated Costs

Practice	Acres	Annual Rental Costs	Annual Maintenance	15 yr Rental Costs	15 yr Maintenance	Installation Costs	25% Bonus	Total USDA-FSA Payments
CP-2 native	27,000	$4,050,000	$108,000	$60,750,000	$1,620,000	$1,350,000		$63,720,000
CP-4D wildlife	10,450	$1,567,500	$41,800	$23,512,500	$627,000	$522,500		$24,662,000
CP-9 shallow water	1,600	$240,000	$6,400	$3,600,000	$96,000	$ 80,000		$3,776,000
CP-23 Wetland	700	$105,000	$2,800	$1,575,000	$42,000	$70,000	$35,000	$1,722,000
CP-23A Playa Lakes	250	$37,500	$1,000	$562,500	$15,000	$25,000	$12,500	$615,000
Totals	**40,000**	**$6,000,000**	**$160,000**	**$90,000,000**	**$2,400,000**	**$2,047,500**	**$47,500**	**$94,495,000**

**Actual acres by conservation practice shall be determined by technical staff's assessment of best eligible practice on subject acres.

In-Kind: The Department of Natural Resources, through the **Division of Water Resources Water Division 3,** has an office in the Valley, whose staff is available to assist Subdistrict #1 with CREP activities. The **Colorado Division of Water Resources (CDWR)** will provide aquifer and streamflow data to assist with the monitoring of aquifer levels and targeted streamflows within the Valley. The CDWR will also assist with monitoring ground water pumping, review the CREP applications for validity, and assist with permitting. The CDWR, with other state staff and contracted consultants, will continue to research the ground water and surface water connectivity and impacts in the Valley. The CDWR will maintain and monitor streamflow gauging stations and work with the **State of Colorado Department of Health's Division of Water Quality Control** in their efforts to monitor ground and surface water quality. Finally, the CDWR will provide information through public meetings in an effort to continually outline the steps needed to reduce water consumption in the Valley. Numerous informational meetings have been held in the Valley to date. The CDWR will be the lead state agency assisting the subdistrict in providing public outreach and communications pertaining to the CREP in the Valley. All of these efforts will continue extensively through the first year of the CREP, and will be maintained through the duration of the program.

The **Rio Grande Water Conservation District,** through **Subdistrict # 1,** will assist CDWR with all well administration and public outreach, and will work directly with the CREP Administrator to monitor USDA compliance and provide USDA with annual CREP progress reports. Subdistrict # 1 will work to assist in the enforcement of the water retirement terms of the producer contracts and ensure that all applicable water retirement documents are submitted to the **CDWR.** Subdistrict #1, through the General Manager, CREP Administrator, Subdistrict #1 Board of Directors, or the CREP Subcommittee will continually provide public outreach and support for the program. The Rio Grande Water Conservation District, through the Subdistrict # 1's assessments, has budgeted sufficient funds to provide all administrative activities associated with this CREP.

The **Colorado Division of Wildlife (CDOW)** will provide wildlife population monitoring and administration. The DOW annually conducts wildlife population surveys that will serve as baseline information for the project. Aquatic species, as well as terrestrial wildlife will be monitored using scientifically accepted methods. In addition, habitat changes will be documented to monitor improvements and enhancement of habitat conditions for specific species. In particular, the riparian habitat zone will be periodically surveyed to try to demonstrate improvements in the habitat conditions for the Southwestern Willow Flycatcher. Efforts will continue within the riparian zone to demonstrate improvement and hopefully increases in breeding bird inventories for these species.

Colorado State University Cooperative Extension will provide public outreach support to the cooperating state and local agencies involved with this CREP submission and implementation. Extension agents with expertise in programmatic areas will be available to answer questions and will help coordinate informational meetings throughout the Valley. Cooperative Extension has extensive outreach networks and will assist with the dissemination of information through these networks. Cooperative Extension has the capacity and expertise to analyze and interpret economic and social impacts in the local communities. Positive impacts will result from changes in environmental conditions as water conservation is realized through this CREP. Some negative impacts may be realized from decreased economic activity in agriculture as land is removed from irrigated agriculture, whether temporary or permanent. Cooperative Extension can monitor these changes and provide suggestions that may mitigate the economic impacts.

There are several planned **Ground Water Management Districts** and subdistrict in the Valley that may assist with the field inspections of wells and potentially perform water level measurements. These districts can also assist with the public outreach efforts that will be necessary to ensure the CREP is successful.

The Rocky Mountain Bird Observatory (RMBO) has offered to provide expertise and resources to monitor passerine bird responses to habitat improvements. They are particularly interested in the CREP as it pertains to riparian enhancement and the Southwestern Willow Flycatcher.

The Nature Conservancy (TNC) has a large parcel of native habitat within the Valley and has shown interest in participating in CREP, as these acres could provide benefits to these existing holdings through improved aquifer levels and streamflows. Meetings have been held with TNC to develop further cooperation and investigate additional mutual objectives between the Subdistrict #1 and TNC.

The **Rio Grande Headwaters Land Trust (RiGHT)** has been extremely active and has indicated a desire to continue providing conservation measures in the Valley. The Rio Grande Initiative was recently awarded $7.4 million dollars to protect farms and ranches along the Rio Grande River. These efforts along with other activities undertaken by **RiGHT** are consistent with the CREP objectives such as water conservation and improving wildlife habitat. **RiGHT** has specifically targeted riparian habitat that is important to the Southwestern Willow Flycatcher, listed as endangered.

Section 7: Monitoring Program

How Success of Program will be Measured

The success of the program will be measured through producer participation level, location of enrolled acres, and the progress toward overall program objectives. Measuring of progress toward meeting program objectives are detailed in this section.

Description of Data to be Collected and Methods

Water Quantity: Participants in the Rio Grande CREP will be required to provide legal documentation, including ground water well permits, surface water right decrees, if applicable, legal descriptions and possibly maps of all formerly irrigated lands that will be subject to a CREP contract. The acreage description and water use will be verified through a cooperative effort between CDWR staff and Subdistrict #1 on a regular basis. Verification will entail research of appropriate County Assessor's Office data, some on-site inspections to confirm irrigated parcel information and continual consultation with local FSA offices to ensure said acreages are consistent with their records. Upon enrollment, all monitoring and verification that the enrolled lands are not being irrigated will consist of two parts for the term of the CREP contract: (1) an annual field inspection of any diversion structures (headgates and/or ground water wells) to ensure that they are either padlocked or otherwise rendered inoperable; and (2) periodic field inspections throughout the irrigation season to verify the subject lands are not being irrigated for the purpose of growing crops. Producers violating the provisions of the contract pertaining to water use will be notified and required to immediately comply.

The annual water savings from participation in the program will be calculated as the net difference in depletions to streamflows and aquifers as calculated by CDWR and Subdistrict # 1 water engineers. The net savings will be provided in an annual report to Subdistrict #1, to the CREP Administrator, and to other interested parties upon request.

Water Quality: The Colorado Department of Agriculture's Groundwater Protection Program provides ground water quality monitoring results in a comprehensive database by year and geographic location, tracking pesticides and inorganic compounds including nitrate–nitrogen. Previous data will serve as baseline information for source-water quality assessments of ground water. Continued efforts by the Colorado Department of Agriculture's Groundwater Protection Program will be utilized in conjunction with any municipal and agricultural well sampling to measure decreases in nitrate and pesticide levels.

Wildlife Responses: Several species of terrestrial and aquatic wildlife have been monitored annually in the Valley. This data will serve as baseline information and continued monitoring will document any significant changes in populations and or breeding activities of selected species.

Section 8: Public Outreach and Support

Phase I – Information Gathering and Assessment of Public Support

The notion of a Rio Grande CREP in the Valley has been generally supported as favorable by the public. Since the initial Plan for Water Management for Subdistrict #1 was presented in 2007, Subdistrict representatives and state staff have disseminated information on the CREP and have received comments from the public. Several presentations were made explaining the program and gathering feedback from various publics. Presentations were conducted at conferences and meetings of agricultural and conservation groups and a CREP survey was distributed to gain additional feedback. Results of the questionnaire are included as Exhibit J. Additionally, support letters from various groups are provided as a supplement to this proposal (referenced in Exhibit H).

Phase II – CREP Rollout

The Rio Grande CREP will be announced and promoted through local newspapers within the Valley. CSU Cooperative Extension will also provide information at its local offices. State staff and Subdistrict #1 representatives will conduct meetings in each county to inform producers of the program and answer any questions. The subdistrict office in Alamosa will be available during business hours to assist producers and will work with NRCS and FSA field offices in the region.

Phase III – Ongoing Support

- The CREP will continue to be a topic for quarterly and special Subdistrict and Rio Grande Water Conservation District meetings.
- Newspaper and radio press releases will be offered to inform producers of the signup opportunities and to provide updated information as it becomes available.
- The CDWR and the RGWCD will maintain websites to provide updated CREP information.
- The RGWCD office will provide a 40 hour weekly central location for producers seeking technical assistance on CREP.
- State and Subdistrict representatives will be available to speak at community functions, when invited.

Section 9: Compliance with Other Laws

This proposal is designed to improve and protect the natural environment through incentive-based programs. This proposal is in compliance with the National Environmental Policy Act, the Endangered Species Act, and all other applicable local, state, and federal regulations.

Exhibit A: Project Area

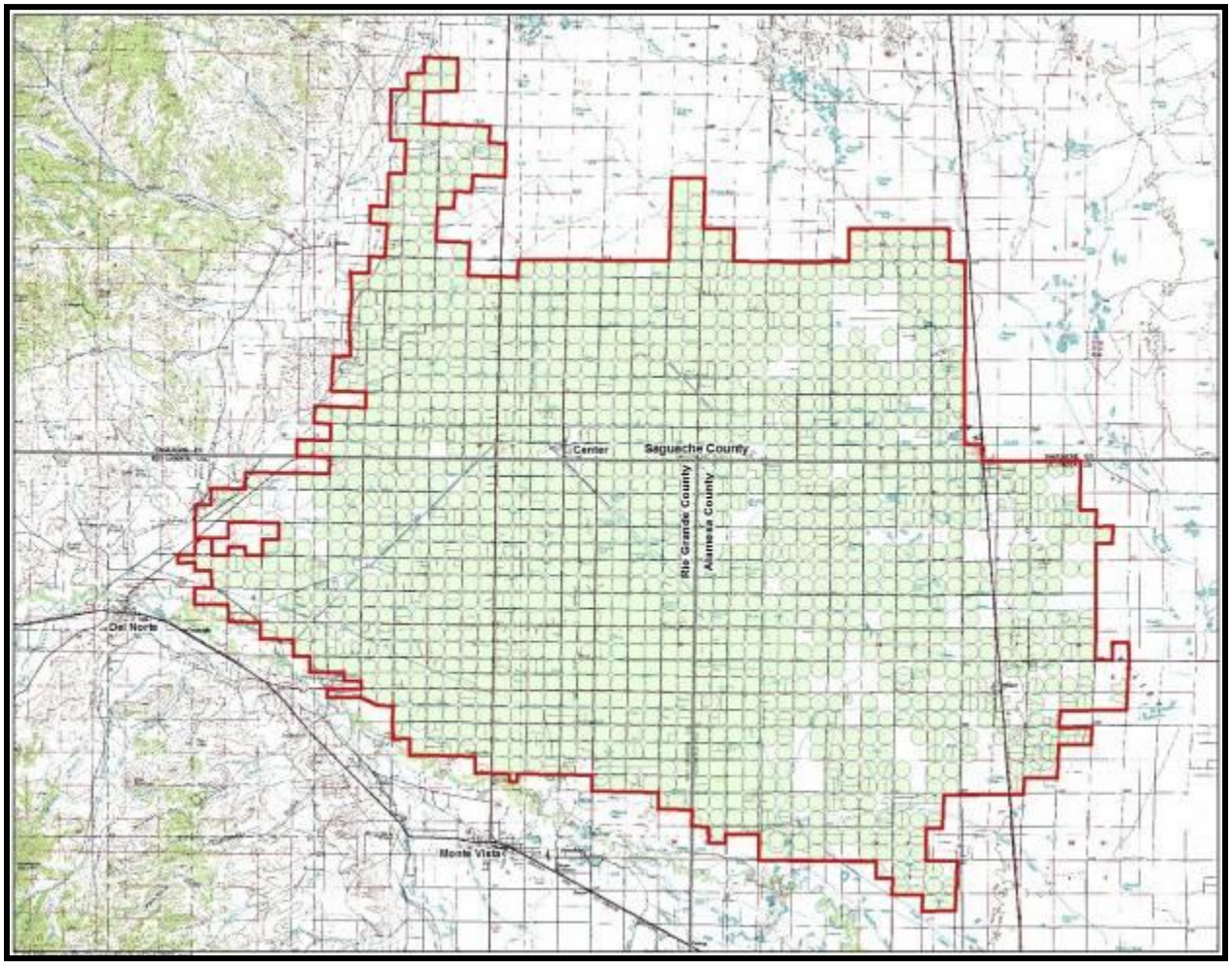
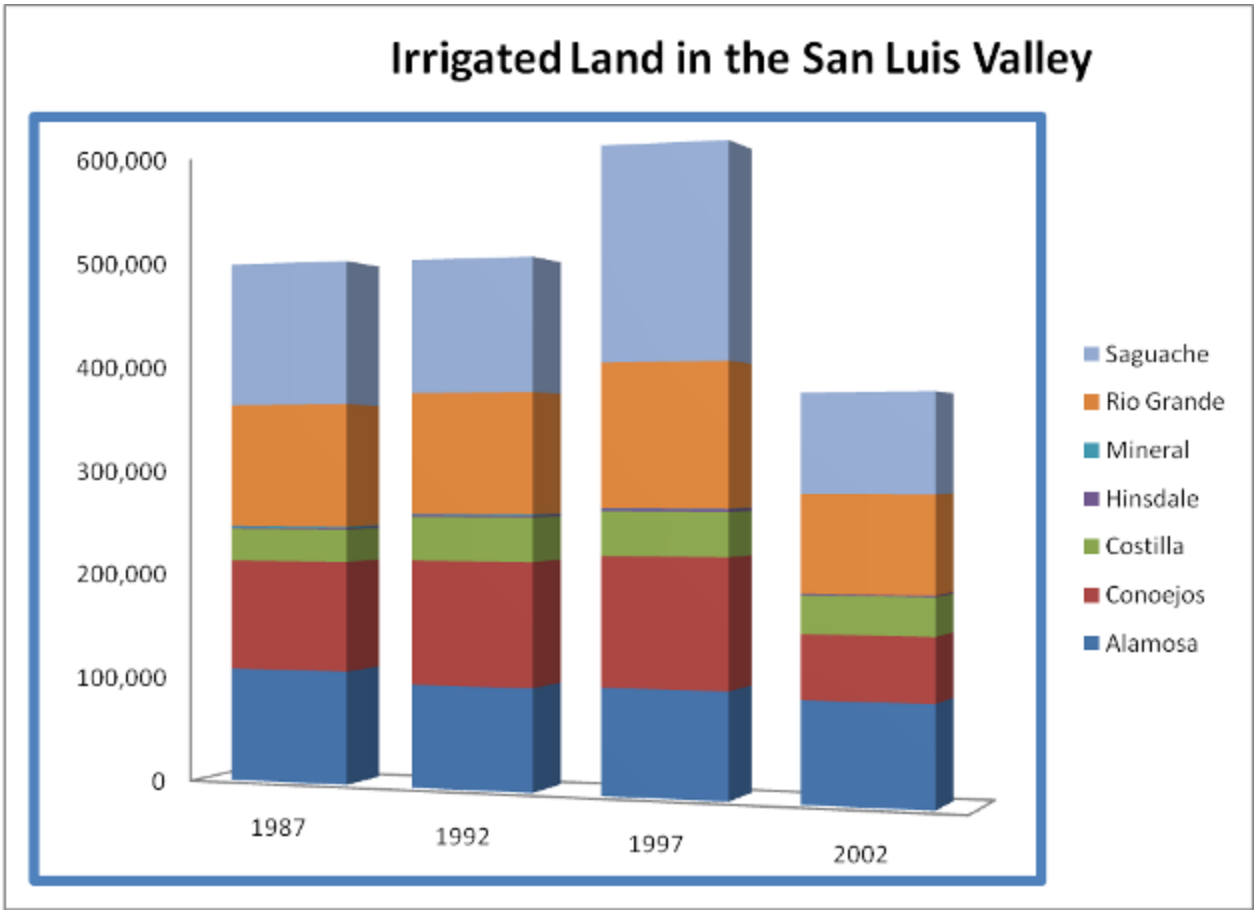
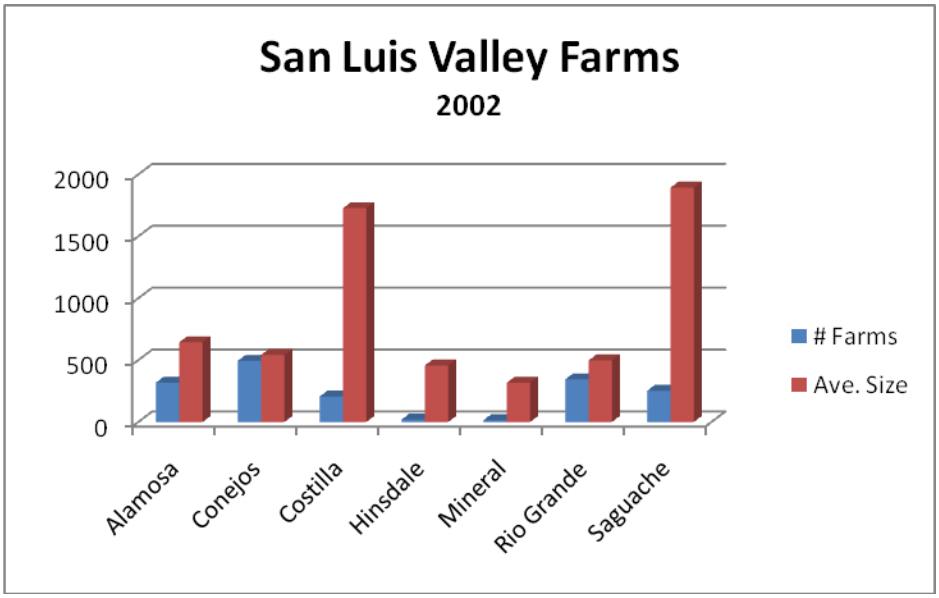


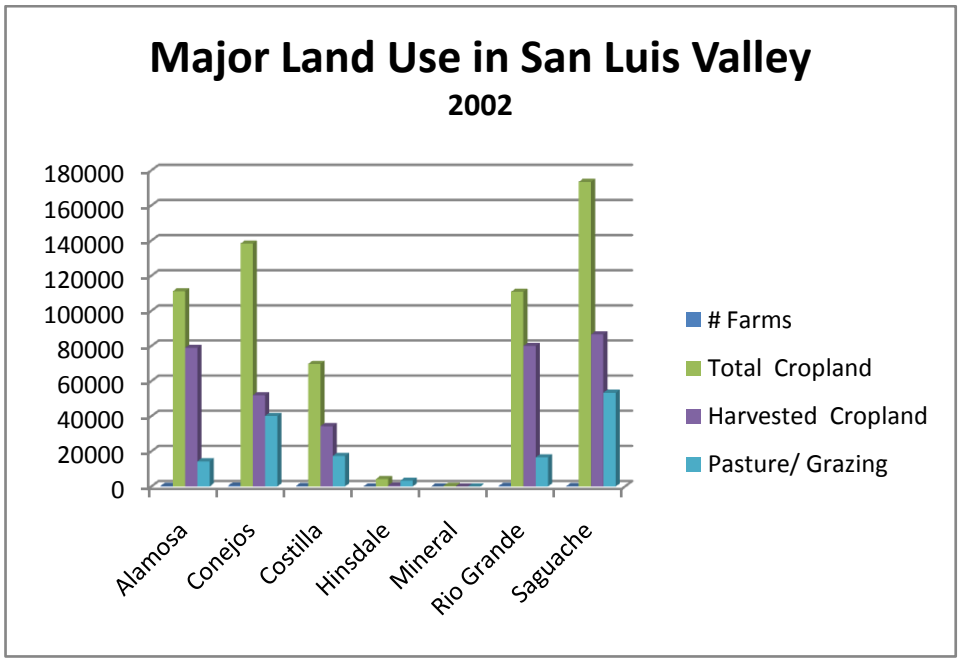
Exhibit B: Historical Irrigated Acres

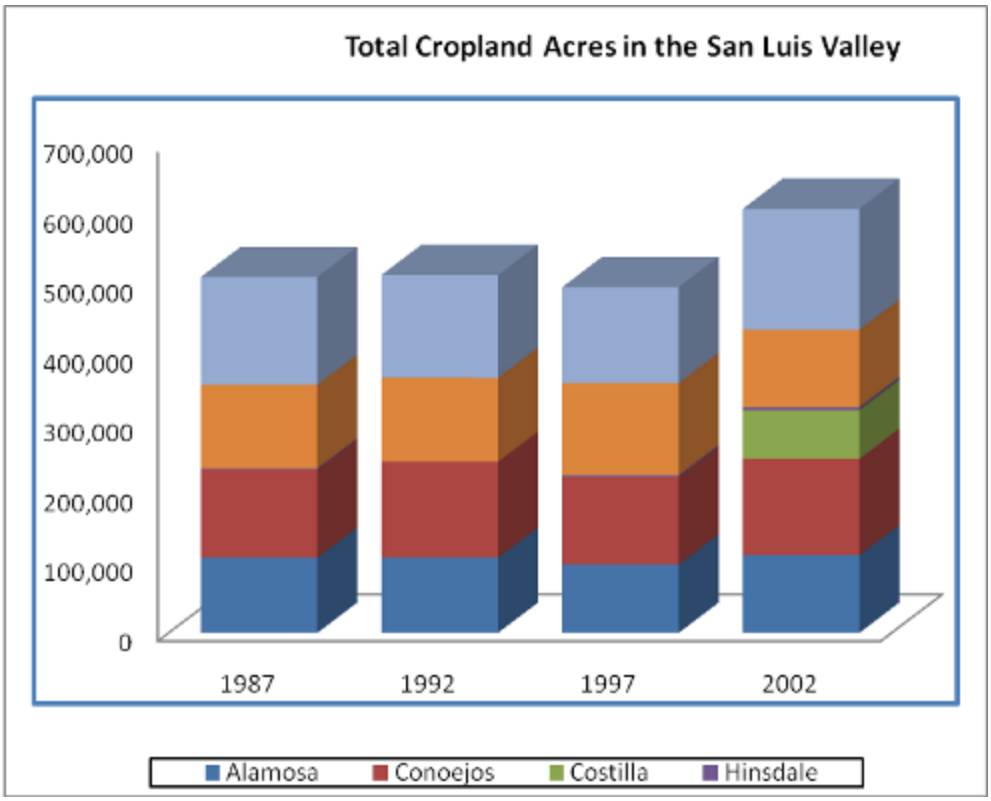


** 2002 Data reflects the lack of surface water due to the severe drought. Subsequent years with adequate surface water have returned irrigated cropland to approximately 600,000 acres.

Exhibit C: Farm Demographics by County






Total Cropland Acres in the San Luis Valley
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1987
1992
1997
2002
Alamosa
Conoejos
Costilla
Hinsdale

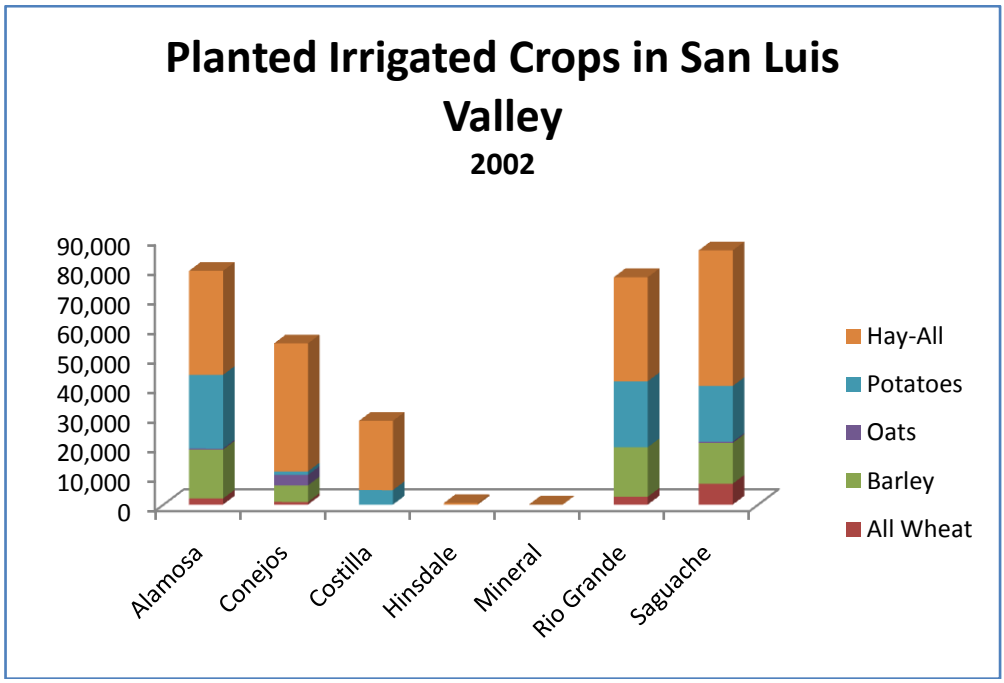

Planted Irrigated Crops in San Luis Valley
2002
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
Alamosa
Conejos
Costilla
Hinsdale
Mineral
Rio Grande
Saguache
Hay-All
Potatoes
Oats
Barley
All Wheat

Exhibit D: Beneficial Practices for Species within the San Luis Valley

Prepared by C. Garcia, NRCS/CDOW Private Lands Wildlife Biologist - Area 4

Species	Habitat	Status	Taxa	Suggested Practices
Long-Billed Curlew	Wetland	SC	Bird	314, 338, 342, 356, 382, 388, 472, 500, 516, 528, 533, 560, 587, 595, 614, 642, 657, 658, 659, 643, 644, 646, 647
Northern Leopard Frog	Wetland	SC	Amphibian	
RMP Greater Sandhill Crane	Wetland	SC	Bird	
Western Snowy Plover (rare)	Wetland	SC	Bird	
Mountain Plover	Grassland	SC	Bird	314, 327, 338, 382, 472, 500, 516, 528, 533, 550, 560, 574, 595, 614, 642, 644, 648
Burrowing Owl	Grassland	ST	Bird	
Ferruginous Hawk (rare)	Grassland	SC	Bird	
Long-Billed Curlew	Grassland	SC	Bird	
Gunnison Sage Grouse (Villa Grove pop.)	Sagebrush	SC	Bird	382, 472, 500, 516, 528, 533, 550, 560, 574, 595, 614, 642, 648, 643, 645
Burrowing Owl	Sagebrush	ST	Bird	
Northern Leopard Frog	Stream	SC	Amphibian	342, 382, 390, 391, 395, 396, 472, 500, 516, 528, 533, 578, 580, 587, 595, 614, 642, 644
Rio Grande Cutthroat Trout	Stream	SC	Fish	
Rio Grande Chub	Stream	SC	Fish	
Rio Grande Sucker	Stream	SE	Fish	
Gunnison Sage Grouse (Villa Grove pop.)	Riparian/Floodplain	SC	Bird	342, 382, 388, 390, 391, 394, 395, 472, 500, 516, 528, 533, 560, 587, 595, 614, 642, 657, 659, 644, 647
Northern Leopard Frog	Riparian/Floodplain	SC	Amphibian	
RMP Greater Sandhill Crane	Riparian/Floodplain	SC	Bird	
SW Willow Flycatcher	Riparian/Floodplain	FE,SE	Bird	
Western Yellow-Billed Cuckoo	Riparian/Floodplain	SC	Bird	
Long-Billed Curlew	Riparian/Floodplain	SC	Bird	
Boreal Toad	Forestland	SE	Amphibian	314, 342, 382, 391, 394, 472, 490, 500, 511, 516, 528, 533, 550, 560, 574, 575, 595, 614, 642, 666, 645, 647
American Peregrine Falcon	Forestland	SC	Bird	
Lynx	Forestland	FT, SE	Mammal	
Townsend's Big-Eared Bat	Forestland	SC	Mammal	
Mountain Plover	Irrigated Cropland	SC	Bird	328, 329, 340, 344, 386, 393, 528, 595, 645
RMP Greater Sandhill Crane	Irrigated Cropland	SC	Bird	
RMP Greater Sandhill Crane	Irrigated Hayland	SC	Bird	472, 511, 512, 528, 595, 645
Long-Billed Curlew	Irrigated Hayland	SC	Bird	

Status Key:

FE - Federally Endangered

FT - Federally Threatened

SC - State Concern

SE - State Endangered

ST - State Threatened

Exhibit E: Change in Unconfined Aquifer Storage

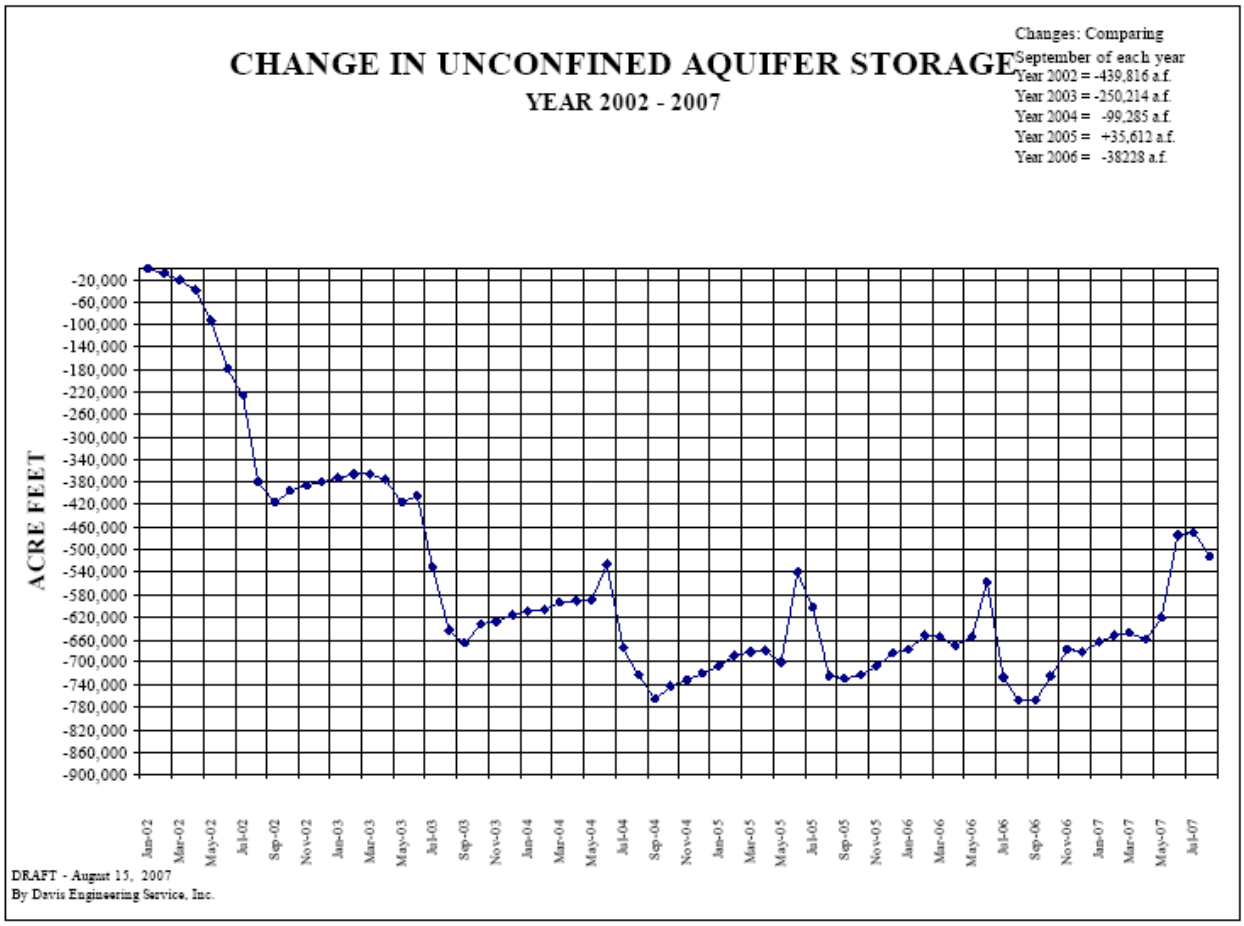


Exhibit F: Reduced Chemical Application

Reduced Chemical Application

Reduced irrigation acreage is estimated in Table I-1 by examining the composition of major irrigated crop acres in the three counties making up the Rio Grande Water Conservation District- Subdistrict # 1 (RGWCD-SD#1). Irrigated crop acreage values were compiled from the Colorado Agricultural Statistics bulletin. Each crops percentage of the estimated 40,000 reduced irrigated acres in the proposal was then applied to arrive at an estimate of reduced acres for each major crop within the Subdistrict.

Table I-1. Irrigated Acres by Crop in Subdistrict #1 of the Rio Grande Water Conservation District

	Wheat	Barley	Alfalfa	Potatoes	Vegetables	Total
Total Acres by crop	12,000	34,000	86,000	62,000	6,000	200,000
% of Total	6%	17%	43%	31%	3%	100%
Estimated Reduced Acres	8,000	14,000	12,000	6,000	0	40,000

Table I-2 represents typical nitrogen and phosphorous fertilizer application rates in pounds per acre for each of the five crops represented. Multiplying these values times the estimated reduced acres in Table I-1 for each crop provides an estimated reduced fertilizer usage over the 40,000 acre retirement in the proposal, shown in Table I-3.

Table I-2. Typical Annual Fertilizer Application in the RGWCD Subdistrict #1 by Crop (Pounds/Acre)

	Wheat	Barley	Alfalfa	Potatoes	Vegetables
Nitrogen	180	150	12	180	150-250
Phosphorous	30	30	60	120	60
Potash	0	0	0	60	0
Zink	0	0	0	5	0

Table I-3. Estimated Annual Reduced Fertilizer Use in the RGWCD Subdistrict #1

Nitrogen by Crop (Pounds)

	Wheat	Barley	Alfalfa	Potatoes	Vegetables	Total
N Applied	1,440,000	2,100,000	144,000	1,080,000	0	4,764,000
P Applied	240,000	420,000	720,000	720,000	0	2,100,000
Potash	0	0	0	360,000	0	360,000
Zink	0	0	0	30,000	0	30,000

Estimating reduced chemical usage in the subdistrict is more difficult due to the broad spectrum of available agricultural chemicals, differing land management practices, and crop pests. Additionally, most pesticides are applied in liquid form so those application rates and subsequent estimated reductions will be estimated accordingly.

Herbicide, insecticide, and fungicide application rates are represented in Table I-4 for wheat, barley, alfalfa, and potatoes.

Table I-4. Typical Annual Pesticide and Fungicide Application Rates in the RGWCD Subdistrict # 1 by crop (per acre).

	Wheat	**Barley**	**Alfalfa**	**Potatoes**
Pursuit™/Raptor™			5 oz.	
Mustang Max™			4 oz.	
Bronate™ +Assert™	1 pt.+1.4 lbs.	1 pt.+1.4 lbs.		
Dual Magnum™ + Sencor™				1.5 pt. +8 oz.
Permithrin™				8 oz.
*Endura™				2.5 oz.
*Headline™ or Quadris™		6 oz.		6 oz.
*Dithane™				2 lbs.
*Supertin™				3 oz.

- 3-4 applications per season

Table I-5. Estimated Annual Reduced Pesticide and Fungicide Use in the RGWCD Subdistrict #1

	Wheat	**Barley**	**Alfalfa**	**Potatoes**
Pursuit™/Raptor™			60,000 oz.	
Mustang Max™			48,000 oz.	
Bronate™ +Assert™	8,000 pts.+ 123,000 pts.	14,000 pts. + 123,000 pts.		
Dual Magnum™ + Sencor™				9,000 pts. + 48,000 oz.
Permithrin™				48,000 oz.
*Endura™				15,000 oz.
*Headline™ or Quadris™		84,000		36,000 oz.
*Dithane™				12,000 lbs.
*Supertin™				18,000 lbs.

Exhibit G: Ground Water Pumping 1988-2004

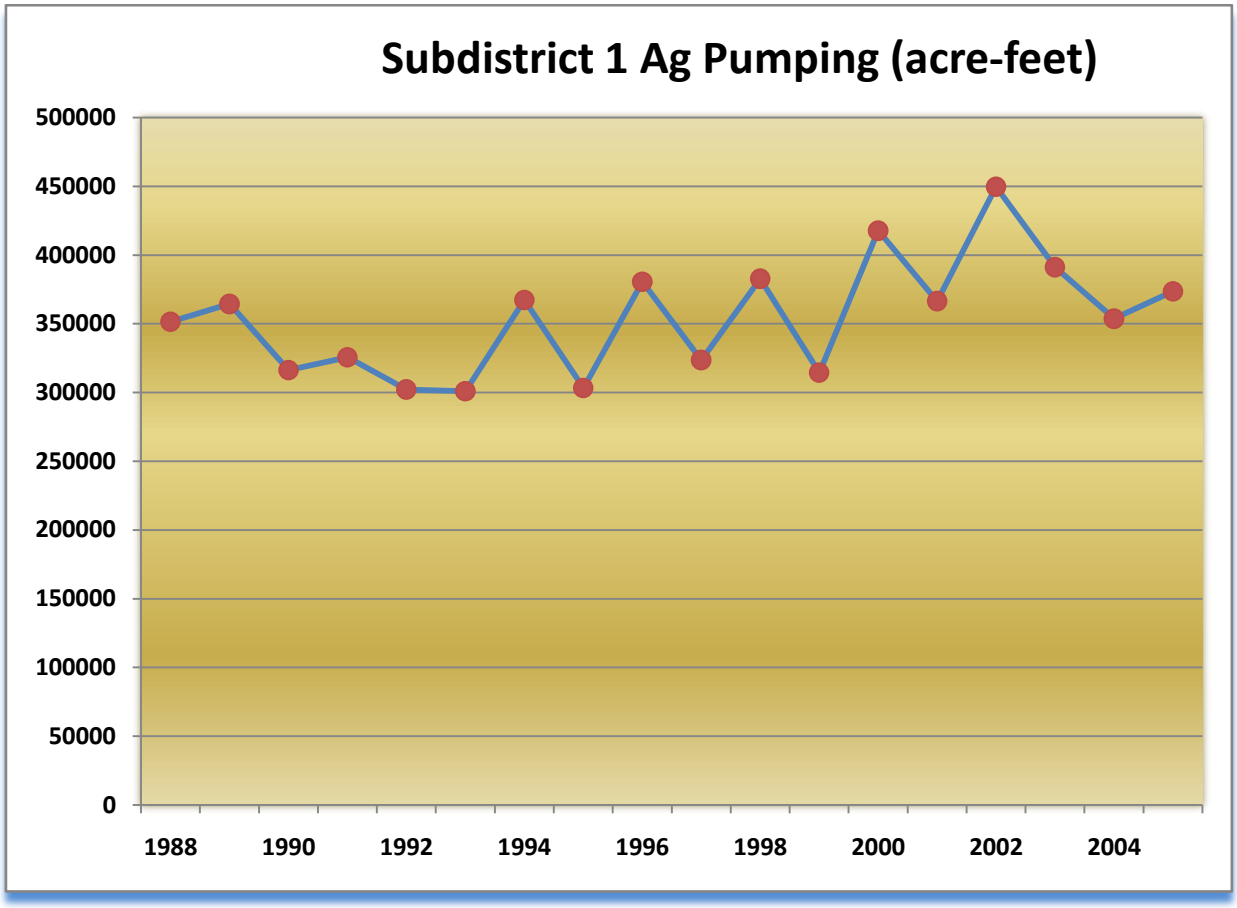


Exhibit H: Letters of Support

Letters expressing support for the Rio Grande Subdistrict #1 CREP proposal are included in the following several pages. Additional letters are currently being collected.

Date: June 5, 2008

Special Improvement District # 1 of the Rio Grande Water Conservation District
10900 Highway 160 East
Alamosa, Colorado 81101

To Whom It May Concern:

Central Pump Company, an irrigation equipment supply and repair business located in the Center, Co. area, would like to support the efforts of the Special Improvement District # 1 of the Rio Grande Water Conservation District to obtain federal funds through the United States Department of Agriculture for the purpose of encouraging some producers within the Special Improvement District to voluntarily participate in a proposed Conservation Reserve Enhancement Program (CREP).

This program would provide incentives and cost-share from the United States Department of Agriculture and additional incentives from the Special Improvement District to participants that voluntarily enter their irrigated cropland into eligible conservation practices. The CREP approval would add a valuable tool for farmers within the Special Improvement District to help sustain the aquifer, therefore assuring long-term agriculture viability in the valley. This proposal, if approved will also enhance environmental conditions by encouraging water and soil conservation and wildlife habitat enhancement.

Central Pump understands by reducing the overall amount of water that is pumped from the aquifer could reduce the amount of future business that we may have, but we strongly believe that by supporting the reduction of pumping through conservation, will also assure that we at Central Pump will still be in business for many years to come!

Thank you for your efforts to preserve and enhance the aquifer!

Orville Diss, Owner
Central Pump Company
0570 E Hwy 112
Center, Co. 81125

SAGUACHE COUNTY GOVERNMENT

501 FOURTH STREET
SAGUACHE, COLORADO
AREA CODE 719 ZIP CODE 81149

Date: 6/3/08

Special Improvement District #1 of the Rio Grande Water Conservation District
10900 Highway 160 East
Alamosa, Colorado

To Whom It May Concern:

The Saguache County Board of County Commissioners supports the efforts of the Special Improvements District #1 of the Rio Grande Water Conservation District to obtain federal funds through the United States Department of Agriculture for the purpose of encouraging some producers within the Special Improvements District to voluntarily participate in a proposed Conservation Reserve Enhancement Program (CREP).

This program would provide incentives and cost-share from the United States Department of Agriculture and additional incentives from the Special Improvements District to participants that voluntarily enter their irrigated cropland into eligible conservation practices. The CREP approval would add a valuable tool for farmers within the Special Improvements District to help sustain the aquifer, therefore assuring long-term agriculture viability in the valley. This proposal, if approved will also enhance environmental conditions by encouraging water and soil conservation and wildlife habitat enhancements.

The Saguache County Board of County Commissioners strongly supports and encourages the implementation of this program.

Board of Commissioners
Saguache County

Sam Pace _____

Mike Spearman _____

Linda Joseph _____

Colorado Certified
POTATO GROWERS ASSOCIATION
P.O. Box 267 • Monte Vista, CO 81144 • Phone: (719) 274-5996 • Fax: (719) 274-9888

Profit from the High Altitude Advantage of Colorado Certified Seed Potato

March 30, 2008

Rio Grande Water Conservation District
Special Improvement District #1
10900 Highway 160 East
Alamosa, CO 81101

To Whom It May Concern:

The Colorado Certified Potato Growers Association supports the efforts of the Rio Grande Water Conservation District and the Special Improvement District #1 to obtain federal funds through the United States Department of Agriculture (USDA) for the purpose of encouraging producers within the Special Improvement District to voluntarily participate in a proposed Conservation Reserve Enhancement Program (CREP).

This program would help provide needed incentives through a cost-share from the USDA. These program funds coupled with additional incentives from the Special Improvement District would be available to participants that voluntarily enter their irrigated cropland into eligible conservation programs. The CREP approval would be a valuable tool to farmers within the Special Improvement District to help recover and stabilize the aquifer, therefore ensuring the long-term sustainability of agriculture in the San Luis Valley. This proposal, if approved could also improve environmental conditions by encouraging water and soil conservation and wildlife habitat enhancement.

The Colorado Certified Potato Growers Association strongly supports and encourages the implementation of the Conservation Reserve Enhancement Program.

Sincerely,

Bob

Robert Mattive,
President

Colorado Potato Administrative Committee

June 24, 2008

Rio Grande Water Conservation District

Special Improvement District #1

10900 Hwy. 160 East

Alamosa, Colorado 81101

To Whom It May Concern:

The Colorado Potato Administrative Committee supports the application being submitted by the State of Colorado and the Rio Grande Water Conservation District- Special Improvement District #1 to obtain federal funding through the United States Department of Agriculture for the purpose of creating a voluntary Conservation Reserve Enhancement Program within Special Improvement District #1 in the San Luis Valley.

The importance of this program is critical to the potato producers within this region of the San Luis Valley. Potato producers here depend on center pivot irrigation systems that utilize the complex underground aquifer. This aquifer system has been historically re-charged with surface water from the surrounding mountains. This complex system has been severely stressed by drought and unsustainable pumping. The incentives the CREP program will provide to producers will create the ability to voluntarily retire irrigated acreage therefore bringing this complex system back into balance. This approach will create a sustainable aquifer resulting in improved wildlife habitat, better water quality, needed emphasis on water and soil conservation, and reduce pumping costs for producers.

The cooperative approach of this local, state, and federal partnership will help insure a sustainable aquifer system while limiting the economic impact of the voluntary acreage reduction on producers and communities. The CPAC committee believes the implementation of the CREP program is vital to our industry's future.

Sincerely,

Jim Ehrlich
Executive Director
CPAC

P.O. Box 348▪Monte Vista, Co. 81144▪ Phone: 719-852-3322 ▪ jehrlich@coloradopotato.org

San Luis Valley Water Conservancy District
415 San Juan Avenue
Alamosa, Colorado 81101
Telephone: (719) 589-2230
Fax: (719) 589-2270
e-mail: slvwcdco1@qwestoffice.net

Michael H. Gibson – Manager

September 19, 2008

To Whom It May Concern,

This letter is written on behalf of the Board of Directors of the San Luis valley Water Conservancy District (SLVWCD), a water conservancy district organized and operated pursuant to the Water Conservancy Act, Colo. Rev. Stat. § 37-45-101, *et seq.*, in support of the application of the Special Improvement District # 1 of the Rio Grande Water Conservation District for the *Rio Grande River Conservation Reserve Enhancement Program Proposal.*

The SLVWCD's Board has been a strong supporter of the concept of the ground water management sub-districts to address the failure of current water management practices to permit a sustainable agricultural community in this region of the headwaters of the Rio Grande. The success of the Special Improvement Districts is a key element in the goal of sustainability and recovery of the San Luis Valley's critical aquifers. The recovery and a sustained aquifer are vital to the agricultural community and health of the region's ecosystems.

As noted in the *Rio Grande River Conservation Reserve Enhancement Program Proposal* it is the intent of the Special Improvement District # 1 of the Rio Grande Water Conservation District, to take agricultural acreage out of production, resulting in the reallocation of irrigation water and reduced consumptive use of the irrigation water. As part of this program, it is necessary that farmers have some means of compensation if elect to have their irrigation water reallocated.

The approval of the *Rio Grande River Conservation Reserve Enhancement Program Proposal* is critical to the success of the objectives of the Special Improvement District # 1 of the Rio Grande Water Conservation District and the Board of SLVWCD, and ultimately to the goal of having an irrigation water management plan that is sustainable.

The Board of the SLVWCD asks that you support and approve the application for the *Conservation Reserve Enhancement Program* from the Special Improvement District # 1 of the Rio Grande Water Conservation District, to the fullest extent possible.

Sincerely,

Michael H. Gibson, Manager

Robert Felmlee, President, Center CO;
Mike Prentice, Vice-President, Monte Vista CO; M. Dee Greeman, Secretary/Treasurer, Alamosa CO;
Directors: Charles A. Lavery, Alamosa CO; Karla Shriver, Monte Vista CO; Randall Palmgren, Center CO;
Doug Messick, Monte Vista CO; Charles Griego, Alamosa CO; Rick Davie, Del Norte, CO; Darius Allen, Alamosa Co.

Commissioners

Alamosa County

July 16, 2008

Special Improvement District #1 of the
Rio Grande Water Conservation District
10900 Highway 160 East
Alamosa, CO 81101

To Whom It May Concern:

The Alamosa County Board of Commissioners is in full support of the Special Improvement District #1 of the Rio Grande Water Conservation District to obtain federal funds through the United States Department of Agriculture for the purpose of encouraging some producers within the Special Improvement District to voluntarily participate in a proposed conservation Reserve Enhancement Program (CERP).

This program will provide incentives and cost share from the United States Department of Agriculture and additional incentives from the Special Improvement District to participate that voluntarily enter their irrigated crop land into eligible conservation practices. The CERP approval would add a valuable tool for farmers within the Special Improvement District to help sustain the aquifer; therefore, assuring long term agriculture viability in the San Luis Valley. This proposal if approved will also enhance environmental conditions by encouraging water and soil conservation and wildlife habitat enhancement

The Alamosa County Board of Commissioners supports and encourages the implementation of this program.

Sincerely,

BOARD OF ALAMOSA COUNTY COMMISSIONERS

George Wilkinson
Chairman

UNITED

P.O. BOX 269, MONTE VISTA, CO · 719.852.2144 · FAX 719.852.2157 · www.unitedpotatoco.com

May 27, 2008

Special Improvement District #1 of the Rio Grande Water Conservation District
10900 Hwy 160 East
Alamosa, CO 81101

To Whom It May Concern:

The Board of United Fresh Potato Growers of Colorado supports the efforts of the Special Improvement District #1 of the Rio Grande Water Conservation District to obtain federal funds through the United States Department of Agriculture for the purpose of encouraging some producers within the Special Improvement District to voluntarily participate in a proposed Conservation Reserve Enhancement Program (CREP).

This program would provide incentives and cost-share from the Untied States Department of Agriculture and additional incentives from the Special Improvement District to participants that voluntarily enter their irrigated cropland into eligible conservation practices. The CREP approval would add a valuable tool for farmers within the Special Improvement District to help sustain the aquifer, therefore assuring long-term agriculture viability in the valley. This proposal, if approved will also enhance environmental conditions by encouraging water and soil conservation and wildlife habitat enhancement.

The Board of United Fresh Potato Growers of Colorado strongly supports and encourages the implementation of this program.

David A. Warsh

David Warsh
President

Colorado Farm Bureau
9177 East Mineral Circle
Centennial CO, 80112
Mailing Address:
P.O. Box 5647
Denver, CO 80217
(303) 749-7500
(303) 749-7701 fax
www.colofb.com

Mission:
The Colorado Farm Bureau, as the premier grassroots organization, promotes the future of agriculture and protects rural values.

June 25, 2008

Rio Grande Water Conservation District
Special Improvement District #1
10900 Highway 160 East
Alamosa, CO 81101

To Whom it May Concern:

On behalf of the Colorado Farm Bureau, Colorado's largest agricultural organization, I am writing to express our support for the proposed Rio Grande Conservation Reserve Enhancement Program sponsored by the Special Improvement District #1 of the Rio Grande Water Conservation District. Farm Bureau encourages the use of voluntary programs in order to achieve conservation goals, which this proposal intends to do.

The hydrology of the San Luis Valley is unique to any other region in our state. Therefore, we recognize the importance of a local solution to stabilizing the Valley's aquifer and ensuring water supplies are maintained well into the future. While the proposal focuses on securing adequate water supplies, additional conservation, water quality and soil erosion benefits will be reaped. Further, cost-share dollars provided by the USDA under the proposal will help ensure the economic stability of the region.

Colorado Farm Bureau believes the proposal is sound and will benefit a wide range of shared interests and we encourage others to support it as well.

Sincerely,

Alan Foutz
President

/lwg

ROCKY MOUNTAIN BIRD OBSERVATORY

Conserving birds and their habitats www.rmbo.org

July 7, 2008

Rio Grande Water Conservation District
Special Improvement District #1
10900 Highway 160 East
Alamosa, Colorado 81101

To Whom It May Concern:

Please accept this letter of support on behalf of the Rocky Mountain Bird Observatory (RMBO) for the proposed Rio Grande Conservation Reserve Enhancement Program.

RMBO supports the availability of a voluntary land retirement program in the San Luis Valley (SLV) as it will provide additional wildlife habitat in an area rich with species diversity. The SLV has long been an important breeding area in the state for dabbling ducks, waterbirds and shorebirds. The SLV's riparian areas are also home to the federally endangered Southwestern Willow Flycatcher. In addition to important breeding habitat the SLV annually provides critical stopover habitat for numerous migrating species including 20,000 Sandhill Cranes. The proposed CREP will also enhance water quality and quantity in the SLV benefitting the wildlife and human community.

The habitat provided through the CREP will not only supplement local wildlife populations but will contribute to the regional, national and global population objectives as identified in the North American Bird Conservation Initiative.

Sincerely,

Tammy Vercauteren
Interim Executive Director

Rocky Mountain Bird Observatory (RMBO) was founded in 1988 and our mission is to conserve birds and their habitats. We accomplish our mission through Science, Education, and Stewardship.

Main office:
14500 Lark Bunting Lane
PO Box 1232
Brighton, CO 80601
(303) 659-4348
Fax (303) 654-0791

Fort Collins office:
230 Cherry Street
Fort Collins, CO 80521
(970) 482-1707
Fax (970) 472-9031

Scottsbluff office:
100547 Airport Road
P.O. Box 489
Scottsbluff, NE 69363
(308) 220-0052
Fax (308) 220-0053

July 10, 2008

San Luis Valley Wetlands Focus Area Committee

To Whom It May Concern,

On behalf of the San Luis Valley Wetlands Focus Area Committee, a community forum with participation from essentially all of the area's non-profits conservation groups along with the state, local and federal land management and wildlife agencies, and local farmers, ranchers and interested citizens, this letter is in support of the application of the Special Improvement District #1 of the Rio Grande Water Conservation District for the *Rio Grande River Conservation Reserve Enhancement Program Proposal.*

Our various members have been involved in this proposal throughout its inception and development and as a group, we see this effort as one of the key prospects for creating water sustainability and recovery of the San Luis Valley's critical aquifer over time. This recovery and sustained health of the aquifer is vital to the nationally and internationally important wetlands of our region, and the abundant wildlife which is dependent upon them.

As noted in the application, "wetland habitats in the Valley support a diverse array of wildlife species, including thirteen wetland dependant breeding birds that are listed as rare or imperiled within the state." As also noted, "Many of the species within the Valley have responded to the changes brought on by settlement and agriculture. The initial changes from a true high elevation desert with numerous wetlands to an area with intensive ground water pumping for agricultural production has had significant impacts on the wildlife population in the area……. irrigated agriculture has had a significant change on streamflows in rivers and streams and has reduced or eliminated many significant wetland complexes. The depletion of the aquifer has reduced or eliminated wetlands which has affected shorebird and waterfowl habitat. A reduction in ground water pumping is theorized to improve streamflows and enhance the wetland complexes important to numerous wildlife species in the Valley."

As active partners in protecting and restoring the health of the San Luis Valley's wetlands that depend upon the underlying aquifer and the Rio Grande river and its tributaries, the San Luis Valley Wetlands Focus Area Committee strongly supports the work of the Rio Grande Subdistrict #1. It is vital to implement this broad based effort to recover the aquifer and sustain the water supply for our region's ecology. Our group and its members in their various capacities will continue to collaborate with and support these efforts to implement the many benefits to our Valley's waters and wetlands.

We encourage you to support the application from the Rio Grande Subdistrict #1 to the fullest extent possible. Thank you for your consideration.

Sincerely,

Rio de la Vista

Rio de la Vista
Coordinator, San Luis Valley Wetlands Focus Area Committee
Box 777, Monte Vista, Colorado 81144

1st SouthWest Bank

Date: July 16, 2008

Special Improvement District # 1 of the
Rio Grande Water Conservation District
10900 Highway 160 East
Alamosa, Colorado 81101

To Whom It May Concern:

The First Southwest Bank supports the efforts of the Special Improvement District # 1 of the Rio Grande Water Conservation District to obtain federal funds through the United States Department of Agriculture for the purpose of encouraging some producers within the Special Improvement District to voluntarily participate in a proposed Conservation Reserve Enhancement Program (CREP).

This program would provide incentives and cost-share from the United States Department of Agriculture and additional incentives from the Special Improvement District to participants that voluntarily enter their irrigated cropland into eligible conservation practices. The CREP approval would add a valuable tool for farmers within the Special Improvement District to help sustain the aquifer, therefore assuring long-term agriculture viability in the valley. This proposal, if approved will also enhance environmental conditions by encouraging water and soil conservation and wildlife habitat enhancement.

The First Southwest Bank strongly supports and encourages the implementation of this program.

David Broyles
President,
First Southwest Bank

Date: June 5, 2008

Special Improvement District # 1 of the Rio Grande Water Conservation District
10900 Highway 160 East
Alamosa, Colorado 81101

To Whom It May Concern:

Beiriger & Sons Irrigation, an irrigation equipment supply and repair business located in Center, Co would like to support the efforts of the Special Improvement District # 1 of the Rio Grande Water Conservation District to obtain federal funds through the United States Department of Agriculture for the purpose of encouraging some producers within the Special Improvement District to voluntarily participate in a proposed Conservation Reserve Enhancement Program (CREP).

This program would provide incentives and cost-share from the United States Department of Agriculture and additional incentives from the Special Improvement District to participants that voluntarily enter their irrigated cropland into eligible conservation practices. The CREP approval would add a valuable tool for farmers within the Special Improvement District to help sustain the aquifer, therefore assuring long-term agriculture viability in the valley. This proposal, if approved will also enhance environmental conditions by encouraging water and soil conservation and wildlife habitat enhancement.

We at Beiriger & Sons understand by reducing the overall amount of water that is pumped from the aquifer could reduce the amount of future business that we may have, but we strongly believe that by supporting the reduction of pumping through conservation, will also assure that we at Beiriger & Sons will still be in business for many years to come!

Thank you for your efforts to preserve and enhance the aquifer!

Larry Beiriger

Beiriger & Sons Irrigation Inc.
P.O. Box 366
676 E Hwy 112
Center, Co. 81125

JOHN T. SALAZAR
3RD DISTRICT OF COLORADO

1531 LONGWORTH HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
202-225-4761
202-226-9669 (FAX)

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

COMMITTEE ON AGRICULTURE

COMMITTEE ON VETERANS' AFFAIRS

Congress of the United States
House of Representatives
Washington, DC 20515

January 15, 2009

Lana I. Nesbit
CREP program manager
USDA-FSA/CEPB
1400 Independence Ave SW
Washington, DC 20250-0513

Re.: Special Improvement District # 1 of the Rio Grande Water Conservation District Application

Dear Ms. Nesbit:

I urge you to support the efforts of the Special Improvement District # 1 of the Rio Grande Water Conservation District in Colorado's San Luis Valley to obtain federal funds through the United States Department of Agriculture, or USDA, to develop a Conservation Reserve Enhancement Program, or CREP. With these funds, the District hopes to encourage producers who may face restrictions to their groundwater usage to voluntarily participate in a CREP to maintain their agricultural livelihood.

I understand this program would provide incentives and cost-share from the USDA and additional incentives from the Special Improvement District to participants that voluntarily enter their irrigated cropland into eligible conservation practices. I see this CREP proposal as a critical tool in the toolbox for San Luis Valley producers within the Special Improvement District to help sustain the aquifer, therefore assuring long-term agriculture viability in the valley. This proposal, if approved will also enhance environmental conditions by encouraging water and soil conservation and wildlife habitat enhancement.

I strongly urge you to support this proposal. As a life-long farmer in the San Luis Valley, I take pride in the vibrant, diverse agricultural economy the region maintains in the face of rising land values and rising cost of doing business. This CREP proposal is vital to the agricultural future of this region .

124 WEST B STREET
PUEBLO, CO 81003
719-543-8200
719-543-8234 (FAX)

225 NORTH 5TH STREET, STE 202
GRAND JUNCTION, CO 81501
970-245-9105
970-245-9144 (FAX)

609 MAIN STREET, #6
ALAMOSA, CO 81101
719-587-5700
719-587-5137 (FAX)

813 MAIN AVENUE, STE 300
DURANGO, CO 81301
970-259-1012
970-259-9467 (FAX)

Thank you very much for your consideration. Please keep my Alamosa office informed of any developments related to this proposal.

Sincerely,

John T. Salazar
Member of Congress

Exhibit I: Resolution to Provide Local Funding

RESOLUTION OF THE BOARD OF MANAGERS OF SPECIAL IMPROVEMENT DISTRICT NO. 1 OF THE RIO GRANDE WATER CONSERVATION DISTRICT AND GOVERNING BOARD OF THE SPECIAL IMPROVEMENT DISTRICT NO. 1 OF THE RIO GRANDE WATER CONSERVATION DISTRICT WATER ACTIVITY ENTERPRISE

(To provide local funding for the Conservation Reserve Enhancement Program)

WHEREAS, the Special Improvement District No. 1 of the Rio Grande Water Conservation District ("Subdistrict") was created pursuant to C.R.S. 37-48-126, to, among other purposes, cooperate and assist the State of Colorado to carry out the State's duty to comply with the limitations and duties imposed upon the State by the Rio Grande Compact, to provide a water management alternative to state-imposed groundwater regulations that limit the use of irrigation wells within the Subdistrict while protecting senior surface rights from material injury as the result of well pumping; and

WHEREAS, pursuant to its enabling legislation, the Subdistrict has established a water activity enterprise pursuant to Article 45.1 of Title 37 of the Colorado Statutes ("Enterprise"); and

WHEREAS, the Board of Managers of the Subdistrict ("Board") is the governing body of the Enterprise ("Governing Body"); and

WHEREAS, the Board, together with the Board of Directors of the Rio Grande Water Conservation District, adopted a Proposed Plan of Water Management pursuant to C.R.S. 37-48-126 as the official plan of the Subdistrict; and

WHEREAS, the State of Colorado seeks to obtain federal funds through the United States Department of Agriculture ("USDA") for the purpose of encouraging producers in the Subdistrict Territory as defined by the Petition forming the Subdistrict to enroll in a voluntary Conservation Reserve Enhancement Program ("CREP"); and

WHEREAS, the Proposed Plan of Water Management established the assessment of an annual fee assessed against every Subdistrict Acre as defined in the Plan of Water Management, and which provides revenues to the Enterprise that are specifically to be used to assist the State of Colorado in participating in a voluntary CREP within the Subdistrict Territory; and

WHEREAS, CREP would provide incentives, cost sharing, and annual rental payments to participants who enroll irrigated cropland into eligible conservation practices such as permanent vegetation or other permanent cover for a period of 14 or 15 years; and

WHEREAS, the proposed Rio Grande CREP would enable producers enrolled in the program to forego irrigation for the term of the contract, convert the acres to permanent vegetation or other permanent cover, and receive financial and technical assistance; and

WHEREAS, a reduction of irrigated acreage within the Subdistrict Territory would assist the State of Colorado to carry out the State's duty to comply with the limitations and duties imposed upon the State by the Rio Grande Compact and to provide a water management alternative to state-imposed water regulations that limit the use of irrigation wells within the Subdistrict; and

WHEREAS, providing incentives, cost sharing, and annual rental payments through programs such as CREP will provide vital assistance in helping sustain water resources within the Subdistrict Territory and the Rio Grande Basin without disastrously impacting the local economy and social fabric in the basin; and

WHEREAS, the Governing Body is willing to commit to provide necessary non-federal funding for the proposed Rio Grande CREP under certain conditions.

RESOLUTION

NOW, THEREFORE, be it resolved by the Board, acting as the Governing Body of the Enterprise, as follows:

1. The Enterprise hereby commits to provide an amount up to but not to exceed 20% of the necessary non-federal funding, including in-kind contributions, for the proposed Rio Grande CREP under the following conditions:
    a. The program would be limited to those acres within the Subdistrict Territory;
    b. The program would be limited to 40,000 acres within the Subdistrict Territory;
    c. The program would provide financial incentives, cost sharing, and annual rental payments to participants to convert irrigated cropland in the Subdistrict Territory to permanent vegetation or other permanent cover that would not be irrigated during the term of the contract, except as permitted to establish the permanent vegetation;
    d. The funding provided by the Enterprise can be structured in a manner to provide incentives, as approved by the Board, acting as the Governing Body for the Enterprise, for farmers to enroll certain irrigated cropland within the Subdistrict Territory in the program that would be of greater benefit in assisting the State of Colorado to carry out the State's duty to comply with the limitations and duties imposed upon the State by the Rio Grande Compact and in meeting the water management objectives outlined in the Proposed Plan of Water Management.
    e. The Enterprise's funding would be provided over the period of the CREP Contracts;
    f. The Enterprise's commitment to provide up to 20% of the necessary non-federal funding, including in-kind contributions, would be subject to the availability of revenues derived from use fees imposed by the Board and to the extent permitted by law;
    g. Any contribution of non-federal funds or non-federal in-kind services by any non-federal partner would be included in the 20% of the non-federal funding, and could thereby reduce the Enterprise's cash obligation, subject to the approved CREP incentive structure and USDA approval.
    h. The Enterprise shall be entitled to hold or control any water right or permit to use ground water that has been used to irrigate land enrolled in the program to ensure that the land is not irrigated during the term of the contract, except as permitted to establish permanent vegetation, and that a condition of the Enterprise's funding can be that the water right or permit not be used in perpetuity, and that the Enterprise can use a surface right to assist the State of Colorado in carrying out the State's duty to comply with the Rio Grande Compact consistent with the goals of the CREP.

2. The Board, acting as the Governing Body, further commits to make its best efforts to establish annual use fees in an amount sufficient to provide the non-federal cash obligations for the Rio Grande CREP, subject to the conditions set forth in paragraph 1 above.

Adopted this _____ day of _____ 20___.

ATTEST:

Board of Managers

SPECIAL SUBDISTRICT NUMBER ONE

Acting as the Governing Body

_____ _____

Secretary

President

EXHIBIT J: Results from Survey Conducted at Southern Rocky Mountain Agricultural Conferences and Trade Fair February 15, 2008

Is this the first time you have heard of CREP?

Yes – 14%
No - 86%

Was the presentation informative?

Yes- 81%
No – 19%

Given what you know today, do you think you may be interested in participating?

Yes – 44%
No - 54%

In addition to USDA incentives, what subdistrict incentives would be reasonable to make the program attractive to you?

- **$ 30.00 per acres per year – 9%**
- **$ 60.00 per acres per year – 14%**
- **$100.00 per acre per year – 26%**
- **$100.00 per acre per year - 26%**

This page purposely left blank.

Exhibit K: Map Showing Subdistrict #1 Target Area

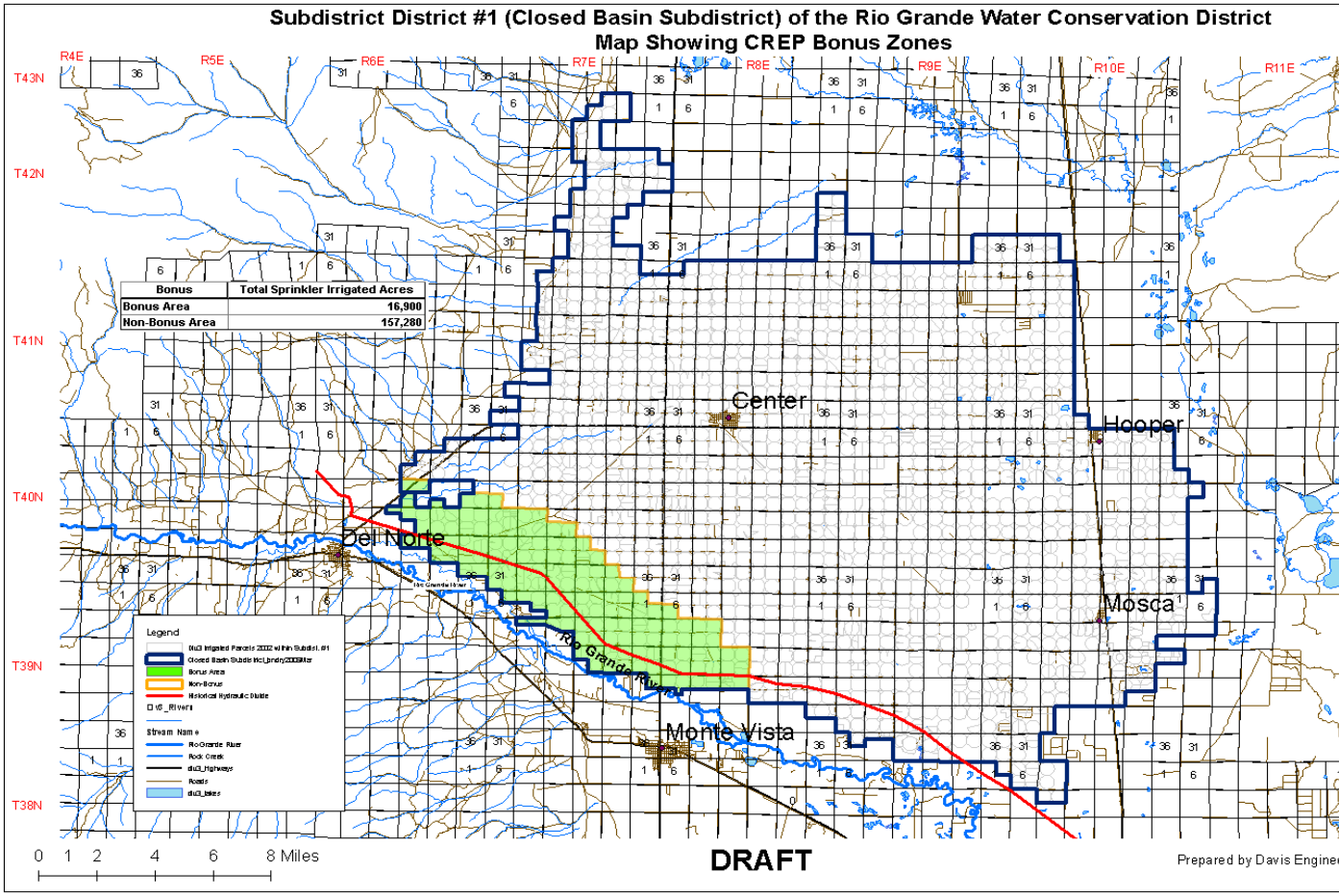


EXHIBIT L

Form RGWCD –Spec.Imp District #1

RGWCD SUBDIST #1 PERMANENT WATER RETIREMENT CONTRACT # _____

NAME: _____

PERMIT/DECREE NO.: _____

SPECIAL IMPROVEMENT DISTRICT NO. 1 OF THE RIO GRANDE WATER CONSERVATION DISTRICT WATER ACTIVITY ENTERPRISE - PARTICIPANT AGREEMENT

TO SUPPLEMENT THE RIO GRANDE CREP

THIS AGREEMENT is made and entered into this _____ day of _____, 20___, between the Special Improvement District No. 1 of the Rio Grande Water Conservation District Water Activity Enterprise ("Enterprise") whose address is 10900 Highway 160 East, Alamosa, Colorado, and the undersigned, referred to herein as the "Participant." The Enterprise and the Participant are collectively referred to herein as the "Parties."

RECITALS

WHEREAS, a Memorandum of Agreement has been entered into between the United States Department of Agriculture (USDA), Commodity Credit Corporation (CCC), and the State of Colorado to implement the Rio Grande Conservation Reserve Enhancement Program (CREP); and

WHEREAS, the CCC has the authority under the provisions of the Food Security Act of 1985, as amended (16 U.S.C. § 3830 et seq.), and the regulations at 7 CFR part 1410 to perform all its activities contemplated by the Rio Grande CREP Agreement; and

WHEREAS, the Enterprise has entered into an Agreement with the State of Colorado to act on behalf of the State of Colorado as it pertains to water retirement associated with the Rio Grande CREP; and

WHEREAS, the State Engineer administers the waters of the Rio Grande River and its tributaries in Colorado and serves as commissioner for Colorado to the Rio Grande River Compact Administration pursuant to Section 13 of Article XII of the State Constitution and Articles 67 and 80 of Title 37 of the Colorado Revised Statutes; and

WHEREAS, the USDA provides annual rental payments and cost-share as an incentive to retire irrigated cropland and plant it to an approved conservation practice under the Rio Grande River CREP; and

WHEREAS, the Participant seeks to offer irrigated cropland into the Rio Grande CREP through the submission of a CRP-1 Contract to the appropriate County FSA office, and has met Enterprise eligibility requirements as outlined in this Agreement; and

WHEREAS, the Participant desires to enter into a CRP-1 contract with the USDA to retire irrigated cropland and plant it to an approved conservation practice; and

WHEREAS, the Special Improvement District No. 1 of the Rio Grande Water Conservation District ("Subdistrict") was formed for the purpose of providing a water management alternative to state-imposed groundwater regulation while protecting senior water rights and cooperating with and assisting the State of Colorado to carry out the State's duty to comply with the limitations and duties imposed upon the State by the Rio Grande Compact; and

WHEREAS, the Subdistrict developed a Plan of Water Management that was adopted by the Rio Grande Water Conservation District Board of Directors as the official plan of the Subdistrict and approved by the Office of the State Engineer pursuant to C.R.S. 37-48-126 of the Colorado Revised Statutes; and

WHEREAS, the Subdistrict established the Enterprise pursuant to Article 45.1 of Title 37 of the Colorado Revised Statutes; and

WHEREAS, permanently retiring the use of irrigation water in the Rio Grande Basin in Colorado will assist the State of Colorado in carrying out the State's duty to comply with the limitations and duties imposed upon the State by the Rio Grande Compact and provide an alternative to state imposed groundwater regulation while protecting senior surface water rights; and

WHEREAS, the Board of Managers of the Subdistrict, acting as the Governing Board of the Enterprise, is authorized to make payments to producers approved to participate in the Rio Grande CREP by USDA as an additional incentive to permanently retire the use of irrigation water in the Subdistrict Territory as defined by the Petition forming the Subdistrict.

NOW THEREFORE, for and in consideration of the mutual covenants and agreements set forth herein, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

1. Upon meeting USDA and Enterprise eligibility requirements and being offered a CRP-1 Contract, the Participant will sign said CRP-1 contract with USDA to participate in the Rio Grande CREP on irrigated acres located within the following farm:

    a. FSA Contract Number(s): _____
    b. Type of land conversion (check all applicable types):

        ☐ Surface

        ☐ Ground

    c. Irrigated land to be converted:

        Number of acres: _____

        Legal description: _____

    d. Mortgage(s) or lien(s) on the property:

        1. Name of mortgage or lien holder: _____

2. Address: _____
3. Phone number: _____
4. Contact person: _____

This Agreement is not binding upon either party until such time a fully executed copy of the CRP-1 Contract between the participant and USDA is attached hereto as Exhibit A ("the CRP-1 Contract").

2. The Participant owns or has the right to use the following well permit to use ground water, or a decreed right to use ground or surface water located within the Subdistrict Territory, and that has been used to irrigate the irrigated land being offered for enrollment in the Rio Grande CREP as identified in the CRP-1 Contract:
   a. Well Permit No. and/or Court Decree Case No.:
      _____
   b. Well location and/or Point of Diversion:
      _____
   c. Maximum annual volume the appropriation in acre-feet and the maximum pumping rate in g.p.m. or the decreed rate in cubic feet per second:
      _____
   d. Name and address of the owner of the well permit or decreed ground or surface water right if other than the Participant:
      _____
   e. If the Well Permit listed in paragraph 2.a is part of a commingled system, list all other Well Permits that are part of the commingled system:
      _____
   f. If the well listed in paragraph 2.b has been decreed as an alternate point of diversion for another water right, list the Court Case No. approving the well as an alternative point of diversion:
      _____
   g. If a decreed surface water right has been used to irrigate the irrigated land being offered for enrollment in the CRP-1 Contract, list the Case Number of any Court decree changing the point of diversion or place of use of the surface water right, including any decree approving an alternate point of diversion:
      _____

3. The Participant agrees that water will not be withdrawn or diverted under the permit or the decreed ground or surface water right listed in paragraph 2.a above to irrigate the irrigated acres offered in the CRP-1 Contract, except as permitted after the CRP-1 Contract date, or later as authorized by USDA, if and when necessary to establish the vegetative conservation cover as outlined in an approved conservation plan, and except as permitted in paragraphs a below. Further, the Participant agrees as follows:
   a. With regard to retirement of a surface water right: Upon final execution and approval of the CRP-1 Contract, the Participant agrees that surface water will not be applied to irrigate the eligible and approved irrigated acres on the CRP-1 contract except as permitted by paragraph 3 above.

b. If a ground water right to be permanently retired was decreed by a Colorado court, the Participant agrees to abandon the ground water right used to irrigate the eligible and approved irrigated acres on the CRP-1 Contract, except as permitted in paragraph 3 above, and further agrees that the ground water right may be listed by the State Engineer on the list of abandoned water rights and the Participant agrees not to oppose the listing of the water right on the abandonment list. If the ground water right is an alternate point of diversion for a surface water right or another ground water right, the Participant agrees that the ground water right to be retired may not be diverted at any other point of diversion.

4. The Participant agrees to participate in CREP on the acres identified in the CRP-1 Contract and to comply with all applicable CRP statutes, regulations, and specifications in accordance with USDA policies.

5. The Participant agrees to implement the Conservation Plan developed by the Participant and USDA to convert irrigated acreage on the farm listed in Paragraph 1 to the specified conservation practices in accordance with the CRP-1 Contract. The starting date of the practice to convert the irrigated acreage to non-irrigated use is the date of the CRP-1 Contract.

6. The Participant agrees to comply with the terms and conditions contained in this Agreement and in the Appendix to this Agreement (Appendix to the Special Improvement District No. 1 of the Rio Grande Water Conservation District Water Activity Enterprise -Participant Agreement to Supplement the Rio Grande CREP).

7. The Participant agrees to pay any applicable liquidated damages if the Participant cancels or violates any portion of this Agreement or the Enterprise terminates this Agreement in accordance with the terms and conditions of this Agreement.

8. No part of this Agreement shall bind either the Participant or the Enterprise to the Agreement until such time that CRP-1 Contract between the Participant and USDA has been fully executed by the Participant and USDA.

9. The Enterprise agrees to pay the Participant the following amount(s) on the dates shown:

Date	Cost-Share	Signup	Annual Rent	Water Retire	Total Pmt

10. The period of this Agreement shall be the same term as the CRP-1 Contract, except that the provisions of paragraph 3 shall be perpetual.

11. This Agreement shall be binding on the heirs, successors, and assigns of the Parties.
12. The Participant(s) is (are):
    The name, address, and phone number of the Participant:

    Name: _____

    Company Name (if applicable): _____

    Address: _____

    City/State/Zip Code: _____

    Phone Number: _____

    SSN/TIN: _____

    Percentage of payments the Participant will receive (%): _____

    _____Owner _____Operator _____ Tenant

    If there is more than one Participant, provide the same information for each Participant.

    Name: _____

    Company Name (if applicable): _____

    Address: _____

    City/State/Zip Code: _____

    Phone Number: _____

    SSN/TIN: _____

    Percentage of payments the Participant will receive (%): _____

    _____ Owner _____Operator _____Tenant

IN WITNESS WHEREOF, the Parties to this Agreement have each caused this Agreement to be duly executed on the date set forth following their signature.

ATTEST:

By: _____

Secretary

SPECIAL IMPROVEMENT DISTRICT NO. 1 OF THE RIO GRANDE WATER CONSERVATION WATER ACTIVITY ENTERPRISE

By: _____

President

Date: _____

PARTICIPANT:

_____

If Participant is a Corporation, Corporate Name:

_____

By: _____

Title: _____

Date: _____

CO-PARTICIPANT:

_____

If Participant is a Corporation, Corporate Name:

_____

By: _____

Title: _____

Date: _____

If the property to be converted is subject to a mortgage or lien, signature of the mortgage or lien holder:

By: _____

Title: _____

Date: _____

EXHIBIT L – continued

WELL OWNER'S STATEMENT AND REQUEST TO
CANCEL A WELL PERMIT
SPECIAL IMPROVEMENT DISTRICT NO. 1 OF THE RIO GRANDE WATER CONSERVATION DISTRICT
("SUBDISTRICT")

SUBDISTRICT NO. 1'S SUPPLEMENTAL

CONSERVATION RESERVE ENHANCEMENT PROGRAM (CREP) FUNDING

Room 818 Centennial Building, 1313 Sherman Street, Denver, CO 80203

NOTE: This form should only be used for wells located within the Special Improvement District No. 1 of the Rio Grande Water Conservation District ("Subdistrict") that are enrolling in the Subdistrict's Supplemental CREP Funding Program.

I, _____, am the owner of the well with Permit No._____, located in the _____1/4 of the _____1/4 of Section_____, Township _____, Range _____, of the ____ P.M., and the owner of the land on which this well is located.

As owner of this well, I hereby request, conditional on the final acceptance of this permit in the Subdistrict's Supplemental CREP Funding Program, that the permit for the well be cancelled and any water rights associated with this permit and well be abandoned. I understand that this well must be plugged according to the Rules and Regulations for Water Well Construction, Pump Installation, Cistern Installation, and Monitoring and Observation Hole/Well Construction (2 CCR 402-2 Rule 16) upon cancellation of the permit and a Well Abandonment Report for the plugged well must be submitted to the Division Engineer for Water Division 3 and the Office of the State Engineer (2 CCR 402-2 Rule 17).

I hereby affirm that I have read and understand the above statement and the information I have provided in true and correct.

Signed and dated this _____day of _____, 20_____.

Signature of Applicant:_____

Applicants Name: _____

(Please Print)

Address: _____

City, State & Zip Code: _____

Telephone No.:_____

<u>FOR RGWCD Subdistrict No. 1 Use Only:</u>

I, _____, as the Program Administrator, acknowledge that the subject water right has been accepted into the Subdistrict's Supplemental CREP Funding Program. I hereby affirm that I have read and understand the above statement and the information I have provided is true and correct.

Signed and dated this _____ day of _____, 20_____.

Signature of Program Administrator _____

Upon completion by RGWCD Special Subdistrict # 1, send form to the Division Engineer for Water Division 3 and the Office of the State Engineer

Form RGWCD –Spec.Imp District #1 RGWCD SUBDIST #1 TEMPORARY WATER RETIREMENT CONTRACT # _____

NAME: _____

PERMIT/DECREE NO.: _____

SPECIAL IMPROVEMENT DISTRICT NO. 1 OF THE RIO GRANDE WATER CONSERVATION DISTRICT WATER ACTIVITY ENTERPRISE - PARTICIPANT AGREEMENT

TO SUPPLEMENT THE RIO GRANDE CREP

THIS AGREEMENT is made and entered into this _____ day of _____, 200__, between the Special Improvement District No. 1 of the Rio Grande Water Conservation District Water Activity Enterprise ("Enterprise") whose address is 10900 Highway 160 East, Alamosa, Colorado, and the undersigned, referred to herein as the "Participant." The Enterprise and the Participant are collectively referred to herein as the "Parties."

RECITALS

WHEREAS, a Memorandum of Agreement has been entered into between the United States Department of Agriculture (USDA), Commodity Credit Corporation (CCC), and the State of Colorado to implement the Rio Grande Conservation Reserve Enhancement Program (CREP); and

WHEREAS, the CCC has the authority under the provisions of the Food Security Act of 1985, as amended (16 U.S.C. § 3830 et seq.), and the regulations at 7 CFR part 1410 to perform all its activities contemplated by the Rio Grande CREP Agreement; and

WHEREAS, the Enterprise has entered into an Agreement with the State of Colorado to act on behalf of the State of Colorado as it pertains to water retirement associated with the Rio Grande CREP; and

WHEREAS, the State Engineer administers the waters of the Rio Grande River and its tributaries in Colorado and serves as commissioner for Colorado to the Rio Grande River Compact Administration pursuant to Section 13 of Article XII of the State Constitution and Articles 67 and 80 of Title 37 of the Colorado Revised Statutes; and

WHEREAS, the USDA provides annual rental payments and cost-share as an incentive to retire irrigated cropland and plant it to an approved conservation practice under the Rio Grande River CREP; and

WHEREAS, the Participant seeks to offer irrigated cropland into the Rio Grande CREP through the submission of a CRP-1 Contract to the appropriate County FSA office, and has met Enterprise eligibility requirements as outlined in this Agreement; and

WHEREAS, the Participant desires to enter into a CRP-1 contract with the USDA to retire irrigated cropland and plant it to an approved conservation practice; and

WHEREAS, the Special Improvement District No. 1 of the Rio Grande Water Conservation District ("Subdistrict") was formed for the purpose of providing a water management alternative to state-imposed groundwater regulation while protecting senior water rights and cooperating with and assisting the State of Colorado to carry out the State's duty to comply with the limitations and duties imposed upon the State by the Rio Grande Compact; and

WHEREAS, the Subdistrict developed a Plan of Water Management that was adopted by the Rio Grande Water Conservation District Board of Directors as the official plan of the Subdistrict and approved by the Office of the State Engineer pursuant to C.R.S. 37-48-126 of the Colorado Revised Statutes; and

WHEREAS, the Subdistrict established the Enterprise pursuant to Article 45.1 of Title 37 of the Colorado Revised Statutes; and

WHEREAS, retiring the use of irrigation water in the Rio Grande Basin in Colorado will assist the State of Colorado in carrying out the State's duty to comply with the limitations and duties imposed upon the State by the Rio Grande Compact and provide an alternative to state imposed groundwater regulation while protecting senior surface water rights; and

WHEREAS, the Board of Managers of the Subdistrict, acting as the Governing Board of the Enterprise, is authorized to make payments to producers approved to participate in the Rio Grande CREP by USDA as an additional incentive to retire the use of irrigation water for the term of the CRP-1 contract in the Subdistrict Territory as defined by the Petition forming the Subdistrict.

NOW THEREFORE, for and in consideration of the mutual covenants and agreements set forth herein, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

2. Upon meeting USDA and Enterprise eligibility requirements and being offered a CRP-1 Contract, the Participant will sign said CRP-1 contract with USDA to participate in the Rio Grande CREP on irrigated acres located within the following farm:

    a. FSA Contract Number(s): _____
    b. Type of land conversion (check all applicable types):

    ☐ Surface

    ☐ Ground

    c. Irrigated land to be converted:

    Number of acres: _____

    Legal description: _____

    d. Mortgage(s) or lien(s) on the property:

    1. Name of mortgage or lien holder: _____
    2. Address: _____
    3. Phone number: _____
    4. Contact person: _____

This Agreement is not binding upon either party until such time a fully executed copy of the CRP-1 Contract between the participant and USDA is attached hereto as Exhibit A ("the CRP-1 Contract").

13. The Participant owns or has the right to use the following well permit to use ground water, or a decreed right to use ground or surface water located within the Subdistrict Territory, and that has been used to irrigate the irrigated land being offered for enrollment in the Rio Grande CREP as identified in the CRP-1 Contract:

    h. Well Permit No. and/or Court Decree Case No.:

    _____

    i. Well location and/or Point of Diversion:

    _____

    j. Maximum annual volume the appropriation in acre-feet and the maximum pumping rate in g.p.m. or the decreed rate in cubic feet per second:

    _____

    k. Name and address of the owner of the well permit or decreed ground or surface water right if other than the Participant:

    _____

    l. If the Well Permit listed in paragraph 2.a is part of a commingled system, list all other Well Permits that are part of the commingled system:

    _____

    m. If the well listed in paragraph 2.b has been decreed as an alternate point of diversion for another water right, list the Court Case No. approving the well as an alternative point of diversion:

    _____

    n. If a decreed surface water right has been used to irrigate the irrigated land being offered for enrollment in the CRP-1 Contract, list the Case Number of any Court decree changing the point of diversion or place of use of the surface water right, including any decree approving an alternate point of diversion:

    _____

14. The Participant agrees that water will not be withdrawn or diverted under the permit or the decreed ground or surface water right listed in paragraph 2.a above to irrigate the irrigated acres offered in the CRP-1 Contract, except as permitted after the CRP-1 Contract date, or later as authorized by USDA, if and when necessary to establish the vegetative conservation cover as outlined in an approved conservation plan, and except as permitted in paragraphs a below. Further, the Participant agrees as follows:

a. With regard to retirement of a surface water right: Upon final execution and approval of the CRP-1 Contract, the Participant agrees that surface water will not be applied to irrigate the eligible and approved irrigated acres on the CRP-1 contract except as permitted by paragraph 3 above.

b. If a ground water right to be retired for the term of the CRP-1 contract was decreed by a Colorado court, the reduced irrigation resulting from non-use of the ground water will not be considered to be a period of non-use for purposes of abandonment or reductions in the Participant's legal water right. Participant agrees not to utilize the ground water right to irrigate the eligible and approved irrigated acres on the CRP-1 Contract, except as permitted in paragraph 3 above. If the ground water right is an alternate point of diversion for a surface water right or another ground water right, the Participant agrees that the ground water right to be retired may not be diverted at any other point of diversion.

15. The Participant agrees to participate in CREP on the acres identified in the CRP-1 Contract and to comply with all applicable CRP statutes, regulations, and specifications in accordance with USDA policies.

16. The Participant agrees to implement the Conservation Plan developed by the Participant and USDA to convert irrigated acreage on the farm listed in Paragraph 1 to the specified conservation practices in accordance with the CRP-1 Contract. The starting date of the practice to convert the irrigated acreage to non-irrigated use is the date of the CRP-1 Contract.

17. The Participant agrees to comply with the terms and conditions contained in this Agreement and in the Appendix to this Agreement (Appendix to the Special Improvement District No. 1 of the Rio Grande Water Conservation District Water Activity Enterprise -Participant Agreement to Supplement the Rio Grande CREP).

18. The Participant agrees to pay any applicable liquidated damages if the Participant cancels or violates any portion of this Agreement or the Enterprise terminates this Agreement in accordance with the terms and conditions of this Agreement.

19. No part of this Agreement shall bind either the Participant or the Enterprise to the Agreement until such time that CRP-1 Contract between the Participant and USDA has been fully executed by the Participant and USDA.

20. The Enterprise agrees to pay the Participant the following amount(s) on the dates shown:

Date	Cost-Share	Signup	Annual Rent	Water Retire	Total Pmt

21. The period of this Agreement shall be the same term as the CRP-1 Contract.

22. This Agreement shall be binding on the heirs, successors, and assigns of the Parties.

23. The Participant(s) is (are):

The name, address, and phone number of the Participant:

Name: _____

Company Name (if applicable): _____

Address: _____

City/State/Zip Code: _____

Phone Number: _____

SSN/TIN: _____

Percentage of payments the Participant will receive (%): _____

_____Owner _____Operator _____ Tenant

If there is more than one Participant, provide the same information for each Participant.

Name: _____

Company Name (if applicable): _____

Address: _____

City/State/Zip Code: _____

Phone Number: _____

SSN/TIN: _____

Percentage of payments the Participant will receive (%): _____

_____ Owner _____Operator _____Tenant

IN WITNESS WHEREOF, the Parties to this Agreement have each caused this Agreement to be duly executed on the date set forth following their signature.

ATTEST:

By: _____
Secretary

SPECIAL IMPROVEMENT DISTRICT NO. 1 OF THE RIO GRANDE WATER CONSERVATION WATER ACTIVITY ENTERPRISE

By: _____
President

Date: _____

PARTICIPANT:

_____

If Participant is a Corporation, Corporate Name:

_____

By: _____

Title: _____

Date: _____

CO-PARTICIPANT:

_____

If Participant is a Corporation, Corporate Name:

_____

By: _____

Title: _____

Date: _____

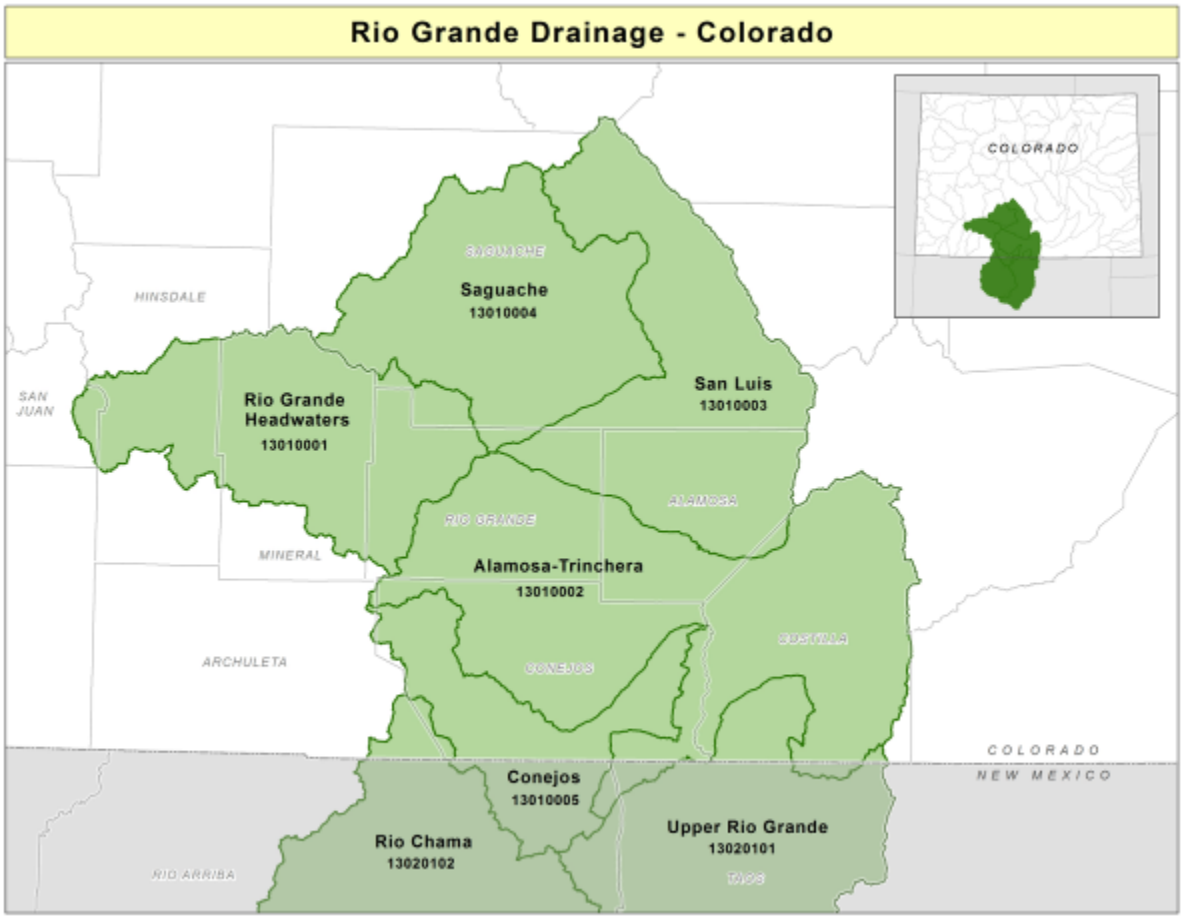
If the property to be converted is subject to a mortgage or lien, signature of the mortgage or lien holder:

By: _____

Title: _____

Date: _____

Exhibit M
NRCS 8 Digit Hydrologic Unit Codes
Portions of 13010001, 13010002, 13010003, 13010004



APPENDIX B
SITE-SPECIFIC ENVIRONMENTAL EVALUATION (FORM FSA 850)

This page intentionally left blank.

This form is available electronically.

FSA-850
(06-14-02)

U.S. DEPARTMENT OF AGRICULTURE
Farm Service Agency

ENVIRONMENTAL EVALUATION CHECKLIST

1. PROJECT INFORMATION

1A. PRODUCER or APPLICANT NAME

1B. PROJECT NUMBER

1C. STATE & COUNTY CODE

1D. TYPE OF PROJECT

LOAN ☐ CRP ☐ ECP ☐

OTHER ☐ _____

1E. PROJECT OR DESCRIPTION

1F. GENERAL LOCATION

2. BACKGROUND

a. Describe the purpose and need for the project:

b. Describe the project site and its present use:

c. Describe the surrounding land uses; indicate the directions and distances involved. The extent of the surrounding land to be considered depends on the extent of the potential impacts of the project, its related activities, and the primary beneficiaries:

Attach adequate location maps of the project area, as well as (1) an aerial photo of the site, (2) if available, topographic map which clearly delineates the area and the location of the project elements, (3) if available, site photos, and (4) if completed, a standard soil survey for the project. When necessary for descriptive purposes or environmental analysis, include land use maps or other graphic information. All graphic materials shall be of high quality resolution.

3. PROTECTED RESOURCES

For the below listed land uses or environmental resources, check the appropriate answer in Column A to indicate those that are present on the site(s) of the proposed action. Check the appropriate answer in Column B for those resources that are within the action's area of environmental impact, such as the areas adjacent to the proposed site(s). Check the appropriate answer in Column C for those land uses and environmental resources that will be adversely affected by the proposed action.

Check the appropriate boxes as provided:
- If "YES" is checked in Column A or B, then Column C must be completed.
- If "YES" is checked in Column C, attach as Exhibit 3a, 3b, 3c, 3d, 3e, 3f, 3g, 3h, and 3i as applicable, a discussion and description of all potential impacts.

	A: Located on the site of the proposed action		B: Located within the proposed action area of environmental impact		C: Adversely affected by the proposed action	
	YES	NO	YES	NO	YES	NO
a. Wetlands An AD-1026 must be completed by all producers who request USDA program or loan benefits covered by the FSA of 1985, as amended by the Federal Agriculture Improvement and Reform Act of 1996. If any of questions 8 through 10 of the AD-1026 are answered "YES," then a NRCS CPA-026e must be completed and attached.						
b. Floodplains - Flood Map Panel # _____ For projects involving construction/development in floodplains, attach applicable floodplain development permits.						
c. Sole Source Aquifer Recharge Area (Designated by Environmental Protection Agency) The proposed action must not contaminate or contribute to the contamination of a sole source aquifer to the extent that a significant hazard to public health is created.						
d. Critical Habitat or Endangered/Threatened Species (listed or proposed) Consult with the U.S. Fish and Wildlife to ensure that the proposed action will not jeopardize a listed species or destroy or modify its "critical habitat" in accordance with the Endangered Species Act.						
e. Wilderness						
f. Coastal Barrier in Coastal Barrier Resources System or Approved Coastal Zone Management Area						
g. Wild or Scenic River						
h. Natural Landmark						
i. Historical, Archeological Sites						

4. WATER QUALITY

a. Will the proposed action adversely affect the quality of surface and/or ground water?

YES ☐ NO ☐

b. Will the proposed action comply with the requirements of the Clean Water Act and any applicable State water quality laws?

YES ☐ NO ☐

If Item 4a is answered "YES," attach as Exhibit 4, a discussion of any impacts to water quality.

5. AIR QUALITY

Will the proposed action produce air emissions or odors that will violate any Federal, State, or local laws or standards?

YES ☐ NO ☐

If "YES," attach as Exhibit 5, a discussion of any impacts to air quality.

6. NOISE

Will the proposed action result in permanent increases in noise levels?

YES ☐ NO ☐

If "YES," attach as Exhibit 6, a discussion of any noise impacts.

7. IMPORTANT LAND RESOURCES

Will the proposed action result in the conversion of important farmland, prime forest land, or prime rangeland to a nonagricultural use?

YES ☐ NO ☐

If "YES," attach as Exhibit 7, a discussion of which land resources would be affected along with any alternatives to the proposed action.

8. UNIQUE NATURAL FEATURES AND AREAS

a. Will the project be located near natural features (i.e. bluffs, caves, or cliffs) or near public or private scenic areas?

YES ☐ NO ☐

b. Are other natural resources visible on the site or in the vicinity?

YES ☐ NO ☐

c. Will any such resources be adversely affected or will they adversely affect the project?

YES ☐ NO ☐

If Item 8c is answered "YES," attach as Exhibit 8, a discussion of such natural features or areas and potential adverse impacts.

9. ENVIRONMENTAL JUSTICE

Will the proposed action cause any adverse human health or environmental effects to minority or low income communities as defined in the Executive Order 12896, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations"?

YES ☐ NO ☐

If "YES," attach as Exhibit 9, a discussion of any adverse effects.

10. SOCIAL AND ECONOMIC IMPACTS

Will the proposed action have any negative impacts on the local social and economic conditions? YES ☐ NO ☐

If "YES," attach as Exhibit 10, a discussion of any negative impacts.

11. STATE ENVIRONMENTAL POLICY ACT

Is the proposed project subject to a State NEPA? YES ☐ NO ☐

If "YES," attach as Exhibit 11, a discussion of the results of compliance with these requirements.

12. PUBLIC REACTION

Have there been any negative reactions from the public related to the proposed project? YES ☐ NO ☐

If "YES," attach as Exhibit 12, a discussion of any associated comments and related correspondence.

13. **CUMULATIVE IMPACTS**

Are there any cumulative impacts resulting from the proposed project? YES ☐ NO ☐

If "YES," attach as Exhibit 13, a discussion of the cumulative impacts of this project and the related activities. Give particular attention to land use changes and air and water quality impacts.

14. **ALTERNATIVES**

Based on the answers provided in this form, will alternatives have to be considered? YES ☐ NO ☐

If "YES," attach as Exhibit 14, a discussion of the feasibility of alternatives to the project and their environmental impacts.

15. **MITIGATION MEASURES**

Based on the answers provided in this form, will mitigation measures have to be considered? YES ☐ NO ☐

If "YES," attach as Exhibit 15, a discussion of any measures which will be required to avoid or mitigate the identified adverse impacts.

16. COMMENTS

17. CHECKLIST

Permits			**Forms**		
	Required	Not Required		Required	Not Required
Army Corps of Engineers 404			Form FSA-851, Environmental Risk Assessment		
NPDES Storm Water			Form NRCS CPA-026e, HEL and WC Determination		
Floodplain Development Permit			Form FEMA 81-93, Standard Flood Hazard Determination		
CAFO Permit					

Letters and Other Requirements					
	Required	Not Required		Required	Not Required
Fish and Wildlife Service clearance on Endangered/Threatened Species			Public Notice for Floodplains as required by section 2(a)(4) of EO 11988		
State Historic Preservation Officer consultation			Tribal Historic Preservation Officer consultation		

NOTE: Other permits, forms, and letters may be required and should be attached as applicable. All permits, forms, and letters should be attached as exhibits corresponding to their appropriate section of this form.

18. FINDING

I have reviewed and considered the types and degrees of adverse environmental impacts identified by this evaluation. I have also analyzed the proposal for its consistency with FSA environmental policies implementing the requirements of the National Environmental Policy Act and have considered the potential benefits of the proposal. Based upon this consideration and balancing of these factors, I recommend one of the following:

a. ☐ There will be no adverse impacts as a result of this proposed action or any adverse effects, either individually or cumulatively. The project can be considered as categorically excluded per '799.10 of 7 CFR Part 799. Neither an Environmental Assessment or Environmental Impact Statement will be required. The project is recommended for approval.

b. ☐ An Environmental Assessment should be completed to provide further and more complete analysis of any adverse impacts and approval of the project must be delayed pending the outcome of the assessment.

19A. NAME OF PREPARER	**19B. TITLE OF PREPARER**
19C. SIGNATURE OF PREPARER	**19D. DATE (MM-DD-YYYY)**
19E. SIGNATURE OF CONCURRING OFFICIAL	**19F. TITLE OF CONCURRING OFFICIAL**

APPENDIX C
AGENCY CORRESPONDENCE

This page intentionally left blank.

United States Department of Agriculture

Farm and Foreign Agricultural Services

Farm Service Agency

1400 Independence Ave, SW
Stop 0513
Washington, DC
20250-0513

June 11, 2012

TO: [Distribution List]

FROM: Matthew T. Ponish
Acting Directory, Conservation & Environmental Programs Divison
United States Department of Agriculture, Farm Service Agency

SUBJECT: Draft Programmatic Environmental Assessment (PEA) for Conservation Reserve Enhancement Program (CREP) Rio Grande, Colorado

Dear [Attached Distribution List],

The United States Department of Agriculture, Farm Services Agency (FSA) on behalf of the Commodity Credit Corporation (CCC) has prepared a Draft PEA to examine the potential environmental consequences associated with implementing CREP in the Rio Grande Water Conservation District, Subdistrict No. 1, in Colorado which includes portions of Alamosa, Rio Grande, and Saguache counties. The FSA is examining the Proposed Action (the CREP Agreement) and the no action alternative environmental baseline for natural and socioeconomic resources.

The Draft PEA is available at the following websites for review and download: http://www.fsa.usda.gov/FSA/webapp?area=home&subject=ecrc&topic=nep-cd and www.water.state.co.us. All comments must be received by **July 15, 2010**. A public meeting has been scheduled for:

June 21, 2012, 6:00pm to 8:00pm
Ramada Alamosa
333 Santa Fe Avenue
Alamosa, Colorado 81101

Written comments may be submitted at the meeting or by mailing to:
State of Colorado
Attn: Kathryn Radke
Division of Water Resources
1313 Sherman Street, Room 818
Denver, CO 80203

We appreciate your review and look forward to receiving your comments.

Matthew T. Ponish

Distribution List

Colorado Department of Natural Resources
Attn: Rebecca Mitchell, Water Policy and Issues Coordinator
1313 Sherman Street, Room 718
Denver, CO 80203

Colorado NRCS State Office
Denver Federal Center
Attn: Phyllis Ann Phillips
Building 56, Room 2604
PO Box 25426
Denver, CO 80225-0426

Colorado Parks and Wildlife
Attn: Ken Morgan
Private Land Specialist
6060 Broadway
Denver, Colorado 80216

Colorado Parks and Wildlife
Monte Vista Office
0722 S. Road 1 East
Monte Vista, CO 81144

Rio Grande Water Conservation District
Attn: Steve Vandiver
10900 E. U.S. Highway 60
Alamosa, CO 81101

The Nature Conservancy
2424 Spruce Street
Boulder, CO 80302

U.S. Fish and Wildlife Service
Region 6
Attn: Steve Guertin
134 Union Boulevard
Lakewood, CO 80228
303 236-7905

U.S. Fish and Wildlife Service
Colorado Field Office
Attn: Susan Linner
P.O. Box 25486 – Denver Federal Center
Denver, CO 80225
303-236-4005

USDA Colorado Farm Service Agency
Denver Federal Center
Attn: Trudy Kareus
Building 56, Room 2760
P O Box 25426
Denver CO 80225-0426