United States Department of Agriculture
Natural Resources Conservation Service

DRAFT
Watershed Plan and Environmental Assessment
for the
Cimarron River-Lower Uncompahgre Watershed Project
Montrose & Gunnison Counties, Colorado

PREPARED BY

U.S. Department of Agriculture
Natural Resources Conservation Service
(Lead Federal Agency)

IN COOPERATION WITH

Bostwick Park Water Conservancy District
Uncompahgre Valley Water Users Association
Cimarron Canal and Reservoir Company
Trout Unlimited (TU)

COOPERATING AGENCIES

USDA Forest Service
USDOI Bureau of Land Management
USDOI National Park Service
USDOI Bureau of Reclamation

April 2025

DRAFT
Watershed Plan and Environmental Assessment
for
Agricultural Water Management Project

of the
Cimarron River and Lower Uncompahgre Watershed
Montrose County & Gunnison County, Colorado

Prepared By:

United States Department of Agriculture, Natural Resources Conservation Service (Lead Agency)

In Cooperation With:

Bostwick Park Water Conservancy District (BPWCD)
Uncompahgre Valley Water Users Association
Cimarron Canal and Reservoir Company
Trout Unlimited (TU)and
USDA-Forest Service, USDOI-Bureau of Land Management, USDOI-National Park Service, and USDOI-Bureau of Reclamation

AUTHORITY

This Draft Watershed Plan and Environmental Assessment (Draft Plan-EA) was developed pursuant to the requirements of the National Environmental Policy Act of 1969, PL 91-190, as amended (42 U.S.C. 4321 et seq.), and would be implemented under the authority of the Watershed Protection and Flood Prevention Act of 1954 (Public Law 83-566) as amended with the authorized purpose of agricultural water management.

ABSTRACT

This document was developed to assess the potential impacts of the Cimarron River-Lower Uncompahgre Watershed Project (Proposed Project). The purpose of the Proposed Project is to improve agricultural water management within the project area. The Proposed Project is needed to address agricultural water management related issues, such as water losses associated with irrigation seepage, salinity and selenium loading, irrigation water management and delivery efficiency, and protect fish habitat and recreational opportunities through agriculture water management. The total project installation cost would be $25,178,335.18. The estimated amount to be paid by the USDA-NRCS Public Law 83-566 would be approximately $19,640,048.53.

COMMENTS AND INQUIRIES

Comments and inquires must be received by (pending). Submit comments and inquiries to: Blongshia Cha, NRCS – Watershed Program Specialist, Denver Federal Center, Building 56, Room 2400, PO Box 25426, Denver, CO 80225-0426, (719) 600-4710.

Non-Discrimination Statement

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the State or local Agency that administers the program or contact USDA through the Telecommunications Relay Service at 711 (voice and TTY). Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at How to File A Program Discrimination Complaint (https://www.usda.gov/about-usda/general-information/staff-offices/office-assistant-secretary-civil-rights/how-file-program-discrimination-complaint) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Mail Stop 9410, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

USDA is an equal opportunity provider, employer, and lender.

WATERSHED PLAN AGREEMENT
(TO BE INCLUDED IN FINAL PLAN-EA)

Table of Contents

List of Tables

List of Figures

Appendices

SUMMARY

OFFICE OF MANAGEMENT AND BUDGET FACT SHEET

S-1.0 Title of Proposed Action

Draft Watershed Plan and Environmental Assessment (Draft Plan-EA) for the Cimarron River-Lower Uncompahgre Watershed Project

S-2.0 Watershed

Cimarron River and Lower Uncompahgre Watershed

S-3.0 County, State

Montrose and Gunnison Counties, Colorado

S-4.0 Congressional District

Colorado's 3rd Congressional District

S-5.0 Sponsoring Local Organization

Bostwick Park Water Conservancy District (BPWCD)
Uncompahgre Valley Water Users Association
Cimarron Canal and Reservoir Company
Trout Unlimited (TU)

S-6.0 Authority

The watershed study was carried out and the plan prepared under the authority of PL 83-566 Stat. 666 as amended (16 U.S.C. Section 1001 et. seq.) 1954 and the National Environmental Policy Act of 1969, PL 91-190, as amended (42 U.S.C. 4321 et seq.). The works of improvement would be installed under the PL 83-566 authorized purpose of Agricultural Water Management.

S-7.0 Cooperating Agency

Bureau of Land Management (BLM), National Park Service (NPS), U.S. Forest Service (USFS), Bureau of Reclamation (Reclamation)

S-8.0 Purpose and Need for Action

The purpose of the Cimarron River-Lower Uncompahgre Watershed Project (Proposed Project) is to increase available water supply for agriculture in the Cimarron River and Lower Uncompahgre Watersheds. The Proposed Project is needed to address agricultural water management related issues, such as inability to deliver water due to canal breaches (water security), water losses associated with irrigation seepage (irrigation efficiency), salinity and selenium loading, and to protect fish habitat and recreational opportunities through agriculture water management decisions.

S-9.0 Description of the Preferred Alternative

The Preferred Alternative would protect agricultural lands from damages associated with canal breach, conserve water, reduce salinity and selenium loading, improve irrigation water management and delivery efficiency, and monitor water quality on the Cimarron River. Project

measures include piping portions of the Cimarron Canal (Wells Basin-1.63 mi. and Coal Hill-1.17 mi.), Vernal Mesa Canal (Slide Point-0.92 mi.), East Lateral (4.26 mi.), and West Lateral (3.99 mi.); lining the Montrose & Delta (M&D) Canal (14.2 ac.) and stabilizing the adjacent hillside; and, installing a temperature sensor on the Cimarron River.

S-10.0 Resource Information

Table S-1 lists the relevant resource information for the project area.

Table S-1. Existing Resource Information

Resource	Description
Latitude/Longitude	Wells Basin: 38°21'38.71"N/107°35'9.21"W Coal Hill: 38°25'27.47"N/107°37'51.48"W Slide Point: 38°27'16.59"N/107°39'19.13"W East Lateral: 38°31'36.10"N/107°44'39.72"W West Lateral: 38°31'24.79"N/107°45'26.57"W M&D Canal: 38°25'13.09"N/107°53'36.44"W Temperature Sensor: 38°15'57.68"N/ 107°32'32.08"W
Hydrologic Unit Number – Hydrologic Unit Code (HUC)	HUC 14020006 (Uncompahgre Sub-basin) HUC 140200060606 (Outlet Uncompahgre River) HUC 140200060603 (Lower Spring Creek) HUC 140200060407 (City of Montrose Uncompahgre River) HUC 140200060403 (Happy Canyon Creek) HUC 140200060406 (Outlet Cedar Creek) HUC 140200060404 (Hairpin Creek Cedar Creek) HUC 14020002 (Upper Gunnison Sub-basin) HUC 140200021103 (Long Gulch Gunnison River) HUC 140200020906 (Lower Cimarron River) HUC 140200020905 (Middle Cimarron River) HUC 140200020904 (Outlet Little Cimarron River) HUC 140200020902 (Upper Cimarron River)
Climate*	Average highs: 88.3 °F Average lows: 12.3 °F
Topography	Wells Basin: Slight to moderate hills occur to the west/north of the site, with elevation generally lower south and east of the site. Elevation in this area ranges from 8,368 feet to 8,410 feet above mean sea level (AMSL). Coal Hill: Moderate hills occur on the west side of the site and areas east of the Cimarron Canal are generally lower in elevation. Elevation in this area ranges from 8,236 feet to 8,256 feet AMSL. Slide Point: The canal sits approximately 800 feet north of Highway 50 and occurs west of the Cerro Summit/Montrose Reservoir and the Cerro Summit State Wildlife Area, which is situated in a mostly undisturbed grassland sagebrush steppe natural community. Elevation in this area ranges from 7,961 feet to 7,973 feet AMSL. East Lateral and West Lateral: These laterals are situated within a valley with higher elevations to the east and west. Elevation in this area ranges from 6,989 feet to 7,223 feet AMSL on the East Lateral and ranges from 6,952 feet to 7,055 feet AMSL for the West Lateral.

Resource	Description
	M&D Canal: Moderate hills occur on either side of the canal and areas north/east of the canal are generally lower in elevation. Elevation in this area ranges from 5,904 feet to 6,044 feet AMSL. Temperature Sensor: The temperature sensor would occur in the Cimarron River. Elevation for the temperature sensor on USFS land, which occurs south of the diversion, ranges from 8,652 feet to 8,655 feet AMSL.
Annual Precipitation/Snowfall*	9.35 inches / 25.1 inches
Watershed Area	HUC 140200060606 (35,710 acres) HUC 140200060603 (11,813 acres) HUC 140200060407 (8,998 acres) HUC 140200060403 (38,456 acres) HUC 140200060406 (16,457 acres) HUC 140200060404 (21,513 acres) HUC 140200021103 (32,045 acres) HUC 140200020906 (16,937 acres) HUC 140200020905 (26,188 acres) HUC 140200020904 (20,527 acres) HUC 140200020902 (18,973 acres) Combined area: 247,616 acres
Land Cover	Water: 716 ac. (0.3%) Trees: 36,043 ac. (14.6%) Flooded Vegetation: 9 ac. (0.004%) Crops: 42,220 ac. (17.1%) Built Area: 16,317 ac. (6.6%) Bare Ground: 5,845 ac. (2.4%) Snow/Ice: 24 ac. (0.01%) Rangeland: 146,442 ac. (59%)
Land Ownership	Private (70.4%), Local (0.2%), County (0.02%), State (2.7%), Federal (26.7%)
Population** (Montrose County/Gunnison County)	42,280 / 17,119
Demographics** (Montrose County/Gunnison County)	White: 78.2% / 86.6% Hispanic or Latino: 21.2% / 9.5% Asian: 0.8% / 0.7% Two or More Races: 10% / 6.5% Native Hawaiian and Other Pacific Islanders: 0% / 0% American Indian and Native Alaskan: 1.4% / 1.2% African American: 0.4% / 0.5%
Farms Present*** (Montrose County/Gunnison County)	1,135 / 309
Land in Farms*** (Montrose County/Gunnison County)	330,523 acres / 266,922 acres
Average Farm Size*** (Montrose County/Gunnison County)	291 acres / 831 acres

**Based on 2020 climate data.*
***U.S. Census Bureau (Census) American Community Survey (ACS) 2020; 2020 Decennial Census.*
****Based on 2017 USDA-NRCS Census of Agriculture.*

S-11.0 Alternative Plans Considered

Alternatives that were considered in this Draft Plan-EA include the No Action Alternative or Future Without Federal Investment (FWOFI), Alternative 1, and Alternative 2. Through the analysis conducted in this Draft Plan-EA, Alternative 1 was determined the Action Alternative, or Future With Federal Investment (FWFI) alternative. Alternative 2 was evaluated against the purpose and need, the Principles, Requirements and Guidelines (PR&G) guiding principles, and decision criteria. From that evaluation, it was removed from further analysis. All reasonable alternatives including non-structural alternatives, were evaluated to determine the locally preferred alternative, environmentally preferred, and the national economic efficiency (NEE) alternative.

- Under the FWOFI, the Cimarron Canal, Vernal Mesa Canal, East Lateral, and West Lateral would not be piped, the M&D Canal would not be lined and the adjacent hillside would not be stabilized, and the temperature sensor would not be installed in the Cimarron River. The existing infrastructure would remain the same. This alternative would not result in any costs.
- Alternative 1 would pipe portions of the Cimarron Canal, Vernal Mesa Canal, East Lateral, and West Lateral; line the M&D Canal and stabilize the adjacent hillside; and install one temperature sensor in the Cimarron River. The analysis conducted in this Plan-EA shows that Alternative 1 is determined the NEE Alternative, or the Preferred Alternative, and is further referred to as the FWFI alternative. Alternative 1 is estimated to cost $25,178,335. This Alternative includes measures to mitigate the adverse effects to the National Register of Historic Places (NRHP)-eligible canal segments through the development of a Memorandum of Agreement (MOA). The MOA is included in Appendix A.
- Alternative 2 is the same as Alternative 1, except M&D Canal would be piped. Alternative 2 was considered during the planning phase but eliminated from detailed study due to associated economic impacts and hydraulic considerations that would result in a slight decrease to flow. Alternative 2 is estimated to cost $39,772,630.

S-12.0 Project Costs and Funding Source

A breakdown of the estimated project costs for the FWFI is summarized in Table S-2. Natural Resources Conservation Service (NRCS) design engineering, construction management, and NRCS incurred administration costs are not cost-shared by the sponsor. Any costs incurred for administration by the sponsor would not be cost-shared by NRCS.

Table S-2. Estimated Project Costs (Dollars)[1]

Item	Public Law 83-566 Funding		Other Funds		Total	
Construction	$15,944,400	75%	$5,314,800	25%	$21,259,200	85%
Engineering & Design	$2,956,200	100%	-	0%	$2,956,200	12%
Permits	-	0%	$212,500	100%	$212,500	<1%
Project Admin	$739,400	99%	$11,000	1%	$750,400	3%
Total	$19,640,000	78%	$5,538,300	22%	$25,178,300	100%

1. Price base: 2022. Prepared December 2022.

S-13.0 Ecosystem Services Framework

An Ecosystem Services Framework was used to evaluate benefits and costs for the Proposed Project. Ecosystem services is a broad term used to describe the benefits humanity receives from ecosystems as a byproduct of their functioning. The four-category ecosystem framework adopted in the PR&G includes the following service types: provisioning, regulating, cultural, and supporting services.

Table S-3 summarizes the project alternatives and associated ecosystem services.

Table S-3. Summary of Project Alternatives and Associated Ecosystem Services

	Alternatives	
	FWOFI	**FWFI**
Alternatives		
Locally Preferred	The FWOFI would maintain the existing conditions and would not improve agricultural infrastructure.	The FWFI is locally preferred as the community in the project area is agriculturally focused; therefore, agricultural infrastructure improvements would provide the greatest benefit to the community. The FWFI would optimize water delivery against costs. No public comments were received during the scoping period.
Non-structural	The FWOFI is the non-structural alternative. The FWOFI would maintain the existing conditions and would not implement structural changes.	The FWFI would implement structural changes.
Environmentally Preferable	The FWOFI would maintain existing conditions in the project area. Water would continue to be lost to seepage and evaporation and salinity and selenium loading would continue to occur.	The FWFI is the environmentally preferred alternative. The FWFI would improve agricultural water delivery, conserve water, improve water quality, and would not result in significant impacts to human health or the environment.
National Economic Efficiency	The FWOFI would require no project investment.	The FWFI would require an investment of $25,178,335, provide $1,118,366 in net benefits, representing a benefit to cost ratio of 1.5.
Guiding Principles		
Healthy and Resilient Ecosystems	Under the FWOFI, water would continue to be lost to seepage and evaporation, and salinity and selenium loading would continue to occur.	The FWFI would invest in projects that conserve water, improve water quality, and thereby restore the functions of ecosystems in the project area.

	Alternatives	
	FWOFI	**FWFI**
Sustainable Economic Development	The FWOFI would not provide an economic investment for the better management of water resources in the project area.	An economic analysis was performed to ensure the FWFI encourages sustainable economic development. The FWFI would provide for the better management of water resources in the project area, while also being considered the NEE alternative.
Floodplains	The FWOFI would not invest federal funds in the development of flood prone areas.	The FWFI would occur in the floodplain associated with the Cimarron River and near the floodplain of Happy Canyon Creek. However, no surface disturbance would be required for the FWFI, and no additional occupancy or modification of the floodplain would occur; therefore, the FWFI would avoid adverse effects to the floodplain and is consistent with Executive Order (E.O.) 11988.
Public Safety	The project area has a history of landslides, canal overtopping, and canal breaching. The FWOFI would not alter the existing conditions.	The FWFI would reduce the risk of canal breach and potential damages from a breach.
Watershed Approach	The FWOFI was analyzed using a complete watershed approach.	The FWFI was analyzed using a complete watershed approach.
Total Project Investment	**$-**	**$25,178,335**
Monetized Net Benefits	**$-**	**$1,118,366**
Regulating Services		
Reduced infrastructure damages	$-	$84,674
Reduced income loss	$-	$439,745
Reduced downstream damages	$-	$441,817
Provisioning Services		
Increased agricultural income	$-	$144,806
Riparian vegetation	-	Reduction of 82 acres
Water access for wildlife	-	Loss of a water source
Wetlands	-	Possible adverse impacts to 5.69 acres of existing

	Alternatives	
	FWOFI	FWFI
		wetlands; No mitigation is anticipated
Cultural Services		
Increased recreation benefits	$-	$7,326

Notes: (1) Note that all costs and benefits for the Action Alternative are compared to the Future Without Federal Investment (FWOFI) here and elsewhere in the document. Benefits and costs were calculated over a 102-year analysis. All values are reported in 2022 dollars. (2) The benefits of the Action Alternative are calculated as the additional value that would be created because of the proposed actions. The benefits of the Action Alternative are not an estimate of total damages under the FWOFI and proposed conditions. (3) Supporting services are not affected by this project, and therefore no supporting services are presented in this table.

S-14.0 Project Benefits

Several benefits are anticipated to result from the implementation of the Preferred Alternative, or FWFI, such as agricultural and non-agricultural related benefits. Agricultural-related benefits include reduced property loss, critical facility loss, and income loss; reduced crop yield damages; and increased water supply. Non-agriculture related benefits include reduced salinity control costs and increased recreation consumer surplus. Implementation of the FWFI would also provide regulating, provisioning, and cultural ecosystem services. The FWFI would provide a total of $1,118,366 in average annual benefits. The breakdown of project costs, benefits, and reduced damages is included in Table S-4 below. The FWFI would directly benefit over 380 shareholders in both the BPWCD and Uncompahgre Valley Water Users Association (UVWUA) systems; approximately 80 shareholders are in BPWCD and over 300 shareholders are on the M&D Canal. Piping the laterals and canals involved in the FWFI is expected to conserve approximately 2,698 acre-feet (ac-ft) of water annually and reduce salinity loading by approximately 2,247 tons (Appendix E. Water Loss Memorandum). The installation of a temperature sensor in the Cimarron River would enable better management of water quality and fish habitat. The agricultural water management benefits are illustrated in Map 3 in Appendix B.

S-15.0 Net Economic Benefits

The estimated annual project economic benefits are summarized in Table S-4. The FWFI is also determined to be the NEE Alternative. The NEE Alternative is the alternative or combination of alternatives that reasonably maximizes the net benefit of the project while protecting sensitive environmental resources. The net economic benefit is the benefit minus the cost of the project. The term NEE is being used in this Plan-EA to identify the most economically efficient alternative, analogous to the Principles and Guidance (P&G) National Economic Development (NED) alternative. It fits within the “Additional Alternatives” category described in Departmental Manual (DM) 9500-013 section 6.b.(4)b.5. Although the NEE Alternative terminology does not exist in the PR&G or National Watershed Program Manual (NWPM) policy, DM 9500-013 refers to NEE in the context of beneficial effects resulting from a water resources investment. Efficiency is the extent to which an alternative alleviates the specified problems and realized the specified opportunities at least cost.

The FWFI improvements in the watershed would generate economic returns in excess of the upfront installation and ongoing management costs compared to the No Action Alternative, or FWOFI. Under the FWOFI, average annual economic damages and expenses are approximately $738,942. These damages are the result of expenses residents and agricultural producers of the

watershed face for property loss, critical facility loss, and income loss, crop yield damages, and salinity control costs. The FWFI would invest an average annual amount of $25,178,335 in built infrastructure to reduce these damages and expenses, thereby enhancing farm incomes and recreational opportunities in the watershed. The value of the enhanced regulating, provisioning, and cultural service benefits generated by the project amount to $1.1 million, outweighing the FWFI's annualized expense.

In all cases, the benefits of each Proposed Project measure outweigh their respective costs. In total, the benefit-cost ratio (BCR) of the FWFI was estimated to be 1.5. The BCRs for each work of improvement ranged from a low of 1.2 for the East Lateral Piping to a high of 8.5 for the temperature sensor (see Table S-4 and Table D-25 of the Benefit-Cost Analysis (BCA) in Appendix E).

Table S-4. Economic Table 6 - Comparison of Average Annual National Economic Efficiency Costs, Reduced Damages and Benefits (2022 Dollars)[1]

Works of Improvement	Agriculture-related			Non-agriculture Related		Average Annual Benefits	Average Annual Cost	Benefit Cost Ratio
	Reduced Property Loss, Critical Facility Loss, and Income Loss	Reduced Crop Yield Damages	Increased Water Supply	Reduced Salinity Control Costs	Increased Recreation Consumer Surplus	Total		
Wells Basin Piping	$26,672	$135,553	$28,022	-	-	$190,247	$145,930	1.3
Coal Hill Piping	$26,672	$135,553	$7,281	-	-	$169,506	$100,443	1.7
Slide Point Piping	$14,903	$33,049	$6,400	$51,693	-	$106,045	$70,922	1.5
East Lateral Piping	-	-	$25,110	$153,310	-	$178,420	$147,594	1.2
West Lateral Piping	-	-	$12,624	$124,151	-	$136,775	$88,183	1.6
M&D Canal Lining and Hill Stabilization (Alternative 1)	$16,427	$135,590	$65,367	$112,663	-	$330,047	$185,006	1.3
M&D Canal Piping (Alternative 2)	$16,427	$135,590	$65,367	$118,366	-	$335,750	$651,816	0.5
Temperature Sensor	-	-	-	-	$7,326	$7,326	$864	8.5
Total (Alternative 1)	**$84,674**	**$439,745**	**$144,806**	**$441,817**	**$7,326**	**$1,118,366**	**$738,942**	**1.5**
Total (Alternative 2)	**$84,674**	**$439,745**	**$144,806**	**$447,520**	**$7,326**	**$1,124,368**	**$1,205,752**	**0.9**

Notes: Totals may not sum due to rounding. Prepared: December 2022. The values presented here may differ from the benefit values presented in Section 4 of the Economic Report due to the fact that the values from Section 4 were discounted at a rate of 2.25 percent, projected over the analysis period of 102-years, summed, and amortized so they could be reported in terms of annualized averages.

1. Price base: 2022 dollars.

S-16.0 Funding Schedule

Funding Schedule (budget year +5): $25,178,335.18

- Federal Funds: $19,640,048.53
- Non-Federal Funds: $5,538,286.65

S-17.0 Period of Analysis

The period of analysis is 102 years, accounting for a 100-year project life and a 2-year installation period. Should installation take longer, the project costs and benefits would be discounted by an additional year. While this would change the results of the economic analysis, the economic conclusions would still hold.

S-18.0 Project Life

The life of the Preferred Alternative is estimated for 100 years.

S-19.0 Environmental Impacts

Table S-5 lists the resources of concern and impacts associated with the Preferred Alternative. Resources that would not be impacted by the Preferred Alternative are not listed.

Table S-5. Summary of Resource Concerns and Impacts

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
Soils & Geology		
Upland Erosion & Sedimentation	Landslides above the M&D Canal, and around the Wells Basin and Coal Hill areas of the Cimarron Canal are causing the canals to overtop and breach. Severe seepage in the Vernal Mesa Canal is impacting the canal stability, which has caused the canal to breach in the past. Under existing conditions, approximately 28,788 acres of agricultural lands in the BPWCD and UVWUA service areas are damaged from canal breaching. The BPWCD and UVWUA incur $86,800 in average annual emergency repairs associated with canal breach and an average of $450,923 of crop yields would be damaged annually. Salt loading (2,247 tons per year) and	Under the Preferred Alternative, landslide frequency may decrease in areas below the canal prism, as canal seepage would no longer occur, and saturated soils are more prone to landslide occurrence. Landslides that come from above the canal prism would likely not decrease in frequency, but their impact on the irrigation water supply, however, would be reduced by enclosing the canals. The Preferred Alternative would mitigate damages to approximately 28,788 acres of agricultural lands in the BPWCD and UVWUA service areas from canal breaching. Furthermore, the Proposed Project would improve agricultural water management by improving efficiency and conserving water in the project area. The Preferred Alternative would provide $144,806 in additional farm net income from conserved water, reduce emergency repair costs by $84,674, and reduce income loss by $439,745. The Preferred Alternative would provide $966,236 in regulating ecosystem services. Under the Preferred Alternative, direct impacts to soil include temporary and permanent ground disturbance from construction. Substantial soil disturbance would occur for the earthwork to install irrigation pipe and stabilize the hillside at the M&D

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
	selenium loading in the watershed would continue. Furthermore, soil disturbance would occur from Preferred Alternative actions.	Canal. Best Management Practices (BMPs), such as the installation of Temporary Erosion Controls (TECs) and reseeding disturbed areas to encourage the establishment of native vegetation, would avoid and minimize construction related erosion and sediment transport. See Appendix E for a complete list of BMPs. A Colorado Discharge Permit System (CDPS) General Permit and associated Stormwater Management Plan (SWMP) and Spill Prevention and Countermeasure Control (SPCC) Plan would be required prior to construction of the Preferred Alternative.
Prime & Unique Farmland	Portions of the project area are designated farmland of statewide importance.	Portions of the project area, specifically lands along the Coal Hill (0.02 acres), East Lateral (16.5 acres), and West Lateral (39.3 acres) project components are designated farmland of statewide importance. Active farmlands are located adjacent to the East and West Laterals. Under the Preferred Alternative, temporary and permanent soil disturbance would be primarily focused to the previously disturbed canal prisms, the Preferred Alternative would not disturb existing agricultural lands that are considered farmland of statewide importance, and the Preferred Alternative would not alter the land use of designated farmlands. No farmlands of statewide importance would be converted from agricultural uses to other uses because of the Preferred Alternative. Therefore, the Preferred Alternative is not anticipated to impact prime and unique farmlands in the project area and complies with the Farmland Protection Policy Act (FPPA).
Water Resources		
Surface & Groundwater Quantity & Quality	Preferred Alternative actions occur within and adjacent to potential jurisdictional waters.	The Preferred Alternative would directly improve water quality and quantity in the project area. The proposed canal piping and lining would conserve 2,698 ac-ft of water by eliminating water lost to seepage and reducing water lost to evaporation. Water conserved by the Preferred Alternative would remain in the Cimarron River during the early irrigation season, until water is needed; efficiency gains by the new system would allow water storage in the Silver Jack Reservoir to last longer. The economic analysis estimates that the Preferred Alternative would provide $144,806 in provisioning ecosystem services from additional farm net income from conserved water. Seepage likely influences groundwater recharge in the project area through deep percolation. Though, the extent to which seepage influences groundwater recharge is unknown, because there is no current data in the project area evaluating direct

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
		groundwater recharge sources and volumes. The piping and lining improvements would also eliminate vertical transport of salts (2,247 tons per year) and agricultural fertilizers via seepage and infiltration in the watershed. Reclamation found that water conservation projects focusing on irrigation on saline soils, such as the Preferred Alternative, is the single most effective salinity control measure found in the past 30 years of investigations (Reclamation 2017a). Thus, though a potential loss of groundwater recharge could occur from the proposed activities, the reduction in salinity from seepage and infiltration would be counteracted, and overall water quality in the project area would be improved. The Preferred Alternative would conserve water lost to seepage and evaporation, provide for efficient delivery of agricultural water, and improve water quality by reducing selenium and salinity loading, thereby addressing the primary goal of the Gunnison Basin Implementation Plan (BIP). Section 5.2.4 describes how the Preferred Alternative is consistent with the Gunnison BIP. The Preferred Alternative would also improve water quality by reducing salt loading (2,247 tons per year) and selenium loading in the watershed, thereby helping to meet the area's Total Maximum Daily Load (TMDL) goals. The Preferred Alternative would reduce salinity control costs by $441,817. Piping approximately 4 miles of the West Lateral would reduce *E. coli* contamination in Red Rock Creek by preventing livestock contamination. The Preferred Alternative may temporarily impact surface water quality during construction. BMPs would be implemented during construction at all locations where surface disturbance occurs to protect water quality and to prevent water pollution from runoff, spills, leaks, and leaching. A CDPS General Permit and associated SWMP and SPCC Plan would be required before construction.
Clean Water Act / Waters of the U.S., including Wetlands	Preferred Alternative actions occur within and adjacent to potential jurisdictional waters.	Construction activities would be primarily contained to the previously disturbed canal prism, though temporary and permanent ground disturbing activities would directly impact 0.05 acres of wetlands within the project area. BMPs are in place to ensure CWA water quality standards would be met, which include implementation of TECs, SPCC

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
		Plan, and SWMP, as well as following the requirements of the CDPS General Permit. A complete list of BMPs is included in Appendix E. The Preferred Alternative would have indirect effects on wetlands by eliminating seepage from the canal that contributes hydrology to the 5.69 acres of wetlands within and adjacent to the project area. However, the Proposed Project would conserve approximately 2,698 ac-ft of water annually, which could indirectly benefit waters of the United States (WOTUS) by maintaining early season flows in the Cimarron River and allowing water storage in the Silver Jack Reservoir to last longer. The portion of the Preferred Alternative that would pipe Vernal Mesa Canal, West Lateral, and Cimarron Canal may be permitted under U.S. Army Corps of Engineers (USACE) Regional General Permit (RGP) 5—Ditch Related Activities in the State of Colorado (USACE 2021). However, a Section 401 permit from Colorado Department of Public Health and Environment (CDPHE) (Water Quality Certification) may also be required. Coordination with the USACE regarding RGP 5 is ongoing, and all permitting requirements would be met for construction (Appendix A. USACE Consultation).
Wetlands	Preferred Alternative actions would occur within and adjacent to potential wetlands.	Temporary ground disturbing construction activities may directly impact 0.05 acres of wetlands within the project area. Impacts to wetlands would be avoided and minimized by containing construction to the previously disturbed canal prism and by implementing BMPs, such as revegetation of disturbed areas with native vegetation and prevention of noxious weed transport, as described in the Appendix E. Indirectly, the Preferred Alternative would eliminate seepage from the canal that contributes hydrology to 5.69 acres of wetlands within and adjacent to the project area. This effect would be offset by the 2,698 ac-ft of water savings that would be available for irrigation or would stay within the watershed.
Regional Water Management Plan	The Preferred Alternative would invest in water infrastructure.	The Preferred Alternative aligns with seven of the nine goals listed in the Gunnison BIP: Goals 1, 2, 3, 5, 6, 7, and 8. The Preferred Alternative addresses Goals 1, 3, and 6 by conserving 2,698 ac-ft of water lost to seepage and evaporation, providing for efficient delivery of

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
		agricultural water and increasing net farm income by $144,806, and improving water quality by reducing selenium and salinity loading by 2,247 tons and reducing salinity control costs by $441,817. The Preferred Alternative would not convert existing prime and unique farmlands; therefore, the Preferred Alternative aligns with Goal 2. The Preferred Alternative protects existing environmental and recreational uses (Goal 5) and encourages relationships among agricultural and environmental recreational water uses (Goal 7) by indirectly benefiting the Black Canyon of the Gunnison National Park and Silver Jack Reservoir. Water conserved by the Preferred Alternative would also allow water to be held in the Silver Jack Reservoir for a longer period, allowing for more recreation user days. Furthermore, the installation of a temperature sensor in the Cimarron River would enable the timed release of conserved water to lower high summer water temperatures in the river, thereby improving fish habitat in the Cimarron River and increasing the number of recreational visitors to the project area. The improvements to the BPWCD and UVWUA water infrastructure would align with Goal 8 of the Gunnison BIP.
Floodplain Management	Preferred Alternative actions would occur within and near the 100-year floodplain.	Proposed activities would occur in the 100-year floodplain of the Cimarron River and near floodplains associated with Happy Canyon Creek. The Cimarron River temperature sensor would be installed on an existing bridge abutment, and the associated small steel electrical enclosure cabinet would be either attached to the existing bridge, or to a metal post. Construction activities would occur within the existing infrastructure of the M&D Canal in a previously disturbed area. Changes to the grade along the M&D Canal would be constrained to the canal prism, the embankment, and the hillside to the west of the canal. The toe of the embankment on the east side of the canal, which overlaps with the 100-year floodplain, would not be modified. Because no surface disturbance would occur with the installation of the temperature sensor or the construction of M&D Canal, and no additional occupancy or modification of the floodplain would

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
		occur, the Preferred Alternative would avoid adverse effects to the floodplain and is therefore consistent with E.O. 11988. Construction of the Cimarron River temperature sensor may require a floodplain development permit and if required, should be obtained prior to construction.
Wild and Scenic Rivers	Tailwaters from the West Lateral flow into the Gunnison River via Red Rock Creek. The Gunnison River is listed on the Nationwide Rivers Inventory (NRI).	The Preferred Alternative would have no direct impact on wild and scenic rivers, or rivers listed on the NRI. The Preferred Alternative would indirectly benefit the Gunnison River, an NRI listed water. Water quality data for Red Rock Creek illustrates elevated levels of *E. coli* during the irrigation season; the elevated levels of *E. coli* in Red Rock Creek are likely attributed to livestock waste entering and contaminating the water. Piping the West Lateral would reduce *E. coli* by preventing livestock contamination, ultimately improving tailwater that flows into the Gunnison River via Red Rock Creek, thus benefitting the Gunnison River.
Air Quality		
Clean Air Act / National Ambient Air Quality Standards	Temporary air emissions from construction activities.	Construction activities are anticipated to cause short-term increases in nitrogen oxide (NOX), carbon monoxide (CO), and particulate matter (PM2.5 and PM10) emissions from construction equipment. However, with the implementation of BMPs, these emissions would be minor, localized, and temporary, and would not interfere with the area achieving National Ambient Air Quality Standards (NAAQS) requirements. Emission rates for NOX, CO, and PM are not expected to increase in the long-term.
Climate Change & Greenhouse Gases	Temporary air emissions from construction activities.	Project activities are anticipated to cause short-term increases in GHG emissions from construction equipment. However, with the implementation of BMPs, these emissions would be minor, localized, and temporary and would not interfere with the area achieving NAAQS requirements or statewide GHG goals. Emission rates for GHG are not expected to increase in the long-term. By improving the agricultural water management, encouraging watershed protection, and enhancing fish and wildlife habitat in the project area, the Preferred Alternative would make the project area and the irrigation system more resilient to climate stress, especially in the uncertain increases in variability of temporal and spatial patterns of precipitation, evaporation, and water availability which could challenge water resource systems. The Preferred Alternative would provide $144,806 in additional farm net income from conserved water, reduce emergency repair costs by $84,674, and

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
		reduce income loss by $439,745. The Preferred Alternative would provide $966,236 in regulating ecosystem services. The agricultural water improvements would also improve water quality by reducing salt loading (2,247 tons per year) and selenium loading in the watershed. The Preferred Alternative would reduce salinity control costs by $441,817.
Plants		
Forest Resources	Preferred Alternative actions would occur on USFS land.	Under the Preferred Alternative, a temperature sensor and associated electrical enclosure would be located on USFS land within the Grand Mesa, Uncompahgre, and Gunnison (GMUG) National Forest. Although construction activities would occur on USFS land (approximately 0.1 acres), the sensor would be located on an existing bridge abutment and the steel cabinet electrical enclosure would either be placed on the existing bridge or a metal post. The temperature sensor and electrical enclosure would not require tree removal. The Preferred Alternative would manage surface use to maintain water quality standards, increase water supply, and protect water quality, consistent with the GMUG Land and Resource Management Plan (RMP). Additionally, the Preferred Alternative would not conflict with the three objectives of the Region 2 Watershed Conservation Practices Handbook: hydrologic function, soil quality, and aquatic systems. The Preferred Alternative's improvements on USFS land would not influence hydrologic function or soil quality but would indirectly benefit aquatic systems by sustaining water quality and aquatic habitat through the installation of the temperature sensor. Given that the installation of the temperature sensor would require only minor disturbance of 0.1 acres of USFS land, that no tree removal would be required, and that the Preferred Alternative would follow the Region 2 Watershed Conservation Practices Handbook, the Preferred Alternative is consistent with the GMUG Land and RMP.
Noxious Weeds & Invasive Plants	Increased potential for introduction of noxious weeds and invasive plants.	Current practices to control and prevent the introduction and establishment of noxious weeds and invasive species would continue. In addition, BMPs would be implemented to control and prevent the introduction and spread of any invasive species or noxious weeds. A complete list of BMPs is included in Appendix E. Given the implementation of BMPs described in Appendix E, the Preferred Alternative would not cause or promote the

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
		introduction or spread of invasive species and therefore follows E.O. 13112.
Riparian Areas & Ecologically Critical Areas	Preferred Alternative actions would occur in or near riparian areas.	Construction practices would remove large overstory trees and shrubs along portions of the canal alignments and would temporarily disturb the herb layer in riparian areas directly within the canal prisms. To protect healthy and functioning riparian areas, as outlined in Goal 1 of the Colorado Natural Heritage Program (CNHP) Wetland Program Plan (WPP), direct impacts to riparian areas would be minimized by implementing BMPs, such as revegetation of disturbed areas with native drought-tolerant vegetation and prevention of noxious weed transport, as described in Appendix E. An indirect effect of the canal piping and lining involves the eventual loss of trees and vegetation within the canal prisms that may have received supplemental hydrology from canal seepage. Under existing conditions, the open, unlined canals have an average of 50 feet of riparian vegetation established across the width of their prism along the approximate 13.5 miles of canals involved in the Proposed Project. These 82 acres of seepage-induced riparian vegetation would eventually be lost across the total project area when the canals are piped and lined. However, the total length of the Cimarron Canal, Vernal Mesa Canal, East and West Laterals, and M&D Canal in the irrigation system is 72 miles, representing 436 acres of riparian vegetation. The 13.5 miles represents only 19% of the total length. Additionally, though hydrophytic vegetation exists along the canals, the composition of native and non-native understory species and the lack of a natural source of water, makes the riparian habitat poor-quality and lacking diversity and complexity in structure. Furthermore, despite the potential loss of this poor-quality riparian habitat, the project is designed to improve overall water quantity and quality in the project area, making the entire basin more resilient to future increases in water use, to drought conditions, or other potential consequences of a changing climate, consistent with the WPP.
Animals		
Wildlife & Wildlife Habitat	Preferred Alternative activities would impact wildlife and adjacent wildlife habitat in the project area.	Potential disturbance to wildlife and adjacent wildlife habitat is anticipated during construction. Piping the canals is anticipated to permanently remove a source of water for wildlife that utilize the area. Big game species, such as mule deer and elk, and other wildlife, may seasonally utilize the open water

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
		sources to drink. However, this water source is not perennially available due to controlled flows. When the water surface drops and flows cease, wildlife cannot easily access water within the canals. No fish habitat is present in the canals, so piping the canals would not impact brown, brook, or rainbow trout species. Although the Preferred Alternative would permanently remove approximately 19.9 acres, or 11.2 miles, of open water that wildlife use in the project area, other water sources are available in the vicinity. For example, in addition to the M&D Canal remaining open, most of the Cimarron Canal and Vernal Mesa Canal would remain open. Other natural sources of water are also present throughout the vicinity, such as over 20 natural drainages and the Silver Jack Reservoir and the Cerro Summit Reservoir. Wildlife, especially big game, may be temporarily displaced during construction due to noise and would likely choose to move to alternate locations while construction activities are present, but also may choose not to return to the area if habitat is lost. Construction would be limited to daylight hours, which would reduce impacts to nocturnal wildlife species. Piping and lining the canals would remove approximately 82 acres of riparian vegetation and 5.69 acres of wetlands that receives supplemental hydrology from canal seepage and that wildlife, such as big game, small mammals, waterfowl, and avian species may use for forage, shelter, and stopover habitat. The loss of this vegetation may impact ungulates and other foraging wildlife, however the canal prisms are heavily managed with herbicide to minimize the presence of noxious weeds and to moderate vegetative growth, reducing the amount of existing forage and cover available for wildlife. Additionally, higher quality forage is present below the canal prisms. The project area overlaps with winter ranges and severe winter ranges for mule deer and elk. However, less than one percent of the winter ranges and severe winter ranges for both species are overlapped by the project area. Both mule deer and elk have ample adjacent winter and severe winter range habitat available in the vicinity of the project area. The Preferred Alternative would be constructed outside of the irrigation season, from October 15th to April 1st, which would overlap with winter use for big game. Mule deer and elk

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
		populations within the vicinity of the project area would likely move to other suitable areas to avoid disturbances from temporary construction activities. However, mule deer and elk habitat are abundant surrounding the project area, and population-level impacts are unlikely; therefore, overall impacts would be minor. The Preferred Alternative would improve the quality and duration of water in natural waterbodies within the project area by reducing salt and selenium loading, and by improving irrigation efficiency which would reduce draw down from upstream water sources in the watershed. This would benefit fish habitat and provide drinking water for big game and small mammals. Indirectly, vegetation surrounding waterbodies where flows improve may benefit from increased hydrology from increased surface water and could provide an increase in available forage and cover for wildlife species. BMPs such as spill prevention, TECs, prevention of noxious weed transport, revegetation of disturbed areas, and bird surveys, as described in Appendix E, would be implemented along the entire alignment to minimize impacts to wildlife species and habitat surrounding the canal prism. The installation of a temperature sensor in the Cimarron River would enable the timed release of conserved water to lower high summer water temperatures in the river, thereby improving fish habitat in the Cimarron River. No in-water work would be required for implementation of the Preferred Alternative, therefore spawning and rearing periods for wild brown and rainbow trout would not be impacted by construction of the Preferred Alternative.
Special Status Animal Species	Potential disturbance to federally-listed and state sensitive species and habitat.	Based on the lack of suitable habitat in the project area for ESA-listed species; the Biological Assessment (BA) identified a No Effect for yellow-billed cuckoo (*Coccyzus americanus*), Mexican spotted owl (*Strix occidentalis lucida*), Canada lynx (*Lynx canadensis*), gray wolf (*Canis lupus*), tri-colored bat (*Pipistrellus subflavus*), monarch butterfly (*Danaus plexippus*), Great Basin silverspot butterfly (*Speyeria nokomis nokomis*), bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), razorback sucker (*Xyrauchen texanus*), and state sensitive species. While project activities area would not directly impact sagebrush and wet meadow habitat within the project area where construction would occur, because of the proximity to critical habitat for

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
		the Gunnison sage-grouse and the potential to cause indirect disturbance to this habitat, the Preferred Alternative May Affect but is Not Likely to Adversely Affect the Gunnison sage-grouse (*Centrocercus minimus*) and Gunnison sage-grouse critical habitat. The BA is included in Appendix E, and the U.S. Fish and Wildlife Service (USFWS) concurrence letter is included in Appendix A.
Migratory Birds / Bald & Golden Eagles	Potential disturbance to migratory birds and protected raptors in the project area.	Though field investigations found no active nests belonging to eagles, raptors or migratory bird species, the project area and surrounding area could provide varying degrees of nesting and foraging habitat for migratory birds or raptors. Therefore, protected avian species have the potential to be present within the project area, or in the vicinity of project area, and construction noise may result in the temporary displacement of nesting bird species within the project area. To protect migratory birds or raptors from project effects, temporary construction disturbance would be avoided by scheduling work outside of nesting bird season. Because construction would be timed outside of the irrigation season (October – April), most construction activities would also occur outside of bird migration, breeding, and nesting seasons, except for bald and golden eagles. The project area would be surveyed for any migratory bird or eagle nests no less than 7 days prior to vegetation removal and construction. If an active migratory bird or raptor nest were identified within the project area, construction and vegetation clearing would pause and the NRCS Biologist and USFWS would be notified immediately to discuss the appropriate course of action. Any active migratory raptor or eagle nest discovered in the project area or within 0.5 miles of construction activities would be protected with the Colorado Parks and Wildlife (CPW) Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors, including a 0.25-mile radius buffer for eagles, a 0.3-mile buffer for red-tailed hawks and a 0.5-mile buffer for peregrine falcons (CPW 2020c). Piping the canals would permanently remove approximately 11.2 miles of open water, amounting to the removal of approximately 19.9 acres of open water source for some avian species; however, the M&D Canal would remain an open feature. The piping and lining of the canals would also eliminate seepage water for vegetation along the canal alignments, which would result in the eventual loss of 82 acres of riparian vegetation and 5.69 acres of

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
		wetlands associated with the canals, including mature trees and shrubs, which likely provide habitat for resident or migratory birds. Most mature trees in the project area occur along the M&D Canal. Abundant alternative and high-quality riparian habitat are available within the vicinity of the project area and along the Cimarron River corridor. The loss of 82 acres of riparian areas would not significantly affect habitat availability at the landscape scale and the indirect effects on migratory birds and raptors from riparian habitat loss along the ditch would be minor, and the Preferred Alternative would not have population-level effects. The Preferred Alternative would also indirectly improve habitat within natural waterbodies in the project area by reducing selenium and salinity loading and improving overall habitat for fish species. These activities would benefit raptors, eagles and other migratory species that use fish as a food source. Impacts to avian habitat would be minimized by construction occurring outside of nesting bird season, implementing BMPs and by indirectly improving fish habitat within the Cimarron River in the project area. A complete list of BMPs is included in Appendix E.
Human Environment		
Socioeconomics	Socioeconomic impacts to the population in the project area.	Direct impacts of the Preferred Alternative include the use of approximately $5,538,287 in local match funds to construct the Proposed Project. In addition, the Preferred Alternative would temporarily create approximately 1.4 direct jobs, 1.6 indirect jobs, and 0.7 induced jobs within the project area during construction (see Appendix E). The PR&G state that federal investments in water resources should strive to maximize public benefits, with appropriate consideration of costs (USDA 2017). The average annual cost of the Preferred Alternative is $738,942 and the Preferred Alternative is anticipated to result in $1,118,366 in average annual economic benefits; over half of the economic benefits are derived from agricultural-related reduced damages and benefits. Therefore, the benefit to cost ratio of the Preferred Alternative is 1.5.
Cultural, Historic & Paleontological Resources	Potential for historic, cultural, and paleontological resources	The Cultural Resource Report recommended that the Preferred Alternative would have an adverse effect on the six eligible canal segments within the project area: Cimarron Canal (5GN.6371.1,

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
	in the area of potential effect (APE).	5MN.4808.5, 5MN.4808.6), M&D Canal (5MN.1855.9), Vernal Mesa Ditch (5MN.7708.3), and East Lateral/Vernal Mesa Ditch (5MN.10323.2). The State Historic Preservation Office (SHPO) concurred with the eligibility and determination of effects (Appendix A). NRCS submitted consultation letters to the Southern Ute Indian Tribe, the Ute Mountain Ute Tribe, and the Ute Indian Tribe of the Uintah & Ouray Reservation on January 13, 2022. The Southern Ute Indian Tribe requested to consult on the MOA on February 25, 2022. A letter inviting the Southern Ute Indian Tribe, the Ute Mountain Ute Tribe, and the Ute Indian Tribe of the Uintah & Ouray Reservation to consult on the MOA was sent on August 29, 2022. Letters were sent to the Comanche Nation, Apache Tribe of Oklahoma, Fort Belknap Indian Community, Navajo Nation, Montrose and Gunnison County Commissioners, Gunnison County Historic Preservation Commission, and the Montrose Historical Society and Museum. Consultation letters are included in Appendix A. In accordance with 36 CFR Part 800.6, NRCS would mitigate the adverse effects to the NRHP-eligible canal segments through the development of a MOA designed to conserve the value of the eligible cultural resources. The MOA was developed in consultation with the Colorado SHPO. All consulting parties were invited to develop the MOA, but no responses were received. The MOA specifies measures to mitigate the adverse effects to the historic properties and would be implemented pursuant to compliance with Section 106 of the National Historic Preservation Act (NHPA). A Post-Review Discovery Plan has been prepared and is included in Appendix B of the MOA. The MOA is included in Appendix A of this Plan-EA. If construction activities uncover any materials of cultural or historic significance (i.e., bone fragments, pottery, stone tools, burial features, etc.), construction would halt and coordination with the SHPO, the Tribal Historic Preservation Office (THPO), and Montrose County and Gunnison County Sheriffs would occur. According to the BLM Potential Fossil Yield Classification (PFYC), there is low to moderate potential to uncover fossils in much of the project

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
		area, however the East Lateral has high to very high PFYC. Given the high PFYC of the East Lateral, a paleontological resource survey was completed for the project element. No fossil localities were documented during the survey. A paleontological monitor was recommended by BLM to oversee the earthwork and document any fossil discoveries. An Unanticipated Discovery Plan for paleontological resources would be implemented under the Preferred Alternative.
Hazardous Materials	Hazardous materials associated with construction (fuel, oil, etc.) would be present in the project area.	A solid waste facility and two Resource Conservation and Recovery Act (RCRA) facilities are located within a mile of the project area; however, the three sites were more than 0.5 miles outside the project area. Given the distance between the facilities and the proposed construction activities, the Preferred Alternative is not anticipated to impact hazardous facilities near the project area. Furthermore, no hazardous materials would be generated by the Preferred Alternative.
Public Health & Safety	The Preferred Alternative would improve public health and safety in the project area.	The purpose of the Preferred Alternative is to provide improved agricultural water management by stabilizing the hillside above the M&D Canal and piping the various canals and laterals throughout the project area. The project area has a history of, and is prone to, landslides which have contributed to canals overtopping, breaching, and flooding adjacent areas. The Preferred Alternative would address flood inundation associated with the breach of canals and laterals and would subsequently improve public health and safety in the project area. The Preferred Alternative would reduce the risk of canal breach and potential damages from a breach.
Recreation	The Preferred Alternative would benefit recreation opportunities in and adjacent to the project area.	The Preferred Alternative would indirectly benefit the Black Canyon of the Gunnison National Park by conserving 2,698 ac-ft of water and by reducing salinity and selenium loading to the Gunnison River. The Preferred Alternative would support the objectives of the Forest Plan for the GMUG National Forest, specifically watershed and aquatic resources restoration and recreational management. Water conserved by the Preferred Alternative would allow water to be held in the Silver Jack Reservoir for a longer period, thereby allowing for more recreation user days. Therefore, the Preferred Alternative would have an indirect beneficial impact on recreation in the Silver Jack Reservoir. The Preferred Alternative would provide $7,326 in increased recreational consumer surplus. The installation of a temperature sensor in the Cimarron River would enable the timed release of

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
		conserved water to decrease high summer water temperatures in the river, thereby improving fish habitat in the Cimarron River and increasing the number of recreational visitors to the project area.
Land Use	Construction activities would occur on federally-owned land.	The Preferred Alternative supports the goals of the Montrose County Master Plan and Gunnison County Land Use Resolution; specifically, protecting agricultural lands, providing an adequate water supply, and promoting the health, safety, and general welfare of the environment. The Preferred Alternative would conserve a total of 2,698 ac-ft of water lost to seepage and evaporation, provide for efficient delivery of agricultural water, and improve water quality by reducing selenium and salinity loading by 2,247 tons. The Preferred Alternative would not convert existing prime and unique farmlands and would improve agricultural water supplies. Under the Preferred Alternative, construction activities associated with East Lateral would occur on BLM land. To account for the piping of East Lateral on BLM lands, BLM would acknowledge the historic right-of-way (ROW). In addition, Reclamation claims ownership of the M&D Canal, therefore a MOA was established between Reclamation and NRCS, which will guide the engineering review process for the 30% and 100% design of the M&D Canal. Reclamation will approve the full design prior to construction commencing. Temporary easements would be required for staging during construction of the Preferred Alternative.
Visual Resources & Scenic Beauty	Potential to cause temporary disturbance from construction equipment in the project area. Piping and lining the canals in the project area may alter visual aspects of the canal corridors.	The Preferred Alternative would have a direct effect on visual resources by eliminating open water in the Cimarron Canal, Vernal Mesa Canal, and East and West Laterals, and by removing mature trees and shrubs, and disturbing herb layer vegetation along all the canals in the project area. There would be temporary, minor impacts to visual resources from the presence of construction equipment and construction crews. Native vegetation would be reestablished in areas disturbed by construction thereby reducing construction-related visual resource impacts. Although the Preferred Alternative would not result in long-term impacts to scenic beauty in the general area, there would likely be visual impacts directly along the canal alignments from the removal of open water features, construction-related vegetation disturbance, and the permanent loss of vegetation dependent on the current canal seepage.

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
		To mitigate for the loss of vegetation, the canals would be revegetated with native, drought-tolerant vegetation. The visual effects of piping and lining the canals would resemble the current condition of the linear canal feature and be strikingly similar to other linear features, such as ditch, power, and fence lines in this rural, agricultural setting, and after reclamation and vegetation establishment, the change would be unnoticeable.
Parklands	The Preferred Alternative would improve water quality of waters that flow into a National Park.	The Preferred Alternative supports the goals the Black Canyon of the Gunnison General Management Plan, specifically the protection of water resources. Current discharge flows from the West Lateral that reach the Black Canyon of the Gunnison National Park would not be reduced under the Preferred Alternative. Indirect effects of the Preferred Alternative would be a water savings of approximately 239 ac-ft per year from the piping of the West Lateral project element. Piping the West Lateral would eliminate livestock contamination in the lateral, which currently flows into the National Park via Red Rock Creek. This outcome would ultimately improve water quality and water flow to nearby parklands due to of a reduction of livestock contamination and reduction of water loss during transport. Additionally, the piping would reduce selenium and salinity loading by 2,247 tons per year, addressing the TMDL for Red Rock Creek. Therefore, the Preferred Alternative is anticipated to have a beneficial impact on parklands adjacent to the project area.
Transportation & Infrastructure	The Preferred Alternative would improve canal infrastructure.	The Preferred Alternative would improve the existing BPWCD and UVWUA systems' infrastructure. The Preferred Alternative aligns with the priorities identified by the BPWCD and UVWUA planning efforts (see Section 4.2). The Preferred Alternative would directly improve irrigation infrastructure, and indirectly protect infrastructure in the project area. The Preferred Alternative would reduce emergency repair costs to the BPWCD and UVWUA systems by $84,674. Additionally, the Preferred Alternative would also provide $966,236 in regulating ecosystem services, of which, $84,674 represents reduced infrastructure damages. Under the Preferred Alternative, three road crossings would be required. The BPWCD and other sponsors would work with the Colorado Department of Transportation (CDOT) to obtain all necessary permits to establish easements, work within the designated State and local ROW, and

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
		implement appropriate traffic control measures during construction to minimize disturbance and reduce impacts to local traffic.
Noise	Temporary construction noise impacts.	Temporary increases in noise related to the use of construction equipment and vehicles would result from implementation of the Preferred Alternative. However, noise mitigation measures would be implemented during construction to minimize temporary noise impacts. No permanent noise impacts are expected from the Preferred Alternative. Because the Preferred Alternative has multiple mitigation measures designed to reduce noise, and the effects are temporary, noise effects would be minor.
Scientific Resources	The Preferred Alternative would create scientific resources in the project area.	Project elements would contribute to the scientific resources in the project area by installing one temperature sensor in the Cimarron River. Piping and lining portions of canals in the BPWCD and UVWUA systems is unlikely to negatively impact paleontological scientific resources that may occur in the project area. Given the high PFYC of the East Lateral, a paleontological monitor was recommended by BLM to oversee the earthwork and document any fossil discoveries. An Unanticipated Discovery Plan for paleontological resources would be implemented under the Preferred Alternative.
National Economic Efficiency		
Construction Cost	$0	$21,259,146.60
Project Environmental, Engineering, and Administrative Costs	$0	$3,919,188.98
Total Project Cost (Installation Cost)	$0	$25,178,335.18
Cost Sharing (NRCS)	$0	$19,640,048.53
Cost Sharing (Sponsors)	$0	$5,538,286.65
Annual Installation Cost	$0	$621,172.00
O&M Cost	$0	$120,626.00
Annual Sum Cost	$0	$738,942.00
Annual Benefit Cost	0	$1,118,366.00
Annual Net Economic Benefit	$0	$379,424.00

Resource of Concern	Summary of Concern	Summary of Effects for Preferred Alternative
Benefit to Cost Ratio	0	1.5

Notes: (1) Price base: 2022 dollars. (2) The benefits of the Action Alternative are calculated as the additional value that would be created because of the proposed actions. The benefits of the Action Alternative are not estimates of total damages under the FWOFI and proposed conditions.

S-20.0 Major Conclusions

Alternative 1, the Preferred Alternative, is the most feasible, practical, economical, and environmentally conscious alternative. This alternative is considered both the Preferred Alternative and the NEE Alternative.

S-21.0 Areas of Controversy to be Resolved

There are no known areas of controversy with this project. Public involvement for the Proposed Project is discussed in the Public Involvement Summary (Appendix E). No comments were received from the public during the public scoping process. Two comments were received from resource agencies (i.e., CPW and the Shavano Conservation District), which pertained to impacts to wildlife and water quality and quantity. No areas of controversy or issues to be resolved were raised during the scoping process.

S-22.0 Evidence of Unusual Congressional or Local Interest

There is no evidence of unusual congressional or local interest for the proposed Cimarron River-Lower Uncompahgre Watershed Project.

S-23.0 In Compliance

Is this report in compliance with executive orders, public laws, and other statutes governing the formulation of water resource projects? __X__YES _____NO

Chapter 1 Purpose and Need for Project Action

1.1 Introduction

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), the Bostwick Park Water Conservancy District (BPWCD), Uncompahgre Valley Water Users Association (UVWUA), Cimarron Canal and Reservoir Company (CC&RC), and Trout Unlimited as the sponsoring local organizations (SLO), propose to use federal funds to implement the Cimarron River-Lower Uncompahgre Watershed Project (Proposed Project). Each sponsor shall be responsible for implementation of the measures that affect their infrastructure; Trout Unlimited does not own infrastructure but will be responsible for the temperature sensor project. Sponsors will oversee design efforts, and construction. Sponsors will also be responsible for procuring the necessary funds for improvement measure implementation and/or providing in-kind services.

Through the provisions of the Watershed and Flood Prevention Operations Programs (WFPO), the Proposed Project would stabilize and line approximately 1.5 miles of UVWUA open canal, pipe several miles of BPWCD laterals, replace a failing section of existing pipeline, and install a temperature sensor in the Cimarron River. The activities proposed by the Sponsors would address agricultural water management issues by preventing damages to agricultural fields from canal breach, conserving water, reducing salinity and selenium loading, and enhancing fish and wildlife habitat.

Under the Watershed Protection and Flood Prevention Act (WPFPA), WFPO provides for cooperation between the federal government and the states or their political subdivisions for preventing erosion, floodwater and sediment damage, and further conservation development, use and disposal of water in authorized watersheds (NRCS 2022). An approved watershed plan must be in place prior to the initiation of any solutions receiving assistance through the WFPO. The NRCS offers financial and technical assistance through this program as authorized through the WPFPA.

In accordance with the National Environmental Policy Act (NEPA), a Watershed Plan and Environmental Assessment (Plan-EA) is being prepared by NRCS for the Proposed Project. A set of alternatives were selected for the Proposed Project that will be analyzed in this Plan-EA. After analyzing the alternatives, one will be selected as the Preferred Alternative. The Plan-EA assists NRCS in determining if the selected alternative (Preferred Alternative) would have a significant impact on the quality of the environment and if the preparation of an Environmental Impact Statement (EIS) would be required. In carrying out the role as lead federal agency, NRCS provides financial and technical assistance to cooperating agencies to protect and restore watersheds up to 250,000 acres.

The watershed limits evaluated in this Plan-EA have been defined as the Cimarron River-Lower Uncompahgre Watershed; the watershed contains the limits of the Proposed Project area (project area). The project area encompasses 247,616 acres and is made up of eleven 6th order subwatersheds, as shown in Figure 1-1 and Map 1 of Appendix B.

The NRCS is the lead federal agency for this Proposed Project, and the Bureau of Land Management (BLM), Bureau of Reclamation (Reclamation), U.S. Forest Service (USFS), and National Park Service (NPS) act as cooperating agencies.

1.1.1 Decision Matrix

This Plan-EA adheres to NRCS procedures and formatting requirements in the National Watershed Program Manual (NWPM) Part 501 (NRCS 2014b), and the National Watershed Program Handbook (NWPH) Part 601 (NRCS 2014a), in which requirements provide a framework that ensures compliance with the NEPA and its implementing regulations, which are set forth in the Council on Environmental Quality (CEQ) regulations 40 Code of Federal Regulations (CFR) Parts 1500–1508; the Principles and Requirements for Federal Investments in Water Resources (P&R) (CEQ 2013), relying primarily on the NRCS intended use of the Guidance for Conducting Analyses Under the Principles, Requirements, and Guidelines for Water and Land Related Resources Implementation Studies and Federal Water Resource Investments as described in USDA DM 9500-13 (USDA 2017), and the corresponding Interagency Guidelines (CEQ 2014), together referenced as the PR&G (USDA 2017); Executive Orders (E.O.); the Code of Federal Regulations; Public Law (PL) 83-566; and related NRCS planning policy, including National Planning Procedures and National Environmental Compliance Handbooks (NRCS 2016 and NRCS 2021).

Under the PR&G, Federal investments are evaluated with respect to the Federal Objective and Guiding Principles. The Federal Objective specifies that Federal investments in water resources as a whole should strive to maximize public benefits, including environmental, economic, and social, with consideration of costs (USDA 2017). The objectives and guiding principles are discussed in the alternative formulation process detailed in Section 4.2.

1.2 Purpose and Need Statement

The purpose of the Proposed Project is to increase available water supply for agriculture in the Cimarron River and Lower Uncompahgre Watersheds. Proposed Project is needed to address agricultural water management related issues, such as inability to deliver water due to canal breaches (water security), water losses associated with irrigation seepage (irrigation efficiency), salinity and selenium loading, and protect fish habitat and recreational opportunities through agriculture water management decisions. Of specific concern to the project Sponsors is water security and irrigation efficiency.

Landslides above the UVWUA Montrose and Delta Canal (M&D Canal), and around the Wells Basin and Coal Hill areas of the Cimarron Canal (BPWCD) are causing the canals to overtop and breach. Seepage in the Vernal Mesa Canal is decreasing canal stability, which has caused the canal to breach in the past. The Proposed Project would mitigate damages to approximately 28,788 acres of agricultural lands in the BPWCD and UVWUA service areas from canal breaching.

The current BPWCD and UVWUA systems lose approximately 2,698 acre-feet (ac-ft) to seepage and evaporation and contribute to salinity loading (approximately 2,247 tons per year) in the watershed (Appendix E. Water Loss Memorandum). Reclamation estimates that irrigation practices and water losses contribute approximately 186,000 tons of salt per year to the Lower Gunnison Basin. A modernized irrigation system would enhance agricultural water management by conserving water and improving delivery efficiency, including providing the opportunity for high-efficiency sprinkler irrigation.

Ultimately, water losses and salt and selenium loading impact agricultural production, as well as the health of the watershed and aquatic habitat in the project area. Addressing the systems' seepage and salinity and selenium loading would protect watershed health and improve fish

habitat in the project area. Furthermore, the addition of a temperature sensor to the Cimarron River would better inform water use and reservoir releases which would protect watershed health, as well as protect fish habitat and associated recreation opportunities.

1.3 Project Background

Agricultural uses represent the majority of water use within the Cimarron River and Lower Uncompahgre Watersheds. The systems of the UVWUA and the BPWCD account for most of the agricultural water use within the watershed. The BPWCD system provides irrigation water to over 4,000 acres of land east of Montrose County. BPWCD manages the 13,500 ac-ft Silver Jack Reservoir; most of the stored water is allocated to irrigation. The CC&RC own Fish Creek #1 and #2 Reservoirs which provide water late in the irrigation season. BPWCD and the CC&RC own and regulate many of the same facilities. The Cimarron Canal, West Lateral, East Lateral, and Vernal Mesa Canal are within the BPWCD service area.

The Cimarron Canal is the primary conveyance canal within the BPWCD system and is predominantly open and unlined (small sections of culvert exist where the canal intersects roadways and drainages). The canal is approximately 23.5 miles long and has a suite of water rights from the Cimarron River and its tributary creeks that total 185 cubic feet per second (cfs). The canal begins at its diversion on the Cimarron River and terminates at a division box near the top of Cerro Summit where it splits into the Vernal Mesa Canal and the Hairpin Canal. While there are turnouts along the canal, its primary function is to convey water to smaller canals and laterals, which take the diverted irrigation water closer to the irrigated acreage. Two discrete sections of the Cimarron Canal have notable breach potential due to a relatively higher risk of landslides along their lengths; these sections are Wells Basin and Coal Hill. A breach at either location would inhibit irrigation deliveries to the 8,439 acres of grass pasture within the Bostwick Park, Shinn Park, Kinikin Heights, and Waterdog Mesa areas. As an unlined canal, water loss through seepage is present along its entire length and is notable in both the Wells Basin and Coal Hill sections.

The Vernal Mesa Canal begins at its split from the Cimarron Canal and conveys irrigation water from the Cerro Summit area to the smaller laterals (East Lateral, West Lateral, and Siphon Lateral) that irrigate the lands of Bostwick Park. Approximately 0.4 miles from the Cimarron Canal split, the Vernal Mesa Canal crosses under U.S. Hwy 50; it then travels along the north side of the highway in a parallel fashion for approximately 2.5 miles before it starts to head in a more northerly direction, away from the highway. A portion of the canal that parallels the highway is known as Slide Point. This section of the canal breached in the 1960s and caused significant damage to the highway. A 48-inch steel pipe was installed to mitigate seepage issues that are believed to contribute to a slide. No slides have occurred since, indicating the efficacy of the remediation. In recent years, however, new seeps have been observed just upstream of the existing piped section. Degradation of the existing steel pipe has also been observed, furthering concern of a breach risk. A breach of the Vernal Mesa Canal would inhibit irrigation of the 3,411 acres of grass pasture in Bostwick Park.

The Vernal Mesa Canal terminates at the split between the Bostwick Park East Lateral and West Lateral. These canals (along with the piped Siphon Lateral which splits from the East Lateral) irrigate most of the lands of Bostwick Park. The East Lateral is an unlined, earthen ditch of approximately 22,500 feet in length. It has 16 headgates distributed throughout its length; tailwater not used by the final headgate diffusely flows northwest until reaching the drainage in nearby Red Rock Canyon.

Recent projects have piped the first mile of the West Lateral (see Section 1.5). After the piped segments, West Lateral consists of approximately 21,000 feet of unlined earthen ditch and has 13 headgates. Tailwater from the West Lateral also discharges into Red Rock Canyon if not used for irrigation. In both the East and West Laterals, water losses in the form of seepage and the use of excess water required to make deliveries, result in faster reservoir drawdown. Water losses in the system limit late season water for both irrigation and aquatic habitat. Continual seepage in the canals also results in significant salt and selenium loading to the Gunnison River and the greater Colorado River Basin. It estimated that approximately 1,503 ac-ft of water is lost to seepage annually in the BPWCD project elements involved in this Proposed Project and contributes approximately 1,690 tons of salinity loading per year.

A large percentage of the lands in the Lower Uncompahgre Watershed are irrigated by the UVWUA. The UVWUA manages the Uncompahgre Valley Project, which supplies water to approximately 76,000 acres of fertile land in Montrose and Delta Counties. The Uncompahgre Valley Project is operated as a system and diverts water from the Uncompahgre River and the Gunnison River; the Uncompahgre Valley Project has total water rights to 2,525.64 cfs. UVWUA operates multiple canals that irrigate the Uncompahgre Valley on both sides of the river. The UVWUA system has approximately 575 miles of canals and laterals, over 200 miles of drains, and approximately 7,000 structures, and is the primary user of the Taylor Park Reservoir and rights to 11,200 ac-ft in the Ridgeway Reservoir (Reclamation 2022a). To reduce system losses and provide additional water once all the systems are charged, the canals in the lower part of the system rely on the tailwater from the canals in the upper part of the system.

The largest canal on the west side of the Uncompahgre River is the M&D Canal. The M&D Canal diverts approximately 627 cfs and irrigates over 20,000 acres spanning from Montrose, Colorado to Delta, Colorado. There is an unstable hillside above the canal approximately 4 miles from the M&D diversion; potential sloughing of the hillside threatens to block, overtop, and breach the canal. The instability is believed to be a function of seepage from other canals above the M&D, irrigation above the M&D, and the steep slope of the hillside. The section of canal in the immediate vicinity has significant water loss due to seepage, which results in faster depletion of UVWUA reservoir water and contributes to the salt and selenium loading in the watershed and the greater Colorado River Basin. It estimated that approximately 1,195 ac-ft of water is lost to seepage annually in the UVWUA project elements involved in this Proposed Project and contributes approximately 557 tons of salinity loading per year.

Landslides above the M&D Canal, and around the Wells Basin and Coal Hill areas of the Cimarron Canal are causing the canals to overtop and breach. Severe seepage in the Vernal Mesa Canal is decreasing canal stability, which has caused the canal to breach in the past. The Proposed Project would mitigate damages to approximately 28,788 acres of agricultural lands in the BPWCD and UVWUA service areas from canal breaching.

Both the BPWCD and UVWUA experience water losses in their system, amounting to over 2,698 ac-ft of water lost to seepage and evaporation annually in the project area (Appendix E. Water Loss Memorandum). Piping and pressurizing the laterals would reduce water lost to seepage and improve agricultural water management by improving delivery efficiency and providing the opportunity for high-efficiency sprinkler irrigation.

The Colorado River is naturally saline, with nearly half (47%) of the salinity in the system coming from natural sources. However, irrigation, reservoir evaporation, and municipal and industrial sources represent the remaining portion of salt loading (Reclamation 2011). Seepage issues in

BPWCD and UVWUA systems do not only impact water quantity in the watershed, but they lead to salt and selenium loading in the Colorado River Basin (over 2,247 tons of salt annually). Adding to salt and selenium loading from seepage, the West Lateral spills into the Red Rock Canyon near the Black Canyon of the Gunnison National Park, causing high dissolved selenium loads during the irrigation season. Piping the laterals would reduce salt loading from seepage and prevent tailwater from spilling into Red Rock Canyon, thereby improving water and soil health for the watershed.

Fish populations and habitat are vulnerable in the Cimarron River due to the lack of monitoring data available, ultimately impacting fish habitats and populations in the watershed. Installing a temperature sensor on the Cimarron River would better inform water use and reservoir releases and protect fish habitats and recreational activities.

1.4 Project Area & Existing Conditions

The project area is located within the Upper Colorado Region (Hydrologic Unit Code [HUC] 14), Gunnison Subregion (HUC 1402), and Gunnison Basin (HUC 140200). The Proposed Project is contained to the Cimarron River and Lower Uncompahgre Watersheds within the Uncompahgre Subbasin (HUC 14020006) and the Upper Gunnison Subbasin (HUC 14020002), specifically eleven 6th order watersheds. The watershed area covers approximately 247,616 acres in Delta, Montrose, Gunnison, and Ouray Counties in Colorado (Figure 1-1 and Watershed Map in Appendix B). The project area is located near Montrose and Cimarron, Colorado. The project area consists of the BPWCD Cimarron Canal, Vernal Mesa Canal, and East and West Laterals, the UVWUA M&D Canal, and the Cimarron River (Appendix B. Preferred Alternative Map). Chapter 2 discusses how the project components were identified and selected.

The project area is contained within Township 46 North, Range 6 West, Sections 5 and 8; Township 47 North, Range 6 West, Section 6; Township 47 North, Range 7 West, Sections 1 and 12; Township 48 North, Range 6 West, Section 28; Township 48 North, Range 7 West, Sections 4, 5, 9, 15, and 16; Township 48 North, Range 9 West, Sections 6, 7, 8, 17 and 18; Township 49 North, Range 8 West, Sections 2, 3, 4, 10, 11, 13, 14, and 15; Township 50 North, Range 8 West, Section 34, New Mexico Meridian. The elevation of the project area ranges from approximately 5,992 feet above mean sea level (AMSL) to 8,659 feet AMSL. Land use within the region is generally rural and agricultural.

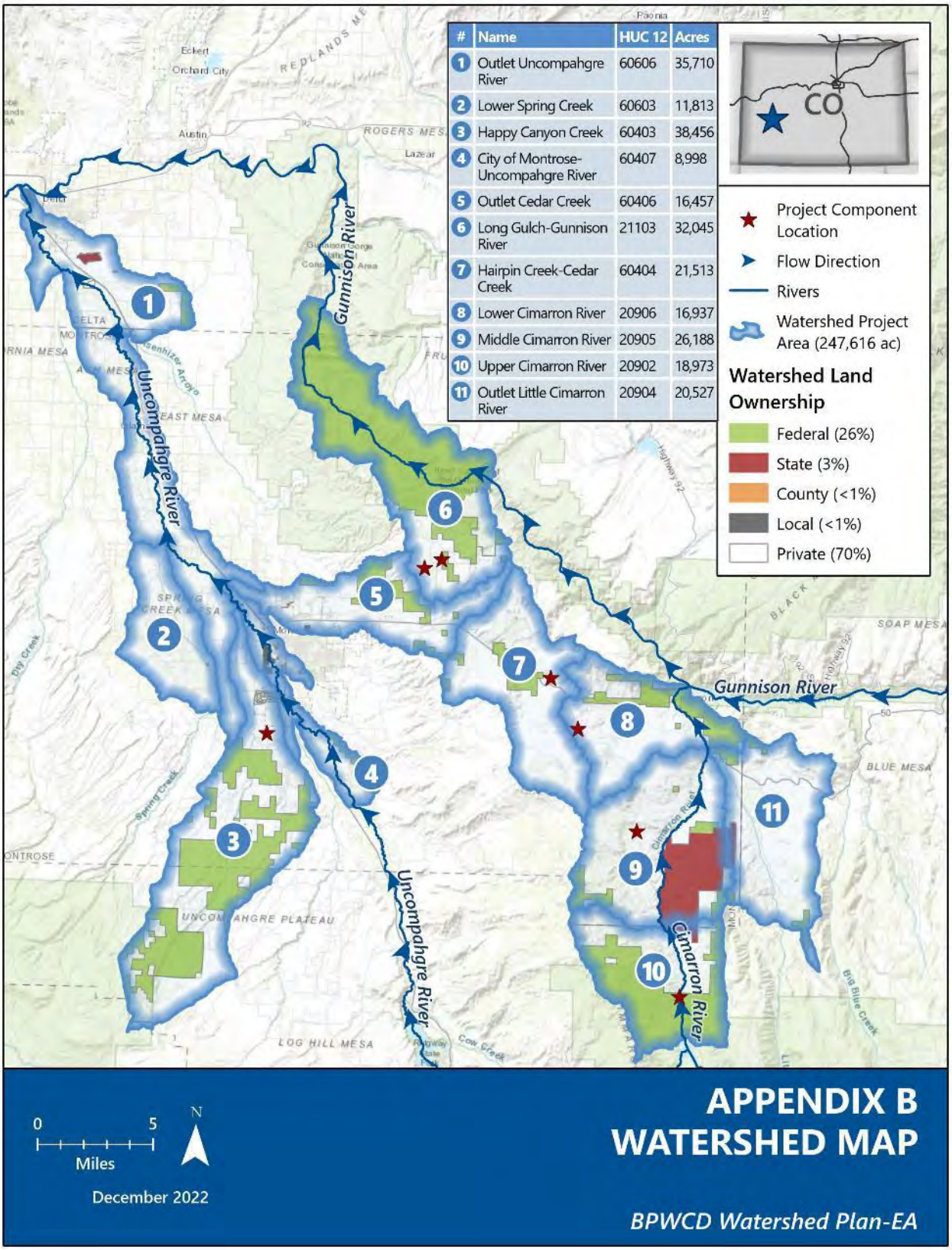

Figure 1-1. Watershed Map

Both the Wells Basin (8,300 feet AMSL) and Coal Hill (8,250 feet AMSL) elements are located at a high elevation, subalpine mountain environment. Along the Cimarron Canal alignment at these locations, the dominant vegetation cover is primarily characterized by Gambel oak (*Quercus gambelii*), rabbitbrush (*Ericameria nauseosa*), roundleaf snowberry (*Symphoricarpos rotundifolius*), and Wood's rose (*Rosa woodsii*). Whitetop (*Lepidium draba*) and Canada thistle (*Cirsium arvense*) are common along the Cimarron Canal. The area is heavily grazed by cattle and horses. Proposed staging areas are located at the northern and southern termini of both Wells Basin and Coal Hill. These areas are directly adjacent to the canal access roads, and flat and vegetated with low growing native and non-native herbaceous vegetation. The Cimarron Canal is previously disturbed by canal construction and maintenance activities.

Figure 1-2. The Wells Basin Proposed Project element is situated on the Cimarron Canal.

Figure 1-3. The Coal Hill Proposed Project element is situated on the Cimarron Canal.

The Vernal Mesa Canal at Slide Point is in an upland area above Montrose Valley at approximately 8,000 feet AMSL. The area is characterized by upland vegetation. Gambel oak, rubber rabbitbrush, western serviceberry (*Amelanchier alnifolia*), roundleaf snowberry, big sagebrush (*Artemisia tridentata*), and Wood's rose are the dominant species present along the alignment. Some noxious species like Canada thistle and whitetop are present throughout the alignment. Overall, habitat is dry, open, and is characteristically upland on both sides of the canal. Two proposed staging areas are previously disturbed with barren soil and are located at the northern terminus of Slide Point. Three additional proposed staging areas are located along the access road to the Vernal Mesa Canal alignment, and along the existing canal.

Figure 1-4. The Slide Point element is situated along the Vernal Mesa Canal, north of U.S. Hwy 50 near the Cerro Summit Reservoir. The Vernal Mesa Canal conveys water to the BPWCD system.

The East and West Laterals extend through a relatively flat agricultural area, at about 7,000 feet AMSL, outside of the community of Montrose. A pinyon juniper ecotype is present on the east side of the East Lateral with agricultural fields bordering the west side. Sparse willow (*Salix* sp.), rubber rabbitbrush, and alfalfa (*Medicago sativa*) were the dominant plants observed along the East Lateral. The West Lateral is bordered by agricultural fields, and active cattle grazing was observed near the lateral. Prairie dogs (*Cynomys* sp.) were abundant along the West Lateral. Eroded banks were noted at both laterals. Four proposed staging areas are located along each lateral, in the adjacent agricultural fields.

Figure 1-5. The East Lateral is part of the BPWCD system and located in the Bostwick Park area, adjacent to agricultural fields.

Figure 1-6. The West Lateral is part of the BPWCD system and located in the Bostwick Park area, adjacent to agricultural fields.

The M&D Canal is supplied from the Uncompahgre River. The M&D Canal sits at an elevation of 6,032 feet AMSL and runs through sections of coyote willow (*Salix exigua*), established narrowleaf cottonwood (*Populus angustifolia*) and Fremont cottonwood (*Populus fremontii*), and open areas that include a shrub layer constituted mostly of big sagebrush, skunkbush sumac (*Rhus trilobata*), greasewood (*Sarcobatus vermiculatus*), rock clematis (*Clematis columbiana*), and sack saltbush (*Atriplex saccaria*). The M&D alignment runs among lowlands within the community of Montrose and is bordered by agricultural fields along the southern half of its alignment. The banks of the M&D Canal have been disturbed, and infestations of noxious species including Russian olive

(*Elaeagnus angustifolia*), spotted knapweed (*Centaurea stoebe*), whitetop, and Russian knapweed (*Acroptilon repens*) were observed. A proposed staging area is located upslope of the southern/central portion of the M&D Canal, within an actively disturbed construction yard.

Figure 1-7. The M&D Canal is part of the UVWUA system and is situated west of Highway 550 between Montrose and Vernal, Colorado.

1.5 Relationship to Other Projects

Cumulative effects are defined in 40 CFR § 1508.1(g)(3) as "effects on the environmental that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effect can result from actions with individually minor but collectively significant effects taking place over a period of time." (GPO 2024a).

Several projects are proposed or have been completed in the vicinity of the project area and could have cumulative effects on the Proposed Project (Table 1-1). The general location of the projects listed in Table 1-1 are shown on Figure 1-8.

Table 1-1. Past, Present, and Reasonably Foreseeable Projects in the Project Area

Agency	Funding Program	Project Title
Reclamation	Salinity Control	BPWCD Siphon Lateral Salinity Control Project (near the City of Montrose)
		BPWCD Shinn Park Waterdog Salinity Control Project (near the City of Montrose)
		C Ditch Company's C Ditch/Needle Rock Pipeline Project (3 miles north of the Town of Crawford in Cottonwood Creek drainage)
		Cattleman's Ditches Pipeline Projects Phases I and II (south of the Town of Crawford in Alkali Creek drainage)

		Clipper Irrigation Salinity Control Project 4 (2.5 miles southeast of the Town of Hotchkiss)
		Fire Mountain Canal Piping Project (near the Town of Paonia)
		Forked Tongue/Holman Ditch Company's Salinity Control Project (near the Town of Eckert in the Tongue Creek drainage)
		Gould Canal Improvements Projects A & B (approximately 4 miles southwest of the Town of Crawford and 18 miles northeast of the City of Montrose in the Smith Fork Watershed)
		Grandview Canal Piping Projects, Upper and Middle & Lower (just south of the Town of Hotchkiss)
		Lower and Upper Stewart Ditch Pipeline Projects (near the Town of Paonia in the North Fork of the Gunnison River drainage)
		Minnesota Canal Piping Projects, Phases I and II (near the Town of Paonia in the North Fork of the Gunnison River drainage)
		Minnesota L75 Piping Project (near the Town of Paonia in the North Fork of the Gunnison River drainage)
		Needle Rock/Lone Rock Ditch Piping Project (approximately 2 miles northeast of the Town of Crawford)
		North Delta Irrigation Canal Salinity Control Project Phase I (northeast of the City of Delta)
		Orchard Ranch Ditch Piping Project (near the Town of Eckert)
		Pilot Rock Ditch Piping Project (approximately 4 miles east of Crawford)
		Rogers Mesa Water Distribution Association's Slack and Patterson Laterals Piping Project (approximately 3 miles west of the Town of Hotchkiss)
		Short Ditch Extension Piping Project (near the Town of Hotchkiss)
		Turner/Lone Cabin Combination Piping Project (approximately 2.5 miles southeast of the Town of Paonia)
		Uncompahgre Valley Water Users Association (UVWUA) East Side Laterals Piping Project Phases 7, 8, 9, and 10 (throughout the Uncompahgre Valley)

	Colorado River Storage Project (CRSP) Basin Fund	Aspen Canal Piping Project (northwest of the Town of Crawford)
		GK Lateral Piping Project (approximately 6.5 miles southwest of Lazear in Delta County)
	WaterSMART	BPWCD Fish Creek Wasteway Project
NRCS	Regional Conservation Partnership Program (RCPP)	BPWCD West Lateral Piping Project (Phase 1)
		Colorado West Land Trust Middle Gunnison Partnership for Resilient Working Lands Project (throughout the Colorado River Basin Critical Conservation Area)
		Needle Rock Diversion Project (approximately one mile west of the Pilot Rock Ditch Piping Project)
		Grandview Canal Piping Project (just south of the Town of Hotchkiss)
		Crawford Clipper Ditch Upper West Lateral Master Plan Projects (various) (just west of Crawford)
Gunnison Basin Roundtable/ Colorado Water Conservation Board/ Colorado River Water Conservation District	-	CC&RC Fish Creek #2 Reservoir Repair Project

Several salinity control projects have been completed or are ongoing in the same basin-wide area. The salinity control projects are funded by Reclamation under the Salinity Control Act and implement cost-effective control projects throughout the area, including:

- The BPWCD Siphon Lateral Project piped approximately 1.8 miles of the existing earthen Siphon Lateral and approximately 0.2 miles of the East Lateral with high-density polyethylene (HDPE) pipe (Reclamation 2014a). Construction was completed in spring of 2015.
- The BPWCD Shinn Park Waterdog Lateral Project would pipe the existing open, unlined Shinn Park Lateral and Waterdog Lateral with a total of approximately 7.7 miles of HDPE pipe (Reclamation 2022b). The Final EA was published in November 2022 and construction is ongoing.
- C Ditch Company's C Ditch/Needle Rock Pipeline Project piped approximately 2.78 miles of existing open, unlined irrigation ditches and laterals (Reclamation 2013). The Final EA was published in August 2013 and construction was targeted for completion by 2015.
- The Cattleman's Ditches Pipeline Project Phases I and II replaced approximately 8.5 miles of open irrigation ditches with approximately 6.4 miles of piping (Reclamation 2015). The Final EA was published in September 2015 and construction was targeted for completion by spring 2016.
- The Clipper Irrigation Salinity Control Project 4 piped approximately 3.5 miles of existing open irrigation ditch and abandoned approximately 1.4 miles of existing open ditches (Reclamation 2014). The Final EA was published in April 2014.

- The Fire Mountain Canal Piping Project would install 1,044 LF of pipeline as an inverted siphon and abandon 8,659 LF of open earthen canal as part of a Master Plan to convert the lower end of the canal to an on-demand managed system (Reclamation 2018a; Reclamation 2024a). The Final EA was published in 2018 and funding for the project was announced in 2023.
- The Forked Tongue/Holman Ditch Company's Salinity Control Project would pipe approximately 1.76 miles of existing earthen Siphon Lateral and approximately 0.2 miles of the East Lateral with HDPE pipe, as well as pipe approximately 1.89 miles of open unlined earthen Forked Tongue/Holman Ditch (Reclamation 2014b). The Final EA was published in September 2014.
- The Gould Canal Improvements Projects A & B project would install approximately 2,000 LF of pipeline that would bypass the Upper Tunnel and carry irrigation water around an area of destabilization (Reclamation 2024b). The Final FONSI and EA was published in November 2024.
- Grandview Canal Piping Projects, Upper and Middle & Lower Project, also known as the Crawford Grand View-Aspen Piping Integration Project, used both RCPP and Reclamation Salinity funds to create a large, multi-beneficial project. As of February 2021, construction had begun on the upper portion of the Aspen pipeline while the design for the lower portion had been completed by Reclamation and was being review by NRCS (Gunnison 2021). The Upper Aspen pipeline will be constructed using Reclamation funding as discussed in the CRSP section below. However, this project is directly related to the RCPP funded Grand View Canal Project described in the RCPP section below.
- The Lower Stewart Ditch Pipeline Project included the piping of 2 miles of ditch to the edge of Paonia as part of a larger project to improve the existing Stewart Ditch headgate and diversion, as well as pipe the ditches to eliminate seepage and reduce salt loading (Colorado Cattleman's Association 2021). The Upper Stewart Ditch Pipeline Project would pipe approximately 2.6 miles of open, earthen ditch with 2.3 miles of PVC pipe (Reclamation 2020). The Draft EA was published in April 2020.
- Phase I of the Minnesota Canal Piping Projects piped 5.2 miles of open earthen canal (Reclamation 2012). The Final EA for Phase 1 was published in October 2012. Phase II of the Minnesota Canal Piping Projects piped an additional 3.8 miles of open earthen canal with plastic, low pressure pipe (Reclamation 2014c). The Phase II Final EA was published in August 2014.
- The Minnesota L75 Piping Project replaced 0.58 miles of unlined open lateral with 0.68 miles of buried irrigation pipe (Reclamation 2017b). The Final EA was published in November 2017.
- The Needle Rock/Lone Rock Ditch Piping Project installed approximately 7.5 miles of buried pressurized pipeline; 7.1 miles within existing ditch prisms and 0.4 miles in new alignments. Additionally, approximately 750 LF of the existing Lone Rock Ditch would be decommissioned (Reclamation 2022d). The Final EA was published in June 2022.
- The North Delta Irrigation Canal Salinity Control Project Phase I replace approximately 0.5 miles of open earthen canal and existing the 190-foot-long trestle flume across Currant

Creek with buried HDPE pipe (Reclamation 2019a). The FONSI and Final EA was published in December 2019.

- The Orchard Ranch Ditch Piping Project would pipe the entire length of the existing Orchard Ranch Ditch (approximately 1.7 miles) and approximately 0.7 miles of laterals with HDPE pipe ranging from 6" to 36" (Reclamation 2018b). The Final EA was published in February 2018.
- The Pilot Rock Ditch Piping Project piped approximately 1.55 miles of open canal with PVC piping (Reclamation 2022e). The FONSI and Final EA was published in July 2022.
- The Rogers Mesa Water Distribution Association's Slack and Patterson Laterals Piping Project piped approximately 9.4 miles of unlined earthen laterals with a buried pipeline (Reclamation 2014d). The Final EA was published in July 2014.
- The Short Ditch Extension Piping Project piped 0.7 miles of the tail-end of the Short Ditch extension, constructed an approximately 0.3-mile siphon, and abandoned approximately 1.1 miles of existing ditch of BLM & private property (Reclamation 2022f). The Final EA and FONSI was published in December 2022.
- The Turner/Lone Cabin Combination Piping Project would convert approximately 27.1 miles of open ditch into approximately 18.9 miles of buried, pressurized pipe and establish approximately 28.3 acres of Habitat Replacement Site (Reclamation 2024c). The Final EA and FONSI was published in June 2024.
- The UVWUA includes 128 miles of canals, 438 miles of laterals, and 216 miles of drains. In an effort to improve overall efficiency and reduce salinity in the Colorado River Basin, several phases of construction were developed, which began in 1998. Phases 1-6 involved piping and/or lining of other sections of the East Side Laterals to reduce salt and selenium loading in the Colorado River Basin and increase water delivery efficiency (Reclamation 2018c).
    - The UVWUA East Side Laterals Piping Projects Phase 7 included the piping of a total of 12.7 miles of laterals and was completed in 2016 (Reclamation 2022g).
    - The UVWUA East Side Laterals Piping Projects Phase 8 included the piping of 14.08 miles of laterals and was completed in 2018 (Reclamation 2022g).
    - The UVWUA East Side Lateral Piping Project Phase 9 would pipe 20.4 miles of open, unlined East Side laterals with approximately 16.5 miles of buried irrigation pipe (Reclamation 2018c). Construction of the Phase 9 project is ongoing.
    - The UVWUA East Side Lateral Piping Project Phase 10 projects propose the piping of 18.3 miles of ditches with 18 miles of pipe installed inside and outside of the existing ditch prism of the UVWUA East Side laterals (Reclamation 2022c). Construction of the Phase 10 project is anticipated to be completed in 2027.

Reclamation's Western Colorado Area Office recently utilized Colorado River Storage Project (CRSP) Basin Funds to implement two projects in the vicinity of the Project Area, including:

- The Aspen Canal Piping Project replaced approximately 5.6 miles of earthen canals with approximately 5.1 miles of HDPE pipe (Reclamation 2019b). The Final EA and FONSI was published in February 2019.

- The GK Lateral Piping Project pipes a 2.3-mile section of the GK Lateral of UVWUA's East Canal upstream of the UVWUA East Side Lateral Piping Project Phase 9 project and was completed in 2017 (Reclamation 2018c).

The BPWCD Fish Creek Wasteway Project is funded by Reclamation under the WaterSMART program and installed a wasteway at the intersections of Fish Creek and the Cimarron Canal and replaced degraded twin culverts with a large concrete box culvert. Construction on the Fish Creek Wasteway Project was completed in 2021 (BPWCD 2021).

NRCS Regional Conservation Partnership Program (RCPP):

- The BPWCD West Lateral Piping Project (Phase 1) replaced approximately 2,900 feet of existing, open West Lateral along Bostwick Park Road. The West Lateral Piping Project (Phase 1) was funded by the NRCS Regional Conservation Partnership Program (RCPP) and completed in 2019.
- The Colorado West Land Trust Middle Gunnison Partnership for Resilient Working Lands Project focuses on the Colorado River Basin Critical Conservation Area and covers land in seven states, including western Colorado. Project objectives including protection of working land and critical water rights, reconnection of floodplains, improvement of soil health, and a reduction of forest fire risks (NRCS 2024). This project was awarded funding in 2024.
- The Needle Rock Diversion Project replaced 875 LF pf open earthen ditch with 42' pipe and included diversion headworks with screening structure and fish passage (Colorado 2021a). This project was completed in 2021.
- The Grandview Canal Piping Project piped 460 LF with dual large diameter pipeline (Colorado 2021a). This project is directly related to the Grandview Canal Piping Projects, Upper and Middle & Lower Project, also known as the Crawford Grand View-Aspen Piping Integration Project discussed above (Gunnison 2021).
- The Crawford Clipper Ditch Upper West Lateral Master Plan piped 4,900 LF of unlined ditches wit 42" pipe, as well as construct a 6 ac-ft regulating pond (Colorado 2021b).

Other BPWCD projects in the project area include the CC&RC Fish Creek #2 Reservoir Repair Project. The CC&RC received grants from the Gunnison Basin Roundtable, Colorado Water Conservation Board (CWCB), and Colorado River Water Conservation District (CRWCD) to repair the outlet of the Fish Creek Reservoir, for the project. Construction of the project began in October 2021 and was completed in October 2022 (BPWCD 2021).

Connected action are defined in § 1508.25(a)(1) as actions that "are closely related and therefore should be discussed in the same impact statement. Actions are connected if they: (i) Automatically trigger other actions which may require environmental impact statements. (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously. (iii) Are interdependent parts of a larger action and depend on the larger action for their justification." (GPO 2024b). The Proposed Project is an independent, standalone project that will be implemented regardless of the funding or approval of the surrounding projects listed in **Error! Reference source not found.** and described above. Therefore, none of the projects listed in **Error! Reference source not found.** should be considered connected actions for the Proposed Project but were considered when evaluating cumulative effects.

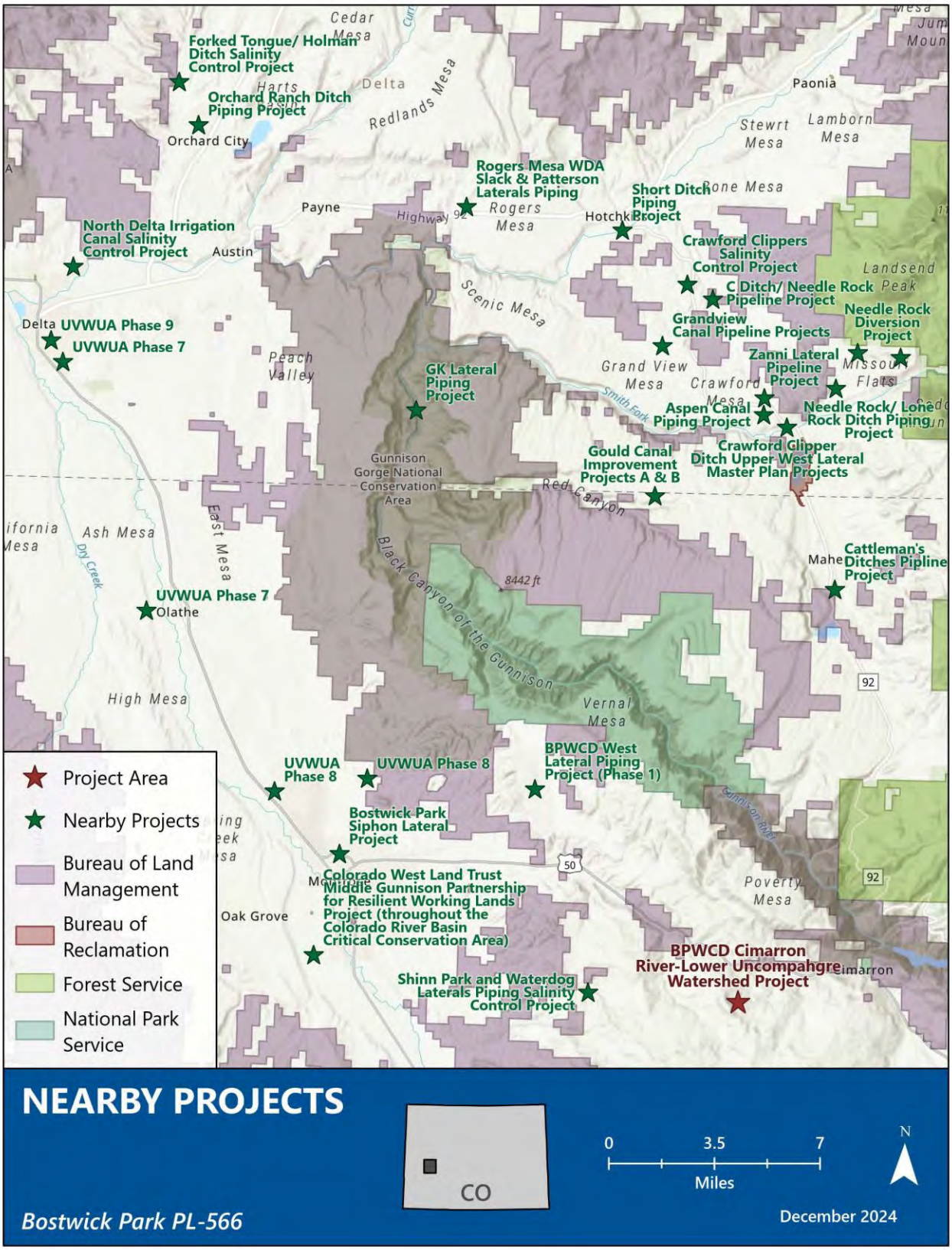

Figure 1-8. Past, Present, and Reasonably Foreseeable Projects

Chapter 2 Scope of the Plan-EA

The scope of the Plan-EA is the range of actions, alternatives, and impacts to be considered in an EIS (40 CFR Section 1508.25). Three types of actions, three alternatives, and three types of impacts will be considered in this Plan-EA. The three types of actions include: connected actions, cumulative actions, and similar actions. Specific actions are discussed in Section 1.5 and Chapter 5. For this Plan-EA, the alternatives analyzed include the No Action Alternative, also known as the Future Without Federal Investment (FWOFI), and the Action Alternative, also identified as the Future With Federal Investment (FWFI) (Chapter 4). Direct, indirect, and cumulative effects are discussed in Chapter 5. A standalone EA is also provided in Appendix F.

The Proposed Project is eligible for support under the Agricultural Water Management purpose of the WFPO Program. As the lead Federal Agency, NRCS is required by NEPA to analyze and disclose the economic, environmental, and social effects of project alternatives. Therefore, a scoping process was performed to identify relevant resources or environmental concerns to be analyzed in detail and to determine which, if any, could be eliminated from further analysis. Resource concerns were identified for the Proposed Project based on scoping requirements outlined in the NWPM Section 501.24B (NRCS 2014b) and from any additional concerns identified by the public, BPWCD, other sponsors, or agencies during the scoping meeting and/or other planning or public meetings.

To accommodate schedules, two virtual scoping meetings were held on December 10, 2020 using Zoom. The meetings provided an opportunity for the public, BPWCD, other sponsors, and agencies to express any specific concerns related to the Proposed Project. Four members of the public, one NRCS representative, five project team members, and two project Sponsor representatives attended the public scoping meeting. No comments were received from the public during the scoping period (December 10, 2020 through January 15, 2021). Three agency representatives, two members of the public, two NRCS representatives, six project team members, and three project Sponsor representatives attended the agency scoping meeting. Two comments were received from resource agencies—Colorado Parks and Wildlife (CPW) Division and the Shavano Conservation District. Comments pertained to support for the Proposed Project, as well as concerns about wildlife and wildlife habitat, and the importance of improving water quality and quantity. A Scoping Report was prepared that provides a summary of the scoping process (Appendix E).

In addition to the public scoping meetings, a meeting was held with J-U-B ENGINEERS, Inc. (J-U-B), NRCS, the Sponsors, and the cooperating agencies on April 28, 2021. The purpose of the meeting was to discuss the resource analysis, review of the Draft Plan-EA, anticipated schedule, and signatures with the cooperating agencies. As cooperating agencies, BLM, NPS, USFS, and Reclamation would provide review comments and be signatories to the Plan-EA. Federal agencies were invited to be cooperating agencies for a variety of reasons which include, Proposed Project actions occurring on Federal land or facilities (i.e., BLM, Reclamation, USFS), and the potential to impact Federal land from Proposed Project actions (i.e., West Lateral flows into the Black Canyon of the Gunnison National Park). The U.S. Army Corps of Engineers (USACE) and U.S. Fish and Wildlife Service (USFWS) were also asked to be cooperating agencies, but they declined.

In accordance with E.O. 13175, NRCS is responsible for assessing the impacts of activities, considering tribal interests, and assuring that tribal interests are considered in conjunction with

federal activities and undertakings. Initial scoping letters detailing information about the Proposed Project were sent to the Southern Ute Indian Tribe of the Southern Ute Reservation, the Ute Mountain Ute Tribe, and the Ute Indian Tribe of the Uintah & Ouray Reservation on November 17, 2020. The scoping letters gave a description of the project, location, and overview, and requested participation and input. The scoping notice also provided details of the scoping meeting, contact information to submit written comments, and the scoping period open and closure date.

NRCS Colorado initiated consultation under Section 106 of the NHPA with the SHPO, Southern Ute Indian Tribe, the Ute Mountain Ute Tribe, and the Ute Indian Tribe of the Uintah & Ouray Reservation on January 13, 2022. The SHPO responded on January 19, 2022, concurring with NRCS Colorado's determination of the APE and that:

- Linear resources 5GN.6371.1, 5MN.1855.9, 5MN.4808.5, 5MN.4808.6, 5MN.7708.3, and 5MN.10323.2 support the eligibility of their respective resources for listing on the National Register of Historic Places (NRHP);
- Sites and linear segments 5MN.3183, 5MN.10817.1, 5MN.11655.2, 5MN.12933, 5MN.12934, 5MN.12939, and 5MN.12940 are not eligible or non-contributing segments to the NRHP;
- Linear segments 5MN.7708.4, 5MN.12106.4, 5MN.12931.1, and 5MN.12932.1 do not support the eligibility of their respective resources for the NRHP;
- Isolated finds 5MN.12935-12938 are not eligible for the NRHP;
- Linear site segments 5GN.6371.1, 5MN.1855.9, 5MN.4808.5-6, 5MN.7708.3, 5MN.10323.2 will be adversely impacted by the proposed project.

NRCS Colorado notified the Advisory Council on Historic Preservation (ACHP) that the project would adversely affect cultural resources eligible for listing on the NRHP on June 16, 2022. The ACHP responded to NRCS Colorado on June 28, 2022, that they would not participate in the consultation unless another consulting party requested their participation.

The Southern Ute Indian Tribe responded on February 25, 2022, accepting the invitation to consult on the development of the Memorandum of Agreement (MOA). The Southern Ute Indian Tribe response specified that they want to "ensure the potential for subsurface deposits are taken into consideration with respect to the agreement document." The MOA Appendix B is a Post-Discovery Plan considering the potential for subsurface deposits in the area of potential effect. NRCS Colorado provided a draft MOA for comment to the Southern Ute Indian Tribe, the Ute Mountain Ute Tribe, and the Ute Indian Tribe of the Uintah & Ouray Reservation on August 29, 2022. No responses have been received by NRCS Colorado.

During an internal review additional consulting parties were identified in 2024. NRCS Colorado initiated consultation by calling and leaving voice messages, when possible, to Tribal representatives from the Comanche Nation, Apache Tribe of Oklahoma, Fort Belknap Indian Community, Navajo Nation in August and September of 2024. Consultation letters on the APE, identified historic properties, eligibility to the NRHP, effects, and the MOA were sent to the Comanche Nation, Apache Tribe of Oklahoma, Fort Belknap Indian Community, Navajo Nation, Montrose and Gunnison County Commissioners, Gunnison County Historic Preservation

Commission, and the Montrose Historical Society and Museum. All records of consultation are included in Appendix A.

The MOA to interpret the adversely effected NRHP eligible historic properties was executed on August 28, 2023 and is being amended.

A summary of resource concerns developed during the scoping process and their relevance to the Proposed Project is provided in Table 2-1. Irrelevant resource categories have been eliminated from detailed analysis. Relevant resource categories are included in detailed studies that are described in this Plan-EA.

Table 2-1. Resource Concerns Summary

Concern	Relevant to the Proposed Project?		Rationale
	Yes	No	
Soils & Geology			
Upland Erosion & Sedimentation	X		The hillside above the M&D Canal is eroding and sloughing into the canal, which poses a risk of canal breach. Two discrete sections of the Cimarron Canal, Wells Basin and Coal Hill, have notable breach potential due to a relatively higher risk of landslides along their lengths. Seepage from the Vernal Mesa Canal has decreased the canal stability which caused the canal to breach. A portion of Vernal Mesa Canal, known as Slide Point, breached in the 1960s and caused significant damage to U.S. Hwy 50. Canal breach at the M&D Canal, Cimarron Canal, and Vernal Mesa Canal have the potential to flood over 28,788 acres of farmland in the project area.
Prime & Unique Farmland	X		Portions of the project area (i.e., Coal Hill and East and West Laterals) contain lands designated farmland of statewide importance (NRCS 2022a).
Water Resources			
Surface & Ground Water Quality & Quantity	X		. The East Lateral, West Lateral, and M&D Canal are within an alluvial aquifer managed aquifer recharge (MAR) potential area and a sedimentary bedrock MAR potential area (CGS 2022). A report by the United States Geological Survey (USGS) and BLM in Eastern Utah and Western Colorado demonstrates that seepage influences groundwater recharge (Masbruch and Shope 2014). Seepage likely influences groundwater recharge in the project area through deep percolation, though the extent to which seepage influences groundwater recharge is unknown because there is no current data in the project area evaluating direct groundwater recharge sources and volumes.

Concern	Relevant to the Proposed Project?		Rationale
	Yes	No	
Clean Water Act & Waters of the U.S., including Wetlands	X		Jurisdictional waters in the project area include the Cimarron River, Happy Canyon Creek, West Lateral, Vernal Mesa Canal, and Cimarron Canal. Twelve wetlands totaling 5.69 acres occur within and adjacent to the project area; approximately 0.05 acres were identified within the project area. Some of these wetlands adjacent to the project area are connected to jurisdictional waters (Appendix E).
Wetlands	X		Twelve wetlands totaling 5.69 acres occur within and adjacent to the project area; approximately 0.05 acres were identified within the project area.
Regional Water Management Plans & Coastal Zone Management Areas	X		The project area is managed under the Colorado Water Plan, specifically the Gunnison Basin Implementation Plan (BIP) (CDNR CWCB 2021). There are no coastal zone management areas within the project area.
Floodplain Management	X		Portions of the project area are within the designated 100-year floodplain associated with the Cimarron River and near floodplains associated with Happy Canyon Creek (FEMA 2012; FEMA 2013).
Wild & Scenic Rivers	X		No wild or scenic rivers are in or near the project area according to the National Wild and Scenic Rivers System Map (Wild and Scenic Rivers 2016). However, the Gunnison River in the Black Canyon of the Gunnison National Park is listed on the Nationwide Rivers Inventory (NRI) for outstandingly remarkable geologic, scenic, and other values (NPS 2022).
Sole Source Aquifer		X	No sole source aquifers are in or near the project area (U.S. Environmental Protection Agency [EPA] 2021a).
Air Quality			
Clean Air Act/National Ambient Air Quality Standards	X		Currently, Montrose and Gunnison Counties comply with all NAAQS requirements..
Climate Change & Greenhouse Gases	X		Greenhouse gases are introduced into the atmosphere in the project area by a variety of sources, including agriculture.
Plants			
Special Status Plant Species		X	The USFWS Information for Planning and Consultation (IPaC) report did not identify any special status plant species as having the potential to occur in the project area (USFWS 2022).
Forest Resources	X		Several national forests are in the vicinity of the project area, including the Uncompahgre National Forest, San Juan National Forest, Rio Grande National Forest, and Grand Mesa, Uncompahgre, and Gunnison (GMUG) National Forest (USFS 2021).
Noxious Weeds & Invasive Plants	X		Noxious weeds and invasive plants are present in the project area.

Concern	Relevant to the Proposed Project?		Rationale
	Yes	No	
Natural Areas		X	The project area is located near, but outside, the Fairview Natural Area and the Wacker Ranch Natural Area (CNAP 2021), which are within 5 miles of the project area.
Riparian Areas & Ecologically Critical Areas	X		The project area contains irrigation canals with a controlled water regime that support a narrow strip of riparian vegetation along its immediate edges. There are no riparian areas with special designations located within the project area.
Animals			
Essential Fish Habitat		X	There is no essential fish habitat located in or near the project area (National Oceanic and Atmospheric Administration [NOAA] 2017).
Wildlife & Wildlife Habitat	X		The project area is within mapped winter range for elk (*Cervus canadensis nelsoni*) and mule deer (*Odocoileus hemionus*) and supports high densities of wintering elk and mule deer (CPW 2021a). The Cerro Summit State Wildlife Area is situated approximately 200 feet west of the proposed staging area, and 0.5 miles southwest of the Slide Point project element (CPW 2021a).
Coral Reefs		X	There are no coral reefs in or near the project area.
Special Status Animal Species	X		The USFWS IPaC identified nine Endangered Species Act (ESA)-listed animal species as potentially occurring within the project area: monarch butterfly (*Danaus plexippus*), Great Basin silverspot butterfly (*Great Basin silverspot butterfly*), tri-colored bat (*Pipistrellus subflavus),* Canada lynx (*Lynx canadensis*), gray wolf (*Canis lupus*), Gunnison sage-grouse (*Centrocercus minimus*), Mexican spotted owl (*Strix occidentalis*), yellow-billed cuckoo (*Coccyzus americanus*), bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and razorback sucker (*Xyrauchen texanus*) (USFWS 2022).
Invasive Animal Species		X	No potential for introduction of invasive animal species.
Migratory Birds & Bald and Golden Eagles	X		There is potential for migratory birds and eagles to be present in the project area.
Human Environment			
Socioeconomics	X		The water losses and salinity and selenium loading in the project area impact agricultural profitability. Canal breaches have the potential to impact approximately 28,788 acres of agricultural lands within the project area.

Concern	Relevant to the Proposed Project?		Rationale
	Yes	No	
Cultural, Historic & Paleontological Resources	X		Cultural and historic resources are present in the project area. A cultural resources survey identified six canal segments as contributing to the eligibility of their associated sites for inclusion in the National Register of Historic Places (NRHP). Paleontological resources may be present in the project area. The East Lateral has a high potential fossil yield class (PFYC). A paleontological resource survey was completed for the project area; no fossil localities were documented during the survey.
Hazardous Materials	X		A solid waste facility and two Resource Conservation and Recovery Act (RCRA) facilities occur near the project area.
Public Health & Safety	X		Canal breaches have the potential to impact approximately 28,788 acres of agricultural lands within the project area.
Recreation	X		The Cerro Summit State Wildlife Area is adjacent to the project area and is open to the public for hunting and fishing (CPW 2021a). The Cimarron River is within the project area and provides recreational opportunities, including fishing and swimming. The Silver Jack Reservoir Recreation Area lies upstream of the Cimarron Diversion. Current year-round recreational uses in the Silver Jack Reservoir Recreation Area include boating, camping, fishing, picnicking, hiking, and wildlife viewing.
Land Use	X		Portions of the project area are on BLM, Reclamation, and USFS lands.
Visual Resources & Scenic Beauty	X		The project area contains residential, agricultural, and transportation infrastructure. The surrounding landscape is natural hills with sagebrush, forested areas, grazing pasture and allotments, and farmlands.
Parklands, National Parks, Monuments, & Historical Sites	X		The Black Canyon of the Gunnison National Park boundary is approximately 0.9 miles north of the project area. Flows from the West Lateral feed into the National Park via Red Rock Creek. No national monuments or historical sites are in or immediately near the project area based on the National Natural Landmarks Map (NPS 2021).
Transportation & Infrastructure	X		Existing infrastructure in the project area includes linear transportation facilities, irrigation features, and residential structures. Irrigation infrastructure includes the Cimarron Canal, Vernal Mesa Canal, East and West Laterals, and M&D Canal.
Noise	X		The project area contains sensitive noise receptors including residential areas. Additionally, wildlife that is sensitive to noise occur in the project area.
Scientific Resources	X		The Cimarron River contains high quality aquatic habitat and supports several species of native fish. Maintaining

Concern	Relevant to the Proposed Project?		Rationale
	Yes	No	
			year-round flows and adequate temperatures within the Cimarron River has been an ongoing conservation concern for this water body. The project area has potential for significant geological and paleontological scientific resources.

In accordance with CEQ regulations 1500.1(b), 1500.2(b), and other sections, NRCS eliminated the following resource categories from further analysis because the Proposed Project would result in negligible or no impact to these resources. Other than the information contained in the list below and Table 2-1, this Draft Plan-EA provides no additional information for the resource issues eliminated from consideration.

- Coastal Zone Management Areas
- Sole Source Aquifer
- Special Status Plant Species
- Essential Fish Habitat
- Coral Reefs
- Invasive Species – Animals
- Natural Areas

2.1 Ecosystem Services

The following six guiding principles identify required planning criteria to accomplish the Federal Objective: 1) healthy and resilient ecosystems, 2) sustainable economic development, 3) floodplains, 4) public safety, and 5) watershed approach. A summary of ecosystem services and their relevance to the Proposed Project is provided in Table 2-2. Irrelevant resource categories have been eliminated from detailed analysis. A discussion of relevant ecosystem services is described in Section 3.7.

Table 2-2. Ecosystem Services Scoping Summary

Ecosystem Services	Relevant to Proposed Action		Rationale
	Yes	No	
Provisioning Services[1]			
Food	X		Provision of conserved water and relationship to agricultural income.
Fiber		X	Not applicable to this project, no fiber production is present.
Water	X		Project is crucial to irrigation water supply within the watershed. Impacts to water resources in the project area.
Timber		X	Not applicable to this project.
Biomass		X	Not applicable to this project.
Regulating Services[2]			
Flood and Disease Control	X		Project affects flood risk from canal breaches.
Water Filtration		X	Not applicable to this project.
Climate Stabilization	X		Project may affect future drought and climate change resiliency.

Ecosystem Services	Relevant to Proposed Action		Rationale
	Yes	No	
Crop Pollination		X	Not applicable to this project.
Cultural Services[3]			
Recreational Experiences	X		Project may affect the quality of the Cimarron River fishery.
Spiritual		X	Not applicable to this project. No spiritual values were expressed by stakeholders during scoping.
Aesthetic Viewsheds		X	Not applicable to this project.
Tribal Values	X		NHPA Section 106 consultation meets the reasonable and good-faith effort requirement of the 36 CFR 800 regulations.
Supporting Services[4]			
Nutrient Cycling		X	Not applicable to this project.
Soil Formation		X	Not applicable to this project.
Primary Production		X	Not applicable to this project.

1 Tangible goods provided for direct human use and consumption

2 Maintain world in which it is possible for people to live, providing critical benefits that buffer against environmental catastrophe

3 Make the world a place in which people want to live

4 Underlying processes maintaining conditions for life on Earth

Chapter 3 Affected Environment

The purpose of this section is to describe the resources that could be affected by the proposed alternatives. The purpose of describing the affected environment is to define the context in which the impacts could occur. The environmental analysis process has been conducted in compliance with applicable federal, state, and local regulations.

The project area is identified in the project maps contained in Appendix B. The Proposed Project elements are scattered throughout Montrose and Gunnison Counties. Table 3-1 summarizes the physical setting of the project area.

Table 3-1. Physical Setting Summary

Physical Setting Information		Information Source
Location		
The Proposed Project contains seven separate elements that are spread across Montrose and Gunnison Counties in Western Colorado. All but the temperature sensor element is in Montrose County. Both the Wells Basin and Coal Hill Proposed Project elements are situated on the Cimarron Canal. The Slide Point component is situated along the Vernal Mesa Canal, north of U.S. Hwy 50 near the Cerro Summit Reservoir. The Vernal Mesa Canal conveys water to the BPWCD system. The East and West Laterals are part of the BPWCD system and located in the Bostwick Park area, adjacent to agricultural fields. The M&D Canal is part of the UVWUA system and situated west of Highway 550 between Montrose and Vernal, Colorado. The temperature sensor is on the Cimarron River, situated in Gunnison County on USFS land associated with the GMUG National Forest.		N/A
Topography		
Wells Basin	Approximately 8,368 to 8,410 ft AMSL	Google Earth
Coal Hill	Approximately 8,236 to 8,256 ft AMSL	
Slide Point	Approximately 7,961 to 7,973 ft AMSL	
East Lateral	Approximately 6,989 to 7,223 ft AMSL	
West Lateral	Approximately 6,952 to 7,055 ft AMSL	
M&D Canal	Approximately 5,904 to 6,044 ft AMSL	
Temperature Sensor	Approximately 8,652 to 8,655 ft AMSL	
Geology		
Wells Basin	See Section 3.1	USGS 1992; Appendix C. Map 4
Coal Hill		
Slide Point		
East Lateral		
West Lateral		
M&D Canal		
Temperature Sensor		
Soil Characteristics		
Soil Type	See Section 3.1	Web Soil Survey (NRCS 2022a)
Description		

Physical Setting Information		Information Source
Land Information		
Land Ownership	Private; BLM; USFS	Appendix B. Map 1 Appendix C. Map 7
Land Use	Agricultural; Grazing; Transportation; Residential; Undeveloped	

3.1 Soils & Geology

The geology within the project area is complex and varied. The project area contains geologic units from the Cretaceous and Quaternary geologic ages, including Mancos Shale, gravels and alluviums, Mesaverde Group, undivided, and landslide deposits (Appendix C. Map 4; USGS 1992). The East Lateral roughly follows the Cimarron Fault (Appendix C. Map 5; CGS 2022a).

Soils information presented in this section has been summarized from the NRCS Web Soil Survey data (Table 3-2; NRCS 2022a). Xeribrush loam (33.3%), Xeribrush extremely stony-Signalhill (22.0%), and Cerro-Swansonlake complex (16.2%) soils are the dominant soil types in the project area. Soils maps are contained in Appendix C (Map 6).

Table 3-2. Soil Classification Summary

Soil Unit Name	Percent of Project Area (%)	Landform	Slope (%)	Erosion Hazard Rating	Maximum Salinity	Prime / Unique Farmland
770A (Xeribrush-Mudcap complex)	0.9%	Strike valleys	0-4	Slight	Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)	Farmland of statewide importance
771 (Xeribrush loam)	33.3%	Dip slopes	4-12	Slight	Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)	Farmland of statewide importance
790 (Briny clay loam)	1.0%	Drainageways	0-3	Slight	Strongly saline (30.0 to 50.0 mmhos/cm)	Not prime farmland
809 (Persayo-Briny)	6.1%	Escarpments	0-25	Moderate	Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)	Not prime farmland
830 (Xeribrush, extremely stony-Signalhill)	22.0%	Scarp slopes	8-45	Slight	Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)	Not prime farmland
841	2.6%	Complex landslides	3-25	Moderate	Nonsaline to slightly	Not prime farmland

Soil Unit Name	Percent of Project Area (%)	Landform	Slope (%)	Erosion Hazard Rating	Maximum Salinity	Prime / Unique Farmland
(Wellsbasin-Xeribrush complex)					saline (0.0 to 4.0 mmhos/cm)	
842 (Parkelei-Signalhill, very stony complex)	3.8%	Drainageways	3-15	Slight	Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)	Not prime farmland
896 (Barboncito, extremely flaggy-Badland complex)	2.9%	Escarpments	15-65	Moderate	Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)	Not prime farmland
912 (Frisco, very stony-Rock outcrop-Silverjack complex)	0.1%	Complex landslides	30-60	Slight	Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)	Not prime farmland
919 (Beachcanyon, extremely boulder-Gothic-Woodhall, rubbly complex)	0.8%	Complex landslides	10-50	Slight	Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)	Not prime farmland
928 (Cerro-Swansonlake complex)	16.2%	Complex landslides	1-45	Moderate	Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)	Not prime farmland
941 (Cerro, extremely stony-Shermap-Curecanti complex)	3.7%	Complex landslides	3-25	Slight	Nonsaline (0.0 to 1.0 mmhos/cm)	Not prime farmland
967 (Cerro, very stony-Curecanti, extremely stony complex)	3.0%	Complex landslides	3-35	Moderate	Nonsaline (0.0 to 1.0 mmhos/cm)	Not prime farmland
987 (Cerro-Curecanti, extremely stony complex)	3.6%	Mountain slopes	15-60	Moderate	Nonsaline (0.0 to 1.0 mmhos/cm)	Not prime farmland
989 (Mudcap loam)	0.0%	Stream terraces	1-6	Slight	Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)	Farmland of statewide importance

3.1.1 Upland Erosion & Sedimentation

Canal Breaching

The Colorado Geological Survey (CGS) Statewide Landslide Inventory Map illustrates past landslides in the project area (Appendix C. Map 7; CGS 2022a). An unstable hillside is present above the M&D Canal approximately 4 miles from the diversion. Potential sloughing of the hillside threatens to block, overtop, and breach the M&D Canal. The hillside's instability is caused by seepage from other canals and irrigation above the canal, as well as the steep slope of the hillside.

Two discrete sections of the Cimarron Canal, Wells Basin and Coal Hill, have notable breach potential due to a relatively higher risk of landslides along their lengths. A breach at either location would inhibit irrigation deliveries to the 8,439 acres of grass pasture within the Bostwick Park, Shinn Park, Kinikin Heights, and Waterdog Mesa areas.

A portion of Vernal Mesa Canal, known as Slide Point, breached in the 1960s and caused significant damage to U.S. Hwy 50. A 48-inch steel pipe was installed to mitigate seepage issues that are believed to contribute toward a potential slide. No slides have occurred since, indicating the efficacy of the remediation. In recent years, however, new seeps have been observed just upstream of the existing piped section. Degradation of the existing steel pipe has also been observed, furthering concern of a breach risk. A breach of the Vernal Mesa Canal would inhibit irrigation of the 3,411 acres of grass pasture in Bostwick Park.

Salinity and Selenium Contributions to the Greater Colorado River Basin

The Uncompahgre and Gunnison River basins, including the project area, is underlain by Mancos Shale, which contains elevated levels of readily soluble selenium. Soils in the project area are also naturally saline (see Table 3-2). Section 3.2.1 discusses salinity and selenium loading in the Colorado River Basin in more detail.

Erosion and Sedimentation from Project Activities

A Colorado Discharge Permit System (CDPS)General Permit, and associated Stormwater Management Plan (SWMP) and Spill Prevention, Control and Countermeasure (SPCC) Plan, administered by the Colorado Department of Public Health and Environment (CDPHE), are required for construction activities that disturb more than one acre.

3.1.2 Prime & Unique Farmland

The Federal Farmland Protection Policy Act (FPPA) [Subtitled I of Title XV, Section 1539-1549 of the Agricultural and Food Act of 1981 (PL 97-98)] requires federal agencies to "minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to assure that federal programs are administered in a manner that to the extent practicable, will be compatible with state, unit of local government, and private programs and policies to protect farmland." Under FPPA, farmland can be designated prime farmland, unique farmland, and land of statewide or local importance (see Table 3-3).

Table 3-3. Farmland Designation Definitions

Term	Definition
Prime farmland	Land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses

Farmland of unique importance	Land other than prime farmland that is used for specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables
Farmland of statewide or local importance	Land that does not meet the requirements for prime or unique farmland can be designated as farmland of statewide or local importance by State or local agencies

Source: 7 CFR 657 and NRCS 2022b

The USDA NRCS Web Soil Survey was used to identify soils and farmland designations in the project area. The project area contains a variety of soil types, including soils that are considered farmland of statewide importance (Table 3-2, NRCS 2022a). Approximately 34.2% of the soils in the project area, specifically lands along the Coal Hill (0.02 acres), East Lateral (16.5 acres), and West Lateral (39.3 acres) are considered farmland of statewide importance. The canal infrastructure involved in this Proposed Project is used to convey irrigation water to numerous agricultural fields throughout the project area. Active farmlands that are designated farmland of statewide importance are located adjacent to the East and West Laterals.

3.2 Water Resources

Southwestern Colorado is hydrologically within the Upper Colorado Region, which is categorized into sub-regions, accounting units (e.g., basins), cataloguing units (e.g., sub-basins), watersheds, and subwatersheds (USGS 2020a). As defined by the USGS Watershed Boundary Dataset (WBD), the Proposed Project is situated in the Gunnison Sub-Region, more specifically the Gunnison Basin (USGS 2021). Montrose and Gunnison Counties fall within the boundaries of Uncompahgre Subbasin (HUC 14020006) and the Upper Gunnison Subbasin (HUC 14020002). The project area is located within the eleven 6th order watersheds in the Cimarron River-Lower Uncompahgre Watershed (247,616 acres) (Figure 1-1 and Appendix B).

3.2.1 Surface & Groundwater Quantity & Quality

The primary source of hydrology for the Cimarron Canal and Vernal Mesa Canal is the Cimarron River, while the Uncompahgre River feeds the M&D Canal. Other inputs to the canals are from stormwater and irrigation return.

3.2.1.1 *Surface & Groundwater Quantity*

Water Quantity

The Cimarron and Uncompahgre Rivers and their tributaries are natural drainages in the project area. The headwaters of the Cimarron and Uncompahgre Rivers is in the San Juan Mountains of the Uncompahgre Wilderness in Colorado. Generally, the Cimarron River flows north, through the Silver Jack Reservoir, until its confluence with the Gunnison River in the Black Canyon of the Gunnison National Park. The Uncompahgre River flows north, through the Ridgway Reservoir until its confluence with the Gunnison River near Delta, Colorado (EPA 2017a).

The Cimarron River, East Lateral, West Lateral, M&D Canal, Cimarron Canal, and Vernal Mesa Canal are the main waterbodies in the project area. Water supplies in the Cimarron River drainage are generally abundant from the start of the irrigation season until the middle of the irrigation season, at which time the supplies are severely reduced. The BPWCD was formed with the intention of supplying supplemental irrigation water to the Bostwick Park area. Irrigation generally begins around the first of May and continues until early September. The main crops present within the Cimarron River drainage are alfalfa, grass hay, small grains, and pasture that supports the

local beef and sheep industry. Presently, the canals in the project area lose approximately 2,698 ac-ft of water annually to seepage and evaporation (Appendix E. Water Loss Memorandum). The East and West Laterals and M&D Canal are within an alluvial aquifer MAR potential area and a sedimentary bedrock MAR potential area (CGS 2021). According to the CGS, MAR is "the process of enhancing recharge of groundwater to an aquifer. It may be implemented for a variety of objectives and through many methods depending on objectives and aquifer characteristics" (CGS 2022b). A report by USGS and BLM in Eastern Utah and Western Colorado demonstrates that seepage influences groundwater recharge (Masbruch and Shope 2014).

Based on the USGS and BLM report, canal seepage likely contributes to groundwater recharge in the project area through deep percolation. However, the extent to which seepage influences groundwater recharge is unknown because there is no historical data available on volumes and sources of groundwater recharge or movement in the project area.

State and Regional Water Supply Plans Consistency

The Interbasin Compact Committee (IBCC), part of the CWCB, is responsible for supporting and furthering the goals of state and regional water supply plans to assist in reducing the State's water supply gaps. These goals are outlined in the CWCB's eight BIPs. The project area is located within the Gunnison Basin, also called the Lower Gunnison River Basin. The goals of the Gunnison BIP are centered around protecting existing water uses, addressing the water supply gaps, improving water quality while maintaining critical infrastructure, encouraging water uses to work together, and continuing to provide public education on important water issues (CDNR-CWCB 2022). The specific goals of the Gunnison BIP are stated in Section 3.2.4.

3.2.1.2 *Surface & Groundwater Quality*

Elevated Salt and Selenium Levels Contributing to Impaired Waters and Consequent Total Maximum Daily Load (TMDL)

Numerous waterbodies on, or adjacent to, the project area are listed on the State's 303(d) list of selenium impaired water courses. In 2011, a TMDL was approved for excess levels of selenium in the Gunnison and Uncompahgre Rivers and their tributaries (CDPHE 2011). The mainstem of Red Rock Creek from the boundary of Black Canyon of the Gunnison National Park to the confluence of the Gunnison River was included in the 2011 TMDL. Elevated levels of selenium in the Uncompahgre and Gunnison basins, including the project area, are thought to be from numerous sources. The area is underlain by Mancos Shale, which contains elevated levels of readily soluble selenium, and is impacted by agricultural and urban development runoff and nearby sand and gravel operations, which contribute to the mobilization and transport of excess selenium from soils to surface water. Seepage from the canals in the project area also contribute to high selenium loads into the Colorado River Basin. The water quality goals of the 2011 TMDL are attainment of the Aquatic Life Use and Agricultural and Water Supply Use classifications in the listed stream segments. The TMDL estimates that the total selenium load would need to be reduced by approximately 2,279 pounds per year (or 69%) from the Uncompahgre River Basin to attain the Aquatic Life Use classification (CDPHE 2011). Tributaries of this area would need to reduce their selenium load by 90% to meet the same classification (CDPHE 2011).

In addition to readily soluble selenium, soils in the project area are naturally saline (see Table 3-2). Salinity naturally occurs in water from the weathering and dissolution of minerals in soil and rock (USGS 2018). Similar salt transport processes occur in areas with irrigated agriculture. According to the USGS, areas with irrigated agriculture produce double the salinity yield

compared to areas without irrigated agriculture. Other factors that influence salinity loads in streams include geology, land cover, land-use practices, and precipitation (USGS 2018). Seepage from the canals in the project area also contribute approximately 2,247 tons of salt annually into the Colorado River Basin. The salinity contribution of the project components on the Cimarron Canal were not included in the salt loading, as the Reclamation Colorado River Basin Salinity Control Program has not formally calculated the annual salinity loading for the Cimarron Canal. However, the USGS maintains water quality for Cimarron Creek, formerly Squaw Creek, which indicates that the Cimarron Canal contributes salinity to Cimarron Creek. Therefore, it can be expected that seepage from the Cimarron Canal also contributes to salt loading in the project area.

The Colorado River and its tributaries provide municipal and industrial water to approximately 35 to 40 million people and irrigation water to nearly 4.5 million acres of land in the United States. The river also serves about 3.3 million people and 500,000 acres in Mexico. The effects of salinity loading in the Colorado River Basin is a major concern in both the United States and Mexico (Reclamation 2017a). Salinity impacts water quality, which in turn affects downstream users by threatening the productivity of crops, degrading wildlife habitat, and corroding residential and municipal plumbing. From 2005 to 2015, an approximate average of 7.5 million tons of salt flowed into the Colorado River annually, and by the year 2035, 1.68 million tons of salt per year will need to be diverted from the system to meet water quality standards in the Lower Basin (Reclamation 2017a). Irrigated agriculture contributes approximately 37% of the salinity in the overall Colorado River Basin (Reclamation 2017a).

***E. coli* Levels in the West Lateral**

Tailwaters from the West Lateral flow into Red Rock Creek, which connects with the Gunnison River at the boundary of the Black Canyon of the Gunnison National Park. Water quality data from the NPS indicates that the *E. coli* levels in Red Rock Creek, where West Lateral flows into Red Rock Canyon near the NPS boundary, are greater during the irrigation season, as compared to the spring or fall months (N. Gibney, personal communication, July 8 2021). The elevated levels of *E. coli* in Red Rock Creek are likely attributed to livestock waste entering and contaminating the tailwater of West Lateral.

3.2.2 Clean Water Act/Waters of the U.S., including Wetlands

The Clean Water Act (CWA) establishes the framework for regulating discharges of pollutants into waters of the United States (WOTUS), which can include wetlands, and regulating quality standards for surface waters (EPA 2022b). An Aquatic Resource Delineation (ARD) was conducted on June 14 and 15, 2021 by J-U-B for the Proposed Project to assess and delineate the aquatic resources in the project area (Appendix E. Aquatic Resource Delineation). The ARD was prepared in accordance with the 1987 USACE *Wetland Delineation Manual and the Arid West Region Supplement* (Version 2.0). The project area was assessed based on topography, presence or absence of dominant hydrophytic vegetation, and/or surface hydrology. Where vegetation indicated any potential for hydric soils, soil pit sampling was conducted, and the results were documented in accordance with the USACE *Arid West Region Supplement*.

The USFWS National Wetlands Inventory (NWI) was referenced as part of the ARD (USFWS 2021). The NWI data indicates that the project area could contain a combination of riparian (R4SBCx; R2UBFx; R3UBFx; R5UBFx; R3UBH), freshwater pond (PABFh), freshwater emergent

(PEM1C; PEM1F; PEM1B), and freshwater forested/shrub wetland habitat along the alignment of the canals and Cimarron River.

Portions of 12 wetlands (totaling 5.69 acres) were delineated within and near the project area (Tables 3-4). Of the 5.69 acres of mapped wetlands, a total of 0.05 acres occurs within the project area, none of which are jurisdictional (Table 3-4). The wetlands within the project area occur downslope of the M&D Canal and the Cimarron Canal. Based on topography and landscape position, all 12 wetlands rely, to some degree, upon canal seepage for hydrology. USACE allows only 0.10 acres of jurisdictional wetlands to be disturbed before mitigation is required.

Table 3-4. Delineated Wetlands in the Project Area

Feature ID	Mapped Acreage#	Acres in Project Area	Length (miles)	Classification (Cowardin)	Project Area Portion	Jurisdictional?
Wetland 1	1.62	0.01	NA	PEM1	M&D Canal	No
Wetland 2	1.71	0	NA	PEM1	M&D Canal	Yes
Wetland 3	0.16	0	NA	PEM1	M&D Canal	Yes
Wetland 4	0.05	0	NA	PEM1	M&D Canal	No
Wetland 5	0.08	0	NA	PEM1	M&D Canal	No
Wetland 6	0.67	0	NA	PEM1	M&D Canal	No
Wetland 7	0.60	0	NA	PEM1	Slide Point	Yes
Wetland 8	0.11	0	NA	PEM1	Slide Point	No
Wetland 9	0.47	0	NA	PEM1	Slide Point	Yes
Wetland 10	0.11	0	NA	PEM1	Wells Basin	No
Wetland 11	0.08	0.03	NA	PEM1	Wells Basin	No
Wetland 12	0.03	0.01	NA	PEM1	Wells Basin	No
Total Wetlands	**5.69 acres**	**0.05 acres**				

#Sum differs due to rounding

Five canals, one creek, and one river totaling 25.83 acres of linear features were delineated in the project area (Table 3-5). Under the 2020 EPA and USACE Joint Memo Ditch Exemption, most irrigation ditches are considered WOTUS and are under the jurisdiction of the CWA. Surface hydrology associated with canals and Cimarron River was observed in the project area, as field surveys were conducted during the irrigation season. The ARD concluded that the Cimarron River, Happy Canyon Creek, West Lateral, Vernal Mesa Canal, and Cimarron Canal represent jurisdictional WOTUS within the project area (Appendix E). In 2021, the USACE issued Regional General Permit (RGP) 5 for Ditch Related Activities in the State of Colorado. Coordination with USACE is ongoing (Appendix A).

Table 3-5. Delineated Waters in the Project Area

Feature ID	Mapped Acreage[1]	Acres in Project Area	Length (miles)	Classification (Cowardin)	Project Area Portion	Jurisdictional?
M&D Canal	14.51	14.51	3.26	Intermittent	M&D Canal	No
East Lateral	2.32	2.32	4.26	Intermittent	East Lateral	No
West Lateral	1.15	1.15	3.99	Intermittent	West Lateral	Yes
Vernal Mesa Canal	1.10	1.10	1.10	Intermittent	Slide Point	Yes
Cimarron Canal	6.31	6.31	2.80	Intermittent	Coal Hill/Wells Basin	Yes
Cimarron River[2]	0.45	0.45	0.08	Perennial	Diversion/Temp. loggers	Yes
Happy Canyon Creek	0.01	0.01	0.02	Intermittent	M&D Canal	Yes
Total Streams	**25.83**	**25.83**	**15.50 miles**			

[1] Sum differs due to rounding
[2] Includes areas that were removed from the project area

3.2.3 Wetlands

E.O. 11990 directs Federal agencies to ensure the consideration of wetlands protection in decision making and to ensure the evaluation of the potential impacts of any new construction proposed in a wetland. Table 3-4 above identifies the wetlands delineated within and near the project area.

The emergent wetland locations in the project area are dominated by herbaceous vegetation communities and have a temporary flooded water regime (i.e., seepage from canals during irrigation season), but some wetlands were bordered by shrub/forest communities and had a few shrubs and trees within the wetland boundary. The wetlands appear to be in good condition, though some wetlands show mild human disturbance, while others show evidence of grazing. The identified wetlands occurred downslope of the M&D Canal and the Cimarron Canal. Given the topographic location of the wetlands, the wetlands can be assumed to be seepage-induced and connected to the hydrology of the canals; however, no groundwater studies have been conducted in the project area.

3.2.4 Regional Water Management Plans

The Colorado Department of Natural Resources (CDNR) is responsible for comprehensive water planning in Colorado. The project area is managed under the 2023 Colorado Water Plan, which provides a statewide framework for solving the State's water challenges (CDNR-CWCB 2023).

As part of the development of the Colorado Water Plan, eight basin roundtables were held which resulted in the creation of eight individualized BIPs. The Gunnison BIP goals are consistent with the Colorado Water Plan (see Table 3-6; CDNR-CWCB 2023).

Table 3-6. Goals of the Gunnison Basin Implementation Plan

Goal Number	Description
1	Protect existing water uses in the Gunnison Basin.
2	Discourage the conversion of productive agricultural land to all other uses within the context of private property rights.
3	Improve agricultural water supplies to reduce shortages.
4	Identify and address municipal and industrial water shortages.
5	Quantify and protect environmental and recreational uses.
6	Maintain or, where necessary, improve water quality throughout the Gunnison Basin.
7	Describe and encourage relationships among agricultural and environmental recreational water uses.
8	Restore, maintain, and modernize critical water infrastructure.
9	Create and maintain active, relevant, and comprehensive public education, outreach, and stewardship processes involving water resources in the six sectors of the Gunnison Basin.

While there are nine goals, “Protecting existing water uses is the unwavering goal and main challenge in the Gunnison Basin” (CDNR-CWCB 2023). The CWCB incorporated the regional values and strategies presented in the BIPs into the Colorado Water Plan (CDNR-CWCB 2021).

3.2.5 Floodplain Management

Landslides, seepage, and lack of water surface control in the UVWUA and BPWCD systems result in flooding, overtopping, and breaching of canals that damage canal infrastructure and adjacent agricultural fields.

E.O. 11988 requires federal agencies to avoid long and short-term adverse effects associated with the occupancy and modification of floodplains and to avoid floodplain development. Floodplains are “lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a 1% or greater chance of flooding in any given year” (E.O. 11988 Section 6(c)). The Federal Emergency Management Agency (FEMA) is responsible for identifying and categorizing flood hazard areas throughout the country. Often flood hazard areas are discussed in relation to special flood hazard areas (SFHA), which have a 1% annual chance of flood. The 1% annual chance of flood is also known as the base flood, or 100-year flood. Activities in the 100-year floodplain can threaten human safety and property, if not properly mitigated.

FEMA develops Flood Insurance Rate Maps (FIRMs) that illustrate the various flood hazard areas in a location. Areas that have a 0.2% annual chance of flooding are referred to as the 500-year flood. Moderate flood hazard areas are the areas between the 100-year floodplain boundary and the 500-year floodplain boundary. If an area is outside of the 100-year flood and above the 500-year flood elevation there is a minimal flood hazard risk.

The FEMA FIRM Panels for the project area indicate that most of the project area is in Zone X (area of minimal flood hazard), while portions are situated in Zone A (100-year floodplain) (Appendix C. Map 8; FEMA 2012; FEMA 2013). The Cimarron River near the project area is designated Flood Zone A (1% annual chance of flood). The temperature sensor site would occur in an area that is not currently mapped by FEMA; however, it can be assumed that this is area is within the 100-year floodplain due to the location of the temperature sensor within the Cimarron

River. As shown on FEMA FIRM Panel 08085C0767D, a small portion of the toe of the embankment on the east side of M&D Canal occurs within Flood Zone A.

3.2.6 Wild and Scenic Rivers

The National and Wild Scenic Rivers Act was designed to preserve rivers designated as having outstanding natural, cultural, and recreational values. The three designations that rivers can receive are outlined in Table 3-7.

Table 3-7. Wild and Scenic River Designations

Designation	Description
Wild River Areas	Rivers or sections of rivers that are free from impoundments, tend to be relatively inaccessible except by trail, and are generally unpolluted waters with primitive watershed and shorelines.
Scenic River Areas	Rivers or sections of rivers that are free from impoundments and undeveloped shorelines but are considered relatively accessible.
Recreational River Areas	Rivers or sections of rivers that are readily accessible, have development along the shorelines, and have some impoundments or have diversions.

Source: American Rivers 2023

As part of the National Wild and Scenic Rivers Act, NRI listed river segments must also be considered when determining potentially adverse effects under NEPA, and avoidance or mitigation must occur (NPS 2022). Although there are no wild and scenic rivers within the project area, the Gunnison River is listed on the NRI for outstandingly remarkable scenic, geologic, and other values. Tailwaters from the West Lateral flow into Red Rock Creek, which connects with the Gunnison River at the boundary of the Black Canyon of the Gunnison National Park. Water quality data from the NPS indicates that the *E. coli* levels in Red Rock Creek are greater during the irrigation season, as compared to the spring or fall months (N. Gibney, personal communication, July 8 2021). The elevated levels of *E. coli* in Red Rock Creek are likely attributed to livestock waste entering and contaminating the tailwater of West Lateral.

3.3 Air Quality

3.3.1 Clean Air Act/National Ambient Air Quality Standards

Pursuant to requirements of the Clean Air Act (CAA; 42 U.S.C. 7401 et. seq.), the EPA has established health-based National Ambient Air Quality Standards (NAAQS) for six criteria pollutants considered harmful to human health and the environment. Criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), sulfur dioxide (SO_2), and lead (Pb). Both Montrose and Gunnison Counties are in attainment for all criteria pollutants (EPA 2021b). Monitoring NAAQS in Colorado is delegated to the CDPHE. The CDPHE has an ambient air monitoring network consisting of 44 air monitors across the state (CDPHE-CAPCD 2019). The three closest air monitors are in Grand Junction, Mesa County. One monitoring station is equipped with sensors for monitoring particulate matter, another station measures ozone and meteorological conditions, and the third station solely monitors meteorologic conditions.

3.3.2 Climate Change & Greenhouse Gases

Data regarding greenhouse gases (GHGs), regulations, and emissions sources are summarized on the EPA's website (EPA 2017). GHGs are introduced into the atmosphere by a variety of

sources, including production of electricity, private and commercial transportation, oil and gas production, commercial and residential practices, and agriculture.

As part of CDPHE's 2019 Climate Change Program, the Colorado Energy Office developed the Greenhouse Gas Pollution Reduction Roadmap to guide future GHG policies and regulations in Colorado (CDPHE 2023). The Greenhouse Gas Pollution Reduction Roadmap has a target reduction of 26% by 2025 and a reduction of 50% by 2030 (CEO 2023).

3.4 Plants

According to the EPA, the project area is contained in three ecoregions: Colorado Plateau Shale Deserts and Sedimentary Basins, Colorado Plateau Semiarid Benchlands and Canyonlands, and Southern Rockies Sedimentary Mid-Elevation Forests. Table 3-8 identifies the ecoregion which coincides with each project component, as well as the common characteristics of the ecoregion.

Table 3-8. Ecoregions in the Project Area

Ecoregion	Ecoregion Characteristics	Project Component
Colorado Plateau Shale Deserts and Sedimentary Basins	Rock outcrops are common, and the natural landscape is sparsely vegetated with mat saltbush (*Atriplex 39orrugate*), bud sagebrush (*Picrothamnus desertorum*), galleta grass (*Pleuraphis jamesii*), and desert trumpet (*Eriogonum inflatum*).	East Lateral, West Lateral, and M&D Canal
Colorado Plateau Semiarid Benchlands and Canyonlands	Characterized by broad, grass-, shrub-, and woodland-covered benches. Dominant species include rubber rabbitbrush, big sagebrush, Woods' rose, Western serviceberry, and Gambel oak.	Coal Hill and Slide Point
Southern Rockies Sedimentary Mid-Elevation Forests	Natural vegetation in this ecoregion includes aspen (*Populus* sp.), ponderosa pine (*Pinus ponderosa*), Douglas-fir (*Pseudotsuga menziesii*), and areas of lodgepole pine (*Pinus contorta*) and limber pine (*Pinus flexilis*). A diverse understory of shrubs, grasses, and wildflowers occurs within lower elevation Gambel oak woodlands in this region.	Wells Basin and Temperature Sensor

Source: EPA 2021c

During the June 2021 site visit, dominant plant species were identified throughout the project area (Table 3-9).

Table 3-9. List of Dominant Vegetation Observed in the Project Area

Common Name	Scientific Name	Coal Hill	West Lateral	East Lateral	M&D Canal	Slide Point	Temp Sensor	Wells Basin
Alfalfa	*Medicago sativa*		X	X	X	X		
Big sagebrush	*Artemisia tridentata*	X	X		X	X	X	X
Canada thistle*	*Cirsium arvense*	X				X	X	X
Cheatgrass*	*Bromus tectorum*				X			
Chinese clematis*	*Clematis orientalis*				X			
Colorado pinyon pine	*Pinus edulis*		X	X				
Coyote willow	*Salix exigua*	X		X	X		X	X

Common Name	Scientific Name	Coal Hill	West Lateral	East Lateral	M&D Canal	Slide Point	Temp Sensor	Wells Basin
Foxtail barley	*Hordeum jubatum*				X			
Fremont cottonwood	*Populus fremontii*				X			
Gambel oak	*Quercus gambelii*	X				X	X	X
Greasewood	*Sarcobatus vermiculatus*				X			
Houndstongue*	*Cynoglossum officinale*	X			X		X	X
Skunkbush sumac	*Rhus trilobata*					X		
Narrowleaf cottonwood	*Populus angustifolia*				X			
Reed canarygrass*	*Phalaris arundinacea*	X	X	X	X	X	X	X
Roundleaf snowberry	*Symphoricarpos rotundifolius*	X				X	X	X
Rubber rabbitbrush	*Ericameria nauseosa*	X		X		X	X	X
Russian knapweed*	*Acroptilon repens*				X			
Russian olive*	*Elaeagnus angustifolia*				X			
Sack saltbush	*Atriplex saccaria*				X			
Scouring rush	*Equisetum hyemale*	X			X	X	X	X
Showy milkweed	*Asclepias speciosa*	X			X		X	X
Spotted knapweed*	*Centaurea stoebe*				X			
Utah juniper	*Juniperus osteosperma*		X	X				
Western serviceberry	*Amelanchier alnifolia*	X				X	X	X
Whitetop*	*Lepidium draba*	X	X	X	X	X	X	X
Wood's rose	*Rosa woodsii*	X			X	X	X	X

**Note: Noxious weed species. See Table 3-10 below for legal designation.*

3.4.1 Forest Resources

Approximately 0.1 acres of USFS land occurs within the project area, where a temperature sensor and associated electrical enclosure would be located. The sensor would be located on an existing bridge abutment and the steel cabinet electrical enclosure would either be placed on the existing bridge or a metal post. The temperature sensor and electrical enclosure would not require tree removal. The GMUG National Forest Land and Resource Management Plan (RMP) water management goals are to manage surface use to maintain federal, state, and local water quality standards, increase water supply, and protect water quality in streams, lakes, riparian areas, and

other water bodies (USDA Forest Service 1991, p. III-3). Additionally, the three objectives of the Region 2 Watershed Conservation Practices Handbook are to protect hydrologic function, soil quality, and aquatic systems.

3.4.2 Noxious Weeds & Invasive Species

E.O. 13112 states that a federal agency shall "not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species." Noxious weeds and invasive plants are non-native species whose introduction does or is likely to cause economic or environmental harm or harm to human health. Colorado has designated 79 plant species as noxious under the Colorado Noxious Weed Act (Colorado Revised Statutes [CRS] 35-5.5). The species on the Colorado Department of Agriculture's (CDA) Weed List fall into three categories that relate to their level of infestation within the state. List A have been targeted for eradication. List B species are those species that are established and therefore have state noxious weed management plans implemented to manage the continued spread of the species. List C species are those for which the state supports local government's management on private and public lands (Montrose County 2011).

Both Montrose and Gunnison Counties have developed Weed Management Plans (Montrose County 2011; Gunnison County 2013). The project area contained six List B noxious weeds and one List C species (Table 3-10). Another species that is generally considered invasive, but has no legal designation is reed canarygrass (*Phalaris arundinacea*). The canal prisms throughout the project area are actively maintained via spraying to keep vegetation growth at a minimum.

Table 3-10. Noxious Weeds Present in Project Area

Common Name	Scientific Name	Legal Designation
Canada thistle	*Cirsium arvense*	List B
Cheatgrass	*Bromus tectorum*	List C
Chinese clematis	*Clematis orientalis*	List B
Houndstongue	*Cynoglossum officinale*	List B
Reed canarygrass	*Phalaris arundinacea*	No legal designation
Russian knapweed	*Acroptilon repens*	List B
Russian olive	*Elaeagnus angustifolia*	List B
Spotted knapweed	*Centaurea stoebe*	List B
Whitetop	*Lepidium draba*	List B

3.4.3 Riparian Areas & Ecologically Critical Areas

Wetlands and other riparian areas are managed by a multi-agency approach in Colorado. To assist in the management, protection, and regulation of these areas, the Wetland Program Plan (WPP) was developed by the Colorado Natural Heritage Program (CNHP) . Riparian areas are adjacent to water bodies and are a transitional zone between wet conditions and dry upland conditions. Riparian plant communities are distinct from upland plant communities due to the improved soil conditions and increased water availability. Riparian plant communities play an important role in bank stabilization, flood water dispersion, maintaining groundwater levels, trapping sediment, and maintaining biological diversity.

Approximately 82 acres of riparian habitat with varying quality exists within the project area. The hydrophytic vegetation along the canals is supported by the presence of the irrigation water during the growing season and some surface flows during spring runoff and rain events. The open,

unlined canals have an average of 50 feet of seepage-induced riparian vegetation established across the width of their prism for the entire length. Habitat along the canal edges exhibited both native and non-native understory species, like scouring rush (*Equisetum hyemale*), showy milkweed (*Asclepias speciosa*), reed canarygrass, whitetop, and shrub species including big sagebrush, Russian olive, and coyote willow. Both Fremont's cottonwood and narrowleaf cottonwood characterized an overstory layer along portions of the M&D Canal alignment. Overall, riparian habitat within the project area lacks diversity and complexity in structure.

3.5 Animals

3.5.1 Wildlife & Wildlife Habitat

Given the agricultural land uses within the project area, wildlife species in the vicinity include a range of native and non-native migratory birds, resident birds, small mammals, deer, and reptiles. Conditions within the Proposed Project's elements varied in elevation and general habitat type. The canal prisms throughout the project area are actively maintained via spraying to keep vegetation growth at a minimum.

Both the Wells Basin and Coal Hill elements are in a high elevation, subalpine mountain environment. Noxious weeds were common at both sites. Both areas have been heavily grazed by cattle, and are also currently grazed by horses, which were observed during site surveys.

The Vernal Mesa Canal at Slide Point is in an upland area above Montrose Valley. The area is characterized by upland vegetation. Some noxious species were present throughout the Proposed Project alignment. Mule deer were observed moving along the hillsides above Slide Point. Overall, habitat is dry, open, and upland on both sides of the canal.

The East and West Laterals extend through a relatively flat agricultural area, outside of the community of Montrose. The West Lateral is bordered by agricultural fields, and active cattle grazing was observed near the lateral during surveys. Prairie dogs were abundant at the West Lateral element.

The M&D Canal runs among lowlands within the community of Montrose and is bordered by agricultural fields along the southern half of its alignment. Banks upland and below the M&D Canal have been disturbed; infestations of noxious species were observed. One adult and four great horned owl fledglings (*Bubo virginianus*) were observed roosting in trees along the M&D Canal alignment.

A temperature sensor would be installed on USFS-land on the Cimarron River, above the Cimarron Canal Diversion. Dominant vegetation at this location is characteristic of vegetation at the Wells Basin and Coal Hill project elements.

CPW provided a comment during the scoping process in relation to wildlife and wildlife impacts in the project area. CPW manages wildlife habitat by balancing conservation and recreational activities within the state for several species. CPW also uses Herd Management Plans to maintain wildlife and wildlife habitat health. The project area is located within the Cimarron Deer Herd Management Plan (Data Analysis Unit D-40) and the Cimarron Elk Herd Management Plan (Data Analysis Unit E-35) (CPW 2022a; CPW 2022b). According to CPW, the project area supports high densities of wintering and elk and mule deer. As of 2020, approximately 6,400 mule deer occupied D-40 and approximately 7,800 elk occupied E-35 (CPW 2022a; CPW 2022b).

The entire project area is within CPW mapped overall habitat for mule deer. All project elements, except for Coal Hill, occur within the 6,344,364-acre CPW mapped general mule deer winter range. Approximately 326 acres of the project area overlaps with mule deer winter range. Of the 1,308,693-acre mapped mule deer severe winter range habitat, approximately 133 acres overlaps with the project area, which includes the M&D Canal and portions of the East Lateral.

The whole project area, except for M&D Canal, is within CPW mapped overall habitat for elk, and mapped winter range for elk, which covers approximately 356 acres of the total 16,824,806-acre range. Only the M&D Canal and the East and West Laterals overlap with the CPW mapped severe winter range for elk, spanning approximately 230 acres of the total 354,896-acre range. The habitat type within the overlapping mule deer and elk winter range areas is primarily sagebrush, and pinyon-juniper and Gambel oak woodland.

The canals involved in the project area provide a water source for big game when the water surface is high; during times of low water, big game is unable to access the canals. Riparian vegetation along the canals provides grazing habitat for big game; however, given that vegetation along the canals is heavily maintained, it is more likely that big game would graze on the vegetation supported by seeps below the canals.

The Cimarron River is not included within the project area, except for one location where a temperature sensor would be installed on an existing bridge over the river. The Cimarron River provides brown, brook and rainbow trout spawning and rearing habitat downstream of the project area. CPW has not identified records of State Species of Concern that may occur within the Cimarron River; however, the mountain sucker fish (*Catostomus platyrhynchus*) may occur within the vicinity of the project area (CNHP 2021). Two surveys conducted within the Cimarron River by the CPW Aquatic Research Station between January 1 and December 31, 2018, detected between 2 and 6 species of fish and between 193 and 249 individual fish (CPW 2019). This fishery management data indicates that the Cimarron River contains high quality aquatic habitat and supports several species of native fish. Maintaining year-round flows, adequate temperatures within the Cimarron River to support aquatic habitat connectivity and existing populations of native fish species, along with managing water diversion for irrigation purposes, has been an ongoing conservation concern for this water body (CDNR CWCB 2021).

3.5.2 Special Status Animal Species

A Biological Assessment (BA) was prepared that discussed species characteristics, habitat requirements, and potential impacts that may result to special status animal species from implementing the Proposed Project (Appendix E). Nine ESA-listed animal species, one species proposed for listing as threatened, one species proposed for listing as endangered, and one candidate species were identified by the IPaC Report as having the potential to occur within the project area (Table 3-11). Critical habitat for the Gunnison sage-grouse was identified within the project area at Slide Point and Coal Hill.

Colorado does not contain any Essential Fish Habitat as defined in the Magnuson-Stevens Act.

Table 3-11. ESA-Listed Animal Species with Potential to Occur in the Project Area

Common Name	Scientific Name	Endangered Species Act Designation	Critical Habitat in Project Area
Canada lynx	*Lynx canadensis*	Threatened	No

Common Name	Scientific Name	Endangered Species Act Designation	Critical Habitat in Project Area
Gray wolf	*Canis lupus*	Endangered	No
Tri-colored bat	*Pipistrellus subflavus*	Proposed Endangered	N/A
Gunnison sage-grouse	*Centroocercus minimus*	Threatened	Yes
Mexican spotted owl	*Strix occidentalis lucida*	Threatened	No
Yellow-billed cuckoo	*Coccyzus americanus*	Threatened	No
Monarch butterfly	*Danaus plexippus*	Candidate	N/A
Great Basin silverspot butterfly	*Speyeria nokomis nokomis*	Proposed Threatened	N/A
Bonytail	*Gila elegans*	Endangered	No
Colorado pikeminnow	*Ptychocheilus lucius*	Endangered	No
Humpback chub	*Gila cypha*	Threatened	No
Razorback sucker	*Xyrauchen texanus*	Endangered	No

The CNHP was also consulted to determine ESA-listed and state sensitive species records of occurrence in the Proposed Project's vicinity. According to CNHP occurrence data, there are three species of State Special Concern (SC) with the potential to occur in the Proposed Project vicinity (Table 3-12). The CNHP uses a standardized ranking system to track rare species and natural communities. Species and ecosystems are ranked on the Global (G), National (N), and Subnational/State/province (S) levels (CNHP 2021). The following includes information regarding each species.

Table 3-12. Protected Colorado listed Species & Species of Concern that May Occur in the Project Area

Common Name	Scientific Name	G Ranking	S Ranking	CO Status
Northern leopard frog	*Lithobates Pipiens*	G5, S3	S3	SC
American peregrine falcon	*Falco peregrinus anatum*	G4T4	S2B	SC
Mountain sucker	*Catostomus platyrhynchus*	G5	S2	SC

3.5.3 Migratory Birds/Bald & Golden Eagles

Under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712), it is considered "illegal to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nest, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations." The Bald and Golden Eagle Protection Act (BGEPA) forbids anyone from taking bald eagles, including their parts, nests, or eggs; take is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, collect, molest or disturb" (USFWS 2016).

According the USFWS IPaC database, there are 15 migratory birds and avian priority conservation species protected under the MBTA or BGEPA that may occur in the project area (Table 3-13).

Table 3-13. Protected Avian Species that May Occur in the Project Area

Common Name	Scientific Name
Bald eagle	*Haliaeetus leucocephalus*
Black rosy-finch	*Leucosticte atrata*

Common Name	Scientific Name
Black swift	*Cypseloides niger*
Brown-capped rosy-finch	*Leucosticte australis*
Cassin's finch	*Haemorhous cassinii*
Clark's nutcracker	*Nucifraga columbiana*
Evening grosbeak	*Coccothraustes vespertinus*
Grace's warbler	*Setophaga graciae*
Lesser yellowlegs	*Tringa flavipes*
Lewis's woodpecker	*Melanerpes lewis*
Long-eared owl	*Asio otus*
Olive-sided flycatcher	*Contopus cooperi*
Pinyon jay	*Gymnorhinus cyanocephalus*
Virginia's warbler	*Leiothlypis virginiae*
Western grebe	*Aechmophorus occidentalis*

Field investigations found no active nests belonging to eagles, raptors, or migratory bird species; however, the project area and the surrounding area could provide varying degrees of available nesting and foraging habitat for bird species (see BA in Appendix E). At all elements, midstory vegetation was most prominent, with sparse to zero overstory trees and forest habitat present.

3.6 Human Environment

3.6.1 Socioeconomics

The project area spans a large area, including portions of both Gunnison and Montrose Counties. Therefore, the following sections describe the current socioeconomic conditions in Gunnison and Montrose Counties, as compared to the State of Colorado. The current demographic, employment, income, and economic conditions are presented for these three areas. Gunnison and Montrose Counties are the thirtieth and seventeenth most populous counties in the State of Colorado, respectively.

3.6.1.1 *Population & Demographics*

Population and demographic estimates for Gunnison County, Montrose County, and the State of Colorado are described in Table 3-14. Percentages for gender, age, and race in Gunnison and Montrose Counties are relatively similar and consistent with percentages for the State. Overall, Caucasian individuals represent the largest portion of the population in each of the areas considered, with individuals of two or more races being the second largest.

Table 3-14. 2020 Demographic Profile Comparison

Socioeconomic Criteria		Gunnison County	Percent[1] (%)	Montrose County	Percent[1] (%)	Colorado	Percent[1] (%)
Total Population		17,119	100	42,280	100	5,684,926	100
Gender	Female	7,803	45.6	21,406	50.6	2,822,773	49.7
	Male	9,316	54.4	20,874	49.4	2,862,153	50.3
Age	Under 18	2,930	17.1	9,014	21.3	1,259,031	22.1
	18 & Over	14,189	82.9	33,266	78.7	4,425,895	77.9
Race	White	14,652	86.6	33,395	78.2	4,082,927	70.7
	Black	88	0.5	181	0.4	234,828	4.1

Socioeconomic Criteria		Gunnison County	Percent[1] (%)	Montrose County	Percent[1] (%)	Colorado	Percent[1] (%)
	American Indian	203	1.2	577	1.4	74,129	1.3
	Asian	122	0.7	338	0.8	199,827	3.5
	Pacific Islander	7	0.0	36	0.0	10,287	0.2
	Other Race	672	4.0	3,870	9.1	464,046	8.0
	Two or More Races	1,094	6.5	4,282	10.0	707,670	12.3
Ethnicity	Hispanic or Latino	1,604	9.5	9,027	21.2	1,263,390	21.9
	Not Hispanic or Latino	15,314	90.5	33,652	78.8	4,510,324	78.1

1. *Numbers may not add up to 100 due to rounding.*
Source: U.S. Census Bureau (Census) American Community Survey (ACS) 2020; 2020 Decennial Census.

The Census estimates that Gunnison and Montrose Counties have grown by approximately 11.7% and 2.4%, respectively since 2010 (using 2020 Census data). The population is anticipated to continue growing in the years to come. Past, current, and future population estimates for Gunnison County, Montrose County, Colorado, and the United States are summarized in Table 3-15.

Table 3-15. Past, Current, and Future Population

Population Year	Gunnison County	Montrose County	Colorado	U.S.
Total Population 1990	10,273[1]	24,423[1]	3,294,394[1]	248,709,873[2]
Total Population 2000	13,956[3]	33,432[3]	4,301,261[3]	281,421,906[4]
Total Population 2010	15,324[5]	41,276[5]	5,029,196[5]	308,745,538[6]
Total Population 2020[7]	17,119	42,280	5,684,926	331,449,281
Projected Population 2030	18,149[8]	48,646[8]	6,499,620[9]	355,100,000[10]

[1] *Census 1990a*
[2] *Census 1990b*
[3] *Census 2000a*
[4] *Census 2000b*
[5] *Census 2012*
[6] *Census 2013*
[7] *Census 2020a*
[8] *CDOLA 2022a*
[9] *CDOLA 2022b*
[10] *Vespa et al. 2020*

3.6.1.2 *Employment & Income*

The 2020 ACS estimate for employment and income status in Gunnison and Montrose Counties and Colorado are provided in Table 3-16. Montrose County has the highest rate of unemployment

and percentage of families below the poverty level. However, the differences are not significant (less than 5% difference).

Table 3-16. Employment and Income Status

Characteristic	Gunnison County	Montrose County	Colorado
Population 16 years and older	13,884	33,922	4,462,770
Total civilian labor force	10,123	19,415	3,064,829
Employed	9,839	18,381	2,924,726
Unemployed	284	1,034	140,103
Not in labor force	3,761	14,507	1,397,941
Percent unemployed	2.8%	5.3%	4.6%
Per Capita Income	$33,727	$30,017	$39,545
Families below poverty level[1]	4.6%	8.9%	6.1%

Source: Census ACS 2020; 2020 Decennial Census

[1] The poverty threshold for a family (2 or more people) was based on the annual statistical poverty thresholds from the Census' Current Population Reports, Series P-60 on Income and Poverty.

Approximately 4.6% and 8.9% of families in Gunnison County and Montrose County, respectively, are below the poverty level (see Table 3-16; Census 2010). Compared to the State of Colorado, the families below the poverty level in Montrose County is greater than the State at 8.9%, while the percentage of families below the poverty level in Gunnison County is less than the State at 4.6%.

Agriculture is considered the backbone of the project area, and Montrose County is known as the agricultural hub of the western slope (Montrose County 2023a). The water losses and salinity and selenium loading currently experienced in the project area impact agricultural profitability. It is estimated that water losses contribute to a loss of $144,806 in potential farm net income. Additionally, seepage in the system contribute to past canal breaches, and the potential for future canal breaches in the project area. Canal breaches have the potential to impact approximately 28,788 acres of agricultural lands within the project area. The project area experiences a total of $537,723 in overall damages from infrastructure repairs and crop yield damages (see Appendix D).

3.6.2 Cultural, Historic & Paleontological Resources

Under NEPA, federal agencies must consider the effect of federal actions upon historical, archaeological, and paleontological resources. In addition, Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider the effects of their undertakings on historic properties. NHPA defines a historic property as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP)…" (36 CFR 800.16). Pursuant to Section 106 of the NRHP, the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Office (SHPO), and/or Tribal Historic Preservation Office (THPO), tribes with historic ties to the Area of Potential Effect (APE), and local government(s) must be consulted to determine whether the Proposed Project could have an adverse effect on NRHP listed and eligible properties.

The Project's 465.6 acres APE was established in consultation with consulting parties and encompasses all aspects of the proposed Project including staging areas. The ACHP defines the APE as "the geographic area or areas within which an undertaking may directly or indirectly cause

alterations in the character or use of historic properties, if any such properties exist" (36 CFR 800.16(d)). The APE encompasses a 200-400 ft. wide corridor centered on the ditches proposed to be altered by the project. Construction will primarily be within an 80-100 ft corridor centered on the ditches. The APE width varies based on the proposed construction corridor and the entire project's property access along the construction corridor. Nineteen staging areas will be utilized. Project access is along existing, developed roads. Refer to figures XX for a map of the APE.

Alpine Archaeological Consultants, Inc. (Alpine) conducted a Class I literature review in August of 2021 and Class III Cultural Resource Survey of the APE between August 16 and September 8, 2021. Results of the literature review and survey are documented in their report, *A Class III Cultural Resource Inventory of the Bostwick Park Water Conservancy District in Montrose and Gunnison Counties, Colorado* of the APE in December of 2021. During the literature review, Alpine researched the Colorado Office of Archaeology and Historic Preservation's cultural resources database for the APE and a ½ buffer of the APE. Numerous small surveys had been conducted for the NRCS and ditch improvements within the literature review area. Fifty-eight sites and twenty-one isolated finds had been documented within the literature review area. Eight previously recorded resources intersect the APE including the Montrose & Delta Canal (5MN.1855), an Open Camp (5MN. 3180), Cimarron Canal segment (5MN.4808.1), Heath Ranch Centennial Farm (5MN.9608), East Lateral of the Vernal Mesa Ditch (5MN.10323.1), and a transmission line (5MN.12106). Alpine notes a low density of prehistoric resources across the APE with only two known sites within the APE. Historic resources occur more frequently and increase near the City of Montrose. Alpine also reviewed General Land Office plats for historic features. A variety of historic features were noted within the APE including named and unnamed roads, the Denver and Rio Grande Railroad, a cabin, telephone line, and segments of the Cimarron Ditch.

Alpine surveyed the APE with parallel pedestrian transects spaced no more than 15 m apart. Archaeologists examined both the ground and cut banks for historic properties. When cultural resources were identified, archaeologists intensively examined the area to determine if it was a site or an IF-defined as 10 or fewer artifacts representing a one-time use of the area. All cultural resources were documented on Colorado Cultural Resource Survey Forms. Locational data was recorded with GPS instruments and digital photographs were taken. No artifacts were collected during the project.

Three sites were not relocated or reevaluated during the survey. Lithic Scatter 5MN.3180 may have been mis-plotted when initially recorded in 1980. Site 5MN.9608 is a Centennial Farm that intersected the edge of the APE. Permission to access the property was not obtained, nor will the project impact the property's structures or overall design. Lastly, 5MN.10323.1 is a segment of the East Lateral Ditch recorded by Alpine in 2013 that has been subsequently infilled and piped.

The survey identified seventeen sites or linear site segments and four isolated finds within the APE. The recorded historic properties include seven linear lateral or canal segments, four road segments, a transmission line, two historic artifact scatters, three lithic scatters, and four Native American isolated finds. Six canal segments were determined eligible for the NRHP under Criterion A (Table 3-17). None of the other historic properties were determined eligible to the NRHP.

Table 3-17. Eligible Canal Segments in the Project Area

Site Number	Canal Segment	NRHP Eligibility Criteria*
5MN.1855.9	M&D Canal	The M&D Canal is an 1833 pioneer ditch that Reclamation incorporated into the Uncompahgre Project in 1908. The Uncompahgre Project is one of the initial large scale federal irrigation projects in the United States. It brought irrigation water to the Uncompahgre Valley through a system of canals and ditches and the 1909 Gunnison Tunnel altering the Uncompahgre Valley significantly. The M&D Canal is a maintained water control feature continuing to convey water as initially designed. It is significant as an agricultural feature and for its association to the Uncompahgre Project.
5MN.4808.5	Cimarron Canal	See 5GN.6371.1
5MN.4808.6	Cimarron Canal	See 5GN.6371.1
5MN.7708.3	Vernal Mesa Ditch	An early water conveyance system, the Vernal Mesa Ditch led to the agricultural growth of the region.
5MN.10323.2	East Lateral/Vernal Mesa Ditch	The East Lateral encompasses the entire early 1900s Vernal Mesa Ditch. It is one of the earliest Bostwick Park irrigation resources. In addition, BLM GLO land patents indicate a substantial increase in land acquisitions after the ditch's completion in 1904. Reclamation's Bostwick Park Project improved the ditch in the early 1970s, altering the design, but not the originally intended function of the resource.

SHPO concurred with the eligibility and determination of effects (Appendix A). NRCS submitted consultation letters to the Southern Ute Tribe, the Ute Mountain Ute Tribe, and the Ute Indian Tribe – Uintah & Ouray Reservation, Comanche Nation, Apache Tribe of Oklahoma, Fort Belknap Indian Community, Navajo Nation, Montrose and Gunnison County Commissioners, Gunnison County Historic Preservation Commission, and the Montrose Historical Society and Museum for concurrence and compliance with Section 106 requirements. Only the Southern Ute Indian Tribe responded to the request for comments. Consultation letters are included in Appendix A.

NRCS also considers resources that do not contain cultural material, but are valuable for other reasons, such as paleontological resources. The NRCS Title 190 National Cultural Resources Procedures Handbook Part 601, Subpart G, Section 601.70, describes paleontological resources as "plant and animal fossils that may be the original preserved organism, molds, and casts, and casts that have been completely replaced by minerals, and secondary fossils such as animal footprints and preserved burrows. The rocks surrounding important paleontological sites are also significant resources because the rocks provide information about the environment in which the ancient plants and animals lived."

Three rock units in Colorado are famous for their fossils: the White River Formation (northeastern Colorado), the Green River Formation (northwestern Colorado), and the Morrison Formation (various locations). The East Lateral crosses through the Jurassic Morrison Formation and the Dakota/Burrow Canyon Formation. Based on the Class III Cultural Resource Inventory completed for the Proposed Project, no known fossil localities have been identified in the project components. The BLM PFYC was also referenced to determine the potential to impact fossil resources in the project area (BLM 2021).

The Uncompahgre RMP illustrates that the project area associated with Wells Basin, Coal Hill, Slide Point, M&D Canal, and the temperature sensor have low (Class 2) to moderate (Class 3) fossil yield potential (BLM 2019b; BLM 2022a). The PFYC for the East and West Laterals was not illustrated in the RMP for the Gunnison Gorge National Conservation Area (NCA) (BLM 2004). Based on coordination with BLM, East Lateral has high (Class 4) to very high (Class 5) PFYC (V. Beresford, personal communication, August 10, 2022). Given the PFYC of the East Lateral, a paleontological resource survey was completed for the project area. No fossil localities were documented during the survey.

3.6.3 Hazardous Materials

The RCRA is the primary statute for hazardous waste management. Hazardous waste is defined as any liquid, solid, gas, or sludge that poses a hazard to human health or the environment because of its quantity, concentration, or physical or chemical characteristics. For a substance to be considered a hazardous waste, it must first be classified as a solid waste under RCRA. Any material that is abandoned, inherently waste-like, discarded military munition, or recycled in certain ways is considered a solid waste and is subject to RCRA.

In Colorado, CDPHE tracks and manages hazardous materials, including solid wastes. A review of the CDPHE Environmental Records was conducted to determine the presence of hazardous or solid waste disposal sites within one mile of the project area (CDPHE 2022). Three features were identified in the search area, but outside the project area:

- a solid waste facility (approximately 0.5 miles from M&D Canal) that disposes of motor vehicle and trailer waste tires;
- a RCRA industrial site called Western Green, Inc. (approximately 0.6 miles from M&D Canal) that manufactures erosion and sediment control materials; and
- a RCRA permitted Colorado Department of Transportation (CDOT) maintenance facility (approximately 1 mile from the West Lateral).

3.6.4 Public Health & Safety

The project area has a history of landslides, canal overtopping, and canal breaching. The primary areas at risk are the M&D Canal, and the Cimarron Canal, and the Vernal Mesa Canal.

An unstable hillside is located above the M&D Canal, approximately 4 miles from the M&D diversion. The instability is believed to be a function of seepage from other canals above the M&D Canal, irrigation above the canal, and the steep slope of the hillside. Potential sloughing of the hillside threatens to block, overtop, and breach the M&D Canal. A canal breach has the potential to impact properties below the canal.

Two discrete sections of the Cimarron Canal, Wells Basin and Coal Hill, have notable breach potential due to a relatively higher risk of landslides along their lengths. A breach at either location has the potential to eliminate Big Cimarron Road and USFS service roads. Vehicles or individuals in the area during a breach would also be at risk.

As described in Section 1.3, the Vernal Mesa Canal at Slide Point overtopped and breached, causing significant damage to U.S. Hwy 50. Improvements were conducted to mitigate seepage issues and no slides have occurred since the 1960s. In recent years, however, new seeps have been observed just upstream of the existing piped section. Degradation of the existing steel pipe has also been observed, furthering concern of a breach risk.

3.6.5 Recreation

A variety of outdoor recreation opportunities are present surrounding and adjacent to the project area, including:

- the Cerro Summit State Wildlife Area;
- the Uncompahgre National Forest, San Juan National Forest, Rio Grande National Forest, and GMUG National Forest;
- the Black Canyon of the Gunnison National Park;
- the Silver Jack Reservoir Recreation Area; and,
- the Uncompahgre Wilderness.

Waters from the West Lateral flow into the Black Canyon of the Gunnison National Park via Red Rock Creek. The Cimarron River also provides numerous recreation opportunities to the public, including fishing for trout (i.e., brook, brown, cutthroat, and rainbow) downstream of the project area. The temperature sensor is located within the GMUG National Forest. The objectives of the USFS' Forest Plan include, but are not limited to, watershed and aquatic resources restoration and recreational management.

3.6.6 Land Use

Montrose County's Master Plan guides all land development decisions in Montrose County (Montrose County 2023b). Most of the project area is in the South Valley and North Valley Planning Areas (Montrose County 2010). Both planning areas have goals for the protection of the environment, including protection of natural waterways and riparian areas; preservation of wildlife areas, especially those identified by the CPW; protecting farming rights and agricultural lands; and providing adequate water supply (Montrose County 2010).

The Gunnison County Land Use Resolution guides land use development in the county with general goals that include promoting the health, safety and general welfare of the environment and protecting the rural character of the county (Gunnison County 2001).

All the project elements are in Montrose County, except for the temperature sensor site, which is in Gunnison County. The majority of the Proposed Project would occur on private land. However, approximately 0.4 acres of East Lateral is located on BLM land, 9.4 acres of M&D Canal occurs on Reclamation land, and the temperature sensor (0.1 acres) would be situated on USFS land in the GMUG National Forest.

The project area contains a variety of land uses, including residential, agricultural, grazing, transportation, undeveloped, and public uses. Land cover in the watershed area is dominated by rangeland, followed by crops, and trees. Built area represents less than 7% in the watershed area (Appendix B. Map 1). The portions of the project area in Montrose County are currently zoned for General Agriculture (A) (Appendix C. Map 6; Montrose County 2022). According to Gunnison County, there is no zoning in the county (Gunnison County 2022).

3.6.7 Visual Resources & Scenic Beauty

Section 1.3 provides photographs and a description of the surrounding landscape in the project area. The project area contains residential, agricultural, and transportation infrastructure. The surrounding landscape is natural hills with sagebrush, forested areas, grazing pasture and allotments, and farmlands.

A Visual Resources Inventory (VRI) was previously completed for portions of the project area. Lands that are designated Class II are considered to have the greatest relative value, while Class IV lands have the lowest relative visual value (BLM 2022b). Table 3-18 identifies the designation of lands in the project area.

Table 3-18. VRI Designations in the Project Area

Project Element	Designation
Wells Basin	Class II
Coal Hill	Class II
Slide Point	Class II
East Lateral	Class II (eastern terminus)/ Not inventoried
West Lateral	Not inventoried
M&D Canal	Class IV
Temperature Sensor	Not inventoried

Public lands in the project area are managed under the Gunnison Gorge NCA and Uncompahgre RMPs (BLM 2004; BLM 2019a; BLM 2019b; BLM 2019c). Table 3-19 describes the Visual Resource Management (VRM) classes assigned to the project area.

Table 3-19. VRM Designations in the Project Area

Project Element	Designation	RMP
East Lateral[1]	Class II	Gunnison Gorge NCA
M&D Canal[2]	Not Classified	Uncompahgre
Temperature Sensor[2]	Not Classified	Uncompahgre

According to the Gunnison Gorge NCA RMP, VRM Class II "retains the existing characteristic landscape. The level of change in any of the basic landscape elements due to management activities should be low and not evident" (BLM 2004).

3.6.8 Parklands

The Black Canyon of the Gunnison National Park is adjacent to the project area, and waters from the West Lateral flow into the National Park via Red Rock Creek. A portion of the Gunnison River (14 miles) flows through the 30,750-acre National Park. The General Management Plan for the National Park encourages the protection and maintenance of both tangible and intangible scenic values within the park area and the protection of water resources (NPS 1997). As mentioned in Section 3.2.1.2, Red Rock Creek is a tributary to the Gunnison River for which a TMDL was approved for dissolved selenium (CDPHE 2011; USGS 2022).

No national monuments or historical sites are in or immediately near the project area based on the National Natural Landmarks Map (NPS 2021).

3.6.9 Transportation & Infrastructure

Existing infrastructure in the project area includes linear transportation facilities, irrigation features, and residential structures. Irrigation infrastructure includes the Cimarron Canal, Vernal Mesa Canal, East and West Laterals, and M&D Canal. The BPWCD and UVWUA systems are guided by planning documents, such as the BPWCD System Optimization Plan (J-U-B 2016) and the Westside Optimization Analysis Final Report (Irrigation Training and Research Center 2017). As described previously, the BPWCD and UVWUA systems experience canal breaches, which

damage the systems and requires emergency repair. The average annual costs of emergency repairs to the irrigation distribution systems under the existing conditions were estimated at $86,800 (Appendix D). The canals are estimated to lose approximately 2,698 ac-ft of water annually to evaporation and seepage.

Generally, the project area follows the alignment of the laterals and canals, which is situated alongside or intersects various roads. The project area can be accessed from roads in Montrose and Gunnison Counties, such as: Bostwick Park Road, CO-347, Pearl Road, 6400 Road, Ranger Road, 6500 Road, US-50, P77 Road, Cimarron Road, and Colorado Road 858.

3.6.10 Noise

Noise is defined as unwanted and unacceptable sound (CDOT 2022). Various factors influence the perception of noise, such as volume, frequency, atmospheric conditions, background noise, and the nature of the activity generating the noise. Background noise (ambient noise) in the project area is associated with road traffic and the use of agricultural equipment. When discussing noise, special consideration must be given to noise sensitive areas and noise sensitive receptors within and adjacent to the Proposed Project. In these quiet areas, noise impacts are viewed as more substantial. Numerous noise sensitive receptors (i.e., National Forests and residential areas) are scattered throughout the vicinity of the project area.

3.6.11 Scientific Resources

According to the National Cultural Resources Procedures Handbook, “among the resources NRCS may consider are those that contain no cultural material and are not associated with a cultural belief or value but are of value for other reasons. These include geological, paleontological, and other scientific resources of interest” (NRCS 2018). Several active streamflow gauges are present within Gunnison and Montrose Counties that measure instantaneous discharges along various stream segments, including two USGS streamflow gauges on the Cimarron River. These gauges measure the height of water in a stream channel to determine instantaneous flow rates. Water quality monitoring stations are also present on Red Rock Creek to monitor water quality and flows entering the National Park. Paleontological resources are discussed in Section 3.6.3. Geological resources are discussed in Section 3.1.

3.7 Ecosystem Services

Table 3-20 describes the relevant ecosystem services that are present in the project area. Ecosystem services related to the project purpose and need, as well as related to resources in the project area, and fall within the six guiding principles described in Section 2.1.

An analysis of these ecosystem services will occur within pertinent sections of Chapter 4, Chapter 5, and Chapter 7.

Table 3-20. Ecosystem Services to Be Considered in the Plan-EA

Ecosystem Services	Rationale / Description
Provisioning Services	
Food	Provides irrigation water supply for over 24,000 acres of farming operations.
Water	Project is crucial to agricultural water supply for the community.

Ecosystem Services	Rationale / Description
Regulating Services	
Flood Control	Flood control provides reduced risk to downstream life and property.
Water Quality	Reducing salt and selenium for downstream water users.
Climate Stabilization	Increased flood and drought resilience.
Cultural Services	
Recreational Experiences	Enhanced recreational experience.

Chapter 4 Alternatives

4.1 General

Early in the Proposed Project development, comments were requested and received from the public, as well as local, state, and federal agencies. Information from the scoping process was used to define watershed problems, planning objectives, and resource concerns to consider. A description of the public scoping process is in Chapter 2 and the Scoping Report (Appendix E).

The project team, composed of environmental and engineering professionals, Sponsor representatives, and agencies developed the Proposed Project alternatives with input from stakeholders during the scoping phase. The formulation of the Proposed Project alternatives adhered to NRCS procedures in the NWPM (NRCS 2014b) Part 501, the NWPH (NRCS 2014a), and additional NRCS watershed planning policy, relying primarily on the PR&G as described in USDA DM 9500-13.

The NRCS must decide if the selected alternative (Preferred Alternative) would or would not constitute a major federal action significantly affecting the quality of the environment. If NRCS determines that the Preferred Alternative would not significantly affect the quality of the environment, then NRCS would prepare and sign a Finding of No Significant Impact (FONSI), and the Proposed Project may proceed. If NRCS determines that the Preferred Alternative would significantly affect the quality of the environment, then an EIS and Record of Decision (ROD) must be prepared and signed before the Proposed Project can proceed. The Preferred Alternative is identified based on guiding principles further discussed in Section 4.2 below. Once selected as the Preferred Alternative, it is then referred to as the FWFI, and the potential environmental impacts of the FWFI are compared against the No Action Alternative, then referred to as the FWOFI. From this assessment of impacts, it is then determined which alternative is the locally, environmentally, and National Economic Efficiency (NEE) preferred alternative.

4.2 Formulation Process

Proposed Project measures were developed by considering the technical merits and drawbacks of potential solutions while also considering Sponsor objectives. The proposed measures provided in the Plan-EA are only those that met some general requirements. For example, projects undertaken within the Bostwick Park service area required piping rather than canal lining due to concerns of damage caused by actively grazing livestock. Further, due to the unstable soils within the Bostwick Park service area, monolithic pipe, such as HDPE, is preferrable to bell and spigot pipe, such as polyvinyl chloride [PVC], so that leaks do not develop from minor shifts in the soil profile. The M&D Canal, however, is fenced and protected from wildlife, making lining a feasible option. A temperature sensor capable of communicating with a supervisory control and data acquisition (SCADA) system provides the ability to manage releases to the Cimarron River for aquatic health.

The initial selection of canals and reaches to be addressed in the Proposed Project were the result of consultation with the project Sponsors while referencing previous master planning efforts, as described in Appendix D. The Sponsors indicated that irrigation water security and irrigation efficiency were their top concerns and objectives for the Proposed Project. Areas of operational concern (i.e., reaches where irrigation operations could be jeopardized if appropriate measures were not taken) were identified by project sponsors and were prioritized for inclusion into the Plan-EA. These reaches include Wells Basin, Coal Hill, Slide Point, and the selected reach of the M&D

Canal. The secondary goal for project Sponsors was irrigation efficiency to preserve late season irrigation water. Piping the East and West Laterals is expected to provide the greatest increase in efficiency. Pressurized service laterals assist in creating an on-demand irrigation system, thereby reducing unnecessary reservoir drawdown and prolonging irrigation seasons. Piping further increases the conveyance efficiency of a system and reduces water lost to seepage and evaporation. Bostwick Park has five service laterals: Shinn Park, Waterdog, Kinikin, East, and West. Piping projects on Shinn Park and Waterdog are ongoing; a smaller project to route Kinikin water through the piped Shinn Park Lateral and eliminate a significant portion of the Kinikin Lateral is under consideration. If East Lateral and West Lateral are piped, all service laterals within the BPWCD would be piped. Improvement measures on the selected reaches are expected to meet the threshold of what the Sponsors are willing to undertake at this time, as the Sponsors have limited financial resources for providing matching funds. For this reason, additional reaches within the watershed were excluded from consideration.

Three alternatives were formulated that reflect the Federal Objective as listed in PR&G 1.2, fall within the PL 83-566 Authorized Purpose (Agricultural Water Management), and address the purpose and need of the project and the project objectives. Additionally, alternatives were formulated with consideration to four criteria: 1) completeness, 2) effectiveness, 3) efficiency, and 4) acceptability. Individual and combinations of project measures were selected regarding achieving the purpose and need, balancing engineering complexity and feasibility, minimizing economic and environmental impacts, and adhering to budgetary constraints. Table 4-1 illustrates the objectives and benefits that were considered during the alternative formulation process, and the hierarchy in which those objectives and benefits were considered.

Table 4-1. Hierarchy of Objectives for Alternative Formulation

Objectives / Benefits		Priority / Hierarchy	Required for Consideration
Federal Objectives		**1**	**-**
PL 83-566 Authorized Purposes		**1**	**-**
Sponsor Objectives	Water Security	2	Yes (Minimum of 1 objective)
	Water Efficiency	3	
Ecological Benefit		4	Yes
Economically Feasible		5	
Positive Social Benefit		6	

As part of the formulation of alternatives process, an Ecosystem Services Framework is used to evaluate benefits and costs for the Proposed Project. Ecosystem services is a broad term used to describe the benefits humanity receives from ecosystems as a byproduct of their functioning.

The four-category ecosystem framework adopted in the PR&G is shown in Table 4-2. The Investigation and Analyses Report (Appendix D) and the NEE Benefit-Cost Analysis (BCA; Appendix E) describes the ecosystem services framework in greater detail.

Table 4-2. Ecosystem Services Framework Used to Evaluate Benefits and Costs

Service Type	Examples
Provisioning	The supply of food, fuel, fiber, water, timber, genetic resources, etc.

Service Type	Examples
Regulating	The regulation of air, climate, natural hazards, water quality, pests, and disease.
Cultural	Services that enhance cultural values, like aesthetics, recreation, tourism, and spiritual or religious values.
Supporting	Nutrient cycling, soil formation, and primary production.

Source: USDA 2017.

In addition to requiring projects to be evaluated using an ecosystem service framework, the PR&G also seek to promote projects that fulfill guiding principles related to federal investments in water resources (see Section 2.1). The PR&G and ecosystem services methods are used to achieve a balanced approach in considering the environmental, economic, and social effects of a proposed project.

4.3 Alternatives and Options Considered but Eliminated from Detailed Study

In accordance with NEPA (40 CFR 1502.14), some initial alternatives were eliminated from further analysis due to high cost, logistics, environmental reasons, or other critical factors. Several alternatives and design options were considered for study early in the project formulation phases. The alternatives considered were the No Action Alternative, Alternative 1, and Alternative 2. The economic analysis located in Appendix D evaluated and compared the three alternatives to determine the NEE Alternative.

Alternative 2 would have improved agricultural water management, encouraged watershed protection, and enhanced fish and wildlife habitat in the project area. Alternative 2 would have included project improvements at seven separate sites within the BPWCD and UVWUA service areas: Wells Basin and Coal Hill (Cimarron Canal), Slide Point (Vernal Mesa Canal), East Lateral, West Lateral, M&D Canal, and one temperature sensor site on the Cimarron River. Alternative 2 is the same as Alternative 1, except for the M&D Canal measure. A more detailed description of Alternative 2 is presented in Appendix D.

Alternative 2 is anticipated to cost $39,772,629.91. Of the three alternatives considered, Alternative 2 was eliminated from detailed study due to the high cost of piping the M&D Canal and hydraulic considerations. Piping the M&D Canal under Alternative 2 would decrease hydraulic energy available at the downstream end of the project and slight decreases in flow could result. Table 4-5 in Section 4.5 illustrates how the cost and benefits of Alternative 2 compared to the No Action Alternative and Alternative 1.

.

4.4 Alternatives Considered for Detailed Study

Two alternatives considered for the Proposed Project were carried forward to study in greater detail as part of this Plan-EA: the No Action Alternative (FWOFI) and Alternative 1, now considered the Action Alternative (FWFI). A description of these alternatives is presented below.

4.4.1 No Action Alternative (FWOFI)

The No Action Alternative assumes no major improvements would occur and that O&M would continue for the period of evaluation. Under the No Action Alternative, the Sponsors would not pipe portions of the Cimarron Canal, Vernal Mesa Canal, East Lateral, or West Lateral, and the M&D Canal would not be lined. The No Action Alternative would not install a temperature sensor on the Cimarron River. If the No Action Alternative were implemented, the Sponsors do not have

an alternate source of funding, therefore, the existing infrastructure would remain the same and capital investment or alternate funding would be required to address agricultural water management and fish and wildlife habitat needs.

4.4.2 Action Alternative (FWFI)

The Proposed Action defines the watershed area as the eleven 6th-field subwatersheds that contain Proposed Project features (see Figure 1-1 and Map 1 in Appendix B).

The Action Alternative would improve agricultural water management in the project area. The Action Alternative would include project improvements at seven separate sites within the BPWCD and UVWUA service areas: Wells Basin and Coal Hill, Slide Point, East Lateral, West Lateral, M&D Canal, and a temperature sensor site on the Cimarron River. A complete list of Best Management Practices (BMPs) that would be implemented as part of the Action Alternative are included in Appendix E. Table 4-4 describes the specific elements of the Action Alternative, and a more detailed description is presented in Appendix D.

Table 4-3. Action Alternative Project Measures

Project Measures	Description*
Cimarron Canal - Wells Basin Piping	Replace approximately 8,590 feet of the Cimarron Canal's open channel with 63- inch solid-wall HDPE pipe, and appurtenant structures.
Cimarron Canal - Coal Hill Piping	Replace approximately 6,180 feet of the Cimarron Canal's open channel with 63-inch solid wall HDPE pipe, and appurtenant structures.
Vernal Mesa Canal - Slide Point Piping	Partial removal and replacement of pipe. Approximately 2,800 feet of 54-inch and 2,100 feet of 48-inch solid wall HDPE pipe and appurtenant structures would be installed.
East Lateral Piping	Replace approximately 22,500 feet of open, unlined ditch with HDPE pipe ranging in size from 36-inch to 18-inch, and appurtenant structures.
West Lateral Piping	Replace approximately 21,000 feet of open, unlined ditch with HDPE pipe ranging in size from 24-inch to 16-inch, and appurtenant structures.
M&D Canal Lining & Hillside Stabilization	Line approximately 394,979 square feet of the M&D Canal to decrease seepage and stabilize the hillside by removing approximately 200,000 CY of material above the canal
Cimarron River Temperature Sensor	Install one temperature sensor and associated electrical enclosure on the Cimarron River (situated on USFS land).

** Refer to detailed description in Appendix D, section D.2*

Access to the project area can be achieved at numerous locations using public roads. Map 2 in Appendix B illustrates the project area, including staging areas.

Construction is anticipated to take two irrigating seasons. Construction would begin in Fall 2026 and be complete in Spring 2028, with construction activities taking place outside of the irrigation season. Excavators, dozers, loaders, dump trucks, fusion equipment (for pipe up to 63 inches),

and concrete mixers, as well as smaller support equipment (such as ATVs, generators, pumps, trucks, and trailers) would be needed to complete the project.

The Action Alternative is anticipated to cost $25,178,335.18.

4.4.2.1 *Non-structural Alternative*

"Non-structural measures include, but are not limited to, modifications to public policy, regulatory policy, and pricing policy, as well as management practices, including the use of green infrastructure. Alternative plans, strategies, or actions that can effectively address a problem through the use of non-structural approaches, if they exist, must be fully considered and carried forward to the final array of solutions" (see Section 6c(2)(c) of PR&G, USDA 2017). Non-structural alternatives were considered while developing the action alternative. To meet the purpose of the project (improved agricultural management by improving water security and efficiency), however, there were no viable non-structural alternatives. Changes in management of the existing infrastructure, such as decreasing flow rates, would still result in seepage and not reduce landslide risk. Infrastructure abandonment would be the only non-structural alternative that would reduce seepage and landslide risk; this alternative, however, is not acceptable as it would result in the cessation of water deliveries for many irrigators. No non-structural alternatives were developed for this project because none were brought forward that would meet the purpose and need of the Proposed Project.

4.4.2.2 *Locally Preferred Alternative*

"In cooperation with local interests that have oversight or implementation authorities and responsibilities, agencies may identify a 'locally-preferred' alternative." This alternative may emerge from the collaborative process during agency and public scoping (see Section 6c(2)(c) of PR&G, USDA 2017). The Action Alternative was created, modified, and supported through a public and local stakeholder process per PR&G. As part of this process, the public and other stakeholders were invited to provide comment and input on the proposed design and evaluation of the Action Alternative. As a result of this input, the Action Alternative (FWFI) was developed into the Preferred Alternative and subsequently is the locally preferred alternative.

4.4.2.3 *National Economic Efficiency Alternative*

The Action Alternative (FWFI) will also be the alternative that increases NEE (see Sections 3.7 and 4.5). The NEE Alternative is the alternative or combination of alternatives that reasonably maximizes the net benefit of the project while protecting sensitive environmental resources. The net economic benefit is the benefit minus the cost of the project. The term NEE is being used in this Plan-EA to identify the most economically efficient alternative analogous to the Principles and Guidance (P&G) National Economic Development (NED) alternative. It fits within the "Additional Alternatives" category described in DM 9500-013 section 6.b.(4)b.5.

4.5 National Economic Efficiency

With the federal law passage of the 2007 Water Resources Development Act, Congress directed the federal government to update and consolidate its past guidance on evaluating the costs and benefits of federal investments. The original P&G was replaced by PR&G as of April 2019. The PR&G allow for:

> *… maximizing public benefits (of all types) relative to costs, the use of quantified and unquantified information in the tradeoff analysis, flexibility in decision making*

> *to promote localized solutions, ability to rely on the best available science and objectivity, and advance transparency for Federal investments in water resources.*

The PR&G further state:

> *Federal investments in water resources as a whole should strive to maximize public benefits, with appropriate consideration of costs. Public benefits encompass environmental, economic and social goals; include monetary and non-monetary effects; and allow for the consideration of both quantified and unquantified measures.*

Although the NEE Alternative terminology does not exist in the PR&G or NWPM policy, DM 9500-013 refers to NEE in the context of beneficial effects resulting from a water resources investment. Efficiency is the extent to which an alternative alleviates the specified problems and realized the specified opportunities at least cost. The PR&G and ecosystem services analysis allow for selecting an alternative that may not be the most economically efficient based on consideration of other economic, social, and environmental tradeoffs. The economic evaluation metric for ecosystem services is as follows:

- Provisioning Services
    - Volume of water conserved. Value of increased agricultural income.
    - Volume of water conserved.
- Regulating Services
    - Value of reduced infrastructure damages.
    - Value of reduced income loss.
    - Value of reduced salinity control costs.
    - Number of acres affected.
- Cultural Services
    - Value of increased recreation consumer surplus.

Table 4-5 illustrates that Alternative 1 and Alternative 2 provide relatively similar benefits, however Alternative 2 provides those benefits at a much higher cost. Therefore, Alternative 1 has higher benefit cost ratio and is considered the NEE Alternative, as defined in Section 4.4.2.3.

Table 4-4. Comparison of Average Annual NEE Costs, Reduced Damages and Benefits, Cimarron River-Lower Uncompahgre Watershed Project, Colorado (2022 Dollars)[1]

Works of Improvement	Agriculture-related			Non-agriculture Related		Average Annual Benefits	Average Annual Cost	Benefit Cost Ratio
	Reduced Property Loss, Critical Facility Loss, and Income Loss	Reduced Crop Yield Damages	Increased Water Supply	Reduced Salinity Control Costs	Increased Recreation Consumer Surplus	Total		
Wells Basin Piping	$26,672	$135,553	$28,022	-	-	$190,247	$145,930	1.3
Coal Hill Piping	$26,672	$135,553	$7,281	-	-	$169,506	$100,443	1.7
Slide Point Piping	$14,903	$33,049	$6,400	$51,693	-	$106,045	$70,922	1.5
East Lateral Piping	-	-	$25,110	$153,310	-	$178,420	$147,594	1.2
West Lateral Piping	-	-	$12,624	$124,151	-	$136,775	$88,183	1.6
M&D Canal Lining and Hill Stabilization (Alternative 1)	$16,427	$135,590	$65,367	$112,663	-	$330,047	$185,006	1.3
M&D Canal Piping (Alternative 2)	$16,427	$135,590	$65,367	$118,366	-	$335,750	$651,816	0.5
Temperature Sensor	-	-	-	-	$7,326	$7,326	$864	8.5
Total (Alternative 1)	**$84,674**	**$439,745**	**$144,806**	**$441,817**	**$7,326**	**$1,118,366**	**$738,942**	**1.5**
Total (Alternative 2)	**$84,674**	**$439,745**	**$144,806**	**$447,520**	**$7,326**	**$1,124,071**	**$1,205,752**	**0.9**

Notes: Totals may not sum due to rounding. Prepared: December 2022. The values presented here may differ from the benefit values presented in Section 4 of the Economic Report due to the fact that the values from Section 4 were discounted at a rate of 2.25 percent, projected over the analysis period of 102-years, summed, and amortized so they could be reported in terms of annualized averages.
1. Price base: 2022 dollars.

4.6 Summary & Comparison of Alternative Plans

The No Action Alternative/FWOFI and Action Alternative/FWFI have been compared against each other to discern the merits and disadvantages of each alternative as related to environmental resources and ecosystem services. A summary of this evaluation is presented in Table 4-6.

Table 4-5. Summary of Alternatives

Resource Area	FWOFI	FWFI
Soils & Geology		
Upland Erosion & Sedimentation	Landslide frequency would remain the same under the FWOFI. The FWOFI would not address current issues with erosion and hillside sloughing. Under existing conditions, approximately 28,788 acres of agricultural lands in the BPWCD and UVWUA service areas are damaged from canal breaching. The BPWCD and UVWUA incur $86,800 in average annual emergency repairs associated with canal breach and an average of $450,923 of crop yields would be damaged annually. Water quality would not be improved and the BPWCD and UVWUA would incur $441,817 in salinity control costs. Given that no construction would occur under the FWOFI, there would be no impacts to soil in the project area and a CDPS General Permit and associated SWMP would not be required.	Under the FWFI, landslide frequency may decrease in areas below the canal prism, as canal seepage would no longer occur, and saturated soils are more prone to landslide occurrence. Landslides that come from the above the canal prism would likely not decrease in frequency, but their impact on irrigation water supply, however, would be reduced by enclosing the canals. The FWFI would mitigate damages to approximately 28,788 acres of agricultural lands in the BPWCD and UVWUA service areas from canal breaching. Furthermore, the FWFI would improve agricultural water management by improving efficiency and conserving water in the project area. The FWFI would provide $144,806 in additional farm net income from conserved water, reduce emergency repair cost by $84,674, and reduce income loss by $439,745. The FWFI would provide $966,236 in regulating ecosystem services. Under the FWFI, direct impacts to soil would include temporary and permanent ground disturbance from construction. Substantial soil disturbance would occur for the earthwork to install irrigation pipe and stabilize the hillside at the M&D Canal. BMPs, such as the installation of Temporary Erosion Controls (TECs) and reseeding disturbed areas to encourage the establishment of native vegetation, would avoid and minimize construction related erosion and sediment transport. A complete list of BMPs is included in Appendix E. A CDPS General Permit and associated SWMP and SPCC Plan would be required before construction of the FWFI.
Prime & Unique Farmland	Portions of the project area are designated farmland of statewide importance. Given that no ground disturbance	Portions of the project area, specifically lands along the Coal Hill (0.02 acres), East Lateral (16.5 acres), and West Lateral (39.3 acres) and project components are designated

Resource Area	FWOFI	FWFI
	would occur under the FWOFI and that prime and unique farmlands would not be converted to a different use under the FWOFI, the FWOFI would not impact prime and unique farmlands.	farmland of statewide importance. Active farmlands are located adjacent to the East and West Laterals. Under the FWFI, temporary and permanent soil disturbance would be primarily focused within the previously disturbed canal prisms, the FWFI would not disturb existing agricultural lands that are considered farmland of statewide importance, and the FWFI would not alter the land use of designated farmlands. No farmlands of statewide importance would be converted from agricultural uses to other uses because of the FWFI. Therefore, the FWFI is not anticipated to impact prime and unique farmlands in the project area and complies with the FPPA.
Water Resources		
Surface & Groundwater Quantity & Quality	Water lost to seepage and evaporation (approximately 2,698 ac-ft annually) would continue; however, groundwater recharge would continue to occur in the project area through deep percolation. The FWOFI would have no direct impact on the goals of the Gunnison BIP. Furthermore, under the FWOFI the project area would continue to contribute approximately 2,247 tons of salt and selenium to the watershed annually, and water quality of Red Rock Creek would not change as West Lateral would not be fully enclosed. Under the FWOFI, water quality would not be temporarily impacted, as construction would not occur, and a CDPS General Permit would not be required.	The FWFI would directly improve water quality and quantity in the project area. The proposed canal piping and lining would conserve 2,698 ac-ft of water by eliminating water lost to seepage and reducing water lost to evaporation. Water conserved by the FWFI would remain in the Cimarron River during the early irrigation season, until water is needed. Efficiency gains by the new system would maintain early season flows in the Cimarron River and allow water storage in the Silver Jack Reservoir to last longer. The economic analysis estimates that the FWFI would provide $144,806 in provisioning ecosystem services from additional farm net income from conserved water. Seepage likely influences groundwater recharge in the project area through deep percolation, though the extent to which seepage influences groundwater recharge is unknown because there is no current data in the project area evaluating direct groundwater recharge sources and volumes. The piping and lining improvements would also eliminate vertical transport of salts (2,247 tons per year) and agricultural fertilizers in the watershed. Reclamation found that water conservation projects focusing on irrigation on saline soils, such as the FWFI, is the single most effective salinity control measure found in the past 30 years of investigations (Reclamation 2017a). Thus, though a potential loss of groundwater recharge could occur from the proposed activities, the

Resource Area	FWOFI	FWFI
		reduction in salinity from seepage and infiltration would be counteracted, and overall water quality in the project area would be improved. The FWFI would conserve water lost to seepage and evaporation, provide for efficient delivery of agricultural water, and improve water quality by reducing selenium and salinity loading, thereby addressing the primary goal of the Gunnison BIP. Section 5.2.4 describes how the FWFI is consistent with the Gunnison BIP. The FWFI would also improve water quality by reducing salt loading (2,247 tons per year) and selenium loading in the watershed, thereby helping to meet the area's TMDL goals. The FWFI would reduce salinity control costs by $441,817. Piping approximately 4 miles of the West Lateral would reduce *E. coli* contamination in Red Rock Creek by preventing livestock contamination. The FWFI may temporarily impact surface water quality during construction. BMPs would be implemented during construction at all locations where surface disturbance occurs to protect water quality and to prevent water pollution from runoff, spills, leaks, and leaching. A CDPS General Permit and associated SWMP and SPCC Plan would be required before construction.
Clean Water Act / Waters of the U.S.,	The FWOFI would have no direct impacts on resources protected under the CWA. The canals in the BPWCD and UVWUA systems would continue to lose water to seepage.. The FWOFI would also have negative, indirect impacts on WOTUS, such as Cimarron River, by reducing available water flow via continue water lost to seepage.	Construction activities would be primarily contained to the previously disturbed canal prism.. BMPs are in place to ensure CWA water quality standards would be met, which include implementation of TECs, SPCC Plan, and SWMP, and following the requirements of the CDPS General Permit. A complete list of BMPs is included in Appendix E. The Proposed Project would conserve 2,698 ac-ft of water annually, which could indirectly benefit WOTUS by maintaining early season flows in the Cimarron River and allowing water storage in the Silver Jack Reservoir to last longer.

Resource Area	FWOFI	FWFI
		The portion of the FWFI that would pipe Vernal Mesa Canal, West Lateral, and Cimarron Canal may be permitted under USACE RGP 5—Ditch Related Activities in the State of Colorado (USACE 2021). However, a Section 401 permit from CDPHE (Water Quality Certification) may also be required. Coordination with the USACE regarding RGP 5 is ongoing (Appendix A. USACE Consultation).
Wetlands	The FWOFI would have no direct impact on wetlands, as no construction would occur. Indirectly, the FWOFI would benefit wetlands in and adjacent to the project area, as the canals in the BPWCD and UVWUA systems would continue to lose water to seepage that provide hydrology to adjacent downslope wetlands.	Temporary ground disturbing construction activities may directly impact 0.05 acres of wetlands within the project area. Impacts to wetlands would be avoided and minimized by containing construction to the previously disturbed canal prism and by implementing BMPs, such as revegetation of disturbed areas with native vegetation and prevention of noxious weed transport, as described in the Environmental Consequences chapter and Appendix E. Indirectly, the FWFI would eliminate seepage from the canal that contributes hydrology to 5.69 acres of wetlands within and adjacent to the project area. This effect would be offset by the 2,698 ac-ft of water savings that would be available for irrigation or would stay within the watershed.
Regional Water Management Plan	The FWOFI would have no direct impact on regional water management plans. No investment in water infrastructure would occur, therefore seepage losses and salinity and selenium loading would continue and may worsen.	The FWFI aligns with seven of the nine goals listed in the Gunnison BIP: Goals 1, 2, 3, 5, 6, 7, and 8. The FWFI addresses Goals 1, 3, and 6 by conserving 2,698 ac-ft of water lost to seepage and evaporation, providing for efficient delivery of agricultural water and increasing net farm income by $144,806, and improving water quality by reducing selenium and salinity loading by 2,247 tons and reducing salinity control costs by $441,817. The FWFI protects existing environmental and recreational uses (Goal 5) and encourages relationships among agricultural and environmental recreational water uses (Goal 7) by indirectly benefiting the Black Canyon of the Gunnison National Park and Silver Jack Reservoir. Water conserved by the FWFI would also allow water to be held in the Silver Jack Reservoir for a longer period, thereby allowing for more recreation user days. Furthermore, the installation of a

Resource Area	FWOFI	FWFI
		temperature sensor in the Cimarron River would enable the timed release of conserved water to lower high summer water temperatures in the river, thereby improving fish habitat in the Cimarron River and increasing the number of recreational visitors to the project area. The improvements to the BPWCD and UVWUA water infrastructure would align with Goal 8 of the Gunnison BIP.
Floodplain Management	If the FWOFI were implemented, no development would occur in the 100-year floodplain of the Cimarron River or near Happy Canyon Creek.	Proposed activities would occur in the 100-year floodplain of the Cimarron River and near floodplains associated with Happy Canyon Creek. The Cimarron River temperature sensor would be installed on an existing bridge abutment, and the associated small steel electrical enclosure cabinet would be either attached to the existing bridge, or to a metal post. Construction activities would occur within the existing infrastructure of the M&D Canal in a previously disturbed area. Changes to the grade along M&D Canal would be constrained to the canal prism, the embankment, and the hillside to the west of the canal. The toe of the embankment on the east side of the canal, which overlaps with the 100-year floodplain, would not be modified. Because no surface disturbance would occur with the installation of the temperature sensor or the construction of M&D Canal, and no additional occupancy or modification of the floodplain would occur, the FWFI would avoid adverse effects to the floodplain and is therefore consistent with E.O. 11988. Construction of the Cimarron River temperature sensor may require a floodplain development permit and if required, should be obtained prior to construction.
Wild and Scenic Rivers	The FWOFI would have no direct impacts on wild and scenic rivers, or rivers listed on the NRI. If the FWOFI were implemented, no improvements would be made to the West Lateral and contaminated tailwaters would continue to flow into Red Rock Creek, ultimately reaching the NRI-listed Gunnison River.	The FWFI would have no direct impact on wild and scenic rivers, or rivers listed on the NRI. The FWFI would indirectly benefit the Gunnison River, an NRI listed water. Water quality data for Red Rock Creek illustrates elevated levels of *E. coli* during the irrigation season; the elevated levels of *E. coli* in Red Rock Creek are likely attributed to livestock waste entering and contaminating the water. Piping the West Lateral would reduce *E. coli* by preventing livestock contamination,

Resource Area	FWOFI	FWFI
		ultimately improving tailwater that flows into the Gunnison River via Red Rock Creek, thus benefitting the Gunnison River.
Air Quality		
Clean Air Act / National Ambient Air Quality Standards	No short-term impacts from construction would occur, therefore, no effect to air quality would occur.	Short-term increases in nitrogen oxide (NOX), carbon monoxide (CO), and particulate matter (PM2.5 and PM10) emissions during construction would be minor, localized and temporary, and would not interfere with the area achieving NAAQS requirements. Additionally, BMPs would be implemented to minimize air quality impacts. Emission rates for NOX, CO, and PM are not expected to increase in the long-term.
Climate Change & Greenhouse Gases	No short-term impacts from construction would occur, therefore, no effect to air quality would occur.	Short-term increases in GHG emissions during construction would be minor, localized, and temporary, and would not interfere with the area achieving NAAQS requirements or statewide GHG goals. BMPs would be implemented to minimize air quality impacts. Emission rates for GHG are not expected to increase in the long-term. By improving agricultural water management, encouraging watershed protection, and enhancing fish and wildlife habitat in the project area, the FWFI would make the project area and the irrigation system more resilient to climate stress, especially in the uncertain increases in variability of temporal and spatial patterns of precipitation, evaporation, and water availability which could challenge water resource systems. The FWFI would provide $144,806 in additional farm net income from conserved water, reduce emergency repair costs by $84,674, and reduce income loss by $439,745. The FWFI would provide $966,236 in regulating ecosystem services. The agricultural water improvements would also improve water quality by reducing salt loading (2,247 tons per year) and selenium loading in the watershed. The FWFI would reduce salinity control costs by $441,817.
Plants		
Forest Resources	Under the FWOFI, no construction activities would occur on USFS land, and no forest resources would be impacted.	Under the FWFI, a temperature sensor and associated electrical enclosure would be located on USFS land within the GMUG National Forest. Although construction activities would occur on USFS land (approximately 0.1 acres), the sensor would be located on an existing bridge abutment and the steel cabinet electrical enclosure

Resource Area	FWOFI	FWFI
		would either be placed on the existing bridge or a metal post. The temperature sensor and electrical enclosure would not require tree removal. The FWFI would manage surface use to maintain water quality standards, increase water supply, and protect water quality, consistent with the GMUG Land and RMP. Additionally, the FWFI would not conflict with the three objectives of the Region 2 Watershed Conservation Practices Handbook: hydrologic function, soil quality, and aquatic systems. The FWFI's improvements on USFS land would not influence hydrologic function or soil quality but would indirectly benefit aquatic systems by sustaining water quality and aquatic habitat through the installation of the temperature sensor. Given that the installation of the temperature sensor would require only minor disturbance of 0.1 acres of USFS land, that no tree removal would be required, and that the FWFI would manage surface use to maintain water quality standards, increase water supply, and protect water quality and follow the Region 2 Watershed Conservation Practices Handbook, the FWFI is consistent with the GMUG Land and RMP.
Noxious Weeds & Invasive Plants	The BPWCD, CC&RC, and UVWUA actively implement invasive species controls to adequately manage and prevent their introduction and establishment. The FWOFI would not alter current invasive species and noxious weed control practices; therefore, the FWOFI would have no effect on noxious weeds and invasive plants.	Current practices to control and prevent the introduction and establishment of noxious weeds and invasive species would continue. In addition, BMPs would be implemented to control and prevent the introduction and spread of any invasive species or noxious weeds. A complete list of BMPs is included in Appendix E. Given the implementation of BMPs described in Appendix E, the FWFI would not cause or promote the introduction or spread of invasive species and therefore follows E.O. 13112.
Riparian Areas & Ecologically Critical Areas	Under the FWOFI, no direct or indirect alteration of riparian areas would occur. Approximately 82 acres of seepage-induced riparian vegetation would continue to exist in the project area. Therefore, the FWOFI would result in no effect to riparian areas.	Construction practices would remove large overstory trees and shrubs along portions of the canal alignments and would temporarily disturb the herb layer in riparian areas directly associated with the canal prisms. To protect healthy and functioning riparian areas, as outlined in Goal 1 of the CNHP WPP, direct impacts to riparian areas would be minimized by implementing BMPs, such as revegetation of disturbed areas with native drought-tolerant vegetation and prevention of noxious weed transport, as described in the

Resource Area	FWOFI	FWFI
		Environmental Consequences chapter and Appendix E. An indirect effect of the canal piping and lining involves the eventual loss of trees and vegetation within the canal prisms that may have received supplemental hydrology from canal seepage. Under existing conditions, the open, unlined canals have an average of 50 feet of riparian vegetation established across the width of their prism along the approximate 13.5 miles of canals involved in this Proposed Project. These 82 acres of seepage-induced riparian vegetation would eventually be lost across the total project area when the canals are piped and lined. However, the total length of the Cimarron Canal, Vernal Mesa Canal, East and West Laterals, and M&D Canal in the irrigation system is 72 miles, representing 436 acres of riparian vegetation. The 13.5 miles represent only 19% of the total length. Additionally, though hydrophytic vegetation exists along the canals, the composition of native and non-native understory species and the lack of a natural source of water, makes the riparian habitat poor-quality and lacking diversity and complexity in structure. Furthermore, despite the potential loss of this poor-quality riparian habitat, as described in Section 5.2.1, the project is designed to improve overall water quantity and quality in the project area, making the entire basin more resilient to future increases in water use, to drought conditions, or other potential consequences of a changing climate, consistent with the WPP. Because of the absence of fish habitat in the canals, no aquatic habitat would be adversely impacted from these changes to the adjacent riparian vegetation. Overall, no significant aquatic or wildlife habitat would be impacted, and instead overall aquatic habitat improvements would result from the FWFI.
Animals		
Wildlife & Wildlife Habitat	The FWOFI would have no direct effects on wildlife and adjacent wildlife habitat in the project area. Indirectly, the FWOFI would impact fish and wildlife habitat in the Cimarron River by not addressing water	Potential disturbance to wildlife and adjacent wildlife habitat would occur during construction. Piping the canals is anticipated to permanently remove a source of water for wildlife that utilize the area. Big game species, such as mule deer and elk, and other wildlife, may seasonally utilize the open water sources

Resource Area	FWOFI	FWFI
	losses and selenium and salt loading in the project area. Continued water loss would directly impact habitat for aquatic species that depend on year-round water flows within the Cimarron River and would impact wildlife that use the river for drinking water, hunting, and which utilize the adjacent riparian vegetation along the river for forage and cover. Increased concentrations of selenium can result in bioaccumulation in organisms and can impact aquatic species by causing reproductive issues and mortality of juvenile fish and invertebrates (EPA 2022a). Increased salt concentrations in aquatic environments create toxic conditions, increase fish mortality, and impact fish hatchling size (EPA 2023). Impacts to populations of native fish within the Cimarron River would indirectly impact wildlife which consume fish species. In addition, the temperature sensor would not be installed to monitor the health of fish habitat in the Cimarron River.	to drink. However, this water source is not perennially available due to controlled flows. When the water surface drops and flows cease, wildlife cannot easily access water within the canals. No fish habitat is present in the canals, so piping the canals would not impact brown, brook, or rainbow trout species. Although the FWFI would permanently remove approximately 19.9 acres, or 11.2 miles of open water that wildlife use in the project area, other water sources are available in the vicinity. For example, in addition to the M&D Canal remaining open, most of the Cimarron Canal and Vernal Mesa Canal would remain open. Other natural sources of water are also present throughout the vicinity, such as over 20 natural drainages and the Silver Jack Reservoir and the Cerro Summit Reservoir. Wildlife, especially big game, may be temporarily displaced during construction due to noise and would likely choose to move to alternate locations while construction activities are present, but also may choose not to return to the area if habitat is lost. Construction would be limited to daylight hours, which would reduce impacts to nocturnal wildlife species. The FWFI and would remove approximately 82 acres of riparian vegetation and 5.69 acres of wetlands that receives supplemental hydrology from canal seepage and that wildlife, such as big game, small mammals, waterfowl, and avian species, may use for forage, shelter, and stopover habitat. The loss of this vegetation may impact ungulates and other foraging wildlife; however, the canal prisms are heavily managed with herbicide to minimize the presence of noxious weeds and to moderate vegetative growth, reducing the amount of existing forage and cover available for wildlife. Additionally, higher quality forage is present below the canal prisms. The project area overlaps with winter ranges and severe winter ranges for mule deer and elk. However, less than one percent of the winter ranges and severe winter ranges for both species are overlapped by the project area. Both mule deer and elk have ample adjacent winter and severe winter range habitat available in the vicinity of the project

Resource Area	FWOFI	FWFI
		area. The FWFI would be constructed outside of the irrigation season, from October 15th to April 1st, which would overlap with winter use for big game. Mule deer and elk populations within the vicinity of the project area would likely move to other suitable areas to avoid disturbances from temporary construction activities. However, mule deer and elk habitat are abundant surrounding the project area, and population-level impacts are unlikely; therefore, overall impacts would be minor. The FWFI would improve the quality and duration of water in natural waterbodies within the project area by reducing salt and selenium loading, and by improving irrigation efficiency in the watershed. This would benefit habitat for fish species and provide drinking water for big game and small mammals. Indirectly, vegetation surrounding waterbodies where flows improve may benefit from increased hydrology from increased surface water and could provide an increase in available forage and cover for wildlife species. BMPs such as spill prevention, TECs, prevention of noxious weed transport, revegetation of disturbed areas, and bird surveys, as described in the Environmental Consequences chapter, would be implemented along the entire alignment to minimize impacts to wildlife species and habitat surrounding the canal prism. The installation of a temperature sensor in the Cimarron River would enable the timed release of conserved water to lower high summer water temperatures in the river, thereby improving fish habitat in the Cimarron River. No in-water work would be required for implementation of the FWFI, therefore spawning and rearing periods for wild brown and rainbow trout would not be impacted by construction of the FWFI.
Special Status Animal Species	Suitable habitat is present in the project area for ESA-listed species. However, the FWOFI would not involve any construction. Therefore, the FWOFI would have no effect on special status animal species.	Based on the lack of suitable habitat in the project area for ESA-listed species; the BA identified a No Effect for yellow-billed cuckoo, Mexican spotted owl, Canada lynx, gray wolf, tri-colored bat, monarch butterfly, Great Basin silverspot butterfly, the four Colorado River fish species, and state sensitive species. While project activities area would not directly impact sagebrush and wet meadow habitat within the project area where construction would occur, because of the proximity to

Resource Area	FWOFI	FWFI
		critical habitat for the Gunnison sage-grouse and the potential to cause indirect disturbance to this habitat, the FWFI May Affect but is Not Likely to Adversely Affect the Gunnison sage-grouse and Gunnison sage-grouse critical habitat. Section 5.5.2 discusses the biological analysis and determination. The BA is included in Appendix E, and the USFWS concurrence letter is included in Appendix A.
Migratory Birds / Bald and Golden Eagles	No vegetation would be removed and temporary disturbances from construction would not displace birds utilizing the canal corridors. The FWOFI would have no direct or indirect effect on migratory birds and bald and golden eagles; therefore, the FWOFI would have no effect on migratory birds and bald and golden eagles.	Though field investigations found no active nests belonging to eagles, raptors or migratory bird species, the project area and surrounding area could provide varying degrees of nesting and foraging habitat for migratory birds or raptors. Therefore, protected avian species have the potential to be present within the project area, or in the vicinity of project area. Construction noise may result in the temporary displacement of nesting bird species within the project area. To protect migratory birds or raptors from project effects, temporary construction disturbance would be avoided by scheduling work outside of nesting bird season. Because construction would be timed outside of the irrigation season (October – April), most construction activities would also occur outside of bird migration, breeding, and nesting seasons, except for bald and golden eagles. The project area would be surveyed for any migratory bird or eagle nests no less than 7 days prior to vegetation removal and construction. If an active migratory bird or raptor nest were identified within the project area, construction and vegetation clearing would pause and the NRCS Biologist and USFWS would be notified immediately to discuss the appropriate course of action. Any active migratory raptor or eagle nest discovered in the project area or within 0.5 miles of construction activities would be protected with the CPW Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors, including a 0.25-mile radius buffer for eagles, a 0.3-mile buffer for red-tailed hawks and a 0.5-mile buffer for peregrine falcons (CPW 2020c). Piping the canals would permanently remove approximately 11.2 miles of open water, amounting to the removal of approximately 19.9 acres of an open water source for avian species; however, the M&D Canal would remain an open feature. The piping and lining

Resource Area	FWOFI	FWFI
		of the canals would also eliminate seepage water for vegetation along the canal alignments, which would result in the eventual loss of 82 acres of riparian vegetation and 5.69 acres of wetlands associated with the canals, including mature trees and shrubs, which likely provide habitat for resident or migratory birds. Most mature trees in the project area occur along the M&D Canal. Abundant alternative and high-quality riparian habitat are available within the vicinity of the project area and along the Cimarron River corridor. The loss of 82 acres of riparian areas would not significantly affect habitat availability at the landscape scale and the indirect effects on migratory birds and raptors from riparian habitat loss along the ditch would be minor, and the FWFI would not have population-level effects. The FWFI would also indirectly improve habitat within natural waterbodies in the project area by reducing selenium and salinity loading and improving overall habitat for fish species. These activities would benefit raptors, eagles and other migratory species that use fish as a food source. Impacts to avian habitat would be minimized by construction occurring outside of nesting bird season, implementing BMPs and by indirectly improving fish habitat within the Cimarron River in the project area. A complete list of BMPs is included in Appendix E.
Human Environment		
Socioeconomics	Under the FWOFI, no local match funds would be required as no construction would occur. No temporary jobs would be created under the FWOFI. The project area experiences an average annual value loss of $537,723 from infrastructure damages ($86,800) and income losses ($450,923). Furthermore, water losses contribute to an annual loss of $144,806 in potential farm net income.	Direct impacts of the FWFI include the use of approximately $5,538,287 in local match funds to construct the Proposed Project. In addition, the FWFI would temporarily create approximately 1.4 direct jobs, 1.6 indirect jobs, and 0.7 induced jobs within the project area during construction (see Appendix E). The PR&G state that federal investments in water resources should strive to maximize public benefits, with appropriate consideration of costs (USDA 2017). The average annual cost of the FWFI is $738,942 and the FWFI is anticipated to result in $1,118,366 in average annual economic benefits; over half of the economic benefits

Resource Area	FWOFI	FWFI
		are derived from agricultural-related reduced damages and benefits. Therefore, the benefit to cost ratio of the FWFI is 1.5.
Cultural, Historic & Paleontological Resources	The FWOFI is anticipated to result in No Historic Properties Affected in the project area because no construction would take place. The FWOFI would have no impact on paleontological resources as no construction would occur.	The Colorado NRCS determined that the FWFI would have an adverse effect on the six eligible canal segments within the project area: Cimarron Canal (5GN.6371.1, 5MN.4808.5, 5MN.4808.6), M&D Canal (5MN.1855.9), Vernal Mesa Ditch (5MN.7708.3), and East Lateral/Vernal Mesa Ditch (5MN.10323.2) pursuant to 36 CFR 800.5. SHPO concurred with the eligibility and determination of effects (Appendix A). NRCS submitted consultation letters to the Southern Ute Tribe, the Ute Mountain Ute Tribe, and the Ute Indian Tribe – Uintah & Ouray Reservation, Comanche Nation, Apache Tribe of Oklahoma, Fort Belknap Indian Community, Navajo Nation, Montrose and Gunnison County Commissioners, Gunnison County Historic Preservation Commission, and the Montrose Historical Society and Museum for concurrence and compliance with Section 106 requirements. Only the Southern Ute Indian Tribe responded to the request for comments. Consultation letters are included in Appendix A. In accordance with 36 CFR Part 800.6, NRCS would mitigate the adverse effects to the NRHP-eligible canal segments through the development of a MOA designed to conserve the value of the eligible cultural resources. The MOA was developed in consultation with all consulting parties. The MOA specifies measures to minimize and mitigate the effects to the historic sites and would be implemented pursuant to compliance with Section 106 of the NHPA. A Post-Review Discovery Plan has been prepared and is included in Appendix B of the MOA. The MOA is included in Appendix A of this Plan-EA. If construction activities uncover any materials of cultural or historic significance (i.e., bone fragments, pottery, stone tools, burial features, etc.), construction would halt and coordination with the SHPO, the THPO, other Tribes with historic ties to the respective APE area, and Montrose County

Resource Area	FWOFI	FWFI
		and/or Gunnison County Sheriffs would occur. According to the BLM PFYC, there is low to moderate potential to uncover fossils in much of the project area, however the East Lateral has high to very high PFYC. Given the high PFYC of the East Lateral, a paleontological resource survey was completed for the project area. No fossil localities were documented during the survey. A paleontological monitor was recommended by BLM to oversee the earthwork and document any fossil discoveries. An Unanticipated Discovery Plan for paleontological resources would be implemented under the FWFI.
Hazardous Materials	The FWOFI would have no direct or indirect impact on hazardous materials in the project area because no construction would take place.	A solid waste facility and two RCRA facilities are located within a mile of the project area; however, the three sites were more than 0.5 miles outside the project area. Given the distance between the facilities and the proposed construction activities, the FWFI would not impact hazardous facilities near the project area. Furthermore, no hazardous materials would be generated by the FWFI.
Public Health & Safety	Without the agricultural water management improvements proposed under FWFI, M&D Canal and the Cimarron Canal would continue to experience risk of canal breach, and associated property and infrastructure damage. Therefore, the FWOFI would have a negative effect on public health and safety.	The purpose of the FWFI is to provide improved agricultural water management by stabilizing the hillside above the M&D Canal and piping the various canals and laterals throughout the project area. The project area has a history of, and is prone to, landslides which have contributed to canals overtopping, breaching, and flooding adjacent areas. The FWFI would reduce the risk of canal breach and potential damages from a breach.
Recreation	No direct or indirect impacts would occur to recreation under the FWOFI because no construction would take place.	The FWFI would indirectly benefit the Black Canyon of the Gunnison National Park by conserving 2,698 ac-ft of water and reducing salinity and selenium loading to the Gunnison River. The FWFI would support the objectives of the Forest Plan for the GMUG National Forest, specifically watershed and aquatic resources restoration and recreational management. Water conserved by the FWFI would allow water to be held in the Silver Jack Reservoir for a longer period, thereby allowing for more recreation user days. Therefore, the FWFI would have an indirect beneficial impact on recreation in the Silver Jack Reservoir. The FWFI would provide

Resource Area	FWOFI	FWFI
		$7,326 in increased recreational consumer surplus. The installation of a temperature sensor in the Cimarron River would enable the timed release of conserved water to decrease high summer water temperatures in the river, thereby improving fish habitat in the Cimarron River and increasing the number of recreational visitors to the project area.
Land Use	The FWOFI would not alter existing conditions and would therefore not interfere with the Montrose County Master Plan or the Gunnison County Land Use Resolution. No direct or indirect impacts would occur to land use under the FWOFI because no construction would take place.	The FWFI supports the goals of the Montrose County Master Plan and Gunnison County Land Use Resolution; specifically, protecting agricultural lands, providing an adequate water supply, and promoting the health, safety, and general welfare of the environment. The FWFI would conserve a total of 2,698 ac-ft of water lost to seepage and evaporation, provide for efficient delivery of agricultural water, and improve water quality by reducing selenium and salinity loading by 2,247 tons. The FWFI would not convert existing prime and unique farmlands and would improve agricultural water supplies. Under the FWFI, construction activities associated with East Lateral would occur on BLM land. To account for the piping of East Lateral on BLM lands, BLM would acknowledge the historic ROW. In addition, Reclamation claims ownership of the M&D Canal. Therefore, a MOA was established between Reclamation and NRCS, which will guide the engineering review process for the 30% and 100% design of the M&D Canal. Reclamation will approve the full design prior to construction commencing. Temporary easements would be required for staging during construction of the FWFI.
Visual Resources & Scenic Beauty	No direct or indirect impacts would occur to visual resources and scenic beauty under the FWOFI because no construction would take place.	The FWFI would have a direct effect on visual resources by eliminating open water in the East and West Laterals, Vernal Mesa Canal, and Cimarron Canal, and by removing mature trees and shrubs, and disturbing herb layer vegetation along all the canals in the project area. There would be temporary, minor impacts to visual resources from the presence of construction equipment and construction crews. Native vegetation would be reestablished in areas disturbed by construction thereby reducing construction-related visual resource impacts. Although the FWFI would not result in long-term impacts to

Resource Area	FWOFI	FWFI
		scenic beauty in the general area, there would likely be visual impacts directly along the canal alignments from the removal of open water features, construction-related vegetation disturbance, and the permanent loss of vegetation dependent on the current canal seepage. To mitigate for the loss of vegetation, the canals would be revegetated with native, drought-tolerant vegetation. The visual effects of piping and lining the canals would resemble the current condition of the linear canal feature and be strikingly similar to other linear features, such as ditch, power, and fence lines in this rural, agricultural setting, and after reclamation and vegetation establishment, the change would be unnoticeable.
Parklands	The FWOFI would not alter existing conditions; therefore, the FWOFI would not interfere with the Black Canyon of the Gunnison General Management Plan. The FWOFI would have no direct or indirect impact on parklands in the project area because no construction would take place.	The FWFI supports the goals the Black Canyon of the Gunnison General Management Plan, specifically the protection of water resources. Current discharge flows from the West Lateral that reach the Black Canyon of the Gunnison National Park would not be reduced under the FWFI. Indirect effects of the FWFI would be a water savings of approximately 239 ac-ft per year from the piping of the West Lateral project element. Piping the West Lateral would eliminate livestock contamination in the lateral, which currently flows into the National Park via Red Rock Creek. This outcome would ultimately improve water flow to nearby parklands due to a reduction of livestock contamination and reduction of water loss during transport. Additionally, the piping would reduce selenium and salinity loading by 2,247 tons per year, addressing the TMDL for Red Rock Creek. Therefore, the FWFI would have a beneficial impact on parklands adjacent to the project area.
Transportation & Infrastructure	If the FWOFI were implemented, the canal infrastructure would not be improved and the existing seepage, inefficiency, and water losses would remain the same. The BPWCD and UVWUA systems experience canal breaches, which damages the systems and requires emergency repair. The average annual costs of	The FWFI would improve the existing BPWCD and UVWUA systems' infrastructure. The FWFI aligns with the priorities identified by the BPWCD and UVWUA planning efforts (see Section 4.2). The FWFI would directly improve irrigation infrastructure, and indirectly protect infrastructure in the project area. The FWFI would reduce emergency repair costs to BPWCD and UVWUA systems by $84,674. Additionally, the FWFI would also provide $966,236 in regulating ecosystem services, of

Resource Area	FWOFI	FWFI
	emergency repairs to the BPWCD and UVWUA irrigation distribution systems under the existing conditions were estimated at $86,800 (Appendix D).	which, $84,674 represents reduced infrastructure damages. Under the FWFI, three road crossings would be required. The BPWCD and other sponsors would work with the CDOT to obtain all necessary permits to establish easements, work within the designated State and local ROW, and implement appropriate traffic control measures during construction to minimize disturbance and reduce impacts to local traffic.
Noise	Background noise levels are associated with existing traffic and agricultural noise. The FWOFI would have no impact on noise levels in the project area.	Temporary increases in noise related to the use of construction equipment and vehicles would result from implementation of the FWFI. However, noise mitigation measures would be implemented during construction to minimize temporary noise impacts. No permanent noise impacts are expected from the FWFI. Because the FWFI has multiple mitigation measures designed to reduce noise, and the effects are temporary, noise effects would be minor.
Scientific Resources	The FWOFI would have no direct or indirect impact on scientific resources in the project area. Scientific resources in the project area would remain the same and existing paleontological resources would not be impacted, as no construction would occur.	Project elements would contribute to the scientific resources in the project area by installing one temperature sensor in the Cimarron River. Piping and lining portions of canals in the BPWCD and UVWUA systems is unlikely to negatively impact paleontological scientific resources that may occur in the project area. Given the high PFYC of the East Lateral, a paleontological monitor was recommended by BLM to oversee the earthwork and document any fossil discoveries. An Unanticipated Discovery Plan for paleontological resources would be implemented under the FWFI.
National Economic Efficiency		
Construction Cost	$0	$21,259,146.60
Project Environmental, Engineering, and Administrative Costs	$0	$3,919,188.98
Total Project Cost (Installation Cost)	$0	$25,178,335.18
Cost Sharing (NRCS)	$0	$19,640,048.53
Cost Sharing (Sponsors)	$0	$5,538,286.65

Resource Area	FWOFI	FWFI
Annual Installation Cost	$0	$621,172.00
O&M Cost	$0	$120,626.00
Annual Sum Cost	$0	$738,942.00
Annual Benefit Cost	$0	$1,118,366.00
Annual Net Economic Benefit	$0	$379,424.00
Benefit to Cost Ratio	0	1.5

Notes: (1) Price base: 2022 dollars. (2) The benefits of the Action Alternative are calculated as the additional value that would be created because of the proposed actions. The benefits of the Action Alternative are not estimates of total damages under the FWOFI and proposed conditions.

Table 4-7 provides a summary of the ecosystem services quantified and valued as part of the NEE analysis. Ecosystem services values are reported in average annualized values (AAV).

Table 4-6. Summary of Project Alternatives and Associated Ecosystem Services

	Alternatives	
	FWOFI	**FWFI**
Alternatives		
Locally Preferred	The FWOFI would maintain the existing conditions and would not improve agricultural infrastructure.	The FWFI is locally preferred as the community in the project area is agriculturally focused; therefore, agricultural infrastructure improvements would provide the greatest benefit to the community. The FWFI would optimize water delivery against costs. No public comments were received during the scoping period.
Non-structural	The FWOFI is the non-structural alternative. The FWOFI would maintain the existing conditions and would not implement structural changes.	The FWFI would implement structural changes.
Environmentally Preferable	The FWOFI would maintain existing conditions in the project area. Water would continue to be lost to seepage and evaporation and salinity and selenium loading would continue to occur.	The FWFI is the environmentally preferred alternative. The FWFI would improve agricultural water delivery, conserve water, improve water quality, and would not result in significant impacts to human health or the environment.
National Economic Efficiency	The FWOFI would require no project investment.	The FWFI would require an investment of $25,178,335, provide $1,118,366 in net

	Alternatives	
	FWOFI	**FWFI**
		benefits, representing a benefit to cost ratio of 1.5.
Guiding Principles		
Healthy and Resilient Ecosystems	Under the FWOFI, water would continue to be lost to seepage and evaporation, and salinity and selenium loading would continue to occur.	The FWFI would invest in projects that conserve water, improve water quality, and thereby restore the functions of ecosystems in the project area.
Sustainable Economic Development	The FWOFI would not provide an economic investment for the better management of water resources in the project area.	Economic analysis was performed to ensure the FWFI encourages sustainable economic development. The FWFI would provide for the better management of water resources in the project area, while also being considered the NEE alternative.
Floodplains	The FWOFI would not invest federal funds in the development of flood prone areas.	The FWFI would occur in the floodplain associated with the Cimarron River and near the floodplain of Happy Canyon Creek. However, no surface disturbance would be required for the FWFI, and no additional occupancy or modification of the floodplain would occur; therefore, the FWFI would avoid adverse effects to the floodplain and is consistent with E.O. 11988.
Public Safety	The project area has a history of landslides, canal overtopping, and canal breaching. The FWOFI would not alter the existing conditions.	The FWFI would reduce the risk of canal breach and potential damages from a breach.
Watershed Approach	The FWOFI was analyzed using a complete watershed approach.	The FWFI was analyzed using a complete watershed approach.
Total Project Investment	**$-**	**$25,178,335**
Monetized Net Benefits	**$-**	**$1,118,366**
Regulating Services		
Reduced infrastructure damages	$-	$84,674
Reduced income loss	$-	$439,745

	Alternatives	
	FWOFI	**FWFI**
Reduced downstream damages	$-	$441,817
Provisioning Services		
Increased agricultural income	$-	$144,806
Riparian vegetation	-	Reduction of 82 acres
Water access for wildlife	-	Loss of a water source
Wetlands	-	Possible adverse impacts to 5.69 acres of existing wetlands; No mitigation is anticipated
Cultural Services		
Increased recreation benefits	$-	$7,326

Notes: (1) Note that all costs and benefits for the Action Alternative are compared to the Future Without Federal Investment (FWOFI) here and elsewhere in the document. Benefits and costs were calculated over a 102-year analysis. All values are reported in 2022 dollars. (2) The benefits of the Action Alternative are calculated as the additional value that would be created because of the proposed actions. The benefits of the Action Alternative are not estimates of total damages under the FWOFI and proposed conditions. 3) Supporting services are not applicable to this project, and therefore no supporting services are presented in this table.

Chapter 5 Environmental Consequences

Under NEPA, the NRCS is required to identify and address environmental and human health effects that may occur from implementing the No Action Alternative/FWOFI and Action Alternative/FWFI. The purpose of this chapter is to describe the potential impacts of each alternative on the environmental and human health resource categories defined in Chapter 3, to describe the significance of the impact and to describe actions to reduce the impacts. Three types of effects may occur and are discussed in this chapter:

- Direct Effect: Effects from a proposed action that occur at the same time and same place.
- Indirect Effect: Effects from a proposed action that occur later in time, at some distance from the project, and are changes due to cause and effect relationships.
- Cumulative Effect: Past, present, and reasonably foreseeable/probable effects from the proposed action, or other activities regardless of agency.

The scale and intensity of impacts are evaluated using the following significance criteria:

- Magnitude: Whether effects from the proposed action will be minor or major.
- Duration: Whether effects from the proposed action will be short-term/temporary or long-term/permanent.
- Extent: Whether effects from the proposed action will be localized or regional.

The evaluation of effects will consider several federally-funded projects that are ongoing or have been completed within the project area. Section 1.5 discusses the past and ongoing piping and repair projects that are related to the Proposed Project and considered in the cumulative effect analysis.

5.1 Soils & Geology

5.1.1 Upland Erosion & Sedimentation

5.1.1.1 *No Action Alternative/FWOFI*

Landslides above the M&D Canal, and around the Cimarron Canal are causing the canals to overtop and breach. Landslide frequency would remain the same under the FWOFI. Severe seepage in the Vernal Mesa Canal is impacting the canal stability, which has caused the canal to breach in the past. The FWOFI would not address current issues with erosion and hillside sloughing. Under existing conditions, approximately 28,788 acres of agricultural lands in the BPWCD and UVWUA service areas are damaged from the breaching. The BPWCD and UVWUA incur $86,800 in average annual emergency repairs associated with canal breach and an average annual loss of $450,923 in crop yields. Given that no construction would occur under the FWOFI, there would be no impacts to soil in the project area and a CDPS General Permit and associated SWMP would not be required. Given that the FWOFI would have no impacts to soil, cumulative effects are not anticipated.

5.1.1.2 *Action Alternative/FWFI*

Canal Breaching

The project area is prone to and has a history of landslides. The project is designed to address this issue and the indicator to determine if the landslide risk is reduced is the acres of agricultural land protected from canal breaching.

The project area is prone to, and has a history of, landslides. Under the FWFI, landslide frequency and magnitude may decrease and become minor in areas below the canal prism, as canal seepage would no longer occur, and saturated soils are more prone to landslide occurrence. Landslides that come from above the canal prism would likely not decrease in frequency, but the magnitude of their impact on the irrigation water supply, however, would be majorly reduced by enclosing the canals. Although the FWFI would require substantial soil disturbance, the duration of this disturbance would be both temporary and permanent, and the extent of this disturbance would be localized to the footprint of the canal and pipe locations. TECs, reseeding of disturbed areas, and other BMPs described in Appendix E, would be implemented to minimize construction induced erosion.

The FWFI would mitigate damages to approximately 28,788 acres of agricultural lands in the BPWCD and UVWUA service areas from canal breaching. Furthermore, the FWFI would improve agricultural water management in the long-term by improving efficiency and conserving water in the project area. The economic analysis estimates that the FWFI would provide $144,806 in additional farm net income from conserved water, reduce $439,745 in average annual crop yield damages due to canal breach, and reduce $84,674 in costs for emergency repairs. The FWFI would provide $966,236 in regulating ecosystem services.

Erosion and Sedimentation from Project Activities

Project activities may contribute to erosion and sedimentation inconsistent with the Colorado Water Quality Control Act, (25-8-101 et seq., CRS, 1973 as amended) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq.). The threshold for determining significance is the amount of the construction area for which BMPs designed to reduce erosion and sedimentation apply, and requirement to comply with CDPS General Permit.

Under the FWFI, direct impacts to soil would include temporary and permanent ground disturbance from construction. Major soil disturbance would occur for the earthwork to install irrigation pipe and stabilize the hillside at the M&D Canal. The extent of this soil disturbance would be confined to the footprint of the canal and pipe locations; however, the extent of erosion and sedimentation could have localized impacts in areas adjacent to the project footprint. BMPs, such as the installation of TECs and reseeding disturbed areas to encourage the establishment of native vegetation, would be applied at all surface disturbance locations and are designed to avoid and minimize construction related erosion and sediment transport. See Appendix E for a complete list of BMPs. A CDPS General Permit and associated SWMP and SPCC Plan would be required before construction of the FWFI. The combination of the required BMPs for the project and the additional erosion and sedimentation BMPs that would be required with the CDPS General Permit ensure that water quality standards would be met during construction activities.

In the short- and long-term, the FWFI would reduce hillside sloughing in the project area, ensuring the project area would continue to meet water quality standards.

Of the seven projects occurring in the project area (see Section 1.5), none of the known projects in the recent past, present, or foreseeable future are anticipated to result in impacts to upland erosion and sedimentation in the project area. Therefore, cumulative effects are not anticipated to result from implementation of the FWFI.

5.1.2 Prime & Unique Farmland

5.1.2.1 *No Action Alternative/FWOFI*

Portions of the project area are designated farmland of statewide importance. . The long-term risks to designated farmlands of statewide importance include continued water loss from seepage and evaporation, and continued landslide frequency. These risks would remain the same under the FWOFI, as discussed in 5.1.1.1, and could contribute to of a canal breach. Canal failure could result in the subsequent major and catastrophic short-term and long-term loss of farmland and crops. However, no ground disturbance would occur under the FWOFI and prime and unique farmlands would not be converted to a different use under the FWOFI. Therefore, the FWOFI would not impact prime and unique farmlands and cumulative effects to prime and unique farmlands are not anticipated.

5.1.2.2 *Action Alternative/FWFI*

Project activities have the potential cause short-term and long-term minor effects to protected farmland of statewide importance, or prime and unique farmlands. The threshold for determining significance is the acres of construction activities that expand the footprint of the canals into farmlands of statewide importance, or prime and unique farmland, and subsequent compliance with Federal Farmland Protection Policy Act (FPPA) [Subtitled I of Title XV, Section 1539-1549 of the Agricultural and Food Act of 1981 (PL 97-98)] ensuring protection of farmlands of statewide importance, or prime and unique farmland.

Portions of the project area, specifically lands along the Coal Hill (0.02 acres), East Lateral (16.5 acres), and West Lateral (39.3 acres) project components are designated farmland of statewide importance. The extent of active farmlands are localized adjacent to the East and West Laterals. Under the FWFI, temporary and permanent major soil disturbance would be primarily focused within the previously disturbed canal prisms, the FWFI would not disturb existing agricultural lands that are designated farmland of statewide importance, and the FWFI would not alter the land use of designated farmlands. No farmlands of statewide importance would be converted from agricultural uses to other uses because of the FWFI. Therefore, the FWFI is not anticipated to impact prime and unique farmlands in the project area and complies with the FPPA.

Of the seven projects occurring in the project area (see Section 1.5), none of the known projects in the recent past, present, or foreseeable future are anticipated to result in impacts to prime and unique farmlands in the project area. Therefore, cumulative effects are not anticipated to result from implementation of the FWFI.

5.2 Water Resources

5.2.1 Surface & Groundwater Quantity & Quality

5.2.1.1 *No Action Alternative/FWOFI*

Under the FWOFI, the project area would continue to experience 2,698 ac-ft of water losses from seepage and evaporation; however, groundwater recharge would continue to occur in the project area through deep percolation. The FWOFI would have no direct impact on the goals of the

Gunnison BIP. Furthermore, under the FWOFI the project area would continue to contribute 2,247 tons of salt and selenium to the watershed annually, and water quality of Red Rock Creek would not change as West Lateral would not be fully enclosed. Under the FWOFI, water quality would not be temporarily impacted, as construction would not occur and a CDPS General Permit would not be required. The other Reclamation and NRCS canal piping projects occurring in the project area, as described in Section 1.5, are anticipated to increase water quantity, improve water quality, improve water efficiency, and enhance agricultural water management in the project area. Therefore, cumulative negative effects to surface and groundwater quantity and quality are not anticipated to result from the FWOFI.

5.2.1.2 *Action Alternative/FWFI*

The FWFI would directly improve water quantity and water quality in the project area.

Water Quantity

The project area loses water to canal seepage which may contribute to groundwater recharge. The project is designed to address this issue, and the indicators are the ac-ft of water conserved, the net income from conserved water, and the amount of provisioning ecosystem services from increased agricultural income associated with efficiency gains.

The effects on water quantity would be major and long-term and the extents of these effects would be regional, under the FWFI. The proposed canal piping and lining would conserve 2,698 ac-ft of water by eliminating water lost to seepage and reducing water lost to evaporation. Approximately 1,503 ac-ft in the BPWCD system and 1,195 ac-ft in the UVWUA system would be conserved (Appendix E. Water Loss Memorandum). Water conserved by the FWFI would remain in the Cimarron River during the early irrigation season, until water is needed. Efficiency gains by the new system would maintain early season flows in the Cimarron River and allow water storage in the Silver Jack Reservoir to last longer. The economic analysis in Appendix D estimates that the FWFI would provide $144,806 in provisioning ecosystem services from increased agricultural income associated with efficiency gains.

As demonstrated in the USGS and BLM report of Eastern Utah and Western Colorado, canal seepage contributes to groundwater recharge, which is likely the case in the project area (Masbruch and Shope 2014). The extent to which seepage influences groundwater recharge is unknown because there is no current data in the project area evaluating direct groundwater recharge sources and volumes. Though piping and lining the canals may reduce groundwater recharge, the conserved water could be applied to the agricultural fields, thus preserving some level of artificial groundwater recharge via deep percolation. Conversely, this water would stay in the natural water systems, making the basin more resilient to future increases in water use or drought conditions.

Overall, the water quantity within the project area would increase by 2,698 ac-ft of water, which would provide additional income and efficiency gains.

State and Regional Water Supply Plans Consistency

The proposed activities are designed to support state and regional water supply plans. The indicator is the identification of the activities which support the goals of the Gunnison BIP.

The FWFI would have major long term, regional effects, and would conserve water lost to seepage and evaporation, provide for efficient delivery of agricultural water, and improve water quality by

reducing selenium and salinity loading, thereby addressing the primary goal of the Gunnison BIP. Section 5.2.4 describes how the FWFI is consistent with the Gunnison BIP.

Water Quality

Project activities may temporarily affect surface water quality, and the magnitude and extent of the effects would be minor and localized. The indicator to determine the threshold of significance is the amount of the construction area for which BMPs designed to protect surface water quality apply and the ability of the Proposed Project to comply with the provisions of the Colorado Water Quality Control Act and the Federal Water Pollution Control Act, as documented in the CDPS General Permit.

Elevated Salt and Selenium Levels Contributing to Impaired Waters and Consequent TMDLs

Elevated salt and selenium levels in the project area contribute to impaired waters and consequent Total Maximum Daily Load (TMDL). The proposed activities are designed to reduce salt and selenium levels, and the indicator is the tons per year of salt and selenium reduction in the project area and contribution towards meeting TMDL goals.

The FWFI would have major and long-term effects on salt and selenium levels, which would be local and regional. The FWFI would eliminate vertical transport of salts (2,247 tons per year) and agricultural fertilizers via seepage and infiltration in the watershed. The agricultural water improvements would improve water quality by reducing salt loading (2,247 tons per year) and selenium loading in the watershed, thereby helping to meet the area's TMDL goals. The FWFI would reduce salinity control costs by $441,817. Reclamation found that water conservation projects focusing on irrigation on saline soils, such as the FWFI, is the single most effective salinity control measure found in the past 30 years of investigations (Reclamation 2017a). Thus, though a potential loss of groundwater recharge could occur from the proposed activities, the reduction in salinity from seepage and infiltration would be counteracted, and overall water quality in the project area would be improved.

***E. coli* Levels in the West Lateral**

E. coli levels in the West Lateral are high during the irrigation season. The proposed activities are designed to reduce *E. coli* levels, and the indicator to determine if this element of the project objective is met is the miles of piping to reduce *E. coli* contamination.

Water quality data for Red Rock Creek illustrates elevated levels of *E. coli* during the irrigation season; the elevated levels of *E. coli* in Red Rock Creek are likely attributed to livestock waste entering and contaminating the water. The FWFI would have major and long-term effects to *E. coli* levels locally within the watershed. Piping approximately 4 miles of the West Lateral would reduce *E. coli* contamination in Red Rock Creek by preventing livestock contamination.

Effects of Project Activities on Surface Water Quality

The FWFI may have temporary and minor impacts to surface water quality during construction, and the extent of these effects would be constrained to the localized project footprint. BMPs would be implemented during construction at all locations where surface disturbance occurs to protect water quality and to prevent water pollution from runoff, spills, leaks, and leaching. Appendix E provides a complete list of BMPs. A CDPS General Permit and associated SWMP and SPCC Plan would be required before FWFI construction. Therefore, the proposed activities would

comply with the CWA, Colorado Water Quality Control Act, and the Federal Water Pollution Control Act.

Together, the FWFI, and the Reclamation and NRCS piping projects described in Section 1.5 would increase water quantity and quality, improve water efficiency, and enhance agricultural water management in the project area. Overall, the FWFI and the Reclamation and NRCS piping projects would result in net positive cumulative effects to surface water quantity and quality in the project area by conserving water and improving water quality.

5.2.2 Clean Water Act/Waters of the U.S., including Wetlands

5.2.2.1 *No Action Alternative/FWOFI*

Tables 3-4 and 3-5 identify the wetlands and waters within and near the project area. The FWOFI would have no direct impacts on resources protected under the CWA. The canals in the BPWCD and UVWUA systems would continue to lose water to seepage that provide hydrology to adjacent downslope wetlands, including jurisdictional wetlands. The FWOFI would also have major, long term, negative, indirect impacts on WOTUS, such as Cimarron River, by reducing available water flow via continued water lost to seepage. Given that the FWOFI would have no direct impacts on water resources protected under the CWA, cumulative effects would not result under the FWOFI.

5.2.2.2 *Action Alternative/FWFI*

The proposed activities could discharge pollutants into navigable waters, referred to as WOTUS. The indicators to determine the threshold of significance are the measures to ensure jurisdictional consistency, and compliance with applicable permitting requirements for WOTUS.

Construction activities would be primarily contained to the previously disturbed canal prism, though major temporary and permanent ground disturbing activities would directly impact 0.05 acres of wetlands within the project area. However, BMPs are in place to ensure CWA water quality standards would be met. BMPs include implementation of TECs, SPCC Plan, and SWMP and following the construction stormwater discharge requirements as stated in the CDPS General Permit. A complete list of BMPs is included in Appendix E.

The FWFI would have major long-term indirect effects on wetlands by eliminating seepage from the canal that contributes hydrology to the 5.69 acres of wetlands within and adjacent to the project area. However, the Proposed Project would conserve 2,698 ac-ft of water annually, which could indirectly benefit WOTUS by maintaining early season flows in the Cimarron River and allowing water storage in the Silver Jack Reservoir to last longer.

The portion of the FWFI that would pipe Vernal Mesa Canal, West Lateral, and Cimarron Canal may be permitted under USACE RGP 5—Ditch Related Activities in the State of Colorado (USACE 2021). However, a Section 401 permit from CDPHE (Water Quality Certification) may also be required. Coordination with USACE regarding RGP 5 is ongoing, and all permitting requirements would be met for construction (Appendix A. USACE Consultation). It should be noted that the final authority regarding pursuance of permitting requirements rests with USACE.

The FWFI and the other Reclamation and NRCS canal piping projects in the project area would permanently indirectly impact wetlands by reducing seepage that provides hydrology to adjacent downslope wetlands. However, water conserved by the FWFI and the other Reclamation and NRCS canal piping projects described in Section 1.5 would indirectly maintain early season flows in the Cimarron River and allow water in the Silver Jack Reservoir to last longer, ensuring cumulative effects to jurisdictional wetlands within and adjacent to the project area would be minor

(Appendix E). Overall, the FWFI and other projects in and around the project area would improve WOTUS.

5.2.3 Wetlands

5.2.3.1 *No Action Alternative/FWOFI*

The FWOFI would have no direct impact on wetlands, as no construction activities would occur. Indirectly, the FWOFI would benefit wetlands in and adjacent to the project area, as the canals in the BPWCD and UVWUA systems would continue to lose water to seepage that provide hydrology to adjacent downslope wetlands. Given that the FWOFI would have no direct impacts on wetlands, cumulative effects are not anticipated to result from the FWOFI.

5.2.3.2 *Action Alternative/FWFI*

The proposed activities have major, temporary, direct and indirect effects to wetlands during construction activities, which are protected under E.O. 11990. The indicators to determine the significance threshold are the measures to protect wetlands directly affected by construction activities, to minimize the destruction, loss, or degradation of wetlands and preserve and enhance the natural and beneficial values of wetlands, as required in E.O. 11990.

Temporary ground disturbing construction activities may directly impact 0.05 acres of wetlands within the project area. Impacts to wetlands would be avoided and minimized by containing construction to the extent of the previously disturbed canal prism and by implementing BMPs, such as revegetation of disturbed areas with native vegetation and prevention of noxious weed transport (see Complete BMP List in Appendix E). These actions would ensure the FWFI minimizes the destruction, loss, or degradation of wetlands and preserves and enhances the natural and beneficial values of wetlands, as required in E.O. 11990.

Indirectly, the FWFI would eliminate seepage from the canal that contributes hydrology to 5.69 acres of wetlands within and adjacent to the project area. This effect would be offset by the 2,698 ac-ft of water savings that would be available for irrigation or would stay within the watershed.

Together, the FWFI and the other Reclamation and NRCS canal piping projects described in Section 1.5 would indirectly impact wetlands by reducing seepage that provide hydrology to adjacent downslope wetlands. Overall, the FWFI and other canal piping projects in the project area would result in cumulative effects to wetlands. However, the Reclamation Salinity Control Projects required Habitat Replacement Plans that preserve the ecological value of the wetlands affected by the seepage reductions, minimize wetland effects. Additionally, this project and the other Reclamation and NRCS projects require extensive BMPs that minimize and avoid wetland impacts, ensuring cumulative effects to wetlands would be minimized in the project area.

5.2.4 Regional Water Management Plans

5.2.4.1 *No Action Alternative/FWOFI*

The FWOFI would have no direct impact on regional water management plans. Under this alternative, water infrastructure improvements and water conservation measures would not be implemented, therefore seepage losses and salinity and selenium loading would continue and may worsen. However, the other Reclamation and NRCS canal piping projects described in Section 1.5 are anticipated to increase water quantity, improve water quality, improve water efficiency, and enhance agricultural water management in the project area. Therefore, cumulative

impacts to water availability and water quality, and therefore regional water planning efforts, are not anticipated to result from the FWOFI.

5.2.4.2 *Action Alternative/FWFI*

The proposed activities are designed to be consistent with Regional Water Management Plans. The indicator to determine consistency with Regional Water Management Plans is the method in which proposed activities would meet goals of the Gunnison BIP.

The goals identified in the Gunnison BIP are consistent with the goals listed the Colorado Water Plan (CDNR-CWCB 2023). The FWFI aligns with seven of the nine goals listed in the Gunnison BIP. Table 5-1 identifies the relevant Gunnison BIP goals and why the FWFI aligns with such goals.

Table 5-1. Relevant Gunnison BIP Goals

Goal	Goal Description	Rationale
1	Protect existing water uses in the Gunnison Basin.	The FWFI would: - Conserve 2,698 ac-ft of water lost to seepage and evaporation. - Provide for efficient delivery of agricultural water. - Improve water quality by reducing selenium and salinity loading by 2,247 tons. - Provide $144,806 from additional farm net income from conserved water. - Reduce salinity control costs by $441,817.
2	Discourage the conversion of productive agricultural land to all other uses within the context of private property rights.	The FWFI would: - Not convert existing prime and unique farmlands.
3	Improve agricultural water supplies to reduce shortages.	The FWFI would: - Conserve 2,698 ac-ft of water lost to seepage and evaporation. - Improve agricultural conveyance infrastructure. - Improve water quality by reducing selenium and salinity loading by 2,247 tons. - Provide $144,806 from additional farm net income from conserved water. - Reduce salinity control costs by $441,817.
4	Identify and address municipal and industrial water shortages.	Not applicable to FWFI.
5	Quantify and protect environmental and recreational uses.	The FWFI would: - Indirectly benefit the Black Canyon of the Gunnison National Park and Silver Jack Reservoir through water conservation and reduced salinity and selenium loading. - Improve fish habitat in the Cimarron River and increase user recreation days.

Goal	Goal Description	Rationale
		- Reduce salinity control costs by $441,817. - Provide $7,326 in recreation user benefits.
6	Maintain or, where necessary, improve water quality throughout the Gunnison Basin.	The FWFI would: - Conserve 2,698 ac-ft of water lost to seepage and evaporation. - Provide for efficient delivery of agricultural water. - Improve water quality by reducing selenium and salinity loading by 2,247 tons. - Reduce salinity control costs by $441,817.
7	Describe and encourage relationships among agricultural and environmental recreational water uses.	The FWFI would: - Indirectly benefit the Black Canyon of the Gunnison National Park and Silver Jack Reservoir through water conservation, reduced salinity and selenium loading, and increased user recreation days. - Reduce salinity control costs by $441,817. - Provide $7,326 in recreation user benefits.
8	Restore, maintain, and modernize critical water infrastructure.	The FWFI would: - Improve BPWCD and UVWUA water infrastructure.
9	Create and maintain active, relevant, and comprehensive public education, outreach, and stewardship processes involving water resources in the six sectors of the Gunnison Basin.	Not applicable to FWFI.

Together, water conserved by the FWFI and the Reclamation and NRCS canal piping projects described in Section 1.5 are anticipated to increase water quantity, improve water quality, improve water efficiency, and enhance agricultural water management in the project area consistent with the Gunnison BIP. The beneficial impacts of the FWFI and the Reclamation and NRCS canal piping projects are expected to result in net positive cumulative effects to regional water management plans in the project area.

5.2.5 Floodplain Management

5.2.5.1 *No Action Alternative/FWOFI*

The FWOFI would have no direct impacts on floodplain management. If the FWOFI were implemented, no development would occur in the 100-year floodplain of the Cimarron River or near Happy Canyon Creek. Given that no direct impacts to floodplains would occur under the FWOFI, cumulative effects are not anticipated to result under the FWOFI.

5.2.5.2 *Action Alternative/FWFI*

The proposed activities may have minor, temporary and localized effects to floodplains, which are protected under E.O. 11988. The indicator to determine the significance threshold for effects is the capability of the Proposed Project to meet the E.O. 11988 by not adversely affecting floodplains.

Proposed activities would occur in the floodplains associated with the Cimarron River and near floodplains associated with Happy Canyon Creek. The Cimarron River temperature sensor would be installed on an existing bridge abutment, and the associated small steel electrical enclosure cabinet would be either attached to the existing bridge, or to a metal post. Because no surface disturbance would occur with the installation of the temperature sensor, and no additional occupancy or modification of the floodplain would occur, the FWFI would avoid adverse effects to the floodplain and is therefore consistent with E.O. 11988.

Construction activities would occur within the existing infrastructure of the M&D Canal in a previously disturbed area. Changes to the grade along the M&D Canal would be constrained to the canal prism, the embankment, and the hillside to the west of the canal. The toe of the embankment on the east side of the canal, which overlaps with the 100-year floodplain, would not be modified. Because no surface disturbance would occur with the construction of the M&D Canal, and no additional occupancy or modification of the floodplain would occur, the FWFI would avoid adverse effects to the floodplain and is therefore consistent with E.O. 11988. The ability of this section of the project area to naturally moderate floods and maintain water quality would remain similar to the existing conditions, and the FWFI would not contribute to any trends increasing flooding risk in the project area or in the basin.

Construction of the temperature sensor within the Cimarron River may require a floodplain development permit. If a floodplain development permit is required, the permit would be obtained prior to construction. Given that the seven projects described in Section 1.5 would not impact floodplain management in and around the project area, cumulative effects would not occur from implementation of the FWFI.

5.2.6 Wild and Scenic Rivers

5.2.6.1 *No Action Alternative/FWOFI*

The FWOFI would have no direct impacts on wild and scenic rivers, or rivers listed on the NRI. If the FWOFI were implemented, no improvements would be made to the West Lateral and contaminated tailwaters would continue to flow into Red Rock Creek, ultimately reaching the NRI-listed Gunnison River. Given that the FWOFI would have no direct impact on wild and scenic rivers, or rivers listed on the NRI, cumulative effects are not anticipated to result from the FWOFI.

5.2.6.2 *Action Alternative/FWFI*

Proposed activities may affect Wild and Scenic Rivers protected under the National and Wild Scenic Rivers Act. The indicators to determine the significance threshold are the measures taken that protect or improve Wild and Scenic Rivers consistent with the National and Wild Scenic Rivers Act.

The FWFI would have no direct impact on wild and scenic rivers, or rivers listed on the NRI. The FWFI would have major, long-term indirect benefits to the Gunnison River, an NRI listed water. Water quality data for Red Rock Creek illustrates elevated levels of *E. coli* during the irrigation season; the elevated levels of *E. coli* in Red Rock Creek are likely attributed to livestock waste

entering and contaminating the water. Piping the West Lateral would reduce *E. coli* by preventing livestock contamination, ultimately improving tailwater that flows into the Gunnison River via Red Rock Creek, thus benefitting the Gunnison River.

Given that the seven projects described in Section 1.5 would not impact wild and scenic rivers in and around the project area, cumulative effects would not occur from implementation of the FWFI.

5.3 Air Quality

5.3.1 Clean Air Act/National Ambient Air Quality Standards, Climate Change & Greenhouse Gases

5.3.1.1 *No Action Alternative/FWOFI*

No short-term impacts from construction would occur; therefore, the FWOFI would have no impact on CAA or NAAQS in the project area. Given that no impacts to air quality would occur under the FWOFI, cumulative effects are not anticipated to result from the FWOFI.

5.3.1.2 *Action Alternative/FWFI*

Clean Air Act/National Ambient Air Quality Standards

Proposed activities could affect air quality protected by the CAA. The indicator to determine the significance threshold are the effects to NAAQS and measures taken to protect air quality.

Currently, Montrose and Gunnison Counties comply with all NAAQS requirements. Construction activities would cause short-term increases in NOX, CO, and PM2.5 and PM10 emissions during construction from construction equipment. These emissions would be minor, localized, and temporary, and would not interfere with the area achieving NAAQS. Additionally, BMPs would be implemented to minimize air quality impacts (see Table 5-2).

Table 5-2. BMPs for Air Quality

Number	BMPs
1	Fugitive dust control.
2	Materials would be hauled in properly tarped or sealed containers.
3	Vehicle speeds would be restricted within the project area.
4	The size and number of excavations would be minimized to the extent practicable.
5	Construction equipment would be required to meet all air quality standards, including properly functioning mufflers.

Because project effects would be minor, localized, and temporary, and BMPs would be in place preventing any further effects to air quality, the area would continue to achieve NAAQS.

Though the seven projects described in Section 1.5 combined with the FWFI could cause temporary increases in NOX, CO, PM2.5, and PM10 from construction equipment emissions, these emissions would be temporary, minor, localized and would not interfere with the area achieving NAAQS requirements. Given that the seven projects described in Section 1.5 would not cause long-term impacts to air quality in the project area, cumulative effects would not result from implementation of the FWFI.

Climate Change & Greenhouse Gases

Proposed activities could contribute to instability in the climate or the accumulation of greenhouse gases (GHGs). The indicator to determine the significance threshold is whether the proposed activities contributions would meet the CDPHE's Climate Change Program to reduce GHGs.

Though project activities could cause temporary increases in GHGs from construction equipment emissions, these emissions would be temporary, minor, and localized, and would not interfere with the area achieving NAAQS requirements or statewide GHG goals, and GHG emissions would not increase in the project area over the short or long-term.

By improving the agricultural water management, encouraging watershed protection, and enhancing fish and wildlife habitat in the project area, the FWFI would make the project area and the irrigation system more resilient to climate stress, especially in the uncertain increases in variability of temporal and spatial patterns of precipitation, evaporation, and water availability which could challenge water resource systems. The FWFI would provide $144,806 in additional farm net income from conserved water, reduce costs for emergency repairs by $84,674, and reduce income loss by $439,745. The FWFI would provide $966,236 in regulating ecosystem services. The agricultural water improvements would also improve water quality by reducing salt loading (2,247 tons per year) and selenium loading in the watershed. The FWFI would reduce salinity control costs by $441,817.

GHG emissions would not increase in the project area over the short or long-term. Though the seven projects described in Section 1.5 combined with the FWFI could cause temporary increases in GHG emissions from construction equipment emissions, these emissions would be temporary, minor, localized and would not interfere with the area achieving NAAQS requirements or statewide GHG goals. Furthermore, the FWFI improvements combined with the seven projects described in Section 1.5 would cumulatively make the project area and the irrigation system more resilient to climate stress, especially with the variability of temporal and spatial patterns of precipitation, evaporation, and water availability which could challenge water resource systems. The seven projects described in Section 1.5 would not cause long-term impacts to GHGs in the project area, and cumulative effects would not result from implementation of the FWFI.

5.4 Plants

5.4.1 Forest Resources

5.4.1.1 *No Action Alternative/FWOFI*

Under the FWOFI, no construction activities would occur on USFS land, and no forest resources would be impacted. Given that no impacts to forest resources would occur under the FWOFI, cumulative effects are not anticipated to result from the FWOFI.

5.4.1.2 *Action Alternative/FWFI*

The installation of the temperature sensor on the GMUG National Forest must be consistent with the GMUG Land and RMP. The indicators to determine consistency with the GMUG Land and RMP are the project activities consistency with the guidelines listed in the Region 2 Watershed Conservation Practices Handbook (R2 FSH 2509.25-2006-1) and the goals of the GMUG Land and RMP. Additionally, indicators for consistency with the GMUG Land and RMP include the total size of the area of impact, whether impacts will be temporary or permanent, and what mitigation will be used to minimize impacts.

Under the FWFI, a temperature sensor and associated electrical enclosure would be located on USFS land within the GMUG National Forest. Although construction activities would occur on USFS land (approximately 0.1 acres), the sensor would be located on an existing bridge abutment and the steel cabinet electrical enclosure would either be mounted on the existing bridge or a metal post. Temporary and permanent impacts would be minor and negligible, as the sensor and electrical enclosure would be mounted on an existing structure, with no soil disturbance required for installation. The temperature sensor and electrical enclosure would not require tree removal. All project BMPs to adhere to working hours and minimize noise and site disturbance would be implemented.

As described in Section 5.2.1, 5.2.2, and 5.1.1, the FWFI would manage surface use to maintain water quality standards, increase water supply, and protect water quality, consistent with the GMUG Land and RMP. Additionally, the FWFI would not conflict with the three objectives of the Region 2 Watershed Conservation Practices Handbook: hydrologic function, soil quality, and aquatic systems. The FWFI's improvements on USFS land would not influence hydrologic function or soil quality but would indirectly benefit aquatic systems by sustaining water quality and aquatic habitat through the installation of the temperature sensor. Given that the installation of the temperature sensor would require only minor disturbance of 0.1 acres of USFS land, that no tree removal would be required, and that the FWFI would manage surface use to maintain water quality standards, increase water supply, and protect water quality and would follow the Region 2 Watershed Conservation Practices Handbook, the FWFI is consistent with the GMUG Land and RMP.

Of the projects described in Section 1.5, no known projects in the recent past, present, or foreseeable future would impact forest resources in the project area; therefore, cumulative effects would not occur from implementation of the FWFI.

5.4.2 Noxious Weeds & Invasive Plants

5.4.2.1 *No Action Alternative/FWOFI*

The BPWCD, CC&RC, and UVWUA actively implement invasive species controls to adequately manage and prevent their introduction and establishment. The FWOFI would not alter current invasive species and noxious weed control practices; therefore, the FWOFI would have no effect on noxious weeds and invasive plant presence in the project area. Given that no impacts to noxious weeds and invasive plants would occur under the FWOFI, cumulative effects are not anticipated to result from the FWOFI.

5.4.2.2 *Action Alternative/FWFI*

Proposed activities could cause the introduction or spread of invasive species, which is specifically prohibited by E.O. 13112. The thresholds to address this issue are the measures taken to prevent the introduction or spread of invasive species to ensure consistency with E.O. 13112.

Current practices to control and prevent the introduction and establishment of noxious weeds and invasive species would continue. In addition to these general practices, BMPs would be implemented to control and prevent the introduction and spread of any invasive species or noxious weeds, ensuring that effects to noxious weeds and invasive species would be temporary, minor and localized (see Table 5-3). A complete list of BMPs is included in Appendix E.

Table 5-3. BMPs for Noxious Weed and Invasive Species

Number	BMPs
1	Minimizing the amount of exposed soil without cover.
2	Application of herbicide prior to ground disturbance to minimize weed seed transport within the project area during construction.
3	Identifying and protecting areas where existing vegetation would not be disturbed by construction activities.
4	Reseeding areas disturbed by construction activities to encourage the establishment of native vegetation.
5	Pressure washing construction equipment to remove plant parts, soil, and other materials that may carry invasive and noxious weed seeds prior to arriving to the project area.

Given the implementation of BMPs described in Appendix E, the FWFI would not cause or promote the introduction or spread of invasive species and therefore follows E.O. 13112. Of the seven projects described in Section 1.5, no known projects in the recent past, present, or foreseeable future would introduce noxious weeds or invasive plants in or around the project area. Therefore, cumulative effects would not occur from implementation of the FWFI.

5.4.3 Riparian Areas & Ecologically Critical Areas

5.4.3.1 *No Action Alternative/FWOFI*

Under the FWOFI, no direct or indirect alteration of riparian areas would occur. Approximately 82 acres of seepage-induced riparian vegetation would continue to exist in the project area. Therefore, the FWOFI would have no impact on riparian areas, as such, cumulative effects would not occur.

5.4.3.2 *Action Alternative/FWFI*

Proposed activities could reduce riparian areas and the CNHP WPP stated goal is to protect and restore healthy, functioning wetlands and riparian areas through conservation, restoration, and adaptive management in the context of a changing climate (CNHP 2020). The indicators to determine the significance threshold are the actions taken to maintain the value of riparian areas and ensure the project area is more resilient to a changing climate, consistent with the WPP.

Construction practices would permanently remove large overstory trees and shrubs along portions of the canal alignments and would temporarily disturb the herb layer in riparian areas directly associated with the canal prisms. Effects would be contained to the extent of the canal; prims. Removal of large overstory trees and shrubs in the project area may majorly alter the light regime in the riparian area by reducing shade and protective canopy coverage. The change in light regime may indirectly influence the vegetative assemblage in the project area. Temporary disturbance of the understory in riparian areas may also temporarily decrease vegetative diversity in the project area.

An indirect major effect of the canal piping and lining involves the eventual loss of trees and vegetation within the extent of the canal prisms that may have received supplemental hydrology from canal seepage. To protect healthy and functioning riparian areas, as outlined in Goal 1 of the CNHP WPP, direct impacts to riparian areas would be minimized by implementing BMPs (see Table 5-4). A complete list of BMPs is included in Appendix E.

Table 5-4. BMPs for Riparian Areas

Number	BMPs
1	All work would be completed within the identified project area, limiting effects to the narrow corridor along the canals.
2	Disturbed areas would be revegetated with native, drought tolerant vegetation, ensuring continual vegetation coverage.
3	To prevent the transportation of invasive species, all equipment would be pressure washed to remove plant parts, soil, and other materials to prevent invasive and noxious weed seeds arriving at the site.

Under existing conditions, the open, unlined canals have an average of 50 feet of riparian vegetation established across the width of their prism along the approximate 13.5 miles of canals involved in the Proposed Project. These 82 acres of seepage-induced riparian vegetation would eventually be lost across the total project area when the canals are piped and lined. However, the total length of the Cimarron Canal, Vernal Mesa Canal, East and West Laterals, and M&D Canal in the irrigation system is 72 miles, representing 436 acres of riparian vegetation. Therefore, the 13.5 miles represent only 19% of the total length. Additionally, though hydrophytic vegetation exists along the canals, the composition of native and non-native understory species and the lack of a natural source of water makes the riparian habitat poor-quality and lacking diversity and complexity in structure. Furthermore, despite the potential loss of this poor-quality riparian habitat, as described in Section 5.2.1, the project is designed to improve overall water quantity and quality in the project area, making the entire basin more resilient to a changing climate, consistent with the WPP.

Eventual permanent loss of the 82 acres of seepage-induced riparian areas along the piped and lined canal alignments would occur due to loss hydrology to support this vegetation. The construction and completion of the FWFI combined with the other Reclamation and NRCS canal piping projects described in Section 1.5 would result in the direct and indirect loss of riparian vegetation in the project area. However, the salinity control projects require habitat replacement to maintain the value of the riparian habitat that would be lost from the piping or lining components of those projects, so cumulative losses to riparian vegetation would not occur. Additionally, effects to riparian areas would be minimized by implementing BMPs.

5.5 Animals

5.5.1 Wildlife & Wildlife Habitat

5.5.1.1 *No Action Alternative/FWOFI*

The FWOFI would have no direct effects on wildlife and adjacent wildlife habitat in the project area. Indirectly, the FWOFI would impact fish and wildlife habitat in the Cimarron River by not addressing water losses and selenium and salt loading in the project area. Continued water loss would directly impact habitat for aquatic species that depend on year-round water flows within the Cimarron River and would impact wildlife that use the river for drinking water, hunting, and which utilize the adjacent riparian vegetation along the river for forage and cover. Increased concentrations of selenium can result in bioaccumulation in organisms and can impact aquatic species by causing reproductive issues and mortality of juvenile fish and invertebrates (EPA 2022a). Increased salt concentrations in aquatic environments create toxic conditions, increase fish mortality, and impacts fish hatchling size (EPA 2023). Impacts to populations of native fish within the Cimarron River would indirectly impact wildlife which consume fish species. In addition,

the temperature sensor would not be installed to monitor the health of fish habitat in the Cimarron River. Cumulative effects would not occur.

5.5.1.2 *Action Alternative/FWFI*

Proposed activities could cause major and minor, permanent and temporary effects to wildlife and wildlife habitat by removing a water source within the extents of the project area, disrupting wildlife during construction, and removing riparian vegetation and wetlands. The indicators to determine the significance threshold are water availability within the project area, and available habitat within or around the project area. Additionally, proposed activities could temporarily cause minor effects to mule deer and elk winter and severe winter range. The indicators to determine the significance threshold are the percent of winter and severe winter range affected by project activities.

Potential temporary disturbance to wildlife and adjacent wildlife habitat would occur during construction. Piping the canals would permanently remove a source of water for wildlife that utilize the area. Big game species, such as mule deer and elk, and other wildlife may seasonally utilize the open water sources to drink. However, this water source is not perennially available due to controlled flows. When the water surface drops and flows cease, wildlife cannot easily access water within the canals. No fish habitat is present in the canals, so piping the canals would not impact brown, brook, or rainbow trout species.

Although the FWFI would permanently remove approximately 19.9 acres, or 11.2 miles, of open water that wildlife use in the project area, other water sources are available in the vicinity. For example, in addition to the M&D Canal remaining open, most of the Cimarron Canal and Vernal Mesa Canal would remain open. Other natural sources of water are also present throughout the vicinity, such as over 20 natural drainages and the Silver Jack Reservoir and the Cerro Summit Reservoir.

Wildlife, especially big game, may be temporarily displaced during construction due to noise and would likely choose to move to alternate locations while construction activities are present, but also may choose not to return to the area if habitat is lost. Construction would be limited to daylight hours, which would reduce impacts to nocturnal wildlife species.

Piping and lining the canals would remove approximately 82 acres of riparian vegetation and 5.69 acres of wetlands that receives supplemental hydrology from canal seepage and that wildlife, such as big game, small mammals, waterfowl, and avian species, may use for forage, shelter, and stopover habitat. Hydrology from the canals supports vegetative growth through seepage downslope from the canal edges and roads. The loss of this vegetation may impact ungulates and other foraging wildlife; however, the canal prisms are heavily managed with herbicide to minimize the presence of noxious weeds and to moderate vegetative growth, reducing the amount of existing forage and cover available for wildlife. Additionally, higher quality forage is present below the canal prisms.

The project area overlaps with 0.005% (326 acres) of the total mule deer winter range (6,344,364 acres) and 0.007% (94 acres) of total mule deer severe winter range (1,308,693 acres). Similarly, the project area overlaps with 0.001% (338 acres) of total elk winter range (26,824,806 acres) and 0.06% (218 acres) of total elk severe winter range (354,895 acres). Both mule deer and elk have ample adjacent winter and severe winter range habitat available in the vicinity of the project area. The FWFI would be constructed outside of the irrigation season, from October 15th to April 1st, which would overlap with winter use for big game. Mule deer and elk populations within the

vicinity of the project area would likely move to other suitable areas to avoid disturbances from temporary construction activities. However, as described previously, mule deer and elk habitat are abundant surrounding the project area, and population-level impacts are unlikely; therefore, overall impacts would be minor. Given that vegetation in the project area is heavily maintained and higher quality forage is present below the canal prism, the ground disturbance in the project area would not impact elk and mule deer foraging access. Post piping, the project area would be reseeded with native grasses and forbs, thereby increasing future forage potential within the alignment for these species. Wildlife would have to go around the project area to access habitat below the alignments. However, these animals are accustomed to navigating the canals, and movement for these species would not be altered significantly by the presence of construction activities.

The FWFI would permanently and majorly improve the quality and duration of water in natural waterbodies within the project area by reducing salt and selenium loading, and by improving irrigation efficiency which would reduce draw down from upstream water sources in the watershed. This would benefit fish habitat and provide drinking water for big game and small mammals. Indirectly, vegetation surrounding waterbodies may benefit from increased surface water, and could provide an increase in available forage and cover for wildlife species.

BMPs, including those listed in Table 5-5 below, would be implemented along the entire alignment to minimize impacts to wildlife species and habitat surrounding the canal prism. A complete list of BMPs is included in Appendix E.

Table 5-5. BMPs for Wildlife and Wildlife Habitat

Number	BMP
1	All work would be completed within the designated project area.
2	When feasible, construction equipment and vehicles would be fueled offsite. Adequate spill response equipment would be maintained and present at all times.
3	TECs, such as silt fences, fiber wattles, or other erosion control mechanisms, would be placed adjacent to or below disturbance areas to prevent and minimize sediment transport into natural waterways and other conveyance facilities.
4	Construction equipment would be prevented from entering the Cimarron River.
5	To prevent the transportation of invasive species, all equipment would be pressure washed to remove plant parts, soil, and other materials that may carry invasive and noxious weed seeds prior to arriving at the site.
6	Following construction, areas disturbed by construction activities would be reseeded to encourage the establishment of native, drought-tolerant vegetation.
7	Sensitive areas would be protected from any disturbance or construction activity by clearly marking these areas as ones to avoid.
8	Pipeline trenches left open overnight would be kept to a minimum and would be covered to reduce the potential for entrapment or harm to large game animals and other smaller mammals. Covers would be secured in place and strong enough to support the weight of a bull moose (1,000+ pounds) and prevent wildlife and livestock from falling through. Both trench covers and wildlife escape ramps would be utilized at all times.
9	The project area should be surveyed for any migratory bird or eagle nests no less than 7 days prior to vegetation removal and construction. If an active migratory bird or raptor nest were to be identified within the project area, construction and vegetation clearing would pause and the NRCS Biologist and USFWS would be notified immediately to discuss the appropriate course of action.

The installation of a temperature sensor in the Cimarron River would enable the timed release of conserved water to lower high summer water temperatures in the river, thereby improving fish habitat in the Cimarron River. No in-water work would be required for implementation of the FWFI, therefore spawning and rearing periods for wild brown and rainbow trout would not be impacted by construction of the FWFI.

The construction and implementation of the FWFI and other Reclamation and NRCS canal piping projects described in Section 1.5 would result in the loss of wildlife habitat associated with riparian vegetation around the canals, as well as the loss of water sources provided by the open canals in the project area. However, the Reclamation and NRCS piping projects described in Section 1.5 may improve the quality and duration of water in natural waterbodies within the project area, which would benefit fish habitat and provide drinking water for big game and small mammals. The Reclamation and NRCS piping projects described in Section 1.5 may indirectly enhance vegetation along natural waterbodies by improving surface water flows, which could provide an increase in available forage and cover for wildlife species. Given the number of piping projects in big game habitat within the project area, the FWFI, along with other past, present, and future projects in the project area (see Section 1.5) would likely have a cumulative effect on wildlife and wildlife habitat associated with the riparian area once provided by the open canals. Cumulative effects to wildlife habitat would be minimized by implementing BMPs (see Appendix E) and indirectly improving habitat within natural waterbodies in the project area.

5.5.2 Special Status Animal Species

5.5.2.1 *No Action Alternative/FWOFI*

Suitable habitat is present in the project area for ESA-listed species; however, no construction would occur under the FWOFI. Therefore, the FWOFI would have no effect on special status animal species in the project area. Cumulative effects are not anticipated.

5.5.2.2 *Action Alternative/FWFI*

The proposed activities have the potential to have minor temporary and localized effects to special status animal species and habitat. The indicators to determine the significance threshold are the effects to each species and resulting implications for their populations.

Table 5-6 summarizes the effect analyses determination for each ESA species that may occur within the project area. Based on the analysis, the Proposed Project would not contribute to declines in populations for any of these species. Refer to the attached BA (Appendix E) for a complete evaluation of the impacts from the FWFI on special status animal species within the project area.

Table 5-6. Determination of Effects for USFWS ESA-Listed Animal Species

Wildlife TES	Known/ Suspected to be Present?	Suitable Habitat Present?	Designated Critical Habitat Present or Could be Affected?	Effects Analysis Rationale	Effects Analysis
Gunnison sage-grouse	Yes	Yes	Yes	Suitable Habitat and Critical Habitat for this species was identified by	MANLAA

Wildlife TES	Known/ Suspected to be Present?	Suitable Habitat Present?	Designated Critical Habitat Present or Could be Affected?	Effects Analysis Rationale	Effects Analysis
(*Centrocercus minimus*)				USFWS to occur within the project area, but not within the boundaries of the Proposed Project. Disturbance from project activities could deter the Gunnison sage-grouse from occupying nearby suitable habitat. However, timing of the Proposed Project avoids potential impacts to this species.	
Tri-colored bat (*Pipistrellus subflavus*)	No	No	No	No suitable cave or forest habitat exists within the project area to support roosting and breeding tri-colored bats.	No Effect
Yellow-billed cuckoo (*Coccyzus americanus*)	No	No	No	The yellow-billed cuckoo occurs in dense riparian habitat with cottonwood overstory. Riparian habitat is present in the vicinity of the project area. However, no suitable riparian habitat for the yellow-billed cuckoo occurs within the project area.	No Effect
Mexican spotted owl (*Strix occidentalis lucida*)	No	No	No	Cliff habitat for the Mexican spotted owl is present nearby the project area, in the Gunnison River canyon. However, no suitable habitat for the Mexican spotted owl occurs within the project area.	No Effect
Canada lynx (*Lynx canadensis*)	No	No	No	Habitat near the vicinity of the project area may be suitable habitat and is at the correct elevation for the Canada lynx to occur. However, no suitable habitat occurs within the project area.	No Effect

Wildlife TES	Known/ Suspected to be Present?	Suitable Habitat Present?	Designated Critical Habitat Present or Could be Affected?	Effects Analysis Rationale	Effects Analysis
Gray Wolf (*Canis lupus*)	No	No	No	Although lone and dispersing wolves may occur throughout this part of Colorado, no suitable habitat is present within the project area and no predator management program is included under the Proposed Project.	No Effect
Monarch butterfly (*Danaus plexippus*)	Yes	No	N/A	Although considered a breeding zone, Colorado is not included in the two migratory populations of the monarch butterfly. No suitable habitat, including milkweed, the larval food source for the monarch, nor an abundance of nectarous plants were identified within the project area.	No Effect
Great Basin silverspot (*Speyeria nokomis nokomis*)	No	No	No	The specific habitat needs for this subspecies, including the presence of the Northern bog violet and an abundance of nectarous plants, are not met by habitat conditions within the project area.	No Effect
Bonytail (*Gila elegans*)	No	No	No	Although the Gunnison River corridor occurs nearby the project area, no suitable habitat for the Colorado fishes exists within the canal systems.	No Effect
Colorado pikeminnow (*Ptychocheilus lucius*)	No	No	No	Although the Gunnison River corridor occurs nearby the project area, no suitable habitat for the Colorado fishes exists within the canal systems.	No Effect
Humpback chub (*Gila cypha*)	No	No	No	Although the Gunnison River corridor occurs nearby the project area, no suitable habitat for the	No Effect

Wildlife TES	Known/ Suspected to be Present?	Suitable Habitat Present?	Designated Critical Habitat Present or Could be Affected?	Effects Analysis Rationale	Effects Analysis
				Colorado fishes exists within the canal systems.	
Razorback sucker (*Xyrauchen texanus*)	No	No	No	Although the Gunnison River corridor occurs nearby the project area, no suitable habitat for the Colorado fishes exists within the canal systems.	No Effect

The effects from the FWFI are shown in Table 5-7 for the three species listed by CPW as species of State Special Concern (SC) with the potential to occur in the project area. Based on the analysis, the Proposed Project would not contribute to declines in populations for any of these species.

Table 5-7. Summary Analysis of Colorado Listed Species & Species of Concern with potential to occur in the Project Area

Species	G Ranking	S Ranking	CO Status	Suitable Habitat Present?	Effects Analysis
Northern Leopard Frog (*Lithobates Pipiens*)	G5, S3	S3	SC	Yes	At the Coal Hill and the Wells Basin elements, within the project area, suitable wet meadow and riparian habitat exists along the edges of the canal alignments in some locations. However, it is unlikely that this species overwinters within the project area because flows through the canal alignments are seasonal and because the species requires deep water that will not freeze to survive the winter season. Proposed Project work would be performed outside of irrigation season, which would create a temporal avoidance of this species since water will not be present at the time. Based on these factors, the Proposed Project would not impact the Northern leopard frog.
American Peregrine Falcon (*Falco peregrinus anatum*)	G4T4	S2B	SC	No	Open high cliff and bluff habitat is absent within all Proposed Project elements, and absent within 0.5 miles of all elements. Furthermore, with the exception of the canal segments, which do not support sustained fish habitat, there is no quality open water for

Species	G Ranking	S Ranking	CO Status	Suitable Habitat Present?	Effects Analysis
					foraging present within 0.5 miles of the project area, near any element. If a nest were to be identified at any time within the project area, the Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors, set forth by CPW (CPW 2020c) would be followed to observe the appropriate buffers and timing to avoid disturbance to the species. No impacts to breeding habitat or populations of the American peregrine falcon would occur because of the Proposed Project.
Mountain Sucker (*Catostomus platyrhynchus*)	G5	S2	SC	No	Fish habitat is not present within the canal segments in the project area. Because suitable habitat for the mountain sucker is absent, the Proposed Project would not impact this species.

Ongoing piping projects in the BPWCD system described in Section 1.5 were found to adversely affect Colorado fishes and may affect not likely to adversely affect (MANLAA) Gunnison sage-grouse. Because the Proposed Project would not affect Colorado River fishes, yellow-billed cuckoo, Mexican spotted owl, Canada lynx, gray wolf, monarch butterfly and the Great Basin silverspot butterfly, nor would it impact CPW State Special Concern (SC) species, no cumulative effects to these species would occur. For the Gunnison sage-grouse and its critical habitat, potential indirect impacts from project activities at Slide Point and Coal Hill, such as noise, would be avoided by performing work outside of breeding season for this species. Construction of the FWFI would occur outside irrigation season from late November to early March, which would avoid breeding, nesting, and brood-rearing seasons for the Gunnison sage-grouse (March 1 through July 15). Conservation measures that would be implemented during construction of the FWFI would limit construction to the project footprint within the canal ROW, and would avoid disturbance and removal of native vegetation, including sagebrush, wherever possible. These project BMPs are described in the BA and Appendix E and would be implemented during construction to minimize impacts to the Gunnison sage-grouse and its critical habitat, ensuring the FWFI would not have cumulative effects on any special status animal species in the project area.

5.5.3 Migratory Birds / Bald & Golden Eagles

5.5.3.1 *No Action Alternative/FWOFI*

No vegetation would be removed and temporary disturbances from construction would not displace birds utilizing the canal corridors. The FWOFI would have no direct, indirect, or cumulative effect on migratory birds and bald and golden eagles; therefore, the FWOFI would have no effect on migratory birds, or bald and golden eagles.

5.5.3.2 *Action Alternative/FWFI*

The proposed activities have the potential for minor, localized short-term and long-term effects to migratory birds, bald and golden eagles, and their habitat. The indicators to determine the significance threshold are the effects to each species and resulting implications for their populations.

Though field investigations found no active nests belonging to eagles, raptors or migratory bird species, the project area and surrounding area could provide varying degrees of nesting and foraging habitat for migratory birds or raptors. Therefore, protected avian species have the potential to be present within the project area, or in the vicinity of project area. Construction noise may result in the temporary displacement of nesting bird species within the project area. To protect migratory birds or raptors from project effects, temporary construction disturbance would be avoided by scheduling work outside of nesting bird season. Because construction would be timed outside of the irrigation season (October – April), most construction activities would also occur outside of bird migration, breeding, and nesting seasons, except for bald and golden eagles. To ensure protection for any overlap of construction activities and nesting birds, the project area would be surveyed for any migratory bird or eagle nests at least 7 days before vegetation removal and construction. If an active migratory bird or raptor nest were identified within the project area, construction and vegetation clearing would pause and the NRCS Biologist and USFWS would be notified immediately to discuss the appropriate course of action, consistent with the CPW Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors, including a 0.25-mile radius buffer for eagles, a 0.3-mile buffer for red-tailed hawks and a 0.5-mile buffer for peregrine falcons (CPW 2020c). Therefore, any effects to nesting migratory birds and eagles would be avoided, and the temporary construction activities would not have population-level effects.

In the long-term, piping the canals would permanently remove approximately 19.9 acres of an open water source for avian species; however, the M&D Canal would remain an open feature. The piping and lining of the canals would also eliminate seepage water for vegetation along the canal alignments, which would result in the eventual loss of approximately 82 acres of riparian vegetation and 5.69 acres of wetlands associated with the canals, including mature trees and shrubs, which likely provide habitat for resident or migratory birds. Most mature trees in the project area occur along the M&D Canal.

Abundant alternative and high-quality riparian habitat are available within the vicinity of the project area and along the Cimarron River corridor. The loss of 82 acres of riparian areas would not significantly affect habitat availability at the landscape scale and the indirect effects on migratory birds and raptors from riparian habitat loss along the ditch would be minor. The FWFI would not have population-level effects.

The FWFI would also indirectly improve habitat within natural waterbodies in the project area by reducing selenium and salinity loading and improving overall habitat for fish species. These activities would benefit raptors, eagles and other migratory species that use fish as a food source.

The construction and implementation of the FWFI combined with the other ongoing canal piping projects described in Section 1.5 may cause temporary disturbance to protected avian species within the vicinity of the project and would result in the direct and indirect loss of riparian and wetland habitat associated with canals. Timing restrictions and survey requirements for nesting birds would avoid effects to nesting migratory birds and eagles, and cumulative population-level

effects would not occur. The FWFI and the other canal piping projects would also indirectly improve habitat within natural waterbodies in the project area by reducing selenium and salinity loading and improving overall fish habitat. These activities would cumulatively benefit raptors, eagles and other migratory species that use fish as a food source.

5.6 Human Environment

5.6.1 Socioeconomics

This section details the consequences of each alternative on the social and economic resources within the vicinity surrounding the project area. The impact analysis area for each resource is the project area and those properties immediately adjacent to that footprint.

5.6.1.1 *No Action Alternative/FWOFI*

Under the FWOFI, no local match funds would be required as no construction would occur. Furthermore, no temporary jobs would be created under the FWOFI. There is the potential to damage approximately 28,788 acres of agricultural land in the BPWCD and UVWUA service areas from canal breaching. The economic analysis prepared as part of Appendix D estimates that the project area experiences an average annual value loss of $537,723 from infrastructure damages ($86,800) and income losses ($450,923). Furthermore, water losses contribute to an annual loss of $144,806 in potential farm net income. Cumulative effects would not occur.

5.6.1.2 *Action Alternative/FWFI*

The proposed activities are designed to improve the socioeconomics within the project area. Indicators to determine if the socioeconomics are improved are the number of jobs created by proposed activities, and whether the net NEE benefits exceed the costs, as displayed by the benefit-to-cost ratio.

Several direct and indirect minor and major, temporary and permanent localized effects to socioeconomics in the project area would result from the implementation of the FWFI. Direct impacts of the FWFI include the use of approximately $5,538,287 in local match funds to construct the Proposed Project. In addition, the FWFI would temporarily create approximately 1.4 direct jobs, 1.6 indirect jobs, and 0.7 induced jobs within the project area during construction (Appendix E).

The PR&G state that federal investments in water resources should strive to maximize public benefits, with appropriate consideration of costs. Public benefits (i.e., positive ecosystem services) encompass environmental, economic, and social goals; include monetary and non-monetary effects; and allow for the consideration of both quantified and unquantified measures (USDA 2017). The average annual cost of the FWFI is $738,942 and the FWFI is anticipated to result in $1,118,366 in average annual economic benefits; over half of the economic benefits are derived from agricultural related reduced damages and benefits. Therefore, the benefit to cost ratio of the FWFI is 1.5, giving the FWFI an overall level of cost-effectiveness that ensures the conservation practices and approaches proposed are the most efficient means of achieving the anticipated conservation benefits of the project. The proposed improvements are expected to conserve 2,698 ac-ft of water that is lost to seepage and evaporation. The economic analysis estimates that the FWFI would provide $144,806 in additional farm net income from conserved water. Water conserved by the FWFI would remain in the Cimarron River during the early irrigation season, until water is needed. Efficiency gains by the new system would maintain early season flows in the Cimarron River and allow water storage in the Silver Jack Reservoir to last longer.

The agricultural water improvements would also improve water quality by reducing salt loading (2,247 tons per year) and selenium loading in the watershed. The FWFI would reduce salinity control costs by $441,817. The installation of the temperature sensor would have beneficial effects on water quality in the project area, which provide $7,326 in cultural ecosystem services from recreation consumer surplus benefits.

The FWFI, along with the past, present, and future projects in the project area, as described in Section 1.5, would require financial expenditures; approximately $5,538,286.65 in local match funds would be used for the FWFI. The FWFI and other proposed projects in the project area would also temporarily create approximately 1.4 direct jobs, 1.6 indirect jobs, and 0.7 induced jobs. Together, water conserved by the FWFI and the past, present, and future Reclamation and NRCS canal piping projects described in Section 1.5 are anticipated to improve water efficiency and agricultural profitability in the project area. The FWFI would provide a total of $1,118,366 in ecosystem services related to regulating services (i.e., reduced infrastructure damages, income loss, and downstream damages), provisioning services (i.e., increased agricultural income), and cultural services (i.e., increased recreation benefits). Therefore, the FWFI and other projects in the project area are expected to result in net positive cumulative effects to socioeconomics in the project area.

5.6.2 Cultural, Historic & Paleontological Resources

5.6.2.1 *No Action Alternative/FWOFI*

The FWOFI is anticipated to result in No Historic Properties Affected in the project area because no construction would take place. The FWOFI would have no impact on paleontological resources as no construction would occur. Cumulative effects are not anticipated.

5.6.2.2 *Action Alternative/FWFI*

The project activities have the potential to have minor long-term and localized effects to cultural, historic, and paleontological resources. The indicators to determine the significance threshold are the effects to these resources, any subsequent preservation of the value of those resources, if they are affected, as agreed upon by the Colorado State Historic Preservation Office (SHPO) or applicable entity (paleontological), and the protection of inadvertent discoveries.

The FWFI proposes to pipe and line laterals including supporting segments of NRHP eligible historic properties. Therefore, ,the Colorado NRCS determined that the FWFI would have a permanent adverse effect on the six eligible canal segments within the project area: Cimarron Canal (5GN.6371.1, 5MN.4808.5, 5MN.4808.6), M&D Canal (5MN.1855.9), Vernal Mesa Ditch (5MN.7708.3), and East Lateral/Vernal Mesa Ditch (5MN.10323.2). All six of the NRHP supporting segments are eligible to the NRHP under Criteria A for their influence in agricultural development of the local area and region. Piping the resources will continue their historically intended use, but adversely impact their integrity of design, setting, materials, workmanship, feeling, and association. SHPO concurred with NRCS' determination of eligibility and effects (Appendix A).

NRCS submitted consultation letters to the Southern Ute Tribe, the Ute Mountain Ute Tribe, and the Ute Indian Tribe – Uintah & Ouray Reservation, Comanche Nation, Apache Tribe of Oklahoma, Fort Belknap Indian Community, Navajo Nation, Montrose and Gunnison County Commissioners, Gunnison County Historic Preservation Commission, and the Montrose Historical Society and Museum for concurrence and compliance with Section 106 requirements.

Only the Southern Ute Indian Tribe responded to the request for comments requesting consideration of subsurface archaeological deposits. Consultation letters are included in Appendix A.

NRCS Colorado notified the ACHP that the project would adversely affect cultural resources eligible for listing on the NRHP on June 16, 2022. The ACHP responded to NRCS Colorado on June 28, 2022, that they would not participate in the consultation unless another consulting party requested their participation (Appendix A.)

In accordance with 36 CFR Part 800.6, NRCS will mitigate adverse effects to the NRHP-eligible canal segments through the development of a MOA. The MOA was developed in consultation all consulting parties. The Colorado NRCS, Colorado SHPO, and BPWCD are MOA signatories, and Reclamation, BLM, CC&RC, and UVWUA participated as concurring parties. The MOA mitigates adverse impacts to the Cimarron Canal, M&D Canal, and East Lateral/ Vernal Mesa Ditch by developing a publicly accessible interpretive website on the historic properties highlighting their history and role in regional development. The website will be in ArcGIS StoryMap format.

Conserving the value of the eligible cultural resources would ensure that piping and lining the canals would not result in the loss of knowledge of early irrigation systems, their design, or reduce the ability to gain knowledge of early irrigation systems into the future. Because the value of the cultural resources related to the FWFI would be conserved, the effects to cultural resources would be minor from implementing the FWFI.

A Post-Review Discovery Plan has been prepared and is included in Appendix B of the MOA. The MOA is included in Appendix A of this Plan-EA. If construction activities uncover any materials of cultural or historic significance (i.e., bone fragments, pottery, stone tools, burial features, etc.), construction would halt and coordination with the SHPO, the THPO, other tribes with historic ties to the area, and the Montrose County and/or Gunnison County Sheriffs would occur.

The UVWUA East Side Laterals Piping Phase 9 and Phase 10 projects, the BPWCD Fish Creek Wasteway project, and the FWFI have been determined to have an adverse effect on cultural resources in the project area. Given the historic eligibility of canals in the project area, the Proposed Project, the UVWUA East Side Laterals Piping projects, and the BPWCD Fish Creek Wasteway project would have a cumulative effect on cultural and historic resources in the project area. However, the implementation and execution of MOAs for documentation and public interpretation for the various projects would mitigate the adverse effects to NRHP eligible sites, and would conserve the value of these cultural resources, ensuring cumulative effects are minor.

According to the BLM PFYC, there is low to moderate potential to uncover fossils in much of the project area, however, the East Lateral has high (Class 4) to very high (Class 5) PFYC (V. Beresford, personal communication, August 10 2022). Given the PFYC of the East Lateral, a paleontological resource survey was completed for the project element. No fossil localities were documented during the survey. Given that the FWFI would require laying pipe 18-36” in diameter throughout the East Lateral ditch and additional excavation would be required in those areas (over three to four feet) to make room for the pipe and establish a suitable trench foundation, and that geologic formations with high and very high PFYC are present across the project area, a paleontological monitor was recommended by BLM to oversee the earthwork associated with the East Lateral and document any fossil discoveries. If construction results in any fossil discoveries, earthwork shall cease, and the findings reported to the BLM Uncompahgre Field Office Authorized Officer. The operator shall suspend earthwork in the area until written authorization to proceed is

issued by the authorized officer. Based on the low to moderate PFYC throughout much of the project area, and that a paleontological monitor would be required during construction of the East Lateral, piping and lining portions of canals in the BPWCD and UVWUA systems is unlikely to negatively impact paleontological resources that may occur in the project area. An Unanticipated Discovery Plan for paleontological resources would be implemented under the FWFI. The Unanticipated Discovery Plan would include a description of and the location of paleontological deposits (fossils) discovered during the project implementation phase (design investigation or construction activities) and discoveries would be recorded in the project records. The landowner (federal, state or private) and the Colorado NRCS state geologist would be notified of all findings as soon as practicable after the discovery and the handling and disposition of any findings would be in accordance with applicable federal and state laws.

The paleontological survey did not document any fossil localities in the project area. However, a paleontological monitor will be required during the construction of the East Lateral. An Unanticipated Discovery Plan for paleontological resources would be implemented under the FWFI. The seven projects described in Section 1.5 are not anticipated to impact paleontological resources in the project area. Therefore, cumulative effects are not anticipated to result from the implementation of the FWFI.

5.6.3 Hazardous Materials

5.6.3.1 *No Action Alternative/FWOFI*

The FWOFI would have no direct or indirect impact on hazardous materials because no construction would take place; therefore, the FWOFI would have no impacts on hazardous materials in the project area. Cumulative effects would not occur.

5.6.3.2 *Action Alternative/FWFI*

The proposed activities could have minor and temporary localized effects to a solid waste facility and two Resource Conservation and Recovery Act (RCRA) facilities. The indicator to determine the significance threshold is the proximity to these sites and the potential effects.

A solid waste facility and two RCRA facilities are located within a mile of the project area; however, the three sites were more than 0.5 miles outside the project area. Given the distance between the facilities and the proposed construction activities, the FWFI is not anticipated to impact hazardous facilities near the project area. Furthermore, no hazardous materials would be generated by the FWFI.

The contractor would be required to apply for a CDPS General Permit prior to construction commencement. As part of this permit, the contractor would also be required to follow an approved SWMP and SPCC Plan. The seven projects described in Section 1.5 in the project area are not anticipated to impact hazardous materials in the project area. Therefore, cumulative effects are not anticipated to result from implementation of the FWFI.

5.6.4 Public Health & Safety

5.6.4.1 *No Action Alternative/FWOFI*

Without the agricultural water management improvements proposed under the FWFI, M&D Canal, Cimarron Canal, and Vernal Mesa Canal would continue to experience risk of canal breach, and associated property and infrastructure damage. Therefore, the FWOFI would have a negative effect on public health and safety. At this time, there are no known projects in the recent past,

present, or foreseeable future that are anticipated to impact public health and safety in the project area. Therefore, cumulative effects are not anticipated to result from implementation of the FWOFI.

5.6.4.2 *Action Alternative/FWFI*

The purpose of the FWFI is to provide improved agricultural water management by stabilizing the hillside above the M&D Canal and piping the various canals and laterals throughout the project area. The project area has a history of, and is prone to, landslides which have contributed to canals overtopping, breaching, and flooding adjacent areas (see Sections 1.3 and 3.6.5). The FWFI would address flood inundation associated with the breach of canals and laterals and would subsequently have major long-term localized effects that would improve public health and safety in the project area. The FWFI would reduce the risk of canal breach and potential damages from a breach.

At this time, there are no known projects in the recent past, present, or foreseeable future that are anticipated to impact public health and safety in the project area. Therefore, cumulative effects are not anticipated to result from implementation of the FWFI.

5.6.5 Recreation

5.6.5.1 *No Action Alternative/FWOFI*

No direct or indirect impacts would occur to recreation under the FWOFI because no construction would take place. Cumulative effects would not occur.

5.6.5.2 *Action Alternative/FWFI*

The proposed activities have the potential to have minor long-term localized effects that would improve recreation. The indicator to determine whether the proposed activities achieve this goal is the ac-ft of water conserved in the Gunnison River Basin and the average annual economic value of increased recreational benefits.

No designated parks exist within the project area; however, the flows from West Lateral enter the Black Canyon of the Gunnison National Park via Red Rock Creek. In addition, the Silver Jack Reservoir Recreation Area lies upstream of the Cimarron Diversion. The reservoir is supported by the Cimarron River and the Silver Jack Dam. Current year-round recreational uses in the Silver Jack Reservoir Recreation Area include boating, camping, fishing, picnicking, hiking and wildlife viewing (Uncover Colorado 2022). The FWFI would indirectly benefit the Black Canyon of the Gunnison National Park by conserving 2,698 ac-ft of water and reducing salinity and selenium loading to the Gunnison River. The FWFI would support the objectives of the Forest Plan for the GMUG National Forest, specifically watershed and aquatic resources restoration and recreational management. Water conserved by the FWFI would allow water to be held in the Silver Jack Reservoir for a longer period, thereby allowing for more recreation user days. Therefore, the FWFI would have an indirect beneficial impact on recreation in the Silver Jack Reservoir.

The installation of a temperature sensor in the Cimarron River would enable the timed release of conserved water to decrease high summer water temperatures in the river, thereby permanently improving fish habitat in the Cimarron River and increasing the number of recreational visitors to the project area. The economic analysis in Appendix D measured the value of recreational benefits in terms of consumer surplus. As stated in Appendix D, consumer surplus is defined as the economic value of a recreation activity above what must be paid by the recreationist to enjoy

the activity. The methods used to calculate consumer surplus for the FWFI are detailed in Appendix D. The economic analysis determined that the FWFI would result in average annual benefit of $7,326 in ecosystem services related to cultural services (i.e., increased recreation benefits).

The seven projects described in Section 1.5 are not anticipated to impact recreation in the project area. Therefore, cumulative effects are not anticipated to result from implementation of the FWFI.

5.6.6 Land Use

5.6.6.1 *No Action Alternative/FWOFI*

The FWOFI would not alter existing conditions and would therefore not interfere with the Montrose County Master Plan or the Gunnison County Land Use Resolution. The project area within Montrose County is zoned for General Agriculture, and there are no zoning designations in Gunnison County. The FWOFI would have no impact on land use designations in the project area because no construction would take place. Cumulative effects are not anticipated.

5.6.6.2 *Action Alternative/FWFI*

The proposed activities must be consistent with zoning ordinances, adhere to County land use requirements, and coordinated with the BLM and Reclamation. The indicators to ensure this consistency are defined by the goals of the Montrose County Master Plan and the Gunnison County Land Use Resolution, and appropriate coordination with BLM and Reclamation.

The FWFI supports the goals of the Montrose County Master Plan and Gunnison County Land Use Resolution; specifically, protecting agricultural lands, providing an adequate water supply, and promoting the health, safety, and general welfare of the environment. The FWFI would conserve a total of 2,698 ac-ft of water lost to seepage and evaporation, provide for efficient delivery of agricultural water, and improve water quality by reducing selenium and salinity loading by 2,247 tons. The FWFI would have minor short-term localized effects to land use and would not convert existing prime and unique farmlands and would improve agricultural water supplies.

Within Montrose County, the project area is zoned for General Agriculture, while there is currently no zoning in Gunnison County. According to Gunnison County, “any change to a parcel, whether it is a boundary line adjustment, a subdivision, a theme park, a mining operation, or any other use or alteration of the property, must obtain a Land Use Change Permit, which approves a specific use, but does not establish a zone for the area in which the parcel is located.” The USFS temperature sensor location is the only project element within Gunnison County; the construction of the temperature sensor and electrical enclosure is not anticipated to require a Land Use Change Permit from Gunnison County. Under the FWFI, land use within Montrose County would not change from existing uses.

Under the FWFI, temporary construction activities associated with East Lateral would occur on BLM land. To account for the piping of East Lateral on BLM lands, BLM would acknowledge the historic ROW. In addition, Reclamation claims ownership of the M&D Canal. Therefore, a MOA was established between Reclamation and NRCS, which will guide the engineering review process for the 30% and 100% design of the M&D Canal. Reclamation will approve the full design prior to construction commencing. Temporary easements would be required for staging during construction of the FWFI.

Given that the FWFI would be consistent with zoning ordinances and adhere to County land use requirements, the Proposed Project is anticipated to have no impact on land use in the project

area. The seven projects described in Section 1.5 are not anticipated to result in impacts to land use in the project area. Therefore, cumulative effects would not result from implementation of the FWFI.

5.6.7 Visual Resources & Scenic Beauty

5.6.7.1 *No Action Alternative/FWOFI*

The FWOFI would have no direct or indirect impact on visual resources and scenic beauty in the project area because no construction would take place; therefore, the FWOFI would have no impacts on visual resources and scenic beauty in the project area. Cumulative effects would not occur.

5.6.7.2 *Action Alternative/FWFI*

The proposed activities have the potential for major and minor short-term and long-term localized effects to the visual resources within the project area. The indicator to determine the significance threshold is the ability of the landscape to retain the existing characteristic landscape, in accordance with the Gunnison Gorge NCA RMP and the Uncompahgre RMP.

The FWFI would have a major direct effect on visual resources by permanently eliminating open water in the West and East Laterals, Vernal Mesa Canal, and Cimarron Canal, and by removing mature trees and shrubs and disturbing herb layer vegetation along all canals in the project area. There would be temporary, minor impacts to visual resources from the presence of construction equipment and construction crews. Native vegetation would be reestablished in areas disturbed by construction activities to mitigate for construction-related visual resource impacts. Although the FWFI would not result in long-term impacts to scenic beauty in the general area, there would likely be visual impacts directly along the canal alignments from the removal of open water features, construction-related vegetation disturbance, and permanent loss of vegetation dependent on the current canal seepage.

Under the FWFI, the level of change to the visual characteristics of the landscape in and around the project area immediately after project implementation would be minor, but the long-term level of change would be low. During the period between piping and lining the canals and successful reclamation, a linear scar attributable to the piping and lining, and vegetation removal along the canal lines could be visible intermittently along adjacent roads, and access roads and driveways. These linear features would create only a minor visual change in the temporary time frame because they would resemble the current condition of the linear canal features and be strikingly similar to other linear features, such as ditch, power, and fence lines in this rural, agricultural setting. After reclamation and vegetation establishment, the changes from the proposed activities would not be substantially noticeable or measurably different from current conditions of the surrounding landscape. Given that the effects to visual resources in the project area would be minor and would not attract attention in the long term, the FWFI would not have substantial impacts on visual resources and would not contribute to a regional trend in visual resource effects, and the FWFI would be consistent with the Gunnison Gorge NCA and Uncompahgre RMPs.

Canal piping projects, such as the Proposed Project covered in this Plan-EA and the completed and ongoing Reclamation and NRCS projects in the project area, as described in Section 1.5, would temporarily impact visual resources in the project area. Impacts would be minimized by implementing BMPs to encourage the establishment of native, drought-tolerant vegetation and preserving existing vegetation when possible. While these canal piping projects would eliminate

open water features, and directly and indirectly alter the riparian vegetation along the canals, the changes from the proposed activities and the other canal piping projects would not be substantially noticeable or measurably different from current conditions of the surrounding landscape. Cumulative effects to visual resources and scenic beauty are not expected to result from the implementation of the FWFI and other canal piping projects in the project area.

5.6.8 Parklands

5.6.8.1 *No Action Alternative/FWOFI*

The FWOFI would not alter existing conditions; therefore, the FWOFI would not interfere with the Black Canyon of the Gunnison General Management Plan. The FWOFI would have no impacts on parklands within the vicinity of the project area, and no impacts on water flows from the project area to the nearby parklands. Cumulative effects would not occur.

5.6.8.2 *Action Alternative/FWFI*

The proposed activities are designed to improve water quality, which would affect Red Rock Creek, which flows into the Black Canyon of the Gunnison National Park. The indicators to determine if the water quality is improved are the amount of water saved from piping the West Lateral, the decrease in livestock contamination, and the measures to address TMDLs and improve water quality.

The FWFI supports the goals the Black Canyon of the Gunnison General Management Plan, specifically the protection of water resources. Current discharge flows from the West Lateral that reach the Black Canyon of the Gunnison National Park range from 0.58 cfs to 5.28 cfs between April and September. Flows would not be reduced under the FWFI. The FWFI would have major long-term regional effects to parklands. Indirect effects of the FWFI would be a water savings of approximately 239 ac-ft per year from the piping of the West Lateral project element. Piping the West Lateral would eliminate livestock contamination in the lateral, which currently flows into the National Park via Red Rock Creek. This outcome would ultimately improve water quality and water flow to nearby parklands due to a reduction of livestock contamination and reduction of water loss during transport. Additionally, the piping would reduce selenium and salinity loading by 2,247 tons per year, addressing the TMDL for Red Rock Creek. Therefore, the FWFI would have a beneficial impact on adjacent parklands. The seven projects described in Section 1.5 are not anticipated to have cumulative effects to parklands in the project area. Therefore, cumulative effects would not result from implementation of the FWFI.

5.6.9 Transportation & Infrastructure

5.6.9.1 *No Action Alternative/FWOFI*

Existing infrastructure in the project area includes linear transportation facilities, irrigation features, and residential structures. Irrigation infrastructure includes the Cimarron Canal, Vernal Mesa Canal, and M&D Canal. The BPWCD and UVWUA systems experience canal breaches, which damages the systems and requires emergency repair. The average annual costs of emergency repairs to the BPWCD and UVWUA irrigation distribution systems under the existing conditions were estimated at $86,800 (Appendix D). The BPWCD system and UVWUA system are projected to lose approximately 1,503 ac-ft and 1,195 ac-ft of water annually, respectively, to evaporation and seepage.

If the FWOFI were implemented, the canal infrastructure would not be improved and the existing seepage, inefficiency, and water losses would remain the same. Road crossings would not be required to implement the FWOFI. Cumulative effects would not occur.

5.6.9.2 *Action Alternative/FWFI*

The proposed activities are designed to improve the existing infrastructure of BPWCD and UVWUA systems. The indicators to determine if the infrastructure is improved are the elimination of ac-ft of water lost to seepage and evaporation, the salt loading reduction, the reduced costs in emergency repairs, and the value of regulating ecosystem services.

The FWFI would have major and minor long-term and short-term localized effects to transportation and infrastructure. The FWFI would improve the existing BPWCD and UVWUA systems' infrastructure by permanently piping portions of the Cimarron Canal, Vernal Mesa Canal, West and East Laterals, and lining the M&D Canal. The FWFI aligns with the priorities identified by the BPWCD and UVWUA planning efforts (see Section 4.2). The proposed infrastructure improvements would eliminate approximately 2,698 ac-ft of water lost to seepage and evaporation annually, reduce salt loading (2,247 tons per year) and selenium loading, and protect infrastructure.

The FWFI would directly improve irrigation infrastructure, and indirectly protect infrastructure in the project area. The FWFI would reduce emergency repair costs to the BPWCD and UVWUA systems by $84,674. Additionally, the FWFI would also provide $966,236 in regulating ecosystem services, of which, $84,674 represents reduced infrastructure damages.

Under the FWFI, three temporary road crossings would be required: P77 Road crossing for the Wells Basin component, CO-347 Highway crossing for the East Lateral component, and Bostwick Park Road crossing for the West Lateral component. The BPWCD and other sponsors would work with CDOT to obtain all necessary permits to establish easements, work within the designated State and local ROW, and implement appropriate traffic control measures during construction to minimize disturbance and reduce impacts to local traffic.

The FWFI may have temporary negative impacts on transportation in the project area due to construction vehicle access, movement, and the necessary road crossings. However, the FWFI, along with seven other ongoing and completed projects in the project area (see Section 1.5), are anticipated to have a net positive cumulative effect on transportation and infrastructure in the project area by improving existing BPWCD and UVWUA infrastructure and minimizing emergency repairs to the distribution systems.

5.6.10 Noise

5.6.10.1 *No Action Alternative/FWOFI*

The project area contains agricultural and residential land uses. Background noise levels are associated with existing traffic and agricultural noise. The FWOFI would have no impact on noise levels in the project area because no construction would take place. Cumulative effects would not occur.

5.6.10.2 *Action Alternative/FWFI*

The project would have minor short-term and localized effects on noise, by temporarily increasing noise during construction. The threshold for determining the significance of this effect are the actions taken to avoid conflicts with residents.

Temporary increases in noise related to the use of construction equipment and vehicles would result from implementation of the FWFI. Backhoes, excavators, haul trucks, and other smaller construction vehicles and equipment would be used to complete the FWFI. However, noise mitigation measures, such as established daytime working hours and the use of properly functioning equipment mufflers, would be implemented during construction to minimize temporary noise impacts. Section 5.5.1 addresses disturbances to wildlife. After completion of the FWFI, noise levels would return to background levels. No permanent noise impacts are expected from the FWFI. Because the FWFI has multiple mitigation measures designed to reduce noise, and the effects are temporary, noise effects would be minor.

The FWFI, along with other ongoing projects described in Section 1.5 would cause temporary increases in noise during construction in the project area. The use of noise mitigation measures during construction would minimize temporary noise impacts. Therefore, cumulative effects are not anticipated to result from implementation of the FWFI.

5.6.11 Scientific Resources

5.6.11.1 *No Action Alternative/FWOFI*

The FWOFI would have no direct or indirect impact on scientific resources in the project area. Scientific resources in the project area would remain the same and existing paleontological resources would not be impacted, as no construction would occur. Cumulative effects would not occur.

5.6.11.2 *Action Alternative/FWFI*

The proposed activities are designed to contribute new scientific resources through installation of the temperature sensor. The indicator to determine if scientific resources are increased is the installation of the temperature sensor on the Cimarron River. The indicator to determine if existing scientific resources are impacted are the measures taken to avoid paleontological and geological scientific resources.

Project elements would have major long-term localized effects by contributing to the scientific resources in the project area by installing one temperature sensor in the Cimarron River. The implementation of the FWFI would cause no adverse impacts on scientific resources within the project area. The information obtained from the temperature sensor would inform management of the Cimarron River by helping to remotely gauge the health of the river and the watershed. The temperature sensor would help managers time the release of conserved water to lower high summer water temperatures in the river. This information would benefit future canal improvement projects across the western U.S.

As described in Section 5.6.3, the paleontological resource survey documented no fossil localities. Based on the low to moderate PFYC throughout much of the project area, and that a paleontological monitor would be required during construction of the East Lateral, piping and lining portions of canals in the BPWCD and UVWUA systems is unlikely to negatively impact paleontological scientific resources that may occur in the project area. An Unanticipated Discovery Plan for paleontological resources would be implemented under the FWFI.

The Action Alternative would have a beneficial impact on scientific resources producing and sharing monitoring data. The seven ongoing and completed projects described in Section 1.5 in the project area are not anticipated to cause cumulative effects to scientific resources in the project area.

5.7 Risk & Uncertainty

The cost-benefit analysis required by NEPA involves both risk and uncertainty. Conducting an environmental evaluation requires the use of best available science, technology, and information to make well-informed assumptions, or predictions. However, existing conditions may change, the public's opinion of a project could evolve, or unanticipated circumstances with construction, funding, or design may arise. Each of these differences could alter predictions of environmental consequences.

5.8 Irreversible & Irretrievable Resource Commitments

Pursuant to the requirements of NEPA, environmental analysis must identify "…any irreversible and irretrievable commitments of resources, which could be involved in the Proposed Action should it be implemented." Irreversible can be described as a loss of future options; irreversible resource commitments involve the use of natural and human-made resources like metals, building materials, water, fossil fuels, electricity, etc. that cannot be recovered, or take a long time to regenerate. Irretrievable resource commitments generally refer to the alteration or destruction of resources that cannot be restored, such as extinction of a protected species. Irreversible and irretrievable resource commitments are not mutually exclusive.

5.8.1.1 *No Action Alternative/FWOFI*

Under the FWOFI, the risk of canal breach from landslides would persist. In the event of a canal breach, natural, physical, capital, and labor resource commitments would be required. Under the FWOFI, approximately 82 acres of seepage-induced riparian vegetation would continue to exist in the project area and 5.69 acres of seepage-induced wetlands within and adjacent to the project area would remain. Groundwater recharge would continue to occur in the project area through deep percolation from canal seepage. The six historic irrigation canals in the project area would remain and would not be impacted.

5.8.1.2 *Action Alternative/FWFI*

Implementing the FWFI would require the immediate and irreversible commitment of natural, physical, capital, and labor resources. Fossil fuels, financial and human resources, and construction materials would be consumed to complete the FWFI. Generally, such resources are not considered reversible. Irretrievable resources that would be lost from the implementation of the FWFI include the loss of 82 acres of riparian habitat, 5.69 acres of seepage-induced wetlands within and adjacent to the project area, an undetermined extent of groundwater recharge from seepage, as well as impacts to six historic irrigation canals in the project area. According to Part 611 of the NRCS National Resource Economics Handbook, wetland valuations can be "hampered by lack of economic evaluation methodologies, lack of methodologies to relate wetland characteristics to functions or outputs, and lack of widespread acceptance of monetary cost-to-benefits estimates" (NRCS 1998). The specific value of riparian habitat per acre is not available for the project area, nor is a specific valuation for groundwater recharge. In the absence of a detailed valuation of the riparian habitat and groundwater recharge in the project area, it is challenging to put a value on the loss of riparian-related ecosystem services, nor the ecosystem services provided by an undefined groundwater recharge volume. However, riparian habitat within the project area is relatively low quality as it lacks diversity and complexity in structure due to active disturbances from canal maintenance. Therefore, it is anticipated that the riparian habitat lost would be of low productivity for ecosystem services. The extent to which groundwater recharge from canal seepage is occurring is unknown. It is known that the seepage poses erosion,

sediment transport, and salinity concerns for downstream waters, which diminishes the value of ecosystem services from groundwater recharge through canal seepage.

Impacts to historic irrigation canals in the project area would be mitigated through the development of a MOA designed to conserve the value of the eligible cultural resources. Conserving the value of the eligible cultural resources would ensure that piping and lining the canals would not result in the loss of knowledge of early irrigation systems, their design, or reduce the ability to gain knowledge of early irrigation systems into the future. Because the value of the cultural resources related to the FWFI would be conserved, the effects to cultural resources would be minor from implementing the FWFI.

Chapter 6 Consultation, Coordination & Public Participation

This chapter describes the public and agency coordination efforts for the Proposed Project. The intent of the Proposed Project is to implement a solution that would provide agricultural water management enhancements for the project area.[note: results of agency and public review of final draft will be added to the following sections in future document versions]

6.1 Consultation

6.1.1 Section 106 of the NHPA Consultation

NRCS Colorado initiated consultation under Section 106 of the NHPA with the SHPO, Southern Ute Indian Tribe, the Ute Mountain Ute Tribe, and the Ute Indian Tribe of the Uintah & Ouray Reservation on January 13, 2022. The SHPO responded on January 19, 2022, concurring with NRCS Colorado's determination of the APE and that:

- Linear resources 5GN.6371.1, 5MN.1855.9, 5MN.4808.5, 5MN.4808.6, 5MN.7708.3, and 5MN.10323.2 support the eligibility of their respective resources for listing on the NRHP;
- Sites and linear segments 5MN.3183, 5MN.10817.1, 5MN.11655.2, 5MN.12933, 5MN.12934, 5MN.12939, and 5MN.12940 are not eligible or non-contributing segments to the NRHP;
- Linear segments 5MN.7708.4, 5MN.12106.4, 5MN.12931.1, and 5MN.12932.1 do not support the eligibility of their respective resources for the NRHP;
- Isolated finds 5MN.12935-12938 are not eligible for the NRHP;
- Linear site segments 5GN.6371.1, 5MN.1855.9, 5MN.4808.5-6, 5MN.7708.3, 5MN.10323.2 will be adversely impacted by the proposed project.

NRCS Colorado notified the ACHP that the project would adversely affect cultural resources eligible for listing on the NRHP on June 16, 2022. The ACHP responded to NRCS Colorado on June 28, 2022, that they would not participate in the consultation unless another consulting party requested their participation.

The Southern Ute Indian Tribe responded on February 25, 2022, to the request for comments and accepted the invitation to consult on the development of the MOA. The Southern Ute Indian Tribe response specified that they want to "ensure the potential for subsurface deposits are taken into consideration with respect to the agreement document." MOA Appendix B is a Post-Discovery Plan considering the potential for subsurface deposits in the APE. NRCS Colorado provided a draft MOA for comment to the Southern Ute Indian Tribe, the Ute Mountain Ute Tribe, and the Ute Indian Tribe of the Uintah & Ouray Reservation on August 29, 2022. No responses were received by NRCS Colorado.

During an internal review additional consulting parties were identified in 2024. NRCS Colorado initiated consultation by calling and leaving voice messages, when possible, to Tribal representatives from the Comanche Nation, Apache Tribe of Oklahoma, Fort Belknap Indian Community, Navajo Nation in August and September of 2024. Consultation letters on the area of potential effect, identified historic properties, eligibility to the NRHP, effects, and the MOA were sent to the Comanche Nation, Apache Tribe of Oklahoma, Fort Belknap Indian Community, Navajo Nation, Montrose and Gunnison County Commissioners, Gunnison County Historic Preservation Commission, and the Montrose Historical Society and Museum. Consultation letters

are included in Appendix A. The MOA mitigates adverse impacts of the project by interpreting the adversely effected historic properties on a publicly accessible website. NRCS Colorado sent a draft MOA for SHPO review on June 16, 2022 and received SHPO comments on July 12, 2022. The MOA was executed on August 28, 2023, and is being amended.

6.1.2 Tribes

In accordance with E.O. 13175 and Section 106 of the NHPA and its implementing regulations 36 CFR 800, NRCS is responsible for assessing the impacts of activities, considering tribal interests, and assuring that tribal interests are considered in conjunction with federal activities and undertakings. NRCS recognizes that tribal governments are sovereign nations located within the United States. NRCS has the responsibility to help fulfill the U.S. government's responsibilities toward tribes when considering actions that may affect tribal rights, resources, and assets.

Initial scoping letters detailing information about the Preferred Alternative were sent to the Southern Ute Indian Tribe of the Southern Ute Reservation, the Ute Mountain Ute Tribe, and the Ute Indian Tribe of the Uintah & Ouray Reservation on November 17, 2020. The scoping letters gave a description of the project, location, and overview, and requested participation and input. The scoping notice also provided details of the scoping meeting, contact information to submit written comments, and the scoping period open and closure date.

The NRCS determined the tribal consultation and submitted letters to the Southern Ute Tribe, the Ute Mountain Ute Tribe, the Ute Indian Tribe of the Uintah & Ouray Reservation, Comanche Nation, Apache Tribe of Oklahoma, Fort Belknap Indian Community, Navajo Nation for concurrence and compliance with Section 106 requirements. Only the Southern Ute Indian Tribe responded to the request for comments. Tribal consultation letters are included in Appendix A.

6.1.3 U.S. Army Corps of Engineers

The USACE has jurisdiction over work in WOTUS under Section 404 of the CWA. Coordination with the USACE regarding the RGP 5 is ongoing. An initial coordination call with USACE occurred on March 10, 2023 to discuss the applicability of the RGP 5. The Draft Plan-EA and an RGP-5 request for the applicable project components will be submitted to USACE to initiate their review of the proposed projects. Coordination with USACE will continue through the implementation phase of the Proposed Project.

6.1.4 U.S. Fish and Wildlife Service

The USFWS was invited to comment on the project during the scoping period. On April 21, 2021, J-U-B (Autumn Foushee) and NRCS (Krystal Phillips) discussed the Proposed Project over a Microsoft Teams meeting with USFWS biologist Creed Clayton to establish the scope and nature of this consultation. On October 18, 2021, NRCS (Krystal Phillips) discussed with the USFWS (Creed Clayton) the designation of the monarch butterfly as a candidate species on the USFWS IPaC resource list in Colorado and the scope of consultation required. Because the monarch butterfly is a candidate species, no formal consultation is necessary for this species. The BA determined that the Proposed Project May Affect, Not Likely to Adversely Affect Gunnison sage-grouse and its critical habitat; therefore, the NRCS submitted the BA to USFWS in March 2023 for informal consultation. The USFWS concurred with the determination in the BA (Appendix A).

6.2 Coordination

In accordance with the CEQ regulations implementing the NEPA at 40 CFR Part 1501.6, the NRCS formally invited six agencies to become cooperating agencies in the Proposed Project. Cooperating agency letters were submitted to BLM, NPS, Reclamation, USACE, USFWS, and USFS on November 17, 2020. Four agencies accepted the invitation to be a cooperating agency: BLM, NPS, Reclamation, and USFS (Appendix A). Cooperating agencies were involved in the planning and development of the Plan-EA. Section 12 consultation occurred on January 25, 2024. NRCS-CO Section 12 correspondence can be found in Appendix A.

6.2.1 Colorado Parks and Wildlife

CPW was invited to comment on the project during the scoping period. CPW provided a comment on January 26, 2021. A state sensitive species list was obtained as part of the biological resource analysis and the BA determined that there would be no impact to state sensitive species from the implementation of the Proposed Project.

6.3 Public Participation

During the scoping period, two comments were received regarding the Proposed Project. The 30-day scoping period for this project began on December 10, 2020 and closed on January 15, 2021. The public scoping meeting was held virtually via Zoom on December 10, 2020.

6.3.1 Public Participation

The main goal of public participation is to involve diverse groups of the public, and government agency representatives to solicit input and provide relevant and timely information throughout the NEPA review process. It is meant to engage all demographics of the public in the NEPA review process, who may be potentially affected by the proposed action. Outreach methods are described in the following section. Table 6-1 lists the project's public outreach activities (some of which are still pending).

Table 6-1. Public Outreach Activities

Date	Activity	Type
November 17, 2020	Scoping Notice Published to NRCS Project Website	Online Publication
November 17, 2020	Scoping Letters Sent to Public and Agencies	Postal Mailing
November 19, 2020	Public Notice Published in The Montrose Daily Press and The Gunnison Times	Newspaper Publication
December 10, 2020	Public Scoping Open House	Open House held virtually using Zoom
January 15, 2021	Scoping Public Comment Period Closed	Written comments received by postal mail and email
TBD	Notice of Draft Plan-EA Public Comment Period	Newspaper and Online Notification
TBD	Draft Plan-EA Public Comment Period Open	Newspaper and Online Notification
TBD	Draft Plan-EA Public Meeting	TBD

Date	Activity	Type
TBD	Draft Plan-EA Public Comment Period Closed	TBD
TBD	Final Plan-EA	Publication

6.3.2 Project Scoping

Chapter 2 describes the scoping process for the Proposed Project in detail. The scoping procedure for the formulation of this Plan-EA followed the general procedures outlined in the NRCS NWPH (NRCS 2014a) and the NRCS NWPM (NRCS 2014b). NRCS procedures and NEPA regulations (40 CHR 1500-1508) require that the NRCS use a scoping process early in the planning phase to identify issues, concerns, and potential impacts that require analysis.

Directed by NRCS, J-U-B coordinated with local, state, and federal agencies regarding subjects pertinent to their jurisdiction, authority, and expertise. Agency coordination occurred via telephone, email, and written letter. Prior to initial scoping, the NRCS approved a scoping letter and project map developed by J-U-B. The purpose of the scoping letter was to inform agencies of the Plan-EA and to request preliminary comments on the proposal. Formal coordination and consultation with tribes and SHPO was completed by NRCS.

Two virtual scoping meetings, an Agency Scoping Meeting and a Public Scoping Meeting, were held on December 10, 2020 using Zoom. Zero public comments were received during the scoping period for the Proposed Project; however, two comments from resource agencies were received during the comment period. A Scoping Report was prepared that provided a summary of the scoping process (Appendix E). A summary of the resource concerns identified during the scoping process are described in the Scoping Report (Appendix E).

A cooperating agency meeting was also held on April 28, 2021. The purpose of the meeting was to discuss the resource analysis, the review of the Draft Plan-EA, the anticipated schedule, and signatures with the cooperating agencies.

6.3.3 Agency Involvement

Federal, state, tribal, and local agencies were involved in the project formulation and given the opportunity to comment on the Proposed Project. A project scoping letter was mailed to various agencies on November 17, 2020. See Chapter 10 for the agencies that received a project scoping letter.

6.3.4 Agency Plan-EA Reviews

NRCS and cooperating agencies reviewed and commented on the Draft Plan-EA prior to issuing the Draft Plan-EA for public review. Agency comments on the Draft Plan-EA were addressed before the Draft Plan-EA was issued for the public.

6.4 Draft Plan-EA Public Comment Period

The Final Plan-EA will document the public scoping process, including any comments and responses. All public comment documentation will be included in Appendix A of the Final Plan-EA.

6.5 Final Plan-EA

A Notice of Availability will be published in the paper of local record to notify the public when the Final Plan-EA and FONSI are issued by the NRCS.

Chapter 7 Preferred Alternative

7.1 Purpose & Summary

The Action Alternative/FWFI was determined to be the Preferred Alternative because of its ability to meet the purpose and need for the project, and balancing of environmental, social, and economic tradeoffs. The Preferred Alternative would have the least impacts to environmental and social resources, and the greatest net economic benefits of the available alternatives. The watershed area associated with the Preferred Alternative is described in Section 3.2 and illustrated in Figure 1-1 and Map 1 in Appendix B.

7.2 Rationale for Preferred Alternative Selection

The Action Alternative/FWFI is considered the Preferred Alternative and is described in detail in Section 7.3 (Appendix B. Map 2). The Action Alternative/FWFI was selected as the Preferred Alternative because it would address agricultural water management issues, have beneficial impacts on water quality and quantity, reduce emergency repairs, crop yield damages, and salinity control costs, increase agricultural income and recreational consumer surplus, and improve fish and wildlife habitat.

Implementing the Action Alternative/FWFI would benefit agricultural water user and agricultural lands in the watershed area by protecting over 28,788 acres of agricultural lands from canal breaching, conserving approximately 2,698 ac-ft of water by eliminating canal seepage and evaporation, and reducing salinity and selenium loading to the Colorado River Basin by approximately 2,247 tons annually. The Preferred Alternative, or FWFI would directly benefit over 380 shareholders on both the BPWCD and Uncompahgre Valley Water Users Association (UVWUA) systems (there are approximately 80 shareholders in the BPWCD and over 300 shareholders on the M&D Canal).

The table below summarizes and compares the No Action Alternative (FWOFI) and Preferred Alternative (FWFI) regarding ecosystem services per PR&G guidelines. The table summarizes benefits compared to costs, performance against the guiding principles, and provisioning, regulating, and cultural trade-offs in respect to ecosystem services. Descriptions of the Preferred Alternative ecosystem services have been discussed throughout the document, including affected resources and consequences.

Table 7-1. Project Summary and Comparison Table for Associated Ecosystem Services

	Alternatives	
	FWOFI	**FWFI**
Alternatives		
Locally Preferred	The FWOFI would maintain the existing conditions and would not improve agricultural infrastructure.	The FWFI is locally preferred as the community in the project area is agriculturally focused; therefore, agricultural infrastructure improvements would provide the greatest benefit to the community. The FWFI would optimize water delivery against costs. No public

	Alternatives	
	FWOFI	**FWFI**
		comments were received during the scoping period.
Non-structural	The FWOFI is the non-structural alternative. The FWOFI would maintain the existing conditions and would not implement structural changes.	The FWFI would implement structural changes.
Environmentally Preferable	The FWOFI would maintain existing conditions in the project area. Water would continue to be lost to seepage and evaporation and salinity and selenium loading would continue to occur.	The FWFI is the environmentally preferred alternative. The FWFI would improve agricultural water delivery, conserve water, improve water quality, and would not result in significant impacts to human health or the environment.
National Economic Efficiency	The FWOFI would require no project investment.	The FWFI would require an investment of $25,178,335, provide $1,118,366 in net benefits, representing a benefit to cost ratio of 1.5.
Guiding Principles		
Healthy and Resilient Ecosystems	Under the FWOFI, water would continue to be lost to seepage and evaporation, and salinity and selenium loading would continue to occur.	The FWFI would invest in projects that conserve water, improve water quality, and thereby restore the functions of ecosystems in the project area.
Sustainable Economic Development	The FWOFI would not provide an economic investment for the better management of water resources in the project area.	Economic analysis was performed to ensure the FWFI encourages sustainable economic development. The FWFI would provide for the better management of water resources in the project area, while also being considered the NEE alternative.
Floodplains	The FWOFI would not invest federal funds in the development of flood prone areas.	The FWFI would occur in the floodplain associated with the Cimarron River and near the floodplain of Happy Canyon Creek. However, no surface disturbance would be required for the FWFI, and no additional occupancy or modification of the floodplain would occur; therefore, the FWFI would avoid adverse

	Alternatives	
	FWOFI	**FWFI**
		effects to the floodplain and is consistent with E.O. 11988.
Public Safety	The project area has a history of landslides, canal overtopping, and canal breaching. The FWOFI would not alter the existing conditions.	The FWFI would reduce the risk of canal breach and potential damages from a breach.
Watershed Approach	The FWOFI was analyzed using a complete watershed approach.	The FWFI was analyzed using a complete watershed approach.
Total Project Investment	**$-**	**$25,178,335**
Monetized Net Benefits	**$-**	**$1,118,366**
Regulating Services		
Reduced infrastructure damages	$-	$84,674
Reduced income loss	$-	$439,745
Reduced downstream damages	$-	$441,817
Provisioning Services		
Increased agricultural income	$-	$144,806
Riparian vegetation		Reduction of 82 acres
Water access for wildlife		Loss of water source
Wetlands	-	Possible adverse impacts to 5.69 acres of existing wetlands; No mitigation is anticipated
Cultural Services		
Increased recreation benefits	$-	$7,326

Notes: (1) Note that all costs and benefits for the Action Alternative are compared to the Future Without Federal Investment (FWOFI) here and elsewhere in the document. Benefits and costs were calculated over a 102-year analysis. All values are reported in 2022 dollars. (2) The benefits of the Action Alternative are calculated as the additional value that would be created because of the proposed actions. The benefits of the Action Alternative are not an estimate of total damages under the FWOFI and proposed conditions.

The FWOFI would not meet the purpose and need of the project as identified above. The FWFI would meet the purpose and need of the project and would provide the greatest net benefit. The FWFI was selected as the Preferred Alternative and was also determined to be the NEE Alternative. Refer to the Investigation and Analyses Report in Appendix D for additional information.

7.3 Measures to be Installed

The Preferred Alternative would improve agricultural water management in the project area. The Preferred Alternative would include project improvements at seven separate sites within the BPWCD and UVWUA service areas: Wells Basin (Cimarron Canal), Coal Hill (Cimarron Canal), Slide Point (Vernal Mesa Canal), East Lateral, West Lateral, M&D Canal, and one temperature sensor site on the Cimarron River.

Table 7-2 summarizes the Preferred Alternative project measures. The measures proposed for the Preferred Alternative would be designed to NRCS conservation practice and safety standards. The design items listed below, as well as construction practices, would be submitted to NRCS for review prior to the start of construction. A detailed description of the Preferred Alternative components is included in Section D.2 of Appendix D.

Table 7-2. Measures of Improvement

Project Area	Measure of Improvement	Description
Wells Basin	Install HDPE Pipe and Fittings	Install approximately 8,590 feet of 63-inch solid-wall HDPE pipe in the Wells Basin Section of the Cimarron Canal. Fittings such as air-vents, mitered bends, and those required for connections to structures are anticipated.
	Construct Concrete Wasteway with Canal Gates	Construct a concrete structure approximately 4,800 feet from the start of the Wells Basin Section of the Cimarron Canal capable of spilling the water in the canal back to the Cimarron River in the event of a downstream breach or failure.
	Construct Inlet Structure	Construct a concrete inlet structure with coarse bar grating to transition from the earthen ditch of the Cimarron Canal to the proposed pipe.
	Construct Outlet Structure	Construct a concrete outlet structure with to transition from the proposed pipe to the existing downstream earthen ditch of the Cimarron Canal.
Coal Hill	Install HDPE Pipe and Fittings	Install approximately 6,180 feet of 63-inch solid-wall HDPE pipe in the Coal Hill Section of the Cimarron Canal. Fittings such as air-vents, mitered bends, and those required for connections to structures are anticipated.
	Reconstruct and Install Turnouts	Remove and the 10-inch water-user turnout in the Coal Hill Section of the Cimarron Canal. Reconstruct the turnout in a manner compatible with the pipeline while maintaining historic outlet location.

Project Area	Measure of Improvement	Description
	Modify Inlet Structure	The proposed piping of the Coal Hill Section of the Cimarron Canal begins at an existing steel wasteway. Modifications would be made to the downstream end of the wasteway to make it a suitable starting point for the proposed pipe.
	Construct Outlet Structure Headwall	Construct a concrete outlet structure with to transition from the proposed pipe to the existing downstream earthen ditch of the Cimarron Canal.
Slide Point	Remove Existing Steel Pipe and Inlet Structure	Remove approximately 1,440 feet of existing 48-inch steel pipe that is aged and leaking. Remove inlet structure to existing pipeline.
	Install HDPE Pipe and Fittings	Install approximately 2,800 feet of 54-inch and 2,100 feet of 48-inch solid wall HDPE pipe in the Slide Point area of the Vernal Mesa Canal. Fittings such as air-vents, mitered bends, reducers, and those required for connections to structures are anticipated.
	Construct Inlet Structure	Construct a concrete inlet structure to transition from the upstream, open, earthen ditch to the 54-inch pipeline.
	Construct Outlet Structure	Construct a concrete outlet structure to transition from the 48-inch pipeline to the open, earthen ditch downstream.
East Lateral	Install HDPE Pipe and Fittings	Install approximately 22,475 feet of solid-wall HDPE pipe ranging in size from 36-inch to 18-inch in the Bostwick Park East Lateral. Fittings are such as air-vents, mitered bends, reducers, and those required for connections to structures are anticipated.
	Construct Trash Screen Structure	Construct a concrete "trash screen" structure immediately after the split with the West Lateral. Coarse bar grating will prevent large debris from entering the pipeline, and structure will transition from the upstream, earthen ditch to 36-inch pipe.
	Construct Screen and Spill Structure	Construct a concrete structure that will utilize fine screening (such as a coanda screen) to remove fine materials from the pipeline system. The structure will also split water between the East Lateral and the piped Siphon Lateral.

Project Area	Measure of Improvement	Description
	Construct Hydraulic Spill Structure	Construct a hydraulic spill structure on the East Lateral pipeline that will set the maximum hydraulic head for the pipeline, allowing for use of thinner walled pipe for much of the pipeline.
	Install Unpressurized and Pressurized Turnouts	Install 2 unpressurized, and 14 pressurized turnouts to provide deliveries to water users at historic locations.
West Lateral	Install HDPE Pipe and Fittings	Install approximately 21,000 feet of solid-wall HDPE pipe ranging in size from 24-inch to 16-inch in the Bostwick Park West Lateral. Fittings are such as air-vents, mitered bends, reducers, and those required for connections to structures are anticipated.
	Construct Intake Structure	Construct an “intake structure” at the start of the piping project. The structure will connect to the existing upstream 24-inch HDPE pipe and the proposed 24-inch pipe downstream. The structure will set a maximum water surface elevation for the pipeline, allowing for thinner walled pipe for much of the pipeline.
	Install Pressurized Turnout	Install 13 pressurized turnouts to provide deliveries to water users at historic locations.
M&D Canal	Canal Lining (30 mil PVC liner with geotextile and shotcrete)	Excavate and shape canal to match proposed canal prism. Install 30 mil PVC liner between two layers of geotextile fabric. Apply 3-inches of shotcrete to protect PVC liner from damage.
	Install Underdrain	Install 8,200 feet of perforated pipe underdrain beneath the liner to intercept water from upgradient irrigation to minimize uneven hydrostatic pressure on the liner.
	Hillside Stabilization	Cut and remove material on steep slopes immediately adjacent to the canal to decrease slope and minimize risk of sloughing/landslides from above the canal.
Temperature Sensor	Install Temperature Sensor	Install and mount a temperature sensor in the Cimarron River upstream of the Cimarron Canal to help inform releases of water from Silver Jack Reservoir to provide both adequate irrigation water and suitable habitat for native fish.

Project Area	Measure of Improvement	Description
	Install Steel Cabinet Electrical Enclosure	Install a steel cabinet to house the temperature sensor, and all appurtenant electronic equipment required to transmit temperature data.

The Preferred Alternative is anticipated to cost $25,178,335. Access to the project area can be achieved at numerous locations using public roads. Map 2 in Appendix B illustrates the project area, including staging areas.

Construction of the Preferred Alternative is anticipated to take two irrigating seasons. Construction would begin in October 2026 and complete in April 2028, with construction activities taking place outside of the irrigation season. Excavators, dozers, loaders, dump trucks, fusion equipment (for pipe up to 63 inches), and concrete mixers, as well as smaller support equipment (such as ATVs, generators, pumps, trucks, and trailers) would be needed to complete the project.

7.4 Mitigation

7.4.1 Avoidance & Minimization

Design features, included in the project BMPs, would be implemented during and post-construction to avoid and minimize impacts to environmental resources in the project area that could occur because of the Preferred Alternative. A complete list of BMPs is included in Appendix E.

7.4.2 Compensatory Mitigation

Compensatory mitigation would not be required for the Preferred Alternative.

7.4.3 Mitigation

Section 106 of the NHPA consultation concluded that the project will adversely impact linear historic property segments that support the overall NRHP eligibility of the Cimarron Canal (5GN.6371.1, 5MN.4808.5, 5MN.4808.6), M&D Canal (5MN.1855.9), Vernal Mesa Ditch (5MN.7708.3), and East Lateral/Vernal Mesa Ditch (5MN.10323.2). All six of the NRHP eligible historic properties are eligible to the NRHP under Criterion A. Piping the resources will continue their historically intended use, but adversely impact their integrity of design, setting, materials, workmanship, feeling, and association.

NRCS Colorado consulted on a MOA to mitigate these adverse impacts with all consulting parties. MOA consultation was sent to the SHPO on June 16, 2022; the Southern Ute Indian Tribe, the Ute Mountain Ute Tribe, and the Ute Indian Tribe of the Uintah & Ouray Reservation on August 29, 2022; and the Comanche Nation, Apache Tribe of Oklahoma, Fort Belknap Indian Community, Navajo Nation, Montrose and Gunnison County Commissioners, Gunnison County Historic Preservation Commission, and the Montrose Historical Society and Museum. The MOA mitigates adverse impacts to the historic properties by interpreting to the public in an ArcGIS Storymap. The MOA was executed on August 28, 2023 and is being amended.

7.5 Permits & Compliance

7.5.1 Federal

U.S. Army Corps of Engineers

An ARD was completed for the project area and determined that the Preferred Alternative would impact WOTUS, including wetlands (Appendix E). Coordination with USACE regarding the RGP 5 is ongoing (Appendix A).

U.S. Fish and Wildlife Service

A BA was completed for the Proposed Project and determined that the Proposed Project May Affect Not Likely to Adversely Affect Gunnison sage-grouse and its critical habitat (Appendix E). The BA was submitted to USFWS for compliance with Section 7 of the ESA in March 2023. The USFWS concurred with the determination in the BA (Appendix A).

Bureau of Land Management

BLM would acknowledge the historic ROW for construction activities that take place on BLM land.

Reclamation

A MOA was established between Reclamation and NRCS, which will guide the engineering review and approval process for the design of the M&D Canal.

7.5.2 State

Colorado Department of Transportation

Encroachment Permits allow for temporary construction work within the CDOT ROW. An Encroachment Permit likely would be required where the Proposed Project elements intersect with state or federal roadways.

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

Under Section 402 of the CWA, a CDPS General Permit is required for construction activities that disturb more than 1 acre with potential to discharge pollutants into surface waters. A SWMP would be developed as part of the General Permit.

Colorado State Historic Preservation Office

Alpine secured a Colorado State Archaeological permit prior to surveying private lands within the APE.

7.5.3 Local

Gunnison County

Floodplain Development Permit Application

7.6 Costs and Cost Sharing

Table 7-3 describes the estimated installation cost of the FWFI and the breakdown of Federal funds and Sponsor participation based on eligible purpose.

Table 7-3. Estimated Installation Costs (Dollars)[1]

Works of Improvement	Applicant Participation	Public Law 83-566 Funding	Total
Agricultural Water Management	$5,538,286.65	$19,640,048.53	$25,178,335.18
Total	**$5,538,286.65**	**$19,640,048.53**	**$25,178,335.18**

1. Price base: 2022. Prepared December 2022

Economic Tables 1, 2, and 4 (Tables 7-4 through 7-6) are illustrated in Section 7.9 below. Economic Table 1 describes the cost of all measures and items by Federal agency and land ownership category. Economic Table 1 represents the basis for providing technical, cost sharing, and credit assistance from PL83-566 funds. Economic Table 2 illustrates the items of installation cost for the individual works of improvement. Economic Table 2 is used to determine the percentages of costs to be shared by the Sponsors and NRCS for each project measure. Economic Table 4 illustrates the estimated average annual NEE plan costs (NRCS 2014b).

The NEE analysis evaluated the costs of the action alternatives based on cost estimates, which included costs for property, permitting, engineering, construction, administration, and O&M of proposed improvements to the BPWCD irrigation delivery system. These were compared against benefits received by regulating costs associated with breaches to the system, salinity and selenium loading to the river and adverse impacts on local trout habitat due to high temperatures.

Effects of both action alternatives were evaluated over a 102-year time horizon, including the two-years required to complete installation. Should installation take longer, the project costs and benefits would be discounted by an additional year. While this would change the results of the economic analysis, the economic conclusions would still hold. This analysis period is equal to the length of time over which the structures are expected to have significant beneficial effects. Benefits are expected to begin accruing the year after the improvements included in the action alternatives are installed and continue to accrue until the end of the 102-year time horizon. Since most of the project elements have design lives of 100-years, replacement costs were only included in the analysis for project elements with design lives less than 100 years (PR&G Section 9, NWPM 501.37.B and the Economics Handbook, Part 611, 1.12.). The temperature sensor included in the action alternative has a design life of 50 years. As a result, its replacement cost was included in the analysis.

The NEE analysis used this information to quantify and value the benefits and costs associated with the action alternative as discussed in more detail below.

Projected benefits and costs are based on a full employment economy and assume no change in relative prices during the period of analysis. Benefits and costs are discounted at the rate for federal projects of 2.25% for 2022 (NRCS 2022c). Results are reported in both annual terms and as annualized averages in 2022 dollars (see Table 7-7).

7.7 Installation & Financing

7.7.1 Planned Sequence of Installation

Design would begin upon authorization from NRCS, likely Winter of 2025. Construction contract procurement would follow final design. The sponsor anticipates that construction would take two irrigating seasons. Construction would begin in October 2026 and complete in April 2028, with construction activities taking place outside of the irrigation season. Should installation take longer,

the project costs and benefits would be discounted by an additional year. While this would change the results of the economic analysis, the economic conclusions would still hold.

7.7.2 Responsibilities

BPWCD is the primary Sponsor and responsible party for the coordination of the Plan-EA. The Sponsor, other sponsors, and partners will coordinate together as they plan, design, and construct the Preferred Alternative. Each sponsor shall be responsible for implementation of the measures that affect their infrastructure; Trout Unlimited does not own infrastructure but will be responsible for the temperature sensor project. Sponsors will oversee design efforts, and construction. Sponsors will also be responsible for procuring the necessary funds for improvement measure implementation and/or providing in-kind services.

If project implementation is funded by NRCS, the Sponsor and NRCS will enter into a cooperative agreement (Project Agreement) that describes each entity's responsibilities during the implementation phase and provides for the transfer of the Federal share of implementation funds to the Sponsors. The Sponsors would work in cooperation with cooperating agencies and other interested agencies to meeting environmental, permitting, and public process requirements.

7.7.3 Contracting

All work associated with the Preferred Alternative would be properly procured by the Sponsors using competitively awarded contracts. The sponsors in coordination with NRCS would oversee and administer the construction of the Proposed Project as described in the Project Agreement.

7.7.4 Financing

As the principal benefactors of the Proposed Project, partnering resources are expected from BPWCD, CC&RC, UVWUA, and Trout Unlimited. The NRCS State Conservationist determined the federal construction cost share rate for this project is 75%. Therefore, NRCS would provide Federal share of funds for the agricultural water management improvements and the BPWCD and its other sponsors would contribute the Local cash match. Since all projects are Agricultural Water Management, 25% of the project cost must be through non-federal sources. BPWCD and UVWUA both have staff that can perform large portions of the construction, allowing for significant in-kind contribution. The time frame of project implementation will require, however, the use of construction contractors on certain project measures. It is expected that state and local agency funds will be available to help cover costs. Ideally grants will be available to the sponsors; low interest loans for agricultural water projects may be utilized if grant funding is unavailable. The total out of pocket cost for the sponsors is estimated to be $5,538,286.

Availability of Federal funds is contingent upon their being adequate funds appropriated by the Government and the allocation of those funds by NRCS to the project.

7.8 Operation & Maintenance

Operation and maintenance of the irrigation infrastructure would be shared by BPWCD, CC&RC, and UVWUA. Operation of these facilities would include administration, management, and performance of non-maintenance actions needed to keep the facilities operational and safe. Maintenance includes the performance of work, recording instrumentation data, preventing deterioration of structures, and repairing damage or replacement of the structure, as needed to prevent failure. Damages to completed structures caused by normal deterioration, droughts, flooding, or vandalism are considered maintenance.

Prior to the start of construction, NRCS, the sponsors will enter into an Operation and Maintenance Agreement (O&M Agreement) lasting for the duration of the planned project life (100 years). The O&M plan included in the agreement will identify the specific responsibilities for each entity.

7.9 Economic Tables

Tables 7-4, 7-5, and 7-6 describe the estimated project and installation cost of the Preferred Alternative, and how those costs would be shared. Tables with an itemized materials list for agricultural water management are included in Appendix D. Economic tables have been included to present information relevant to the costs and benefits of the Preferred Alternative (Table 7-7).

Table 7-4. Economic Table 1 - Estimated Installation Cost of the Action Alternatives, Cimarron River-Lower Uncompahgre Watershed Project, Colorado (2022 Dollars)[1,2]

Works of Improvement	Unit	Number			Estimated Cost (Dollars)						
		Federal Land	Non-Federal Land	Total	Public Law 83-566 Funds			Other Funds			Total
					Federal	Non-Federal Land	Total	Federal Land	Non-Federal Land	Total	
Wells Basin Piping Project	Miles	0	1.63	1.63	$0	$4,307,932	$4,307,932	$0	$1,214,156	$1,214,156	$5,522,088
Coal Hill Piping Project	Miles	0	1.17	1.17	$0	$2,964,718	$2,964,718	$0	$836,111	$836,111	$3,800,829
Slide Point Piping Project	Miles	0	0.92	0.92	$0	$2,089,397	$2,089,397	$0	$589,819	$589,819	$2,679,216
East Lateral Piping Project	Miles	0.31	3.94	4.26	$264,270	$3,335,402	$3,599,672	$74,494	$940,207	$1,014,701	$4,614,373
West Lateral Piping Project	Miles	0	3.99	3.99	$0	$2,150,227	$2,150,227	$0	$606,712	$606,712	$2,756,939
M&D Canal Lining and Hill Stabilization Project	Acres	9.40	4.80	14.20	$2,987,630	$1,525,598	$4,513,228	$841,209	$429,553	$1,270,762	$5,783,990
Temperature Sensor	Each	1	0	1	$14,875	$0	$14,875	$6,025	$0	$6,025	$20,900
Total	**Miles**	**0.31**	**11.65**	**11.97**	**$3,266,774**	**$16,373,275**	**$19,640,049**	**$921,728**	**$4,616,558**	**$5,538,286**	**$25,178,335**
	Acres	**9.40**	**4.80**	**14.20**							
	Each	**1**	**0**	**0**							

Notes: Totals may not sum due to rounding. Prepared: December 2022.

1. Price base: 2022 dollars. 2. Project cost prepared by J-U-B.

Table 7-5. Economic Table 2 - Estimated Cost Distribution – Water Resource Project Measures Cimarron River-Lower Uncompahgre Watershed Project, Colorado (Dollars)[1]

Works of Improvement	Installation Cost – Public Law 83-566							Installation Cost – Other Funds								Total
	Construction	Engineering	Construction Engineering	Real Property Rights	Relocation Payments	Project Admin	Total Public Law 83-566	Construction	Engineering	Construction Engineering	Permits	Real Property Rights	Relocation Payments	Project Admin	Total Other Funds	Installation Costs
Wells Basin Piping Project	$3,497,719	$324,000	$324,000	$0	$0	$162,213	$4,307,932	$1,165,906	$0	$0	$46,600	$0	$0	$1,650	$1,214,156	$5,522,089
Coal Hill Piping Project	$2,407,085	$223,000	$223,000	$0	$0	$111,633	$2,964,718	$802,362	$0	$0	$32,100	$0	$0	$1,650	$836,112	$3,800,829
Slide Point Piping Project	$1,696,709	$157,000	$157,000	$0	$0	$78,688	$2,089,397	$565,570	$0	$0	$22,600	$0	$0	$1,650	$589,820	$2,679,216
East Lateral Piping Project	$2,922,152	$271,000	$271,000	$0	$0	$135,520	$3,599,672	$974,051	$0	$0	$39,000	$0	$0	$1,650	$1,014,701	$4,614,373
West Lateral Piping Project	$1,745,286	$162,000	$162,000	$0	$0	$80,941	$2,150,227	$581,762	$0	$0	$23,300	$0	$0	$1,650	$606,712	$2,756,939
M&D Canal Lining and Hillside Stabilization Project	$3,663,334	$340,000	$340,000	$0	$0	$169,894	$4,513,228	$1,221,111	$0	$0	$47,900	$0	$0	$1,750	$1,270,761	$5,783,990
Temperature Sensor Installation Project	$12,075	$1,120	$1,120	$0	$0	$560	$14,875	$4,025	$0	$0	$1,000	$0	$0	$1,000	$6,025	$20,900
Total	$15,944,360	$1,478,120	$1,478,120	$0	$0	$739,449	$19,640,049	$5,314,787	$0	$0	$212,500	$0	$0	$11,000	$5,538,287	$25,178,335

Table 7-6. Economic Table 4 - Estimated Average Annual NEE Costs, Cimarron River-Lower Uncompahgre Watershed Project, Colorado (2022 Dollars)[1]

Action Alternative Component	Project Outlays (Amortization of Installation Cost)	Other Direct Costs[2]	Total Cost	Adverse Effects
Wells Basin Piping Project	$136,235	$9,695	$145,930	82-acre reduction in habitat supporting riparian vegetation; A source of water for wildlife is removed
Coal Hill Piping Project	$93,770	$6,673	$100,443	
Slide Point Piping Project	$66,099	$4,823	$70,922	
East Lateral Piping Project	$113,840	$33,754	$147,594	
West Lateral Piping Project	$68,016	$20,167	$88,183	
M&D Canal Lining and Hill Stabilization Project	$142,696	$42,310	$185,006	
Temperature Sensor	$516	$348	$864	
Total	**$621,172**	**$117,770**	**$738,942**	**-82 acres of riparian habitat; Reduction in water sources for wildlife**

Notes: Totals may not sum due to rounding.

1. Price base: 2022 dollars.

2. Other direct costs include annual operations and maintenance associated with installation, operation or replacement of project structures.

Table 7-7. Economic Table 6 - Comparison Benefits and Costs, Cimarron River-Lower Uncompahgre Watershed Project, Colorado (2022 Dollars)[1]

Works of Improvement	Agriculture-related			Non-agriculture Related		Average Annual Benefits	Average Annual Cost	Benefit Cost Ratio
	Reduced Property Loss, Critical Facility Loss, and Income Loss	Reduced Crop Yield Damages	Increased Water Supply	Reduced Salinity Control Costs	Increased Recreation Consumer Surplus	Total		
Wells Basin Piping	$26,672	$135,553	$28,022	-	-	$190,247	$145,930	1.3
Coal Hill Piping	$26,672	$135,553	$7,281	-	-	$169,506	$100,443	1.7
Slide Point Piping	$14,903	$33,049	$6,400	$51,693	-	$106,045	$70,922	1.5
East Lateral Piping	-	-	$25,110	$153,310	-	$178,420	$147,594	1.2
West Lateral Piping	-	-	$12,624	$124,151	-	$136,775	$88,183	1.6
M&D Canal Lining and Hill Stabilization	$16,427	$135,590	$65,367	$112,663	-	$330,047	$185,006	1.3
Temperature Sensor	-	-	-	-	$7,326	$7,326	$864	8.5
Total	**$84,674**	**$439,745**	**$144,806**	**$441,817**	**$7,326**	**$1,118,366**	**$738,942**	**1.5**

Notes: Totals may not sum due to rounding. Prepared: December 2022.

1. Price base: 2022 dollars.

7.10 Structural Tables

Tables 7-8 and 7-9 are the structural tables for the Proposed Project.

Table 7-8. Structural Table 3b– Channel Work, Cimarron River and Lower Uncompahgre Watershed, Colorado

						Channel Dimensions				n Value		Velocities (ft/s)					
Channel Name (reach)	Station (Start Station 10+00)	Drain area (mi^2)*	Design discharge (ft^3/sec)	Water surface elev feet (msl)	Hydraulic Gradient (ft/ft)	Gradient (ft/ft)	Bottom width (ft)	Elev. (ft/msl)	Side slope	aged	as built	aged**	as built	Excavation volume (yd^3)***	Type of work	Existing channel type	Present flow cond.
M&D Canal (Trapezoid 1)	61+50	0.28	625 - Max. Diverted Water	≈6036	0.0010	0.0010	11	≈6037	2:1	0.027	0.017	2.96 - ADCP Boat Measurement	5.94 - designed	154,478	Lining	Manmade	Intermittent
M&D Canal (Half Trapezoid)	72+51	0.04	625 - Max. Diverted Water	≈6030	0.0013	0.0013	13	≈6031	2:1 / ∞	0.027	0.017	3.21 - Scaled ADCP Boat Measurement	6.75 - designed	972	Lining	Manmade	Intermittent
M&D Canal (Trapezoid 2)	92+00	0.21	625 - Max. Diverted Water	≈6029	0.0007	0.0007	15	≈6030	2:1	0.027	0.017	2.38 - ADCP Boat Measurement	5.02 - designed	4,202	Lining	Manmade	Intermittent

**M&D Canal is not used for stormwater conveyance. Diversions are decreased during storms. Appropriate stormwater canal crossings will be designed as part of channel work.*

*** ADCP Boat Measurements taken with ~440 cfs in canal. Half trapezoid velocity calculated by scaling trapezoid 1 velocity with hydraulic radius and slope.*

**** Excavation includes adjacent hillside stabilization.*

Table 7-9. Supplemental Structural Table – Channel Work, Cimarron River and Lower Uncompahgre Watershed, Colorado

Channel Name (reach)	Existing Channel Characteristics										Proposed Piping Characteristics				
	Beginning Station	Reach Length (feet)	Maximum discharge (ft^3/sec)	Gradient (ft/ft)	Bottom width (ft)	Side slope	Average Current n Value	Average Velocity (ft/s)	Existing channel type	Present flow condition.	Material	Nominal Diameter (inches)	Average Velocity (ft/s)	Maximum Operating Pressure (psi)	Required Structures/ Turnouts (no.)
Cimarron Canal (Wells Basin)	10+00	200	135	0.0187	13	2.1H:1V	0.035	6.25	Manmade	Intermittent	HDPE	63	22.1	0	1/0
	12+00	1072	135	0.0033	11	1.7H:1V	0.035	3.62	Manmade	Intermittent	HDPE	63	11.6	0	0/0
	22+72	1328	135	0.001	11	2.3H:1V	0.035	2.26	Manmade	Intermittent	HDPE	63	6.9	<1	0/0
	36+00	1026	135	0.0023	14	1.3H:1V	0.035	3.16	Manmade	Intermittent	HDPE	63	6.9	<1	0/0
	46+26	2724	135	0.0011	14	1.9H:1V	0.035	2.36	Manmade	Intermittent	HDPE	63	6.9	<1	1/0
	73+50	1463	135	0.0021	9.5	1.3H:1V	0.035	3.23	Manmade	Intermittent	HDPE	63	9.7	0	0/0
	88+13	775	135	0.001	10	1.9H:1V	0.035	2.35	Manmade	Intermittent	HDPE	63	6.9	<1	1/0
Cimarron Canal (Coal Hill)	10+00	1001	135	0.0025	13	1.5H:1V	0.035	3.25	Manmade	Intermittent	HDPE	63	10.4	0	1/0
	20+01	959	135	0.002	9	1.5H:1V	0.035	3.1	Manmade	Intermittent	HDPE	63	9.5	0	0/0
	29+60	416	135	0.0056	7.3	2H:1V	0.035	4.45	Manmade	Intermittent	HDPE	63	6.9	<1	0/0
	33+76	1224	135	0.0022	13	1.5H:1V	0.035	3.11	Manmade	Intermittent	HDPE	63	6.9	1.5	0/0
	46+00	649	135	0.002	7	1.3H:1V	0.035	3.24	Manmade	Intermittent	HDPE	63	6.9	1.5	0/0
	52+49	1931	135	0.001	9	1.3H:1V	0.035	2.48	Manmade	Intermittent	HDPE	63	6.9	1.5	1/1
Vernal Mesa Canal (Slide Point)	10+00	230	85	0.0035	8	2.1H:1V	0.035	3.25	Manmade	Intermittent	HDPE	54	10.6	0	1/0
	12+30	670	85	0.003	7.6	1.3H:1V	0.035	3.28	Manmade	Intermittent	HDPE	54	10.0	0	0/0
	19+00	1000	85	0.0015	8	1.2H:1V	0.035	2.6	Manmade	Intermittent	HDPE	54	7.5	0	0/0
	29+00	900	85	0.0015	9.5	1.3H:1V	0.035	2.5	Manmade	Intermittent	HDPE	54	7.5	0	0/0
	38+00	400	85	0.001	8	1.3H:1V	0.035	2.2	Manmade	Intermittent	HDPE	48	7.7	<1	0/0
	42+00	400	85	0.0025	N/A (Piped)	N/A (Piped)	0.035	9.0	Manmade	Intermittent	HDPE	48	9.0	0	0/0
	46+00	1278	85	0.0043	N/A (Piped)	N/A (Piped)	0.035	11.4	Manmade	Intermittent	HDPE	48	11.4	0	1/0
East Lateral	10+00	1158	45	.0048 to .0282	7.5	1.3H:1V	0.035	4.88	Manmade	Intermittent	HDPE	36	15.2	0	1/1
	21+58	442	45	.0358 to .0670	6	1.4H:1V	0.035	7.43	Manmade	Intermittent	HDPE	30	24.7	0	0/1
	26+00	1460	45	.0049 to .0358	8	1.3H:1V	0.035	5.14	Manmade	Intermittent	HDPE	30	15.07	2.6	0/0
	40+60	640	45	.0128 to .1161	8	1.5H:1V	0.035	7.48	Manmade	Intermittent	HDPE	30	25.88	0	0/0
	47+00	1250	23	.0043 to .0982	7	1.3H:1V	0.035	6.3	Manmade	Intermittent	HDPE	30	5.4	0	1/0
	59+50	10450	23	.0039 to .0154	6.5	1.3H:1V	0.035	4.8	Manmade	Intermittent	HDPE	30	5.4	24	1/4
	164+00	2100	17	.0044 to .0064	4	1H:1V	0.035	2.77	Manmade	Intermittent	HDPE	24	6.2	28.5	0/1
	185+00	3000	17	.0026 to .0049	3.5	1H:1V	0.035	2.5	Manmade	Intermittent	HDPE	24	6.4	32.7	0/4
	215+00	1975	9	.0013 to .0059	2.5	1.3H:1V	0.035	2.04	Manmade	Intermittent	HDPE	18	6.0	36.2	0/5
West Lateral	4+50	12250	13	.0004 to .0178	2.5	1.5H:1V	0.035	3.11	Manmade	Intermittent	HDPE	24	4.7	31.3	1/3
	127+00	7300	8	.0004 to .0113	3	1H:1V	0.035	2.36	Manmade	Intermittent	HDPE	18	5.2	39.6	0/8
	200+00	1507	6	.0013 to .0411	1.5	1H:1V	0.035	3.7	Manmade	Intermittent	HDPE	16	4.9	46.6	0/3

Chapter 8 References

American Rivers. 2023. *Protecting Wild Rivers.* Accessed February 21, 2023. https://www.americanrivers.org/threats-solutions/protecting-rivers/.

Bureau of Land Management (BLM). 2004. Gunnison Gorge National Conservation Area: Approved Resource Management Plan and Record of Decision. Accessed July 27, 2022. https://www.blm.gov/sites/blm.gov/files/uploads/programs_national-conservation-lands_colorado_gunnison-gorge_NCA_RMP_0.pdf.

BLM. 2019a. Proposed Resource Management Plan and Final Environmental Impact Statement. Uncompahgre Field Office. Accessed November 9, 2020. https://eplanning.blm.gov/public_projects/lup/62103/175697/214066/Uncompahgre_Proposed_RMP_Final_EIS_-_Volume_I.pdf.

BLM. 2019b. Proposed Resource Management Plan and Final Environmental Impact Statement (Volume II). Uncompahgre Field Office. Accessed November 9, 2020. https://eplanning.blm.gov/public_projects/lup/62103/175697/214067/Uncompahgre_Proposed_RMP_Final_EIS_-_Volume_II.pdf

BLM. 2019c. Proposed Resource Management Plan and Final Environmental Impact Statement. Uncompahgre Field Office. Accessed November 9, 2020. https://eplanning.blm.gov/public_projects/lup/62103/175697/214066/Uncompahgre_Proposed_RMP_Final_EIS_-_Volume_I.pdf.

BLM. 2021. PFYC: A Rapid Assessment Tool for Paleontology. Accessed 27, July 2022. https://www.blm.gov/blog/2021-07-08/pfyc-rapid-assessment-tool-paleontology.

BLM. 2022a. Potential Fossil Yield Classification System. Accessed July 27, 2022. https://www.blm.gov/sites/blm.gov/files/uploads/IM2016-124_att1.pdf.

BLM. 2022b. Visual Resource Inventory Methodologies. Accessed August 9, 2022. https://blmwyomingvisual.anl.gov/vr-inventory/index.cfm.

Census. 1990a. 1990 Census of Population General Population Characteristics Colorado. Accessed September 8, 2022. https://www2.census.gov/library/publications/decennial/1990/cp-1/cp-1-7.pdf

Census. 1990b. 1990 Census of Population Characteristics United States. Accessed September 8, 2022. https://www2.census.gov/library/publications/decennial/1990/cp-1/cp-1-1.pdf

Census. 2000a. Profiles of General Demographic Characteristics: Colorado. Accessed September 8, 2022. https://www2.census.gov/library/publications/2001/dec/2kh08.pdf

Census. 2000b. Profiles of General Demographic Characteristics: United States. Accessed September 8, 2022. https://www2.census.gov/library/publications/2001/dec/2kh00.pdf.

Census. 2012. Colorado: 2010. 2010 Census of Population and Housing. Accessed September 8, 2022. https://www2.census.gov/library/publications/2012/dec/cph-1-7.pdf

Census. 2013. United States: 2010. 2010 Census of Population and Housing. Accessed September 8, 2022. https://www2.census.gov/library/publications/2012/dec/cph-1-1.pdf

Census. 2020a. 2020 American Community Survey 5-Year Estimates. Accessed June 7, 2021. https://data.census.gov/cedsci/

Census. 2020b. 2020 Decennial Census. Accessed June 7, 2021.

https://data.census.gov/cedsci/

Colorado Cattleman's Association. 2021. Stewart Ditch Diversion and Headgate Improvement Funding and Implementation Tracking Project. Accessed December 3, 2024. https://www.agwaternetwork.org/Stewart-Ditch-Diversion-and-Headgate-Improvement-Funding%20and%20Implementation-Tracking.aspx.

Colorado Department of Agriculture (CDA). 2021. Colorado Weed Programs. Accessed June 7, 2021. https://ag.colorado.gov/conservation/noxious-weeds/county-weed-programs.

Colorado Energy Office (CEO). 2023. *GHG Pollution Reduction Roadmap.* Accessed February 21, 2023. https://energyoffice.colorado.gov/climate-energy/ghg-pollution-reduction-roadmap.

Colorado Department of Local Affairs (CDOLA). 2021a. Population by Single Year of Age – County. Accessed September 8, 2022. https://gis.dola.colorado.gov/population/data/sya-county/

CDOLA. 2021b. Population by Single Year of Age – Region. Accessed September 8, 2022. https://gis.dola.colorado.gov/population/data/sya-regions/

Colorado Department of Public Health & Environment (CDPHE). 2011. Total Maximum Daily Load Assessment Gunnison River and Tributaries Uncompahgre River and Tributaries Delta/Mesa/Montrose Counties, Colorado. https://drive.google.com/file/d/0B0tmPQ67k3NVYWRzalNhNmFVd1U/edit?resourcekey=0-A8Se4FVgz6EMal1aAoj5mA. Accessed July 20, 2022.

CDPHE. 2022. Colorado Environmental Sites Search. Accessed July 20, 2022. https://cdphe.maps.arcgis.com/apps/webappviewer/index.html?id=dbca3a2942764fd8bdb947826a5a2228.

CDPHE. 2023. *Climate Change*. Accessed February 21, 2023. https://cdphe.colorado.gov/environment/air-pollution/climate-change.

Colorado Department of Natural Resources (CDNR) Colorado Water Conservation Board (CWCB). 2023. Colorado State Water Plan. Accessed February 2, 2023. https://dnrweblink.state.co.us/cwcbsearch/ElectronicFile.aspx?docid=213417&dbid=0.

CDNR-CWCB. 2021. Basin Implementation Plans. Accessed June 7, 2021. https://cwcb.colorado.gov/colorado-water-plan/basin-implementation-plans.

CDNR-CWCB. 2022. Gunnison Basin Implementation Plan. Volume 1. Accessed February 2, 2023. https://dnrweblink.state.co.us/cwcbsearch/0/edoc/216709/Gunnison_BIP_Volume1_2022.pdf.

Colorado Department of Public Health & Environment Colorado Air Pollution Control Division (CDPHE-CAPCD). 2019. 2019 Ambient Air Monitoring Network Plan. Accessed June 7, 2021. https://www.colorado.gov/airquality/tech_doc_repository.aspx?action=open&file=2019AnnualNetworkPlan.pdf.

Colorado Department of Transportation (CDOT). 2022. Noise FAQs. Accessed March 1, 2023. https://www.codot.gov/programs/environmental/noise/noise-faqs.html.

Colorado Geologic Survey (CGS). 2021. Colorado Groundwater Atlas – Managed Aquifer Recharge. Accessed June 7, 2021. https://cologeosurvey.maps.arcgis.com/apps/webappviewer/index.html?id=fb606631306f4bbb8a0c3c706ff14c66.

CGS. 2022a. The Colorado Geological Survey (CGS) Statewide Landslide Inventory Map. Accessed July 27, 2022. https://coloradogeologicalsurvey.org/hazards/landslides/.

CGS. 2022b. ON-010 Colorado Groundwater Atlas. ON-010 Colorado Groundwater Atlas - Colorado Geological Survey. Accessed September 1, 2022.

Colorado Natural Areas Program (CNAP). 2021. Colorado Natural Areas and Significant Natural Features. https://cpw.maps.arcgis.com/apps/Shortlist/index.html?appid=99fbd9adfbfc49deab2d1707f49b61b2 .

Colorado Natural Heritage Program (CNHP). 2020. Colorado Wetland Program Plan *2020-2024.* Accessed February 21, 2023. https://cnhp.colostate.edu/download/documents/2020/Colorado-Wetland-Program-Plan-2020-2024.pdf.

CNHP. 2021. Download Data. Accessed November 5, 2021. https://cnhp.colostate.edu/ourdata/download-data/.

Colorado Parks and Wildlife (CPW). 2019. 2019 Statewide Fisheries Assessments and Surveys. https://cpw.state.co.us/Documents/Research/Aquatic/pdf/Publications/Statewide-Fisheries-Assessments-and-Surveys-2019.pdf#search=cimarron%20river. Accessed January 31, 2023.

CPW. 2020a. Leopard Frogs. https://cpw.state.co.us/Documents/LandWater/WetlandsProgram/PrioritySpecies/Factsheet-and-Habitat-Scorecard_LeopardFrogs.pdf. Accessed November 5, 2021.

CPW. 2020b. Wildlife Species: American Peregrine Falcon. https://cpw.state.co.us/learn/Lists/Wildlife%20Species/DispForm.aspx?ID=133. Accessed November 5, 2021.

CPW. 2020c. Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors. https://cpw.state.co.us/Documents/WildlifeSpecies/LivingWithWildlife/Raptor-Buffer-Guidelines.pdf. Accessed November 5, 2021.

CPW. 2021a. State Wildlife Area Map. Accessed June 7, 2021. https://cpw.state.co.us/placestogo/parks/Pages/WildlifeAreaMap.aspx.

CPW. 2021b. Threatened and Endangered List. https://cpw.state.co.us/learn/Pages/SOC-ThreatenedEndangeredList.aspx. Accessed November 5, 2021.

CPW. 2022a. Cimarron Deer Herd Management Plan Data Analysis Unit D-40. *Game Management Units 64 and 64.* Accessed February 2, 2023. https://cpw.state.co.us/Documents/Hunting/BigGame/DAU/Deer/D40DAUPlan_Cimarron.pdf.

CPW. 2022b. Cimarron Elk Herd Management Plan Data Analysis Unit E-35. *Game Management Units 64 and 65.* Accessed February 2, 2023. https://cpw.state.co.us/Documents/Hunting/BigGame/DAU/E35DAUPlan_Cimarron.pdf.

Colorado River District. 2021a. "Lower Gunnison Project 2015 NRCS RCPP Final Summary Report". Accessed December 2, 2024. https://gunnisonriverbasin.org/wp-content/uploads/2021/12/2021-11-12-RCPP-Summary-Report-v2.pdf.

Colorado Water Conservation Board. 2021b. "Water Plan Grant Application: Upper West Lateral Pipeline and Water Optimization Crawford Clipper Ditch Company." Accessed December 2, 2024 https://dnrweblink.state.co.us/cwcb/0/edoc/218718/CA5a.pdf?searchid=116196d3-f3b3-40d6-8391-5d4c78fc939d.

CEQ. 2013. Principles and Requirements for Federal Investments in Water Resources. Council on Environmental Quality. Known as the P&R. Pursuant to 42 USC 1962–3: Water Resources Principles and Guidelines. 18 pp. Available at: https://obamawhitehouse.archives.gov/sites/default/files/final_principles_and_requirements_march_2013.pdf

CEQ. 2014. Interagency Guidelines. Interagency Guidelines for the updated 1983 Principles and Guidelines for Water and Land Related Resources Implementation Studies (Principles and Guidelines). https://obamawhitehouse.archives.gov/sites/default/files/docs/prg_interagency_guidelines_12_2014.pdf.

Environmental Protection Agency (EPA). 2017. "Greenhouse Gas (GHG) Emissions." Accessed August 19, 2019. https://www.epa.gov/ghgemissions.

EPA. 2017a. "WATERS GeoViewer." Accessed January 17, 2020.https://www.epa.gov/waterdata/waters-geoviewer.

EPA. 2021a. Sole Source Aquifer. Accessed June 7, 2021. https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ada1877155fe31356b.

EPA. 2021b. Greenbook: Colorado Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants. Accessed June 7, 2021. https://www3.epa.gov/airquality/greenbook/anayo_co.html.

EPA. 2021c. Ecoregion Download Files by State-Region 8. Accessed December 3, 2021. https://www.epa.gov/eco-research/ecoregion-download-files-state-region-8.

EPA. 2022a. Aquatic Life Criterion - Selenium. Accessed February 15, 2023. https://www.epa.gov/wqc/aquatic-life-criterion-selenium.

EPA. 2022b. Summary of Clean Water Act. Accessed February 16, 2023. https://www.epa.gov/laws-regulations/summary-clean-water-act

EPA. 2023. Risk Assessment: Salt. https://www.epa.gov/risk/salt. Accessed 15 February 2023.

Federal Emergency Management Agency (FEMA). 2012. National Flood Insurance Program. Accessed June 7, 2021. https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd.

FEMA. 2013. 2013 FEMA FIRM Panels. Accessed June 7, 2021. https://catalog.data.gov/dataset/2013-fema-firm-panels.

FishBase. 2021. Catostomus platyrhynchus (Cope, 1874) Mountain sucker. https://www.fishbase.se/summary/Catostomus-platyrhynchus.html. Accessed November 5, 2021.

Gunnison County. 2001. Land Use Resolution, As amended September 8, 2022. Accessed February 21, 2023. https://www.gunnisoncounty.org/DocumentCenter/View/3157/Gunnison-County-Land-Use-Resolution--Amended-September-8-2022?bidId=.

Gunnison County. 2013. Gunnison County Weed Management Plan Including, But Not Limited to, the Gunnison Basin. Accessed February 2, 2023. https://www.gunnisoncounty.org/DocumentCenter/View/581/Gunnison-Basin-Weed-District-Management-Plan?bidId=.

Gunnison County. 2022. Land Use Change Permits. Accessed February 3, 2022. https://www.gunnisoncounty.org/370/Land-Use-Change-Permits#:~:text=There%20is%20no%20zoning%20in%20Gunnison%20County.%20Any,the%20area%20in%20which%20the%20parcel%20is%20located.

Gunnison County. 2023. *Community and Economic Development.* Accessed February 21, 2023. https://www.gunnisoncounty.org/144/Community-and-Economic-Development.

Gunnison River Basin. 2021.Lower Gunnison Project". Accessed December 2, 2024. https://gunnisonriverbasin.org/projects/lower-gunnison-project/.

Irrigation Training & Research Center. 2017. Westside Optimization Analysis Final Report for the Uncompahgre Valley Water Users Association.

J-U-B ENGINEERS, Inc. (J-U-B). 2016. Bostwick Park Water Conservancy District System Optimization Plan.

Masbruch, Melissa D. and Christopher L. Shope. 2014. Groundwater and Surface-Water Resources in the Bureau of Land Management Moab Master Leasing Plan Area and Adjacent Areas, Grand and San Juan Counties, Utah, and Mesa and Montrose Counties, Colorado. Open-File Report 2014-1062. USGS and BLM. https://pubs.usgs.gov/of/2014/1062/pdf/ofr2014-1062.pdfMeijer et al. 2006 Impacts of concrete lining of irrigation canals on availability of water for domestic use in southern Sri Lanka. Agricultural Water Management. Vol 83 (3): 243-251.

Meredith and Blais. 2019. Quantifying irrigation recharge sources using groundwater modeling. Agricultural Water Management. Vol 214: 9-16.

Montrose County. 2010. Master Plan. Prepared by the Montrose County Planning and Development Office. Accessed February 21, 2023. https://www.montrosecounty.net/308/Master-Plan.

Montrose County. 2011. Weed Management Plan. Prepared by the Montrose County Weed Management Department.

Montrose County. 2022. Interactive Maps: Montrose County Zoning. Accessed February 3, 2022. https://www.montrosecounty.net/318/Interactive-Maps.

Montrose County. 2023a. Colorado State University Extension. Accessed March 3, 2023. https://www.montrosecounty.net/278/CSU-Extension.

Montrose County. 2023b. *Planning and Development.* Accessed February 21, 2023. https://www.montrosecounty.net/143/Planning-Development.

National Oceanic and Atmospheric Administration (NOAA). 2017. EFH Mapper. Accessed June 7, 2021. https://www.habitat.noaa.gov/application/efhmapper/index.html

National Parks Service (NPS). 1997. General Management Plan. *Black Canyon of the Gunnison National Monument and Curecanti National Recreation Area.* Accessed February 6, 2023. https://www.nps.gov/blca/learn/management/upload/CURE_BLCA_GMP.pdf.

NPS. 2021. National Natural Landmarks. Accessed June 7, 2021. https://www.nps.gov/subjects/nnlandmarks/nation.htm.

NPS. 2022. Nationwide Rivers Inventory. Accessed November 30, 2022. https://www.nps.gov/maps/full.html?mapId=8adbe798-0d7e-40fb-bd48-225513d64977.

National Park Service (NPS). 2021. National Natural Landmarks Directory. Accessed July 27, 2021. https://www.nps.gov/subjects/nnlandmarks/nation.htm.

Natural Resources Conservation Service (NRCS). n.d. Contingent Valuation/Recreational Values. Accessed September 8, 2022. Contingent Valuation/Recreational Values | NRCS (usda.gov)

NRCS. 1998. NRCS Economic Handbook. Part 611: Water Resources Handbook for Economics.

NRCS. 2010. General Manual, Title 190-Ecological Sciences, Part 410-Compliance with NEPA, August 1979, as amended March 2010. Accessed July 27, 2022. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_010608.pdf.

NRCS. 2014a. National Watershed Program Handbook (2nd Edition). April 2014 Parts 600 through 606. Accessed July 27, 2022. https://directives.sc.egov.usda.gov/ViewerFS.aspx?hid=36702

NRCS. 2014b. National Watershed Program Manual (4th Edition). April 2014, as amended January 2015, Parts 500-506. Accessed July 27, 2022. https://directives.sc.egov.usda.gov/viewerFS.aspx?hid=35135.

NRCS. 2016. NRCS Colorado Coordinated Resource Management Handbook and Guidelines. Accessed July 27, 2022. https://efotg.sc.egov.usda.gov/references/Delete/2016-2-13/NRCS_CO_CRM_Handbook_jan2016.pdf.

NRCS. 2018. National Cultural Resources Procedures Handbook. Accessed March 3, 2023. https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=42755.wba.

NRCS. 2021. National Planning Procedures Handbook (NPPH), Amendment 9. Title 180 National Planning Procedures Handbook. 108 pp. https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=47643.wba

NRCS. 2022. Watershed and Flood Prevention Operations (WFPO) Program. Accessed August 29, 2022. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/landscape/wfpo/?cid=nrcs143_008271.

NRCS. 2022a. Web Soil Survey. Accessed June 7, 2021. https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

NRCS. 2022b. Soil Data Access (SDA) Prime and other Important Farmlands. Accessed June 27, 2021. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1338623.html.

NRCS. 2022c. Discount Rates for Federal Water Projects. NRCS Economics. Accessed September 8, 2022. Discount Rates for Federal Water Projects| NRCS Economics | NRCS (usda.gov)

NRCS. 2024. “Regional Conservation Partnership Program 2024 Awarded Projects”. Accessed December 2, 2024. https://www.nrcs.usda.gov/sites/default/files/2024-10/rcpp-2024-awarded-projects.pdf.

U.S. Department of the Interior Bureau of Reclamation (Reclamation). 2011. Quality of Water in the Colorado River Basin Progress Report No. 23. Accessed June 7, 2021. https://www.usbr.gov/uc/progact/salinity/pdfs/ProgressReports/PR23final.pdf.

Reclamation. 2012. “Final Environmental Assessment Minnesota Canal and Reservoir Company Piping Project 2012-2014”. Accessed November 26, 2024. https://www.usbr.gov/uc/envdocs/ea/MinnesotaCanal/FEA.pdf.

Reclamation. 2013. “Daft Environmental Assessment C Ditch/Needle Rock Pipeline Project Delta County, Colorado.” Accessed November 21, 2024. https://www.usbr.gov/uc/envdocs/ea/cDitch/draftEA.pdf.

Reclamation. 2014. “Environmental Assessment: Bostwick Park Water Conservation District’s Siphon Lateral & Forked Tongue/Holman Ditch Company’s Salinity Control Projects Montrose and Delta Counties, CO.” Accessed July 27, 2022. https://www.usbr.gov/uc/envdocs/ea/BostwickPark/finalEA.pdf.

Reclamation. 2014a. “Final Environmental Assessment Clipper Irrigation Salinity Control Project 4 Smith Fork Project Delta County, Colorado. Accessed November 21, 2024. https://usbr.gov/uc/envdocs/ea/clipperIrrig/final-EA.pdf.

Reclamation. 2014b. “Environmental Assessment Bostwick park Water Conservation District’s Siphon Lateral & Forked Tongue/Holman Ditch Company’s Salinity Control Projects Mountrose [sic] and Delta Counties, CO”. Accessed November 26, 2024. https://www.usbr.gov/uc/envdocs/ea/BostwickPark/finalEA.pdf.

Reclamation. 2014c. “Environmental Assessment Minnesota Canal and Reservoir Company Salinity Control Project Phase II 2014-2016”. Accessed November 26, 2024. https://www.usbr.gov/uc/envdocs/ea/MinnesotaCanal/phase2/Phase2-finalEA.pdf.

Reclamation. 2014d. Reclamation Releases a Final Environmental Assessment for Piping the Slack and Patterson Laterals. Accessed November 26, 2024. https://www.usbr.gov/newsroom/newsroomold/newsrelease/detail.cfm?RecordID=47407.

Reclamation. 2015. "Final Environmental Assessment Cattleman's Ditches Pipeline Project Montrose County, Colorado." Accessed November 21, 2024. https://www.usbr.gov/uc/envdocs/ea/pdf/CattlemansFinalEA.pdf.

Reclamation. 2017a. "Environmental Assessment Minnesota L75 Lateral Salinity Control Project Delta County, Colorado." Accessed November 26, 2024. https://www.usbr.gov/uc/envdocs/ea/pdf/MinnesotaL75LateralFinalEA.pdf.

Reclamation. 2017b. "Quality of Water Colorado River Basin – Progress Report No. 25." United States Bureau of Reclamation. January 18, 2023. http://www.coloradoriversalinity.org/docs/Progress%20Report%2025%20-%20Reclamation.pdf

Reclamation 2018. "Environmental Assessment and Finding of No Significant Impact Uncompahgre Valley Water Users Association East Side Laterals Piping Project Phase 9." Accessed July 27, 2022. https://www.usbr.gov/uc/envdocs/ea/UncompahgreValleyWaterUsersAssociationEastSideLateralsPipingProjectPhase9-FinalEAandFONSI.pdf.

Reclamation. 2018a. "Environmental Assessment Fire Mountain Canal Salinity Reduction Piping Project." Accessed November 26, 2024. https://www.usbr.gov/uc/envdocs/ea/FireMountainCanalSalinityReductionPipingProject-FinalEAandFOSNI.pdf.

Reclamation. 2018b. "Orchard Ranch Ditch Piping Project Environmental Assessment." Accessed November 26, 2024. https://www.usbr.gov/uc/envdocs/ea/pdf/OrchardRanch_FinalEA.pdf.

Reclamation. 2018c. "Environmental Assessment and Finding of No Significant Impact Uncompahgre Valley Water Users Association East Side Laterals Piping Project Phase 9". Accessed December 3, 2024. https://www.usbr.gov/uc/envdocs/ea/UncompahgreValleyWaterUsersAssociationEastSideLateralsPipingProjectPhase9-FinalEAandFONSI.pdf.

Reclamation. 2019a. "Environmental Assessment and Finding of No Significant Impact for the North Delta Canal Phase 1 Extension Project." Accessed November 26, 2024. https://www.usbr.gov/uc/DocLibrary/EnvironmentalAssessments/2091200-NorthDeltaCanalPhase1ExtensionProject-FinialEAandFONSI-508-WCAO.pdf.

Reclamation. 2019b. "Environmental Assessment and Finding of No Significant Impact Aspen Canal Piping Project." Accessed November 26, 2024. https://www.usbr.gov/uc/DocLibrary/EnvironmentalAssessments/20190200-AspenCanalpipingProject-FinalEAandFONSI-508-WCAO.pdf.

Reclamation. 2020. "Draft Environmental Assessment Upper Steward Ditch Pipeline Project." Accessed November 26, 2024. https://www.usbr.gov/uc/DocLibrary/EnvironmentalAssessments/20200400-UpperStewartDitchPipelineProject-DrftEA-508-WCAO.pdf.

Reclamation. 2022a. “Uncompahgre Project.” Accessed November 30, 2022. https://www.usbr.gov/projects/index.php?id=412.

Reclamation 2022b. “Draft Environmental Assessment Shinn Park and Waterdog Laterals Piping Salinity Control Project.” Accessed July 27, 2022. https://www.usbr.gov/uc/DocLibrary/EnvironmentalAssessments/20220708-ShinnParkWaterdogLateralsPipingSalinityControlProject-DraftEA-508-WCAO.pdf.

Reclamation 2022c. “Draft Environmental Assessment for the Uncompahgre Valley Water User Association’s East Side Laterals Piping Project Phase 10.” Accessed July 27, 2022. https://www.usbr.gov/uc/envdocs/ea/UncompahgreValleyWaterUsersAssociationEastSideLateralsPipingProjectPhase9-FinalEAandFONSI.pdf.

Reclamation. 2022d. “Environmental Assessment and Finding of No Significant Impact for the Needle Rock – Lone Rock Ditch Piping Project.” Accessed November 26, 2024. https://www.usbr.gov/uc/DocLibrary/EnvironmentalAssessments/20220600-NeedleRockLoneRockDitchPipingProject-FinalEAandFONSI-508-WCAO.pdf.

Reclamation. 2022e. “Environmental Assessment and Finding of No Significant Impact Pilot Rock Ditch Piping Project.” Accessed November 26, 2024. https://www.usbr.gov/uc/DocLibrary/EnvironmentalAssessments/20220722-PilotRockDitchPipingProject-FinalEAandFONSI-508-WCAO.pdf.

Reclamation. 2022f. “Environmental Assessment and Finding of No Significant Impact Short Ditch Extension Piping Project.” Accessed November 26, 2024. https://www.usbr.gov/uc/DocLibrary/EnvironmentalAssessments/20221200-ShortDitchExtensionProject-FinalEAandFONSI-508-WCAO.pdf.

Reclamation. 2022g. “Uncompahgre Valley Water Users Association Drought Contingency Plan Grant Application”. Accessed December 3, 2024. https://www.usbr.gov/drought/docs/2022/dcp/DRP-004_UncompahgreValleyWaterUsersAssoc_508.pdf.

Reclamation. 2024a. Colorado River Basin Salinity Control Program. Fire Mountain Canal Phase 2 Salinity Project. Accessed November 26, 2024. https://www.usbr.gov/uc/progact/salinity/.

Reclamation. 2024b. “Finding of No Significant Impact and Environmental Assessment for Gould Canal Improvements Projects A & B – Upper Tunnel Bypass”. Accessed November 26, 2024. https://www.usbr.gov/uc/DocLibrary/EnvironmentalAssessments/20241100-GouldCanalImprovementProjectsAandBUpperTunnelBypass-FinalEAandFONSI-508-WCAO.pdf.

Reclamation. 2024c. “Finding of No Signification Impact and Environmental Assessment for the Turner & Lone Cabin Ditch Combination Salinity Reduction Project.” Accessed November 26, 2024. https://www.usbr.gov/uc/DocLibrary/EnvironmentalAssessments/20240717-TurnerLoneCabinDitchCombinationSalinityReductionProject-FinalEAandFONSI-508-WCAO.pdf.

Uncover Colorado. 2022. Silver Jack Reservoir- Cimarron-Ridgeway. Colorado Outdoor Recreation & Sports. Accessed June 7April 20, 2022. https://www.uncovercolorado.com/activities/silver-jack-reservoir-heeney/.https://www.uncovercolorado.com/outdoor-recreation-sports.

U.S. Army Corps of Engineers (USACE). 2021. Economic Guidance Memorandum, 22-03, Unit Day Values for Recreation for Fiscal Year 2022. Accessed September 8, 2022. Economic Guidance Memorandum, 22-03, Unit Day Values for Recreation for Fiscal Year 2022 (dren.mil)

U.S. Department of Agriculture (USDA). 2017. Guidance for Conducting Analyses Under the Principles, Requirements, and Guidelines for Water and Land Related Resources Implementation Studies and Federal Water Resource Investments. Departmental Manual 9500-013. Natural Resources and Environment.

USDA Economic Research Service (ERS). 2017. Irrigation and Water Use. Accessed June 27, 2021. https://www.ers.usda.gov/topics/farm-practices-management/irrigation-water-use/.

USDA National Agricultural Statistics Service (NASS). 2017. Colorado Census of Agriculture. Accessed June 7, 2021. https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_2_County_Level/Colorado/.

U.S. Forest Service. (USFS). 2007. Proposed Land Management Plan Grand Mesa, Uncompahgre, and Gunnison National Forests. Accessed February 22, 2023. https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev7_003194.pdf.

USFS. 1991. Amended Land and Resource Management Plan, Grand Mesa, Uncompahgre, and Gunnison National Forests. USDA Forest Service Rocky Mountain Region, Delta, Colorado. Available at: https://www.fs.usda.gov/detail/gmug/landmanagement/planning/?cid=FSEPRD764558

USFS. 2021. USFS Interactive Visitor Map. Accessed June 7, 2021. https://www.fs.fed.us/ivm/index.html.

U.S. Fish and Wildlife Service (USFWS). 2016. The Bald and Golden Eagle Protection Act. https://www.fws.gov/northeast/ecologicalservices/eagleact.html. Accessed November 11, 2021

USFWS. 2021. National Wetlands Inventory. Accessed July 27, 2021. https://www.fws.gov/program/national-wetlands-inventory.

USFWS. 2023. Information for Planning and Consultation (IPaC). Accessed March 1, 2023. https://ipac.ecosphere.fws.gov.

U.S. Geological Survey (USGS). 1992. Colorado Geological Map Data. Accessed June 7, 2021. https://mrdata.usgs.gov/geology/state/state.php?state=CO.

USGS. 2018. Technical Announcement: Salinity Decreased throughout Upper Colorado River Basin Over Time. Accessed December 2, 2022. https://www.usgs.gov/news/technical-announcement/salinity-decreased-throughout-upper-colorado-river-basin-over-time.

USGS. 2020a. Water Resources of the United States: Hydrologic Unit Maps. Accessed January 6, 2021. https://water.usgs.gov/GIS/huc.html#:~:text=A%20cataloging%20unit%20is%20a,Cataloging%20Units%20in%20the%20Nation.

USGS. 2021. Watershed Boundary Dataset. Accessed June 7, 2022. https://www.usgs.gov/national-hydrography/watershed-boundary-dataset.

USGS. 2022. Black Canyon of the Gunnison National Park. Accessed July 20, 2022. https://www.usgs.gov/geology-and-ecology-of-national-parks/black-canyon-gunnison-national-park.

Vespa, J., Medina, L., and D. Armstrong. 2020. Demographic Turning Points for the United States: Population Projections for 2020 to 2060. Accessed July 27, 2021. https://www.census.gov/content/dam/Census/library/publications/2020/demo/p25-1144.pdf

Wild and Scenic Rivers. 2016. “National Wild and Scenic Rivers System: National Wild & Scenic Rivers System Map.” Accessed July 27, 2022. https://www.rivers.gov/documents/nwsrs-map.pdf.

Chapter 9 List of Preparers

9.1 Draft Plan-EA Preparers

Table 9-1 lists the individuals who assisted in preparing this Draft Plan-EA.

Table 9-1. List of Preparers

Name	Title (Years)	Agency/Firm	Education	Licenses/ Certifications
Blongshia Cha	Watershed Program Specialist (8 years)	USDA-NRCS	B.S. Agricultural Science	
John Andrews	Watershed Program Engineer (40+ years)	USDA-NRCS	B.S. Agricultural Science B.S. Agricultural Engineering M.S. Environmental Engineering	P.E. (CO & IL) CPESC
Craig Dengel	Colorado State Cultural Resources Specialist (15 Years)	USDA-NRCS	B.A. Sociology and Anthropology M.S. Geography Ph.D. ABD. Anthropology	
Autumn Foushee Davies	Senior Biologist (18 years)	J-U-B ENGINEERS, Inc.	M.S. Botany B.S. Natural Resources Conservation and Management – Forest Ecology B.S. Journalism – Environmental Journalism	
Lexie Conley	Lead Environmental Scientist (6 years)	J-U-B ENGINEERS, Inc.	M.S. Environmental Studies B.A. Biology B.A. Environmental Studies	
Rebecca Hendricks Miller	Biologist (12 years)	J-U-B ENGINEERS, Inc.	M.S. Organismal Biology B.A. Environmental Studies and Biology	
Luke Gingerich	Project Manager (16 years)	J-U-B ENGINEERS, Inc.	B.S. Civil Engineering	P.E. (CO, NM, UT)
Nicholas Emmendorfer	Lead Project Engineer (11 years)	J-U-B ENGINEERS, Inc.	B.S. Civil Engineering	P.E. (CO)
Michael Verdone	Director (14 years)	BBC Research & Consulting	Ph.D. Economics M.A. Economics B.A. Economics	
Matthew Landt	Principal Investigator (26 years)	Alpine Archaeological Consultants, LLC	M.A. Anthropology	RPA #15334

Chapter 10 Distribution List

The following agencies received a scoping letter for the Proposed Project. A notice of availability for the Draft-Plan EA will be distributed to the following government agencies/staff and organizations. The names and addresses of private parties who will receive notice of the Draft Plan-EA are not listed in this chapter for privacy purposes.

Table 10-1. Distribution List

Type of Agency/Organization	Name of Agency/Organization
Federal Government	U.S. Army Corps of Engineers
	U.S. Bureau of Land Management
	U.S. Environmental Protection Agency
	U.S. Fish and Wildlife Service
	U.S. Forest Service
	National Park Service
	U.S. Bureau of Reclamation
Tribal Government	Southern Ute Tribe
	Ute Indian Tribe – Uintah & Ouray Reservation
	Ute Mountain Ute Tribe
State Government	Colorado Department of Transportation
	Colorado Department of Public Health and the Environment
	Colorado Parks and Wildlife
	Colorado Department of Natural Resources
	State Historic Preservation Office
	Tribal Historic Preservation Office
Local Government	Montrose County
	Gunnison County
	City of Montrose
	City of Montrose Historic Preservation Commission
	Gunnison County Historic Preservation Commission
Businesses & Organizations	Gunnison Basin Roundtable
	Colorado Water Conservation Board
	Upper Gunnison River Water Conservancy District
	Montrose County School District
	Gunnison Watershed School District
	Delta County School District
	Colorado Association of Conservation Districts
	Colorado River District
	Tri-County Water Conservancy District
	Shavano Conservation District
	Colorado Council of Professional Archaeologists
	State Historical Society of Colorado
	Montrose County Historical Society
	Montrose County Historical Museum
	Colorado Archaeological Society

Chapter 11 Acronyms, Abbreviations, and Short Forms

Acronym	Term
A	General Agriculture
AAV	average annualized values
ac-ft	acre-feet
ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
Alpine	Alpine Archaeological Consultants, LLC
AMSL	above mean sea level
APE	area of potential effect
ARD	Aquatic Resource Delineation
BA	Biological Assessment
BCA	Benefit-Cost Analysis
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	Best Management Practice
BPWCD	Bostwick Park Water Conservancy District
CAA	Clean Air Act
CC&RC	Cimarron Canal and Reservoir Company
CDNR	Colorado Department of Natural Resources
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
CDPS	Colorado Discharge Permit System
Census	U.S. Census Bureau
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	Colorado Geological Survey
CH_4	methane
CNHP	Colorado Natural Heritage Program
CO	carbon monoxide
CO_2	carbon dioxide
CPW	Colorado Parks and Wildlife
CRS	Colorado Revised Statutes
CRWCD	Colorado River Water Conservation District
CWA	Clean Water Act
CWCB	Colorado Water Conservation Board
DR	Departmental Regulation
EIS	Environmental Impact Statement
E.O.	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact

Acronym	Term
FPPA	Federal Farmland Protection Policy Act
FWFI	Future With Federal Investment
FWOFI	Future Without Federal Investment
G	Global
GHG	Greenhouse gas
HDPE	High-density polyethylene
HFC	hydrofluorocarbons
HUC	Hydrologic Unit Code
IPaC	Information for Planning and Consultation
J-U-B	J-U-B ENGINEERS, Inc.
M&D Canal	Montrose and Delta Canal
MANLAA	May Affect Not Likely to Adversely Affect
MAR	Managed Aquifer Recharge
MBTA	Migratory Bird Treaty Act
MOA	Memorandum of Agreement
N	National
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NCA	National Conservation Area
NEE	National Economic Efficiency
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRI	Nationwide Rivers Inventory
NWI	National Wetlands Inventory
NWPH	National Watershed Program Handbook
NWPM	National Watershed Program Manual
O_3	ozone
Pb	lead
PFC	perfluorocarbons
PFYC	Potential Fossil Yield Classification
Plan-EA	Watershed Plan and Environmental Assessment
PM	particulate matter
P&G	Principles and Guidelines
P&R	Principles and Requirements
PR&G	Principles, Requirements & Guidelines
project area	Proposed Project area
Proposed Project	Cimarron River-Lower Uncompahgre Watershed Project
PVC	polyvinyl chloride
RCPP	Regional Conservation Partnership Program
RCRA	Resource Conservation and Recovery Act

Acronym	Term
Reclamation	U.S. Bureau of Reclamation
RGL	Regulatory Guidance Letter
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
S	Subnational/State/Province
SC	State Special Concern
SCADA	supervisory control and data acquisition
SF_6	sulfur hexafluoride
SFHA	special flood hazard area
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasure
SWMP	Stormwater Management Plan
TECs	Temporary Erosion Controls
THPO	Tribal Historic Preservation Office
TMDL	Total Maximum Daily Load
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UVWUA	Uncompahgre Valley Water Users Association
VRI	Visual Resources Inventory
VRM	Visual Resource Management
WBD	Watershed Boundary Dataset
WFPO	Watershed and Flood Prevention Operations
WOTUS	Waters of the U.S.
WPFPA	Watershed Protection and Flood Prevention Act

Appendices

Appendix A. Comments and Responses
- Scoping Letter
- Cultural Consultation Letters
- SHPO Concurrence Letter
- Tribal Concurrence Letters
- SHPO Memorandum of Agreement Consultation Letter
- Final Memorandum of Agreement
- Cooperating Agency Letters and Responses
- USACE Consultation (pending)
- USFWS Concurrence
- Section 12 Consultation

Appendix B. Project Map
- Map 1 – BPWCD Watershed Map
- Map 2 – BPWCD Preferred Alternative Map
- Map 3 – Benefit Area Map

Appendix C. Support Maps
- Map 4 – Geology Map
- Map 5 – Fault Map
- Map 6 – Soil Maps
- Map 7 – Landslide Map
- Map 8 – FEMA FIRM Panels
- Map 9 – Montrose County Zoning Map
- 30% Plans

Appendix D. Investigations and Analyses Report
- Investigations and Analyses Report

Appendix E. Other Supporting Information
- Scoping Report
- Aquatic Resource Delineation
- Biological Assessment
- Water Loss Memorandum
- BPWCD Watershed Plan and Environmental Assessment National Economic Efficiency Benefit-Cost Analysis of Alternatives
- Short Term Construction Impacts Memorandum
- Complete List of Best Management Practices
- 30% Design Report