RECLAMATION

Managing Water in the West

Draft Programmatic Environmental Assessment for Pueblo Reservoir Temporary Excess Capacity Storage and Exchange Contracting Program,

and

Site Specific Environmental Assessment for Donala Water and Sanitation District 40-Year Excess Capacity Storage and Conveyance Contract
and
Bureau of Land Management 40-Year Excess Capacity Storage Contract

Projects 2015-05 & 2015-028
Fryingpan-Arkansas Project
Eastern Colorado Area Office
Great Plains Region

U.S. Department of the Interior
Bureau of Reclamation

October 2018

MISSION STATEMENTS

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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ACRONYMS

2006-2010 EA	Temporary Excess Capacity Storage and Exchange Contracts 2006-2010 Environmental Assessment
ac-ft	acre-feet
AGUA	Arkansas River Groundwater Users Association
Aurora	City of Aurora
AVC	Arkansas Valley Conduit
BLM	Bureau of Land Management
CDOC	Colorado Department of Corrections
CDWR	Colorado Division of Water Resources
CEQ	Council on Environmental Quality
cfs	cubic feet per second
CPW	Colorado Division of Parks and Wildlife
CSU	Colorado Springs Utilities
CWCB	Colorado Water Conservation Board
CWPDA	Colorado Water Protective District Association
Donala	Donala Water and Sanitation District
EA	Environmental Assessment
EIS	Environmental Impact Statement
EOM	End of Month
Fry-Ark Project	Fryingpan-Arkansas Project
In-District	Within the boundaries of the Southeastern Colorado Water Conservancy District
LRE	Leonard Rice Engineering, Inc.
Master Contract	40-Year Excess Capacity Storage Contract No. 16XXX650031
M&I	Municipal and Industrial
NEPA	National Environmental Policy Act of 1973, as amended
Non-Project Water	Non-Fry-Ark Project Water
NOW	Pueblo Dam's North Outlet Works
OM&R	Operation, Maintenance and Replacement
Out-of-District	Outside the boundaries of the Southeastern Colorado Water Conservancy District
Pueblo Water	Pueblo Board of Water Works
Reclamation	Bureau of Reclamation
SDS	Southern Delivery System
Service	U.S. Fish and Wildlife Service
Southeastern	Southeastern Colorado Water Conservancy District
Temporary Program	Fry-Ark Project Temporary Excess Capacity Program
TLRCC	Twin Lakes Reservoir and Canal Company
USACE	U.S. Army Corps of Engineers

Chapter 1 – Purpose & Need

1.1 Introduction

The Bureau of Reclamation (Reclamation) evaluates three independent contracting actions in this draft environmental assessment (EA). All proposed actions would store water in Pueblo Reservoir near Pueblo, Colorado, when space is available. The Proposed Actions include:

> 1) Continuing the Fryingpan-Arkansas Project (Fry-Ark Project) Temporary Excess Capacity Storage Contracting Program (Temporary Program) to use East-Slope Fry-Ark Project facilities to store agricultural and municipal water if and when storage is available;
>
> 2) Approving a 40-year excess capacity storage and conveyance contract with Donala Water and Sanitation District (Donala) to store up to 499 acre-feet (ac-ft) of water per year for augmentation and municipal uses; and
>
> 3) Approving a 40-year excess capacity storage contract with the Bureau of Land Management (BLM) to continue storing up to 500 ac-ft of water per year in Pueblo Reservoir for exchanges between Pueblo and DeWeese reservoirs to supplement flows in Grape Creek.

See Chapter 2—Proposed Action and Alternatives for detailed descriptions.

This draft EA is prepared in compliance with the National Environmental Policy Act (NEPA) (Public Law 91-190) under guidelines established by the Council on Environmental Quality, U.S. Department of the Interior, and Reclamation. This EA is not a decision document; rather it discloses the environmental effects of the Proposed Actions and consequences of the No Action alternatives. Because the environmental effects are insignificant, Reclamation has drafted a Finding of No Significant Impact with a determination for each Proposed Action.

Reclamation used information from other NEPA documents for connected and similar actions, consistent with the Council on Environmental Quality (CEQ) regulations (40 CFR §1502.20 and 1502.21) and Department of Interior regulations (43 CFR § 46.135 and 46-1.20 and 46.136 of 43 CFR) for implementing NEPA. This draft EA follows CEQ 2014 guidance on the effective use of programmatic NEPA reviews (CEQ 2014). The guidance is available at: https://ceq.doe.gov/guidance/guidance.html.

The draft EA takes a programmatic approach for continuing the Temporary Program and site-specific analysis for the proposed Donala and BLM long-term contracts. Collectively, the Proposed Actions are combined with reasonably foreseeable future actions to identify and discuss potential cumulative effects. See Chapter 3-Affected Environment and Environmental Consequences for specific resource analyses.

1.2 Purpose and Need

The purpose of the Proposed Actions is to maximize the use of existing Fry-Ark Project infrastructure to support entities with temporary agricultural, municipal and industrial (M&I), fishery, and recreation needs in response to increasing water demands and annual variability of climate and hydrologic conditions. By providing excess capacity storage and exchange contracts for Non-Fry-Ark Project Water (Non-Project Water), Reclamation is acting pursuant to the Act of June 17, 1902 (32 Stat. 388) and Acts amendatory and supplementary thereto, including the Act of August 4, 1939 (53 Stat. 1187) and Public Law 87-92 as amended. The need for each proposed contract action is discussed in greater detail below.

1.2.1 Fryingpan-Arkansas Project Temporary Excess Capacity Storage Contracting Program

Continuing the Temporary Program gives Fry-Ark municipal and agricultural users space to temporarily store Non-Project water for later use when space is available. Temporary excess capacity storage and exchange contracts help meet short-term water user needs by increasing water management flexibility and efficiency and continuing deliveries when systems need repairs or flow augmentation. Only water entities are legally entitled to divert and store in Pueblo Reservoir, either through a decree by the Colorado Water Court or by temporary State Engineer approval, may be stored under these contracts.

1.2.2 Donala Water and Sanitation District 40-Year Excess Capacity Storage and Conveyance Contract

Donala identified a need to reduce dependency from nonrenewable groundwater to renewable surface water sources. Donala has available annual groundwater supplies sufficient to meet total existing and planned demand, which includes future development of Chaparral Hills and the Mining Museum and minimal remaining infilling. The proposed 40-year contract would enable Donala to efficiently use its existing water rights using existing infrastructure for long-term water storage and conveyance. It increases Donala's water management flexibility and facilitates use of its Willow Creek Ranch surface water rights and leased water from the Pueblo Board of Water Works (Pueblo Water). If approved, a 40-year contract would replace Donala's temporary contracting, which has allowed Willow Creek Ranch Water Rights to be stored and exchanged in Pueblo Reservoir. Donala has requested use of Pueblo Dam's North Outlet Work (NOW) to convey water through the Colorado Springs Utilities' (CSU) Southern Delivery System (SDS) pipeline.

1.2.3 Bureau of Land Management-40-Year Excess Capacity Storage Contract

BLM needs to supplement flows in Grape Creek below DeWeese Reservoir to benefit aquatic and riparian resources. Storage and releases from DeWeese Reservoir for agricultural purposes can result in variation of flow rates from day to day of up to 30 cubic feet per second (cfs) and can result in flow rates close to zero below the dam (BLM 2017a). Since 2004 BLM has obtained annual contracts with Reclamation under the Temporary Program to assist in augmenting flows in Grape Creek below DeWeese Reservoir. Grape Creek flows through BLM's Grape Creek Area of Critical Environmental Concern downstream of DeWeese Reservoir to the Arkansas River at Cañon City. The Area of Critical Concern is managed by the BLM to protect significant riparian, scenic, wildlife and plant resources (BLM 2017b). The

proposed BLM 40-year Excess Capacity Storage contract would streamline BLM and Reclamation contracting and administrative processes.

1.3 Background

1.3.1 Fryingpan-Arkansas Project

The Fry-Ark Project is a multipurpose federal transmountain water diversion and delivery project in Colorado constructed between 1964 and the mid-1980s. It diverts about 56,000 ac-ft (mean annual) from the Fryingpan River and other tributaries of the Roaring Fork River on the west slope of the Rocky Mountains for use in the Arkansas River Basin on the east slope.

East slope Fry-Ark Project storage facilities include: Turquoise Reservoir, Twin Lakes Reservoir, and Pueblo Reservoir (Figure 1). The use of west slope Fry-Ark Project collection and storage facilities are not included in the Proposed Actions. Reclamation owns and operates all Fry-Ark Project facilities and the U.S. Forest Service manages recreation, fish and wildlife facilities, and resources at Turquoise and Twin Lakes reservoirs. At Pueblo Reservoir fish and wildlife, recreation and land-based resources are managed by the Colorado Division of Parks and Wildlife (CPW) under agreements between the State of Colorado and Reclamation. Additional descriptions of the Fry-Ark Project, facilities and operations can be found in Reclamation's 2013 Arkansas Valley Conduit (AVC) and Master Contract Final EIS available online at: https://www.usbr.gov/avceis/.

The Southeastern Colorado Water Conservancy District (Southeastern) was established in 1958 and assumed responsibility for repayment of reimbursable costs associated with the construction, operation, and maintenance of the Fry-Ark Project (Contract No. 5-07-70-W0086). Southeastern holds most of the water rights for the Fry-Ark Project and annually allocates supplemental water from the Fry-Ark Project for use by: 1) municipal and domestic water suppliers on the East-Slope of Colorado, and 2) various private and mutual ditch companies.

1.3.2 Fryingpan-Arkansas Project Temporary Excess Capacity Storage Contracting Program

Reclamation has historically contracted with entities to allow Non-Project water to be stored in Fry-Ark Project storage space on an as-available basis. The first Fry-Ark Project excess capacity storage contract was issued in 1986. Historically, the primary users of these contracts have been CSU and the City of Aurora (Aurora). Appendix A lists Reclamation temporary and long-term Fry-Ark Project excess capacity storage and exchange contracts. Only water that entities are legally entitled to divert and store in Fry-Ark Project facilities, either through a decree by the Colorado Water Court, or by temporary approval of the State Engineer, may be stored under these contracts.

Prior to 2006, Reclamation completed individual NEPA compliance review for each proposed temporary or long-term contract. Temporary contracts increased applicant's contract costs for the associated environmental review and NEPA compliance documentation, which would be reduced by consolidation into this EA.

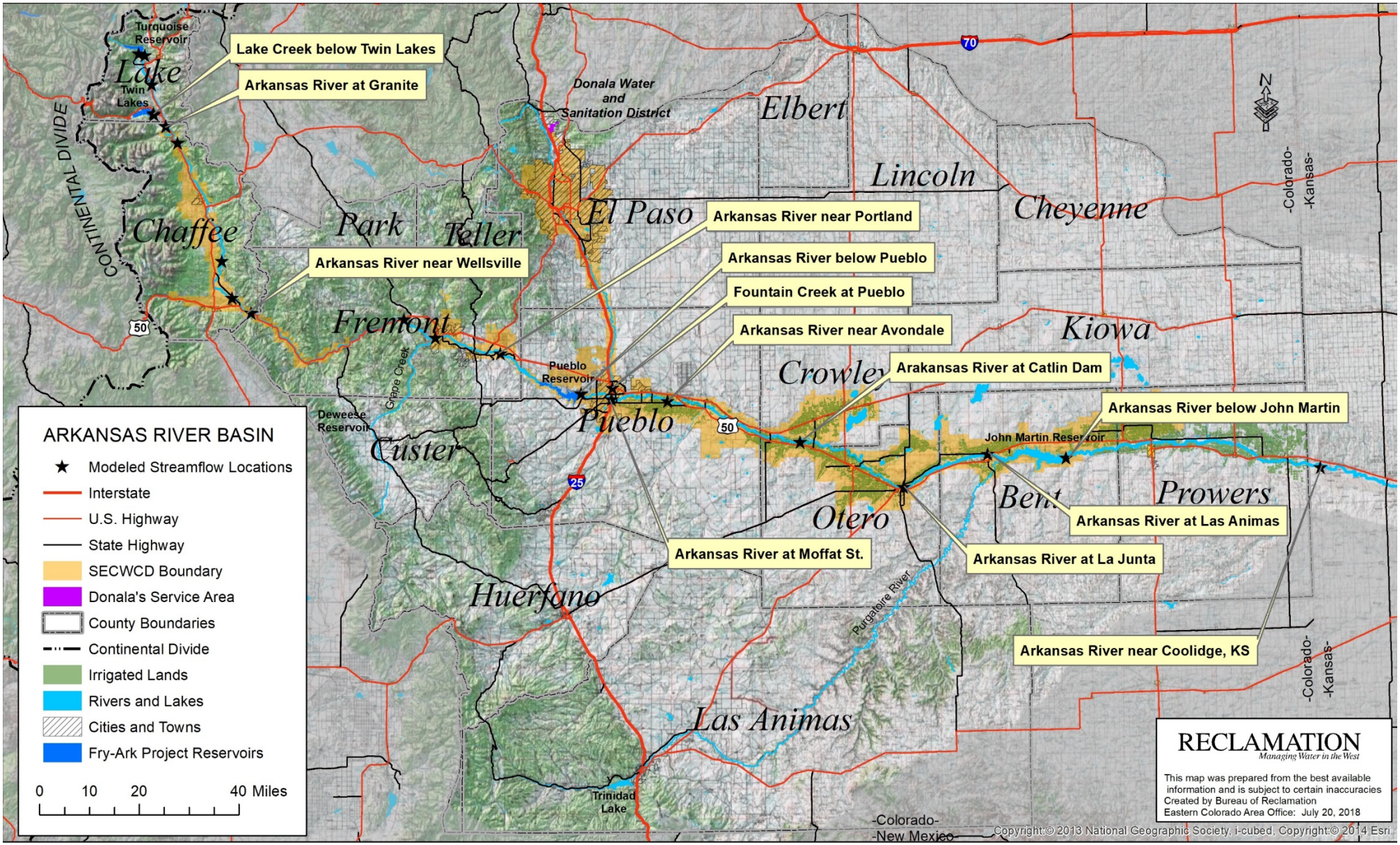

Figure 1-Arkansas River Basin

In 2006 Reclamation prepared a programmatic EA entitled "Temporary Excess Capacity Storage and Exchange Contracts 2006-2010 Environmental Assessment," (2006-2010 EA). It analyzed environment effects associated with the Temporary Program contracting up to 80,000 ac-ft of excess capacity storage within Fry-Ark Project reservoirs (Reclamation 2006). The analysis covers temporary and existing long-term excess capacity storage and exchange contracts and streamlined the NEPA process. As Reclamation entered into additional long-term excess capacity storage and exchange contracts, the storage amount available to the Temporary Program was reduced by the sum of the long-term contracts. In 2010 Reclamation reviewed the progress of the Temporary Program and determined that continuing it was not a major Federal action and would not result in significant direct, indirect, or cumulative impacts to the human environment, or natural or cultural resources (Reclamation 2010).

In 2018, the total amount of Fry-Ark Project long-term excess capacity storage contracts exceeded the 80,000 ac-ft. of excess capacity analyzed in the 2006-2010 EA; however, there was never more than 80,000 ac-ft of excess capacity water in Pueblo Reservoir. Therefore, under this Proposed Action, Reclamation proposes to continue the Temporary Program into the future issuing temporary contracts to entities within the Southeastern's boundaries (In-District) when requested (Figure 1). Three historic temporary contracts (Donala, City of Victor, and portions of the Upper Arkansas Water Conservancy District) outside of Southeastern's boundaries have also been issued under the Temporary Program with additional NEPA review.

1.3.3 Donala Water and Sanitation District

In 2008 Donala purchased the Willow Creek Ranch located in Lake County and acquired additional surface water rights to supplement existing groundwater wells in El Paso County. In 2011 Donala requested an excess capacity storage contract from Reclamation for storage and use of the Willow Creek Ranch water in Fryingpan-Arkansas facilities. Donala also entered into a lease with Pueblo Water for water stored in Twin Lakes Reservoir and agreements with CSU to facilitate exchanges and delivery of the exchanged Willow Creek Ranch water through CSU's existing Otero Pipeline system.

In 2012 Reclamation prepared an EA to evaluate the environmental effects of issuing a temporary contract to Donala for up 499 ac-ft. Subsequently, Donala entered into its first temporary excess capacity storage contract to store up to 499 ac-ft of Non-Project Water in Pueblo Reservoir. Since 2012 Donala has been issued annual contracts every year, including 2018. Under this Proposed Action, Reclamation would enter into 40-year excess capacity storage and conveyance contracts for 499 ac-ft that would allow for the continued excess capacity storage of up to 499 acre-per year (which can be exchanged into CSU;s non-federal account in Twin Lakes) and authorize use of Pueblo Dam's NOW for conveyance of the stored water to the SDS pipeline. Under agreements with CSU, Donala would receive treated water at Northgate road under either of these delivery options.

1.3.4 Bureau of Land Management

Beginning in 2004, the BLM has obtained annual contracts for up to 400 ac-ft of excess capacity storage in Pueblo Reservoir to facilitate exchanges between Pueblo and DeWeese reservoirs to benefit flows in Grape Creek below DeWeese Reservoir and the Arkansas River. Each spring, their entire volume of water stored in Pueblo Reservoir is exchanged up to DeWeese Reservoir and held during the irrigation season. Starting on November 15 BLM gradually releases stored

water to Grape Creek at a rate of 3 to 4 ac-ft per day. In general, all of BLM's water in DeWeese has been released to Pueblo Reservoir by early February. Under this Proposed Action, Reclamation and BLM would enter into a 40-year excess capacity storage contract for continued exchanges between Pueblo and DeWeese reservoirs.

1.4 Issues and Concerns

Table 1 lists NEPA compliance documents used to evaluate the Proposed Actions; most are available online. All documents are in the Administrative Record and can be requested from Reclamation. Previous Fry-Ark Project excess capacity storage contracts NEPA documents were used to identify issues and concerns associated with the Proposed Actions and analyze direct, indirect, and cumulative impacts, shape the scope, and reduce duplication of existing analysis (Table 1).

Table 1-Reclamation's Previous Fry-Ark Project Excess Capacity Storage and Exchange Contract NEPA Compliance Documents

NEPA Compliance Document Year & Type	Document Name
2000 EA	South Outlet Works and Conveyance Agreement, If and When Storage (Pueblo Board of Water Works) (Reclamation 2000).
2004 EA	2004 Temporary "If and When: Excess Capacity Storage and Exchange Contracts (Reclamation 2004).
2006-2010 EA	Temporary Excess Capacity Storage and Exchange Contracts 2006-2010 (Reclamation 2006).
2007 EA	City of Aurora Proposed Excess Capacity Storage and Exchange Contracts (Reclamation 2007a).
2008 Final EIS	Southern Delivery System Final Environmental Impact Statement (Reclamation 2008).
2009 EA	2009 Upper Arkansas Water Conservancy District Temporary Excess Capacity Storage Contract, Fryingpan-Arkansas Project (Reclamation 2009a).
2009 EA	2009 City of Victor Temporary Excess Capacity Storage Contract, Fryingpan-Arkansas Project (Reclamation 2009b)
2010 Finding of No Significant Impact	Temporary Excess Capacity Storage and Exchange Contracts, Fryingpan-Arkansas Project, Finding of No Significant Impact (Reclamation 2010).
2013 Final EIS	Arkansas Valley Conduit and Long-Term Excess Capacity Master Contract, Final Environmental Assessment (Reclamation 2013).
2014 EA	Donala Water and Sanitation District, Temporary Excess Capacity Storage Contract, Fryingpan-Arkansas Project (Reclamation 2013).
2016 EA	Final Environmental Assessment, Pueblo Hydropower Project (Reclamation 2016).

General issues and concerns identified associated with the Proposed Actions include:

- Aquatic Life
- Aquatic Recreation
- Channel Stability and Morphology
- Cumulative Effects
- Geographic Scope
- Groundwater
- Historic Properties
- Human Environment
- Surface Water Hydrology
- Sedimentation
- Socioeconomics
- Southern Delivery System
- Vegetation
- Water Conservation
- Water Quality
- Water Rights
- Wildlife

Chapter 2 - Proposed Action and Alternatives

2.1 Excess Capacity Storage Contracts

Excess capacity storage contracts allow storage of Non-Project Water in Fry-Ark Project reservoirs "if and when" space is available. When reservoir space cannot accommodate both Fry-Ark and Non-Project Water storage, Non-Project Water is evacuated or "spilled" from the reservoir. This typically occurs only when seasonal flood space is needed for flood control purposes from April 15 to November 1 and follows the U.S. Army Corps of Engineers (USACE) Pueblo Reservoir Flood Control Criteria (USACE 1994). Figure 2 shows Pueblo Reservoir storage allocations. Additional discussion of the Pueblo Reservoir's Flood Criteria and evacuation or "spill priority" is in Chapter 3. The spill priority language included in Article 13 of Contract No. 5-07-70-W0086 is included as Appendix G.

Table 2 describes the three types of excess capacity storage and exchange contracts that can be issued by Reclamation[1]. For the analysis in this EA, the Temporary Program includes only 1 to 5-year temporary contracts requesting up to 10,000 ac-ft of excess capacity storage in Pueblo Reservoir. One-year contracts can be approved at the Eastern Colorado Area Office level. All other excess capacity storage and exchange contract requests require approval of Reclamation's Regional Director or Commissioner.

[1] By providing excess capacity storage contracts for Non-Project Water, Reclamation is acting pursuant to the Reclamation Act of June 17, 1902 (32 Stat. 388), and Acts amendatory and supplementary thereto, including the Reclamation Project Act of August 4, 1939 (53 Stat. 1187), and authorization from the Fry-Ark Project.

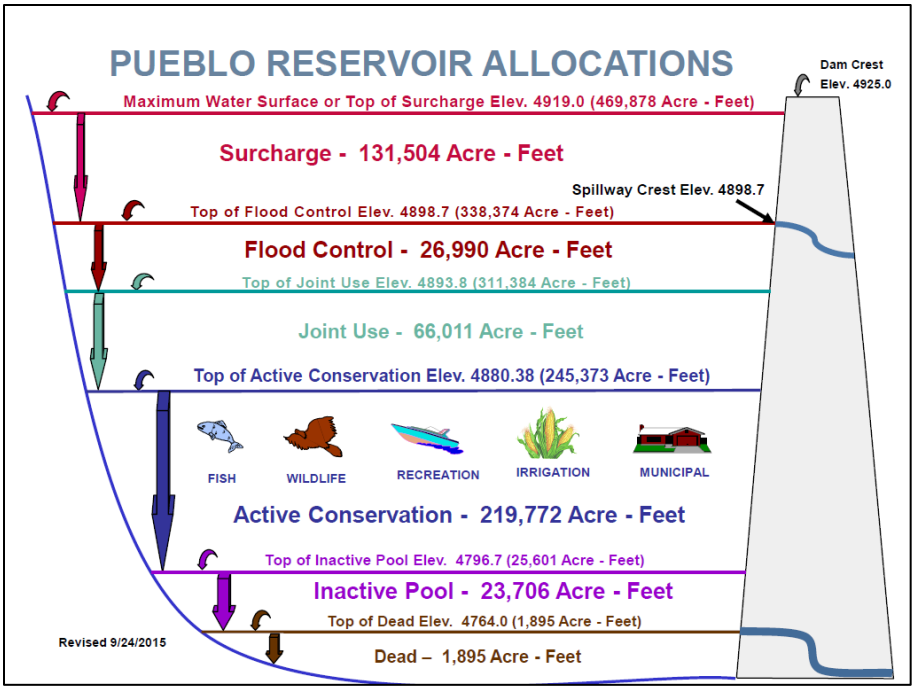

Figure 2 - Pueblo Reservoir Storage Allocations

Table 2-Types of Reclamation Excess Capacity Storage Contracts

Contract Type	Contract Amount	Duration	Water Uses	Reclamation Contract Authority
Temporary 1-Year Excess Capacity	Up to 10,000 ac-ft	1 Year	M&I, irrigation, fishery, and recreation	Area Manager[2]
Temporary 1-5 Year Excess Capacity	Up to 10,000 ac-ft per year	Not to exceed 5 Years	Same as above	Regional Director[3]
Long-Term Excess Capacity	Up to 1,000 ac-ft per year	40 Years	Same as above	Regional Director
Long-Term Excess Capacity	Unlimited	As authorized by Congress	Same as above	Commissioner, unless Delegated to Regional Director

[2] Eastern Colorado Area Office Area Manager is delegated authority to sign water contracts up to 10,000 ac-ft for a period of 1 year.

[3] Great Plains Regional Director is delegated authority to sign water contracts for up to 40 years for 1,000 ac-ft or less, and up to 5 years for 10,000 ac-ft or less.

2.2 Alternatives

Alternatives evaluated in this EA include No Action and Proposed Action alternatives as described in greater detail below.

2.2.1 No Action Alternative

Under the No Action Alternative, Reclamation would discontinue the Temporary Program. All future temporary excess capacity storage and exchange contracts would require individual NEPA analysis annually and would be issued on a first come, first serve basis or require a long-term contract. The entities outside of the boundaries of Southeastern (Out-of-District) would cover costs of additional hydrologic analysis and NEPA compliance annually for each requested temporary contract. The entities In-District costs are covered by the ad valorem tax paid to Southeastern.

In some cases, temporary contract entities would need to find other sources for exchanges and/or augmentation to meet existing needs. In extreme case, some diversions and groundwater pumping could be curtailed when water rights are out of priority and augmentation water is not available.

Under the No Action Alternative, the proposed 40-year excess capacity storage and conveyance contracts with Donala and BLM would not be executed. Donala has indicated that it does not intend to continue requesting temporary contracts in the absence of a long-term contract. Donala would likely sell its Willow Creek Ranch water rights to another entity.

BLM likely would continue requesting annual storage contracts. They have relied on these since 2004 to use their Park Center and other water rights to increase flows in Grape Creek during flow periods; however, reduced flows in Grape Creek similar to those experience prior to 2004 could occur under the No Action Alternative if BLM were unable to secure additional water rights in the Grape Creek Basin.

2.2.3 Proposed Actions

Temporary Program

Reclamation proposes issuing temporary excess capacity storage contracts to In-District entities under the umbrella of the Temporary Program. A sample copy of the 2019 Temporary Excess Capacity Storage and Exchange Contract Application is included as Appendix D. A new programmatic annual threshold of 25,000 ac-ft would be established for storage less than 10,000 ac-ft or a term of 1 year. [4] The Temporary Program excludes major Federal actions, such as new water supply, construction of diversion structures or pipelines, or directly support future development. Table 3 lists all long-term contracts and the proposed Temporary Program. Table 4 and Table 5 displays contracts issued under the Temporary Program in 2017 and 2018 (see Appendix A for a complete list).

[4] Two Out-of-District entities, City of Victor and a portion of Upper Arkansas Water Conservancy District, lie upstream of Southeastern's boundaries and are included in the 25,000 ac-ft threshold analyses, because they have between 6 to 9 years' of annual temporary excess capacity storage and exchange contracts analyzed by other EAs.

Table 3- Temporary Program 2017 Temporary Contracts

Contractor	Max Storage Requested	Contracted Amount	2016 Carryover	Pueblo Storage	Volume in acre-feet Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
			1900	In	0	0	0	0	500	800	250	50	0	0	0	0	3500
Arkansas Groundwater Users	3600	2600		Out	0	0	500	500	500	0	0	350	350	0	0	0	2200
			50	In	0	0	20	20	10	20	10	10	10	0	0	0	150
Arkansas River Farms Group	1000	50		Out	10	10	10	20	10	10	10	10	10	10	10	10	130
			400	In	400	400	275	0	0	0	0	300	0	0	400	400	2575
Bureau of Land Management	500	400		Out	0	0	0	400	400	400	400	400	400	400	400	0	3200
			81	In	0	0	20	20	0	40	0	0	0	0	0	0	161
Catlin Augmentation Association, Inc.	1000	100		Out	10	10	20	0	0	0	0	0	10	10	10	0	70
			0	In	80	0	0	0	0	0	0	0	0	0	0	0	80
Colorado Department of Corrections	150	80		Out	0	0	0	0	0	0	0	0	0	0	0	0	0
			475	In	0	0	0	0	0	50	0	0	475	0	0	0	1000
Colorado Parks and Wildlife	1500	1000		Out	0	0	0	0	0	0	500	500	0	0	0	0	1000
CO Water Protective and Development Assoc.			4000	In	0	0	100	100	100	0	200	200	200	100	0	0	5000
(IRR, M&I)	7000	5000		Out	650	400	400	150	150	150	150	150	150	400	400	650	3800
Donala Water and Sanitation District[1] (Out of			355	In	0	0	0	0	170	207	172	143	0	0	0	0	1047
District)	499	499		Out	24	19	17	8	0	0	0	0	15	21	47	32	183
				In													0
Fountain, City of				Out													0
				In													0
Fowler, Town of				Out													0
Lower Arkansas Valley Water Conservancy				In													0
District (IRR, M&R)				Out													0
				In													0
Ordway, Town of				Out													0
				In													0
Penrose				Out													0
				In													0
Rocky Ford, City of				Out													0
				In													0
Salida, City of				Out													0
				In													0
Security Water District				Out													0
				In													0
St. Charles Mesa Water District				Out													0
				In													0
Stratmoor Hills Water District				Out													0
Upper Arkansas Water Conservancy District In-				In													0
District				Out													0
Upper Arkansas Water Conservancy District			40	In	0	0	5	10	10	10	10	10	5	5	5	5	115
(Out of District)	100	50		Out	4	4	4	4	20	20	20	20	5	6	4	4	115
Victor, City of (Out			21.3	In	0	0	50	0	0	0	0	0	0	0	0	0	71.3
of District)	1000	50		Out	0	0	0	0	12.5	25	25	12.5					75
				In													0
Widefield Water and Sanitation District				Out													0
			7322.3	In	480	400	470	150	790	1127	642	713	690	105	405	405	13699.3
Total	16349	9829		Out	698	443	951	1082	1092.5	605	1105	1442.5	940	847	871	696	10773

Note: Monthly sequence of requested inflows and outflows may not comply with maximum storage requested. Actual implementation will be modified, if necessary, to comply.

[1] Will not be releases out of Pueblo. 508 ac-ft is exchanged into CSU non-federal storage account and delivered to Donala's delivery system via CSU's system.

In Master Contract

Table 4-Temporary Program 2018 Temporary contracts

Contractor	Volume in acre-feet																
	Max Storage Requested	Contracted Amount	2017 Carryover	Pueblo Storage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Arkansas Groundwater Users	3400	2400	1700	In	0	0	0	0	500	800	250	50	0	0	0	0	3300
				Out	0	0	500	500	500	0	0	350	350	0	0	0	2200
Arkansas River Farms Group*	1000	50	50	In	0	0	0	0	0	0	0	50	0	0	0	0	100
				Out	10	10	10	10	10	10	10	10	10	10	10	10	120
Bureau of Land Management	500	400	400	In	350	350	275	0	0	0	0	300	0	0	470	395	2540
				Out	0	0	10	700	700	700	0	0	0	350	350	0	2810
Catlin Augmentation Association, Inc.	1000	100	40	In	0	0	10	30	40	10	10	0	0	0	0	0	140
				Out	10	10	20	0	0	0	0	0	0	10	10	10	70
Colorado Department of Corrections	400	300	265	In	35	0	0	0	0	0	0	0	0	0	0	0	300
				Out	0	0	0	0	0	0	0	0	0	0	0	0	0
Colorado Parks and Wildlife	1500	1000	835	In	0	0	0	0	0	65	0	0	100	0	0	0	1000
				Out	0	0	0	0	0	0	500	500	0	0	0	0	1000
CO Water Protective and Development Assoc. (M&I)	6000	3000	2000	In	0	0	0	0	0	400	400	400	400	400	0	0	4000
				Out	650	675	675	0	0	150	150	150	150	150	150	150	3050
Donala Water and Sanitation District[1] (Out of District)	499	499	250	In	0	0	0	0	170	207	172	143	0	0	0	0	942
				Out	66	61	59	50	42	42	42	42	57	63	89	74	687
Upper Arkansas Water Conservancy District (Out of District)	100	50	40	In	0	0	5	10	10	10	10	10	5	5	5	5	115
				Out	4	4	4	4	15	20	20	16	10	10	4	4	115
Victor, City of (Out of District)	0	0	0	In	0	0	0	0	0	0	0	0	0	0	0	0	0
				Out	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**14399**	**7799**	**5580**	**In**	**385**	**350**	**290**	**40**	**720**	**1492**	**842**	**953**	**505**	**405**	**475**	**400**	**12437**
				Out	**740**	**760**	**1278**	**1264**	**1267**	**922**	**722**	**1068**	**577**	**593**	**613**	**248**	**10052**

Note: Monthly sequence of requested inflows and outflows may not comply with maximum storage requested. Actual implementation will be modified, if necessary, to comply.

[1] Will not be releases out of Pueblo. 508 ac-ft is exchanged into CSU non-federal storage account and delivered to Donala's distribution system via CSU's system.

*Arkansas River Farms Group is part of Catlin Canal and their storage was previously included Catlin Canal's annual contract.

All temporary excess capacity storage contracts requests for storage greater that 10,000 ac-ft or a term of 2 to 5 years, will require additional review and evaluation. In addition, temporary contract requests with water rights not included in the Fry-Ark RiverWare® Planning and Operations Model (Fry-Ark RiverWare Model), developed by Reclamation as part of this EA, will require additional analysis (See Appendix C's List of Water Rights). Contract applications with new water rights, new uses, or a change in services areas will require additional NEPA and/or National Historic Preservation Act review but can be tiered to this programmatic EA if the proposed contract fulfills all environmental commitments and other Temporary Program requirements.

Table 5-Current Contracts for Long-Term Excess Capacity Storage

Long-Term Contract	Maximum Contract Amount	Contract Expiration Date
Board of Water Works of Pueblo	15,000 ac-ft	2025
City of Aurora	10,000 ac-ft	2047
Southern Delivery System	40,515 ac-ft	2049
Master Contract	29,938 ac-ft	2056
Donala (Proposed)	499 ac-ft	2058
BLM (Proposed)	500 ac-ft	2058
Sub-Total	96,452 ac-ft	**2058**
Proposed Continuation of Temporary Program	Up to 25,000 ac-ft	Annually
Total Excess Capacity	**120,453 ac-ft**	**2032**

The Temporary Program does not include conversion of any entity's temporary contract to a long-term contract. However, if the entity has held a temporary contract for 5 years or more and proposes no changes in the storage volume and timing, water rights, or water uses, then NEPA compliance for these conversions can be tiered to the Programmatic EA.

Donala 40-year Excess Capacity Storage Contract

Donala wants to enter into a long-term excess capacity storage and conveyance contract with Reclamation. This Proposed Action does not include new diversion facilities and Donala would convey the water stored in its excess capacity account through Pueblo Dam's NOW to the SDS pipeline. Raw water would be delivered through SDS infrastructure, as capacity allows, to CSU for treatment. Treated water would then be delivered to Donala via the Northgate Road connection with CSU's water distribution system. Figure 3 shows Donala's Willow Creek Ranch water rights, Turquoise, Twin Lakes, and Pueblo reservoirs, the SDS, and Donala's Service Area.

Although SDS would be a new method to deliver water, Donala is not an SDS participant and has requested use of the next incremental portion of excess capacity within Reclamation's portion of the NOW 90-inch diameter pipeline. Additional contract provisions are included in the Proposed Action for Donala's use of Reclamation's portion of the NOW. A long-term agreement with CSU will also be required to use the SDS pipeline. Water stored in Donala's Pueblo Reservoir excess capacity account could be conveyed via the NOW and SDS.

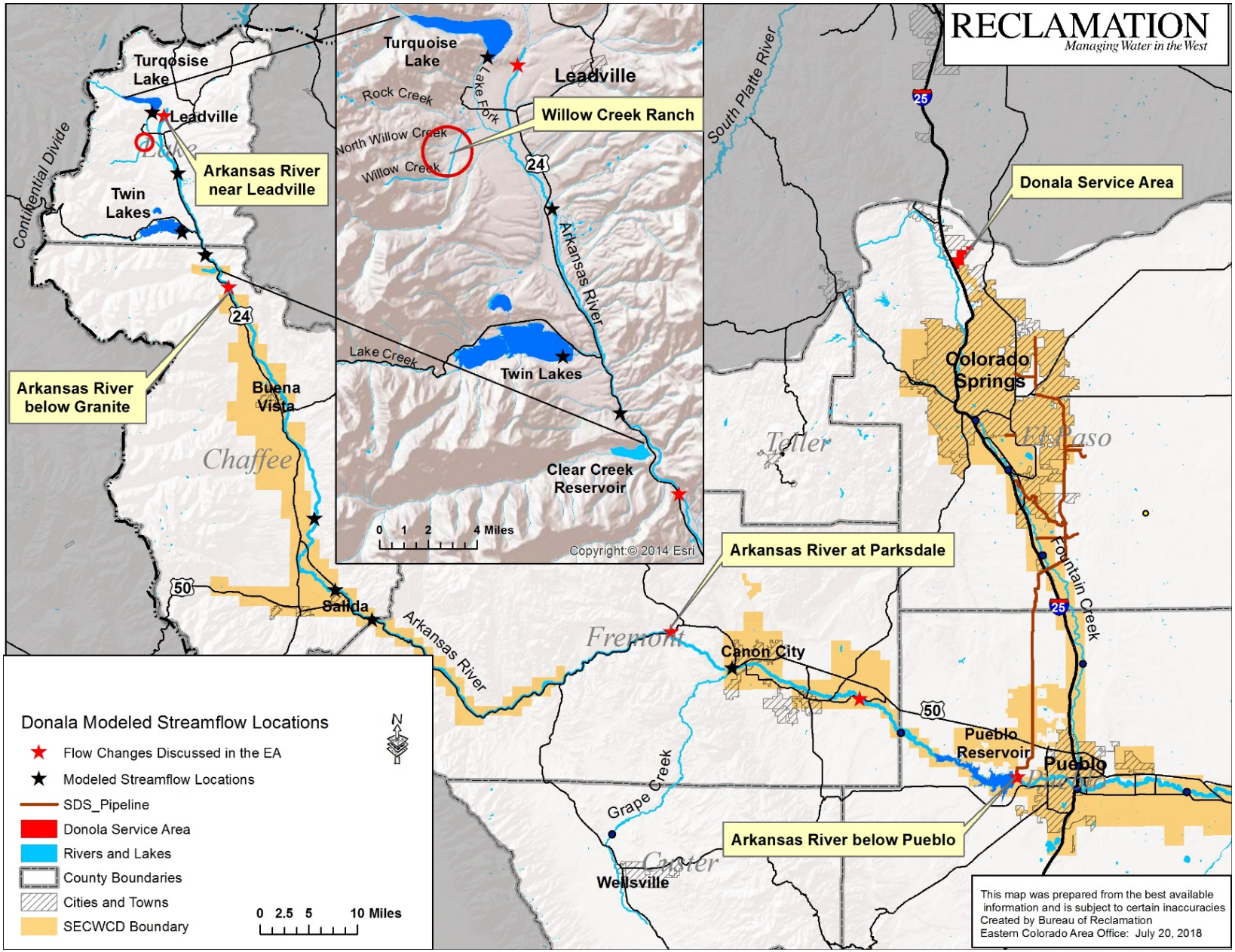

Figure 3-Donala Contract Project Area

Under the Proposed Action, Donala's stored water could also be exchanged upstream by CSU into their non-federal storage accounts at Twin Lakes (via TLRCC shares), Turquoise Reservoir (Homestake, CF&I storage accounts), or the Otero intake. CSU would then deliver a like amount of treated water to Donala's water distribution system through the Northgate Road interconnect.

The contract exchange component would operate as follows:

a. Donala's Willow Creek water rights flow downstream to the confluence with Lake Fork Creek and are exchanged into CSU's non-federal shares of TLRCC Company storage in Twin Lakes.
b. In return, Donala would receive an equal amount of water in its excess capacity account at Pueblo Reservoir from CSU's storage account at Pueblo Reservoir.
c. Without the proposed excess capacity storage and conveyance contract, Donala's water delivered to Pueblo Reservoir suffers approximately 10% transit loss. With the proposed 40-year contract, transit loss is approximately 2%.

Donala's proposed water supply sources are the same as the temporary contract (Table 6). Donala contracted with Leonard Rice Engineering, Inc. (LRE) to complete the hydrologic modeling for this Proposed Action. The Willow Creek Ranch-Daily Surface Water Hydrology Model Documentation and Result Summary is in Appendix C.

Table 6-Donala Excess Capacity Storage Contract Water Supply Sources

Diversion No & Decree No.	Ditch	Appropriation Date	Rate	Source
Donala's Water Rights				
Division (Div.) 2 09CW73	Abbott Placer Ditch	03/10/1881	2.0 cfs	Willow Creek
	Abbot Placer Ditch	11/30/1881	1.0 cfs	Willow Creek
	Willow Creek Ditch	04/15/1881	1.6 cfs	Willow Creek
	Mitchell Ditch No. 3 & 4	05/31/1881	1.3 cfs	Willow Creek
	Sites Ditch No. 1	04/30/1881	0.8 cfs	Little Willow Creek*
	Sites No. Ditch 2	04/30/1882	1.6 cfs	Little Willow Creek*
Pueblo Water (Lease)				
Div. 5 CA 507 and 90CW34	Ewing Placer Ditch (aka Ewing Ditch)	06/01/1906	18.5 cfs	Piney Creek, tributary to the Eagle River and its stored return flows.
Div. 5: CA 963, 80CW505, and 90CW340	Warren E. Wurtz Ditch and Wurtz Extension Ditch	06/8/1929	85 cfs	Bennett Creek, Mitchell Creek, and tributaries thereto, all tributaries to the Eagle River, Eagle River and its stored return flows
Div. 5: CA 2621, and 90CW340	Busk Ivanhoe System	06/27/1921 06/27/1921 09/28/1924 10/5/1924	1,200 ac-ft, 35 cfs 50 cfs	Ivanhoe Reservoir Ivanhoe Creek Lyle Creek Pan Creek

		08/30/1927	25 cfs 70 cfs	Hidden Lake Creek
Div. 5: CA 3082, and modified by W-1901	Twin Lakes and Independence Pass Transmountain Diversion System: New York Collection Canal & Supplement: Roaring Fork Division No. 2 & Lincoln Gulch Connection; and Lost Man Diversion Dam	08/23/1930 08/23/1930 04/30/1973 04/30/1973 04/30/1973	625 cfs 171 cfs 100 cfs 370 cfs 275 cfs	Lincoln Gulch West Fork Gulch, New York Gulch, & Tabor Gulch Roaring Fork River Lost Man Creek

Bureau of Land Management 40-Year Excess Capacity Storage Contract

Under this Proposed Action, BLM's would convert its annual contract to a 40-year long-term contract. BLM's water would be stored as previously described. Figure 4 show Grape Creek and DeWesee Reservoir in relationship to the Arkansas River and BLM managed lands. There are no additional water rights or uses (Table 7).

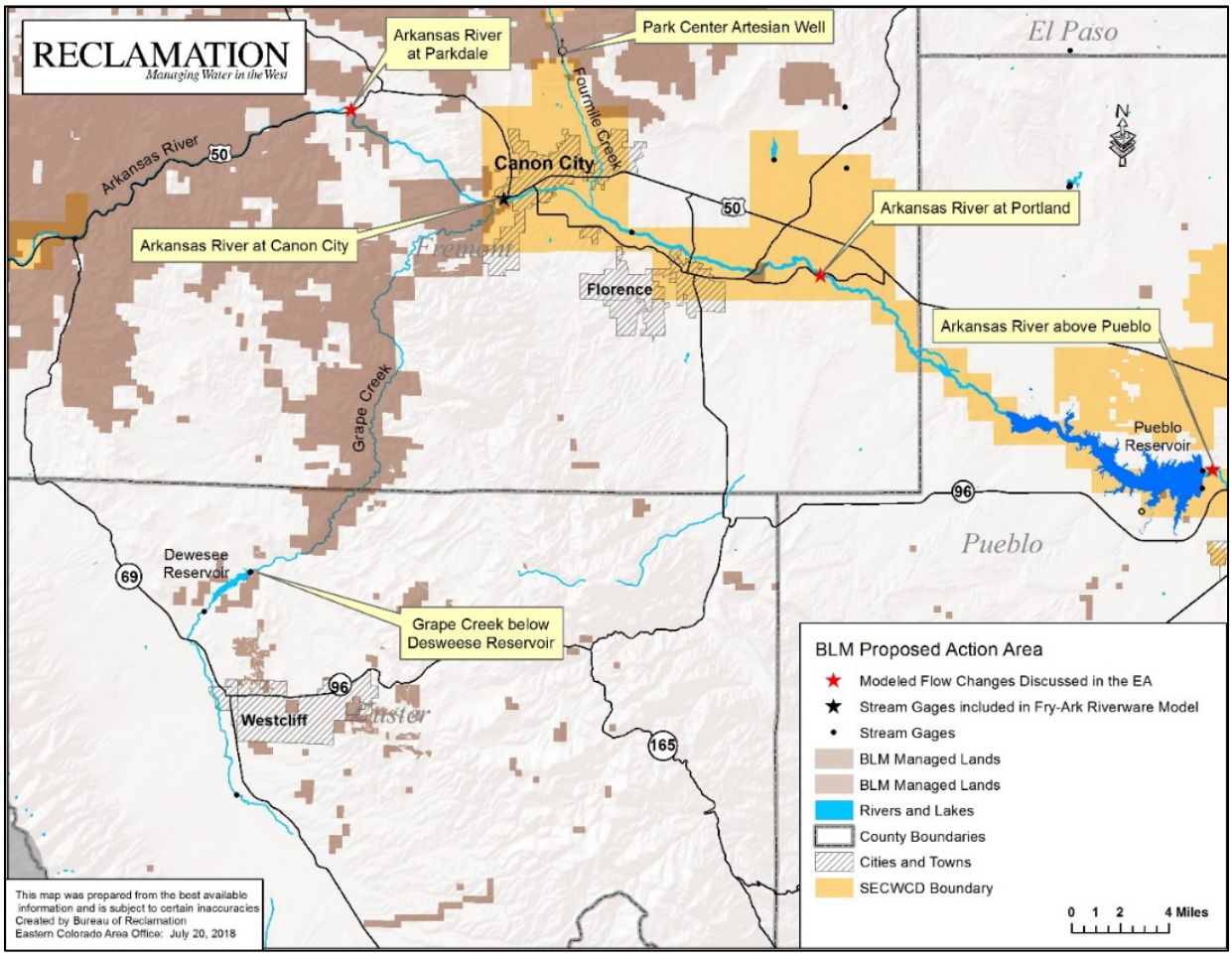

Figure 4-BLM 40-Year Contract Project Area

Table 7-BLM Excess Capacity Storage Contract Water Sources

Diversion No & Decree No.	Name	Appropriation Date	Rate	Source
BLM Water Rights				
Div. 2 97 CW 169	Park Center Well	05/29/1936	2.67 cfs	Non-tributary Ground Water
Div. 2: CA 5141 & CW 92	Cache Creek Reservoir Storage Right	07/09/1969	760 ac-ft (cond.)	Cache Creek
DeWeese-Dye Ditch & Reservoir Company Exchanges & Agreements				
Div. 2: CA 2602, CA 5469	DeWeese Reservoir Storage	10/08/1901 03/14/1931	1771 ac-ft 1564 ac-ft	Grape Creek
Pueblo Water (Lease)				
Div. 5 CA 507 & 90CW34	Ewing Placer Ditch (aka Ewing Ditch)	06/01/1906	18.5 cfs	Piney Creek, tributary to the Eagle River and its stored return flows.
Div. 5: CA 963, 80CW505, & 90CW340	Warren E. Wurtz Ditch and Wurtz Extension Ditch	06/8/1929	85 cfs	Bennett Creek, Mitchell Creek, and tributaries thereto, all tributaries to the Eagle River, Eagle River and its stored return flows
Div 5: CA 2621, & 90CW340	Busk Ivanhoe System	06/27/1921 06/27/1921 09/28/1924 10/5/1924 08/30/1927	1,200 ac-ft, 35 cfs 50 cfs 25 cfs 70 cfs	Ivanhoe Creek Ivanhoe Creek Lyle Creek Pan Creek Hidden Lake Creek
Div. 5: CA 3082, & modified by W-1901	Twin Lakes and Independence Pass Transmountain Diversion System: New York Collection Canal & Supplement: Roaring Fork Division No. 2 & Lincoln Gulch Connection; and Lost Man Diversion Dam	08/23/1930 08/23/1930 04/30/1973 04/30/1973 04/30/1973	625 cfs 171 cfs 100 cfs 370 cfs 275 cfs	Lincoln Gulch West Fork Gulch, New York Gulch, & Tabor Gulch Roaring Fork River Lost Man Creek
Div. 2: CA 2602 & CA 5469				
Other Water Purchases & Leases				
Div. 2: CW 141, 87 CW 23, 91 CW 19, CA 2346 & W-	Upper Arkansas Water Conservancy District	10/01/1983 09/09/1982 05/01/1874 12/15/1896 & 03/25/1897	500 ac-ft 595 ac-ft	North Fork South Arkansas River Twin Lakes Shares, Lake Creek

3965, 82 CW205		09/09/1982	26.08 ac-ft 54,452 ac-ft 193 ac-ft	and its Tributaries Gray's Creek
Div. 2: 02 CW 186	Round Mountain District	05/15/1872 05/15/1878 06/05/1878 06/10/1888 06/10/1872 06/10/1875 06/11/1875	0.6 cfs 1.75 cfs 0.86 cfs 0.64 cfs 0.56 cfs 1.19 cfs 0.585 cfs	Macey Creek
Div. 2: CA 4613 & W-829-76	Fry-Ark Project Return Flows	07/28/1957	900 cfs 721 cfs	Headwaters of Fryingpan and Arkansas River to Project Storage Facilities

Chapter 3 - Affected Environment & Environmental Consequences

This chapter describes the affected environment and discloses direct, indirect and cumulative environmental consequences of the No Action and Proposed Actions. It focuses on these resources: Water resources and hydrology, water quality, aquatic resources, recreation, threatened and endangered species, socioeconomics, cultural resources. When predicted environmental effects differ for Donala and BLM 40-year contracts, they are discussed individually. Cumulative impacts related to present and reasonably-foreseeable future actions are also discussed at the end of each resource section.

3.1 Reasonably Foreseeable Future Actions

Reasonably foreseeable actions considered in the analyses include:

AVC and Master Contract - First authorized in 1962, AVC would be a Federally-owned regional water supply project located in the Lower Arkansas Valley of southeastern Colorado. Approximately 40 water service providers would be served filtered water from Pueblo Reservoir, including 17 providers currently under enforcement actions from the Colorado Department of Health and Environment. They are required to come into compliance with the Safe Water Drinking Act by 2026. Master Contract is a 40-year excess capacity storage contract between Reclamation and Southeastern that was signed in 2016. Master Contract allows Southeastern to subcontract with Master Contract participants up to 29,938 ac-ft of storage per year in Pueblo Reservoir. For

2019 they have contracted 6,565 ac-ft of space in Pueblo Reservoir. For cumulative effects analysis, both AVC and Master Contract are assumed to be operating as described in the AVC/Master Contract Final EIS (Reclamation 2013).

- **Pueblo Board of Water Works Long-Term Contract Renewal** - In 2000 Pueblo Water entered into a 25-year excess capacity storage contract to store up to 15,000 ac-ft per year of Non-Project Water in Pueblo Reservoir. Initial discussions between Pueblo Water and Reclamation are underway regarding renewal of the existing contract or developing a new long-term excess capacity storage contract. For cumulative effects analysis, Reclamation assumes a similar 15,000 ac-ft per year excess capacity storage contract is in place during the period of analysis (2017 to 2058)

- **Southern Delivery System** - In 2011, CSU Pueblo West Metropolitan Water District, City of Fountain and City of Security entered into 40-year excess capacity storage and exchange contracts. CSU also entered into a conveyance contract to modify and connect SDS to the NOW of Pueblo Dam and convey up to 96 million gallons per day of SDS water using Project Facilities. SDS began delivering water in 2016. It includes two new reservoirs to store a portion of CSU's water supplies and to capture and reuse Fountain Creek return flows in Phase II within the next 5-10 years. For cumulative effects analysis, Reclamation assumes that SDS is operating as described in the SDS Final EIS (Reclamation 2008).

- **Chaparral Hills and Mining Museum Future Development** - Two areas outside of the current Donala service area are assumed to receive water from Donala. The Chaparral Hills neighborhood, beside Donala and the Mining Museum located southwest of Donala, are included in the planning process. Donala has sufficient groundwater to meet its existing and planned demand and minimal infill development.

3.2 Hydrologic Models

Two hydrologic models evaluated hydrologic changes: The Fry-Ark Project RiverWare Model and the Willow Creek Ranch—Daily Surface Water Hydrology Model. Each is discussed in detail in Appendices B. Appendix C and D includes each models documentation.

3.3.2 Effects on Surface Water Resources - Rivers and Streams

This EA and the hydrologic analysis focuses on potential changes in gaged flows in the Arkansas River, Lake Creek and Fountain Creek. A brief description of river and resources follows, and additional information can be found in SDS and AVC/Master Contract EISs and the other documents included in Chapter 1-Table 1 and discussed throughout this EA.

Arkansas River

The Arkansas River is the 4th longest river in the United States with a length of about 1,450 miles. Originating in the headwaters of East Slope of Colorado's portion of the Continental Divide, approximately 316 miles of Arkansas River flow through Colorado. With a watershed of 28,268-square miles or 27 percent of Colorado, it is also the state's largest river basin (CWBC 2015).

The Arkansas River originates in the Mosquito and Sawatch ranges of the southern Rocky Mountains in Lake County, near Leadville and flows south to the City of Salida, then southeasterly through deep canyons near Cañon City and east through Pueblo and across the eastern plains through Colorado, Kansas, Oklahoma, and Arkansas.

Mountain precipitation, primarily as snowfall, results in snowpack accumulation during the winter months and early spring. Rapid warming during late spring and early summer result in high-intensity, short duration runoff events in the Arkansas River (Abbott 1985).

Reclamation selected eleven stream gage locations for use in the hydrologic analysis. These include: Arkansas River near Wellsville; Arkansas River at Portland; Arkansas River above Pueblo (with Pueblo Fish Hatchery Return Flows added); Arkansas River at Moffat Street; Arkansas River near Avondale; Arkansas River at Catlin Dam, near Fowler; Arkansas River at La Junta; Arkansas River at Las Animas; Arkansas River below John Martin Reservoir; and Arkansas River near Coolidge, Kansas.

Lake Creek

Lake Creek is a tributary to the Upper Arkansas River that significantly influences all gages above Pueblo Reservoir from releases of Fry-Ark Project Water made from Turquoise Reservoir through the Mt. Elbert Conduit and Twin Lakes to meet target flows for the Upper Arkansas Voluntary Flow Management Program. These releases vacate storage space in Turquoise Reservoir for the following year's West Slope imports (Reclamation 2013).

Fountain Creek

The Upper Fountain Creek watershed originates in Woodland Park along Pikes Peak in the central front range and flows southeasterly to join the Monument Creek watershed which drains an area south of the Palmer Divide. Monument Creek merges with Fountain Creek in Colorado Springs. Fountain Creek then continues a southerly flow through the municipalities of Stratmoor, City of Security, Widefield and Fountain before joining the Arkansas River in Pueblo. Fountain Creek is 74.5 miles long, and its watershed encompasses 927-square miles.

Temporary Program Modeling Results

Modeling results show only minor differences in annual mean daily streamflow under the Proposed Action (see Appendix B). Largest predicted increase in annual stream flow (0.9 percent) occurs at the Arkansas River at the Catlin Dam, near Fowler, Colorado under the 2032 Proposed Action Scenario. The greatest predicted decrease of 0.3 percent occurs in the 2032 Proposed Action Scenario at the Lake Creek below Twin Lakes, Arkansas River at Avondale, and Arkansas River at Coolidge, Kansas stream gages. A 0.3 percent decrease at the Arkansas River at Avondale also occurs in the 2047 Proposed Action Scenario and all predicted changes in annual mean daily streamflow were less than 1 percent and are considered negligible.

Donala's 40-year Contract Modeling Results

Predicted streamflow changes range from negligible to minor under all year-types in Lake Creek below Twin Lakes. Minor changes occur in Dry and Mean years with changing ranging from a 2.8% decrease in February 1998 to 6.8% decrease in September 2003. All predicted changes in Arkansas River below Granite streamflow are negligible. A maximum decrease of 2.5% occurs only May of wet years. The Arkansas River at Parkdale also experiences negligible changes in streamflow under this Proposed Action. The maximum predicted decrease of 1.9% occurs in May of a wet year.

In the Arkansas River above Pueblo, the model predicts a 39.9% decrease in October flows using 2003 hydrology – a 0.4 cfs decrease under extreme low-flow conditions (Appendix B, Table B-14). Major decreases (15.1% to 39.5% or -0.4 cfs) were predicted to occur in February, September and October of dry years. These decreases occurred during one day in September, two days in October using 2002 hydrology and one day in February using 2005 hydrology. Predicted flows do not include the Pueblo Fish Hatchery return flows.

Reclamation used the Fry-Ark RiverWare Model to identify cumulative changes in streamflow contributed to the Donala 40-Year Contract. The 2058 Proposed Action model run was compared to another run that excluded Donala's Willow Creek Ranch operations and excess capacity storage in Pueblo Reservoir but included all other 2058 temporary contracts. This model run assumed that no temporary or long-term excess capacity storage contract with Donala is executed and the Willow Creek Ranch water rights revert to native Arkansas River flows. The model run also assumes water leased from Twin Lakes to meet historic return flow requirements would no longer be needed.

Results showed no changes in annual streamflow at the Arkansas River at Wellsville, Portland, and at Coolidge, Kansas. The modeling also predicted no changes of flows at the Fountain Creek at Pueblo location. Annual streamflow changes are all less than 1 percent and are considered negligible.

Except for flows downstream of John Martin Reservoir, all predicted mean monthly streamflow changes would be less than 1 percent. The mean March monthly flow would increase by about 0.4 cfs under this Proposed Action from 4.2 cfs to about 4.6 cfs. This represents about a 10 percent increase in mean stream flows for the month of March. Modeling also predicts that March monthly mean flows at the Coolidge, Kansas gage would increase by about 0.3 cfs under the Proposed Action. This is a 0.2 percent increase in the March Monthly mean flow at Coolidge, Kansas with an increase from 152.4 cfs to 152.7 cfs.

Reservoirs

In addition to Reclamation's East Slope Fry-Ark Project facilities (Turquoise, Twin Lakes and Pueblo reservoirs), John Martin, Clear Creek and Trinidad Lake reservoirs were selected for this hydrologic analysis. Reservoir analyses focus primarily on Pueblo Reservoir and a brief description of each reservoir follows.

Pueblo Reservoir

Pueblo Reservoir was constructed as the terminal storage reservoir for the Fry-Ark Project. It has a total active storage capacity of 256,949 ac-ft, dedicated flood control space of 26,991 ac-ft, and a joint-use pool of 66,011 ac-ft. Please see Figure 2 in Chapter 2 for more detail representation of Pueblo Reservoir's storage allocations.

Pueblo Reservoir stores both West Slope and native Arkansas River sources and can store Non-project water in the Conservation Pool and in the Joint-Use Pool pursuant to contractual arrangements from November 1 to April 15 (Figure 2). The contractual arrangements are primarily the excess capacity storage programs previously discussed in Chapter 2. Arkansas River native flows during the period of November 15 to March 15 are stored in available Conservation and Joint-Use pools under the decreed Winter Water Storage Program administered by the State of Colorado.

During the flood control period (April 15 to November 1 of each year), the Joint-Use Pool and Flood Control space must be evacuated by April 15th at a rate not to exceed the safe channel capacity of the Arkansas River, or 5,000 cfs. Water is evacuated or "spilled" from Pueblo Reservoir based on the spill priority language included in Article 13 of Southeastern's repayment contract (Appendix G).

Fry-Ark Project Water is released from Pueblo Reservoir to: 1) the Arkansas River for irrigation and municipal use by entities in the Arkansas River east of Pueblo; 2) to the Fountain Valley Conduit for Fountain Valley Authority (FVA) members (CSU and Fountain, City of Security, Stratmoor Hills, and Widefield); 3) to Pueblo West Metropolitan Water District for municipal use; 4) Bessemer Ditch for irrigation and municipal use; and 5) Pueblo Fish Hatchery.

Turquoise Reservoir

Originally constructed for Colorado Fuel and Iron storage system, the Fry-Ark Project increased capacity of Turquoise Reservoir from 17,416 ac-ft to 129,398 ac-ft. During enlargements, additional storage space was added for both the Fry-Ark Project and the Homestake Project. Colorado Springs, Aurora, and Pueblo Water all have Non-Project Water storage space in the non-federal Homestake and Busk-Ivanhoe water projects. Turquoise Reservoir regulates the surface flow of Lake Fork Creek and transbasin diversions from the Projects listed above. Releases are made to both Lake Fork Creek and the Mt. Elbert Conduit to the Mt. Elbert Forebay for power generation at the Mt. Elbert Pumped-Storage Powerplant.

Twin Lakes Reservoir

Originally owned by TLRCC, Twin Lakes was also enlarged by Reclamation during construction of the Fry-Ark Project. The Fry-Ark Project increased the total active reservoir storage to 67,917 ac-ft with a total storage 140,855 ac-ft. The Twin Lakes Project is a non-federal water project with active reservoir storage used by the CSU, Aurora, Pueblo Water, Pueblo West Metropolitan Water District, Colorado Canal Company, and other entities. Reclamation's active storage in Twin Lake Reservoir is 13,465 ac-ft.

Twin Lakes Reservoir regulates the native flows of Lake Creek. Fry-Ark Project releases through the Mt. Elbert Pumped-Storage Powerplant, and transmountain imports by the TLRCC. Water

owned by Aurora and CSU is released to the Arkansas River and pumped to the Otero Pipeline for direct use or stored in Aurora's Spinney Mountain Reservoir in the Platte River Basin or CSU's Rampart Reservoir in the Fountain Creek Basin.

Clear Creek Reservoir

Clear Creek Reservoir was built by the Otero Canal Company and purchased by Pueblo Water in 1955. Clear Creek Reservoir is located on Clear Creek downstream of Granite, Colorado with a storage capacity of about 11,440 ac-ft. It stores native Clear Creek flow and transmountain diversions from Columbine, Wurtz and Ewing ditches by exchange. The water stored in Clear Creek is released into Clear Creek and the Arkansas River by Pueblo Water when needed.

John Martin Reservoir

John Martin Reservoir is owned and operated by USACE. It is the largest reservoir within the study area with a maximum storage capacity of 603,495 ac-ft. The reservoir receives inflows from both the Arkansas and Purgatoire Rivers and is primarily used for flood control, irrigation, and recreation purposes. The Arkansas River Compact Administration oversees operations of its 333,912 ac-ft conservation pool.

Trinidad Lake Reservoir

Trinidad Lake Reservoir is also owned and operated by USACE. Trinidad Reservoir was constructed under the Trinidad Dam and Reservoir Project which its authorized uses include flood and sediment control, irrigation, and recreation. Trinidad Lake is located on the Purgatoire River roughly 120 river miles upstream of the Purgatoire River's confluence with the Arkansas River. The confluence is just upstream of John Martin Reservoir. Reclamation administers the irrigation portion of the Trinidad Dam and Reservoir Project's repayment contract with the Purgatoire River Water Conservancy District. Additional information on Trinidad Lake can be found in Reclamation's EA for Purgatoire River Water Conservancy District Repayment Contract Amendments (Reclamation 2018). A copy of the EA is available at: https://www.usbr.gov/gp/ecao/nepa/prwcd_ea.html.

DeWeese Reservoir

DeWeese Reservoir is a 4,100 ac-ft private water supply reservoir owned and operated by the DeWeese-Dye Ditch and Reservoir Company. In 2009, DeWeese Reservoir, O'Haver, Boss, North Fork, Rainbow Lake and Cottonwood reservoirs (all within the Upper Arkansas Water Conservancy District Service Area) were added to Upper Arkansas Water Conservancy District annual excess capacity storage contract. Reclamation completed an EA that analyzed 37.2 ac-ft of expected outflow from Pueblo Reservoir that would be exchanged to these reservoirs and 400 ac-ft that would be exchanged to the North Fork Reservoir (Reclamation 2009).

Effects on Surface Water Resources-Reservoirs

Fryingpan-Arkansas Project RiverWare Reservoir Modeling Results

Table B-16 in Appendix B shows the predicted mean end of month (EOM) water surface elevation for the major reservoirs within the Arkansas River Basin. Mean monthly reservoir elevation for Pueblo Reservoir is predicted to increase between 1.66 feet in the 2032 Scenario to 1.40 feet in the 2058 Scenario under the Proposed Action. All other reservoir evaluation

changes are predicted to decrease less than 3.74 inches and to increase by up to 1.68 inches under all modeled Scenarios.

There would be negligible changes in excess capacity storage at John Martin Reservoir and negligible to minor changes at Turquoise, Twin, Clear Creek, and Trinidad reservoirs under the various demand and storage scenarios. As expected, largest changes in reservoir elevations occur at Pueblo Reservoir when comparing the No Action and Action alternatives.

Table 8 shows potential changes in long-term contract excess capacity storage accounts with continuation of the Temporary Program. These changes are primarily the result of water leases from the long-term excess capacity storage accounts to the temporary excess capacity accounts and occur only if the long-term contract entity makes operational decisions to lease water to the temporary excess capacity entity.

Table 8- Modeled Existing Long-Term Contract Storage Demand Storage Volumes

Excess Capacity Account	Max Contract Amount	2032 Demand				2047 Demand				2058 Demand			
		Annual Daily Avg.		Difference		Annual Daily Avg. (ac-ft)		Difference		Annual Daily Avg.		Difference	
		No Action	Proposed Action	(ac-ft)	Percent	No Action	Proposed Action	(ac-ft)	Percent	No Action	Proposed Action	(ac-ft)	Percent
Pueblo Water	15,000	12,261.7	12,011.1	-250.6	-2.0%	12,629.7	12,423.3	-206.4	-1.6%	12,392.6	12,101.5	-291.1	-2.3%
City of Aurora	10,000	1,066.0	1,023.9	-42.1	-3.9%	1,192.0	1,116.3	-15.2	-1.3%	1,183.9	1,119.7	-64.1	-5.4%
Colorado Springs Utilities	28,000	1,455.1	1,478.9	23.7	1.6%	2,412.0	2,118.7	-92.6	-3.8%	2,428.9	2,093.9	-335.1	-13.8%
Fountain	2,500	6.2	6.2	0.0	0.0%	5.5	5.3	0.1	1.1%	5.5	5.3	-0.2	-3.5%
Pueblo West	10,000	1,791.8	1,234.1	-557.7	-31.1%	2,325.4	1,594.2	-402.7	-17.3%	2,080.4	1,466.6	-613.7	-29.5%
Security	1,500	13.1	13.7	0.6	4.6%	10.3	10.1	-0.1	-1.0%	10.0	10.0	0.0	-0.2%
Master Contract	29,938	6,278.8	5,628.7	-650.1	-10.4%	8,134.8	7,524.3	-507.6	-6.2%	8,800.9	8,190.6	-610.3	-6.9%
LT Total	**96,938**	**22,872.8**	**21,396.5**	**-1,476.2**	**-6.5%**	**26,709.7**	**24,792.2**	**-1,224.5**	**-4.6%**	**26,902.1**	**24,987.6**	**-1,914.5**	**-7.1%**

3.4 Groundwater Resources

Groundwater resources play a major role in Colorado's statewide water supply as about 20 percent of the state's population rely heavily on groundwater (Colorado Water Conservation Board (CWCB) 2015). In the Arkansas River Basin in Colorado, groundwater provides about 6 percent of the basin's total water supply (USGS 2015). Alluvial and consolidated bedrock aquifers are important water sources for municipalities, industry, and agriculture. The Arkansas River has both gaining and losing reaches, relative to localized groundwater usage. Alluvial, Denver Basin, and Dakota-Cheyenne aquifers are the primary groundwater resources use in the Project Area, as shown in Figure 5 (CWCB 2015).

Colorado's Decision Support System (CDNR 2018) reports 16,550 decreed wells in the Arkansas River Basin. Irrigation is the dominant groundwater use throughout the Arkansas River Basin, followed by Municipal and Industrial (M&I) uses (Reclamation 2013). In 2005, Lower Arkansas River Basin groundwater uses were most prevalent in El Paso, Kiowa, and Prowers counties and ranged from 918 ac-ft per year in Fremont County to 33,768 ac-ft per year in Prowers County (USGS 2005).

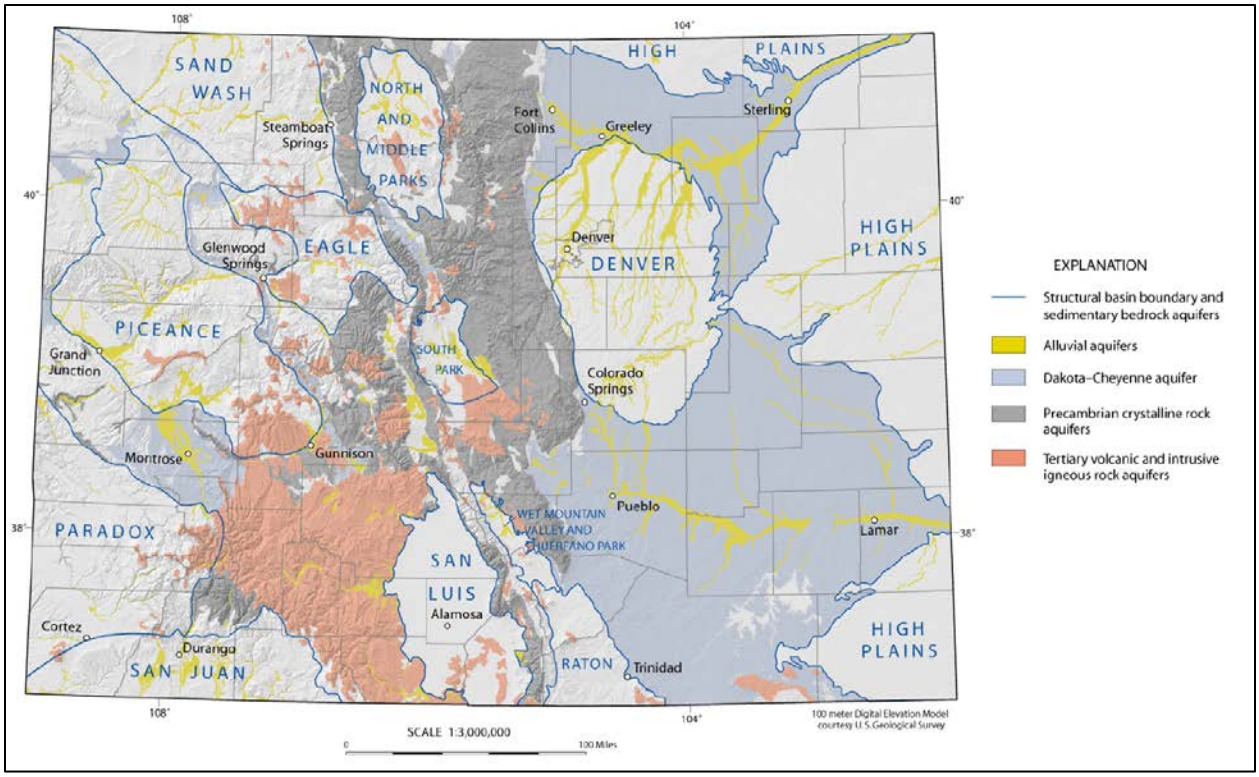

Figure 5-Colorado Groundwater Resources

The Lower Arkansas River and its associated alluvial groundwater are high in total dissolved solids, selenium, sulfate, hardness, manganese, and uranium and exceed water quality standards in certain reaches. Naturally occurring radionuclides, dissolved solids and sulfates, especially in the Dakota-Cheyenne deep bedrock aquifer water supply, exceed water quality standards. Alluvial and deep bedrock groundwater currently make up about 86 percent of AVC participants' existing water supply in the lower portion of the Arkansas River Basin (Reclamation 2013) and alluvial groundwater represents about 75 percent of the water supply in the Lower Arkansas River. Deep bedrock aquifers comprise an additional 11 percent.

3.4.1 Temporary Program Groundwater Uses

As of November 2017, seventeen municipalities and water suppliers included in AVC were under Drinking Water Standards enforcement actions for exceeding drinking water standards in the lower Arkansas River (SEWCD 2017). Six additional water suppliers had radionuclides detected in their drinking water supplies but were at levels below enforcement action.

CWPDA, AGUA, Lower Arkansas Water Management Association, Arkansas River Users Group (ARUG) and the Colorado Department of Corrections (CDOC) provide augmentation water to replace out-of-priority depletions pursuant to Colorado's *Amended Rules and Regulations Governing the Diversion and Use of Tributary Groundwater in the Arkansas River Basin*. The rules and regulations and Rule 14 plans can be accessed at: http://water.state.co.us/groundwater/GWAdmin/UseAndMeasurement/ArkGWUseMeasRules/Pages/Rule14Plans.aspx. Rule 14 Plans are approved by the Colorado Division of Water Resources. CWPDA and AGUA

both utilize excess capacity storage contracts in Pueblo Reservoir to assist in meeting their return flow obligations.

Table 9 shows CWPDA and AGUA's ac-ft for planned 2018 pumping and augmentation releases based on their approved 2018 Rule 14 plans. Arkansas River Groundwater Users Association also utilizes the Temporary Program for groundwater augmentation. Arkansas River Farmers Group members are shareholders in the Catlin Canal, Catlin Canal Augmentation Association and are also enrolled in CWDPA, AGUA and Lower Arkansas Water Management Association Rule plans.

Table 9-2018 CWPDA and AGUA 2018 Approved Rule 14 Plan Summaries

Association	Pumping (ac-ft per year)	Source Aquifer
CWPDA	49,098	Valley-Fill and Surficial Aquifers subject to Rule 3.
	7,553	Valley-Fill, Surficial and Fountain Creek Aquifers subject to Rule 4.
	2,335	Other Aquifers subject to Rule 5.
Total	**59,986**	CDWR estimates 25,560 ac-ft as out-of-priority stream depletions for CWPDA.
CWPDA's Pueblo Reservoir Excess Capacity Storage Use		*4,469 ac-ft of secured storage supply in Pueblo Reservoir stored in CWPDA's 2018 Temporary excess Capacity Storage Contract.*
AGUA	5,607	Valley-Fill and Surficial Aquifers subject to Rule 3.
	956	Valley-Fill, Surficial and Fountain Creek Aquifers subject to Rule 4.
	1,084	Other Aquifers subject to Rule 5.
Total	**7,647**	CDWR estimates 3,996 ac-ft as out-of-priority stream depletions for AGUA.
AGUA's Pueblo Reservoir Excess Capacity Storage Use		*2,400 ac-ft of fully consumable secured storage supply in Pueblo Reservoir stored in AGUA's 2018 Temporary excess Capacity Storage Contract.*

Historically, AGUA has requested between 500 ac-ft and 2,000 ac-ft of excess capacity storage and CWDPA has requested between 3,000 ac-ft and 6,000 ac-ft. ARGA only began requesting 50 ac-ft of excess capacity storage in 2016. AGUA's 2018 Rule 14 plan includes augmentation releases for the pumping of 285 wells of about 2,400 ac-ft from AGUA's 2018 2,600 ac-ft contracted excess capacity storage in Pueblo Reservoir. Lower Arkansas Water Management Association relies on Fry-Ark Project return flows from deliveries to agricultural users, various consumptive use credits, and conservation storage in John Martin Reservoir. It has never requested an excess capacity storage contract for Pueblo Reservoir.

Colorado Department of Corrections (CDOC) also operates wells associated with their East Canyon City Prison Complex and Buena Vista Correctional Complex. The 2018 approved Rule 14 plans estimate out of priority pumping associated with these wells as 47.11 ac-ft for East Canyon City Prison Complex and 44.0 ac-ft. CDOC leases 180 ac-ft of fully consumable trans-mountain water from Pueblo Water with replacement deliveries from Clear Creek Reservoir. CDOC has historically contracted between 80 to 300 ac-ft of excess capacity per year in Pueblo Reservoir to exchange water to make releases from Pueblo Reservoir for East Canyon City Prison Complex depletions when they can be made without injury to water rights. Any

remaining Pueblo Water leased water not released to fulfill Rule 14 requirements is also stored in CDOC's annual temporary capacity account or has been transferred to other entities such as the City of Fountain. The CDOC indicated in 2015 and 2016, that they did not anticipate having an excess capacity storage contract in Pueblo Reservoir past 2020, as they have plans to use the water that has typically been stored in Pueblo Reservoir to be used in a Substitute Water Supply Plan. However, CDOC did not include this information in 2017.

3.4.2 Donala Water and Sanitation District's Groundwater Uses

Donala has sufficient available annual groundwater supplies to meet its total existing and planned demand, including ongoing development in Chaparral Hills and the Mining Museum and minimal remaining infilling. Donala's total groundwater water rights total over 2,400 ac-ft per year and its annual water use is approximately 800 ac-ft per year with most of the supply from the Denver Basin. The Denver Basin underlies an area of about 7,000 square miles extending from Greeley south to near Colorado Springs and from the Front Range east to near Limon including the Denver metropolitan area (USGS 2018a). In the metropolitan area withdrawals greatly exceed recharge, and some water-level declines have exceeded 500 feet in some wells. Donala is seeking renewable sources to replace dwindling groundwater and purchased Willow Creek Ranch in 2008 to reduce its dependency on groundwater. Donala's 2017 Drinking Water Quality Report (Donala 2018), lists its water sources as treated surface water from CSU and 14 groundwater wells. Figure 6 shows its annual water production by water source from 2000 to 2017.

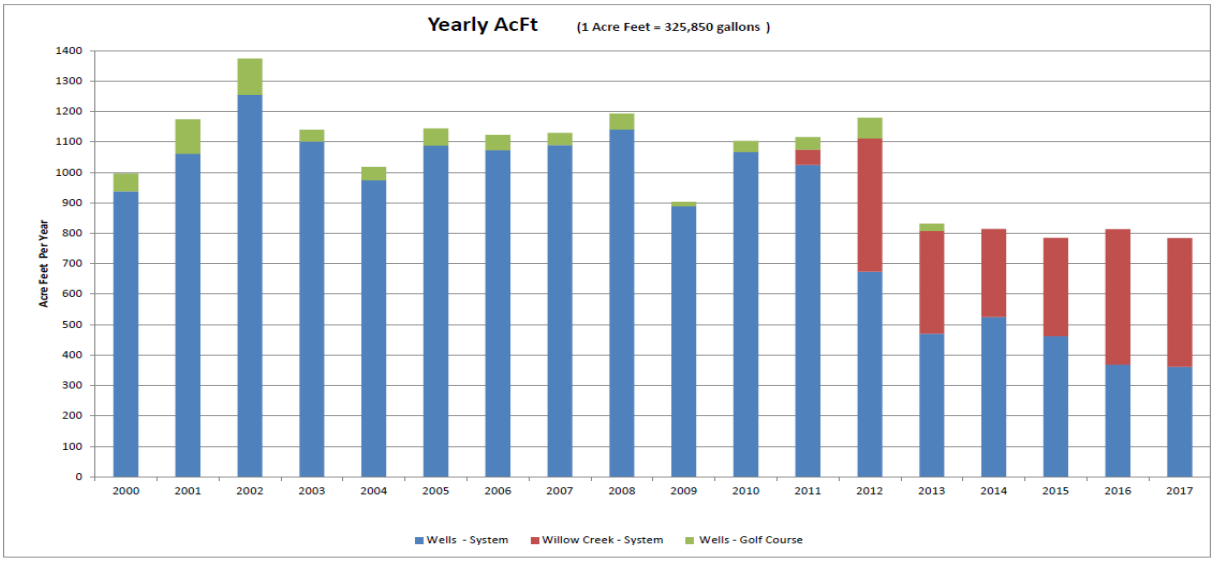

Figure 6-Donala's Yearly Water Production by Source
from: http://www.donalawater.org/index.php/water/dewss.html

3.4.3 BLM Groundwater Uses

Within the project area, BLM's primary groundwater resource is the Park Center Well. The BLM's Park Center Well has a decreed augmentation plan (Colorado Water Court Case No. 12CW125).

The Park Center Well is a 3,216 ft deep artesian well located north of Canyon City adjacent to Fourmile Creek. BLM owns the well and the associated water rights, and leases water produced from the well to the Park Center Water District. BLM operates the well pursuant to Division 2 water court decrees in Colorado Water Court Case Nos. 81CW192 and 97CW169 which authorize the diversion of up to 227 ac-ft annually for domestic, municipal, irrigation, and augmentation purposes. The maximum diversion rate is 2.67 for Park Center Water District, DeWeese Reservoir, DeWeese Reservoir Service Area, and Pueblo Reservoir. BLM does not claim storage water rights within DeWeese Reservoir and Pueblo Reservoir but does have a cooperative agreement with DeWeese-Dye Ditch and Reservoir Company allowing BLM to store up to 450 ac-ft in DeWeese Reservoir. BLM uses the Temporary Program to store between 300 ac-ft and 500 ac-ft annually between Pueblo Reservoir and DeWeese Reservoir to augment flows in Grape Creek.

3.4.4 Effects to Groundwater Resources

Temporary Program

Under the No Action Alternative, entities in the Temporary Program could not store water in Pueblo Reservoir. Groundwater users who pump that requiring augmentation under Rule 14 would be adversely affected. CWPDA 2018 temporary excess capacity storage contract (5,000 ac-ft), if fully utilized, could provide about 20 percent of the CWPDA 2018 Rule 14 plan's estimated 25,560 ac-ft out-of-priority stream depletions. For AGUA, its 2018 temporary excess capacity storage contract of 2,600 ac-ft could yield about 65 percent of the estimated 3,996 ac-ft of AGUA's out-of-priority stream depletions. Water users subject to Rule 14 would need to find other water sources to avoid effects to senior surface water rights in Colorado and inflows to John Martin Reservoir during conservation storage.

Under this Proposed Action Alternative, continuing the Temporary Program would allow Arkansas River water users (i.e. CWPDA. AGUA, ARUG) to to meet a portion of their Rule 14 augmentation requirements on an annual basis. The Temporary Program also allows these entities to tailor their requested storage based on 1) each annual augmentation plan approved by the State Engineer, and 2) each temporary excess capacity storage contractor's water rights and leases. Additionally, it allows any remaining storage from their previous year's temporary excess capacity account to carry stored water over if a new temporary contract is in place prior to January 1st. Upon expiration of the temporary contract, all remaining stored excess capacity water would become Fry-Ark Project Water or be released from Pueblo Reservoir.

Continuation of the Temporary Program would have no direct effect on groundwater uses associated with AVC as described in the AVC/Master Contract EIS. Water stored in Pueblo Reservoir under Temporary Program and Donala and BLM 40-year excess capacity storage contracts could augment sources for alluvial and surficial groundwater depletions.

All Temporary excess capacity storage contracts would incorporate language requiring:

1) The contractor shall not sell, sublease, donate, loan or in any manner transfer the use of the storage space contracted to any other entity or individual without written approval from the Contracting Officer.

2) All water stored, delivered, and/or exchanged under each contract shall only be used for lawfully decreed purposes that are consistent with the contract and with applicable, Federal, State, and local laws and analyzed in the EA or a subsequent NEPA analysis.
3) Changes resulting from any subsequent NEPA analysis must be approved in advance and in writing by the Contracting Officer.

Donala Water and Sanitation District

Under the No Action Alternative Donala would no longer store Willow Creek Ranch water in Pueblo Reservoir and without new water sources likely would increase groundwater pumping from its existing wells to meet current and future demands. The No Action Alternative would increase Donala's dependency on its non-renewable groundwater and accelerate its depletions.

Under the Proposed Action, Donala would reduce its dependency on non-renewable groundwater. Figure 6 illustrates the substantial beneficial effect that the Proposed Action has had on the non-renewable groundwater resources since Donala acquired the Willow Creek Ranch in 2008. Figure 7 shows a monthly breakdown of Donala's water production since 2012.

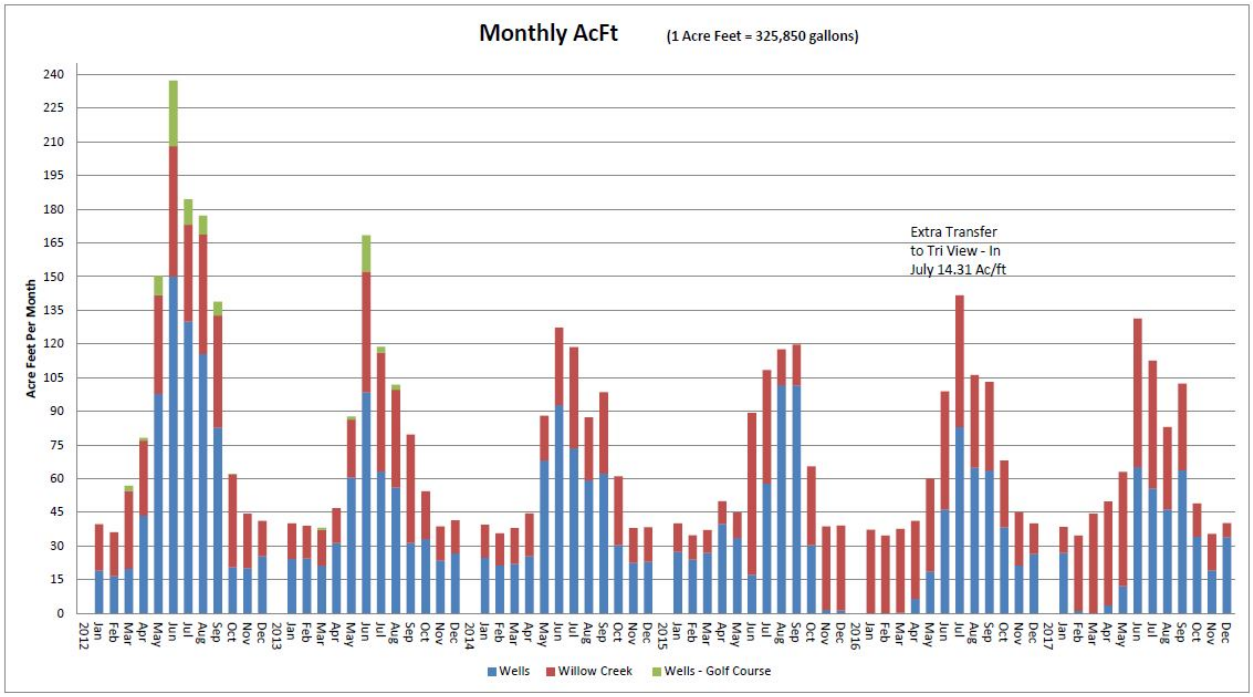

Figure 7-Donala's Monthly Water Production 2012-2017
from http://www.donalawater.org/index.php/water/dewss.html

Bureau of Land Management

Under this Proposed Action Alternative, it is anticipated that BLM either would use the Temporary Program or a long-term contract to store at least a portion of it water from its Park Center Well water rights in Pueblo Reservoir to DeWeese Reservoir. BLM also purchases water from other providers in the Arkansas River Basin to augment Grape Creek flows.

Under the No Action Alternative, BLM's Park Center Well water would not be stored in in Pueblo Reservoir. BLM would need to explore other options. Under both alternatives, BLM

would likely continue to lease water from the Park Center Well to the Park Center Water District.

3.5 Water Rights

3.5.1 General

Water Rights in Colorado's Arkansas River Basin (Division 2) are adjudicated in Colorado Water Court and are administered by CDWR under the "1st in time, 1st in right" Prior Appropriation Document. Water rights grant the owner to put native flows to beneficial uses according to availability. When there is not enough native flow to meet all the water rights, CWDR administers a "call" to ensure senior water rights owners receive sufficient flows to meet the decrees before junior water rights holders. To legally store water in Colorado, a water right must include decreed storage. Arkansas River groundwater water rights are also administered by CWDR through a permit process.

The Colorado Water Court publishes a monthly resume of water rights applications received to inform the public of pending water rights cases. Owners of water rights may file a statement of opposition to any water right application they think may injure their water right. The Colorado State Engineer may allow a water exchange without a court decree, if the water is available in priority and the exchange will not cause injury to other water rights.[5]

Water rights for trans-mountain diversions are different than native flows. The imported water can be used to extinction and need not provide return flows. Major water imports to the Arkansas River Basin include those from the Boustead Tunnel (Fry-Ark Project), Twin Lakes Tunnel (TLRCC), Homestake Tunnel (Aurora), Busk-Ivanhoe (Pueblo Water/Aurora), Wurtz Ditch (Pueblo Water), Columbine Ditch (Pueblo Water), Ewing Ditch (Pueblo Water), and Larkspur Ditch (Catlin Canal Company) (Winchester 2001).

The Fry-Ark RiverWare Model uses RiverWare's Water Rights Solver to simulate allocation of native inflow to direct flow and storage by priority date in the model network each day of a model run. Table 10 in the Hydrologic Modeling Section of this chapter lists the flow management and minimum flows requires in the Arkansas River Basin. Specific water rights included in the Proposed Actions for the Temporary Program and Donala and BLM 40-year excess capacity contracts were previously discussed in Chapter 2.

3.5.2 Arkansas River Compact

The Arkansas River Compact, negotiated between Colorado and Kansas, apportions the Arkansas River flows and conservation benefits of John Martin Reservoir. John Martin Reservoir was constructed by ACOE between 1939 and 1948 and Arkansas River Compact was signed by the states' and federal representatives in 1948. The Arkansas River Compact was

[5] See *Citizen's Guide to Colorado Water Law* (Colorado Foundation for Water Education 2004) for more information on Colorado water rights at: https://www.colorado.edu/geography/class_homepages/geog_4501_s14/readings/CG-Law2004.pdf. CDWR also maintains a website at: http://water.state.co.us/Home/Pages/default.aspx.

subsequently enacted as state law and as a federal statute.[6] The compact is administered by the Arkansas River Compact Administration and is unusual in that it does not apportion the waters of the river between the states in specific amounts or as a percentage of river flows. Instead, it includes language designed to protect existing uses in both states from depletions due to future development (CWCB 2011). Additional information is available at: http://www.co-ks-arkansas rivercompact admin.org/home.html.

The Colorado State Engineer has adopted *Compact Rules Governing Improvements to Surface Water Irrigation Systems* in the Arkansas River Basin in Colorado. The purpose is to ensure that improvements to surface water irrigation systems in the Arkansas River Basin in Colorado comply with Article IV-D of the Arkansas River Compact (CDWR 2010). The groundwater rules are discussed in that section.

3.5.3 Effects on Water Rights

Under the No Action Alternative, Reclamation would discontinue the Temporary Program. Entities would be limited to the use of existing facilities outside of the Fry-Ark Project or permit to convey, exchange and store their Non-Fry-Ark Project water subject to their water right decrees. When existing facilities are not capable of conveying, exchanging, or storing Non-Fry-Ark Project water, the entity would bypass their water right for diversion to the next downstream water right holder or permit and construct new facilities

.

Under the Proposed Actions, CDWR would continue to administer all water rights and only water that entities are legally entitled to divert and store in Fry-Ark Project facilities, either through a decree, or by temporary approval of State Engineer's Office, may be stored in excess capacity storage contracts. The Proposed Actions would not change or expand contractors' water rights or uses. Contractors could not divert any additional water in addition to that which was historically consumed, nor can they divert additional water because of increased efficiencies. Entities would continue to obtain approval from the State Engineer's Office prior to storing any water if not included in their water right decree. Temporary excess capacity storage contracts increase opportunities for contractors to make physical exchanges if there are no water right in the intervening reach which would be harmed.

To protect water rights, each contractor is responsible for making necessary arrangements to make Non-Fry-Ark Project water available for storage and/or conveyance pursuant to Colorado law, including but not limited to, obtaining any necessary approvals from CDWR. Each contractor is also solely responsible for any transit and evaporation losses assessed by CDWR and/or associated with the use of excess capacity storage and conveyance of Non-Fry-Ark Project water.

3.6 Water Quality

Water quality in the Arkansas River varies by reach and depends on geology and land and water use. As is typical of other Colorado basins, the quality of water in the Arkansas River Basin has degraded due to historic mining in the headwaters, reservoir impoundments, diversions, and

[6] (Colorado Revised Statute 37-69-101; Kansas Statutes Annotated 82a-520; and 63 Statute 145, 81st Congress, May 31, 1949)

return flows. The Colorado Department of Public Health and Environment's Water Quality Control Commission (WQCC) establishes designated uses and numeric water quality standards to protect designated uses in Colorado.[7]

Regulation No. 32 details classifications and numeric standards for the Arkansas River Basin, Regulation No. 93 includes Colorado's section 303(d) lists of impaired waters, and Regulation No. 11 is Colorado's Primary Drinking Water Regulations. Non-attainment of water quality standards (impaired waters) is reported to the Environmental Protection Agency in Regulation 93. Table 10 lists impaired waters in the Arkansas River Basin by Upper, Middle or Lower Arkansas River Basin.[8]

Table 10- Summary of 303(d) Listed Waters in the Arkansas River Basin

ID		303(d) Listed Reach	Name of Water Body	Use Types	303(d) Listed Analytes
COARUA Upper Arkansas River Headwaters to Pueblo Reservoir		COARUA02a_A COARUA02c_A COARUA05_A COARUA05_B COARUA05_C COARUA07_A COARUA10_A COARUA12a_A COARUA15_B COARUA15_C COARUA35_A COARUA40_A	East Fork Arkansas River Brown's Creek Lake Fork Colorado Gulch Evans Gulch Lake Creek Chalk Creek Grape Creek Grape Creek DeWeese Reservoir Brush Hollow Reservoir	Aquatic Life Water Supply	Arsenic, Cadmium, Copper, Dissolved Oxygen, Iron, Lead, Manganese, Mercury, pH, Phosphorus, Zinc
COARMA Middle Arkansas River Pueblo Reservoir to below confluence with Saint Charles River		COARMA04a_A COARMA04c_A COARMA06b_A COARMA07b_A COARMA09_A COARMA10_A COARMA12_A COARMA13a_B COARMA14_A COARMA18a_A COARMA26_B COARMA26_C	Wildhorse Creek Chico Creek Saint Charles River Greenhorn Creek Greenhorn Creek Sixmile Creek Huerfano Creek Wahatoya Creek Cucharas River Boggs Creek Lake Meriam Ohem Lake	Aquatic Life Recreational Water Supply	Arsenic, Copper, E. Coli, Iron, Macroinvertebrates, Manganese, Mercury, Sulfate, Selenium
COARFO Fountain Creek		COARFO01a_B COARFO01b_A COARFO02a_A COARFO02b_A COARFO03a_B COARFO04_B COARFO04_D COARFO04_E COARFO04_G COARFO06_B COARFO06_C	Fountain Creek Severy Creek Fountain Creek Fountain Creek West Monument Creek Sand Creek Tributaries below Monument Creek Sand Creek Little Fountain Creek Monument Creek Monument Creek	Aquatic Life Recreational Water Supply	E. Coli, Arsenic, Manganese, Iron, Zinc Temperature, Macroinvertebrates, Selenium
COARLA Lower Arkansas River		COARLA01a_A COARLA01b_A COARLA01c_A COARLA02a_A COARLA03a_A	Arkansas River Arkansas River Arkansas River Tributaries, CO Canal to Kansas	Aquatic Life Recreational Water Supply	Arsenic, E. coli, Iron, Macroinvertebrates, Manganese, Selenium, Sulfate, Uranium

[7] For brevity, all water quality classifications, standards, drinking water regulations, and procedural and planning rules can be accessed at: https://www.colorado.gov/pacific /cdphe/water-quality-control-commission-regulations.
[8] An interactive map of Colorado's 2018 Stream and Lake Segmentation is available online at: http://cdphe.maps.arcgis.com/apps/Viewer/index.html? appid=f1541d 2f21834642ba1551c674fd4a79. Additional descriptions of surface and groundwater quality in the Arkansas River Basin is included in the AVC/Master Contract EIS and 2006-2010 EA.

Below Saint Charles River to Kansas State Line		COARLA04a_A COARLA04a_B COARLA05b_A COARLA05b_B COARLA06a_B COARLA06a_E COARLA09a_A COARLA09a_B COARLA09a_C COARLA09b_A COARLA09b_B COARLA10_B COARLA10_C COARLA11_A COARLA12_A COARLA12_B COARLA15_B	Apishapa River Apishapa River Apishapa River NF of the Purgatoire River Long Canyon Creek Apache Canyon Banarito Canyon Buffalo, Cheyenne Creeks, etc. Horse Creek Adobe Creek Apache, Little Horse Creeks, etc. Big Sandy Creek Adobe Creek Reservoir Nee Gronda Reservoir John Martin Reservoir Lake Meredith Lake Henry Trinidad Reservoir		

Conductance is attributable to salinity, or dissolved solids. A high specific conductance indicates a high dissolved solid concentration which can affect the suitability of water for domestic, industrial and agricultural uses. Colorado's Primary Drinking Water Regulations (5 CCR 1002-11) establishes secondary maximum containment levels, unenforceable guidelines with reasonable goals for drinking water quality. The secondary maximum containment levels for Total Dissolved Solids is 500 mg/l affecting taste, color, odor, and cosmetics of drinking water which directly relate to public acceptance.

Fountain Creek has historically been a geomorphologically unstable stream. High erosion in the upper portion of Fountain Creek leads to sedimentation in Lower Fountain Creek and at its confluence with the Arkansas River. This process is primarily due to increased return flows from municipal and industrial water use, and increased stormwater runoff.

Specific conductance was used as a general indicator to evaluate effects on water quality. Specifically, Donala's proposed use of SDS facilities and agreements with CSU triggers requirements in SDS 1041 Permit 2008-002 (Pueblo County Resolution No. P&D 09-22) issued to CSU for applicable land uses and regulatory powers of Pueblo County.[9]

3.6.1 Effects on Water Quality

Temporary Program and BLM 40-Year Excess Capacity Contract

Continuing the Temporary Program would not trigger construction activities or other ground disturbance. Hydrologic changes are negligible to minor for all Arkansas River segments shown previously in Appendix B Tables B-7 and B-8. In the 2006-2010 EA, Reclamation used specific conductance as an additional indicator of effects on water quality.

The 500 mg/L secondary standard is applied at the tap and is not enforceable. In the lower Arkansas River, 500 mg/L is generally equivalent to a specific conductance of about 718 micro-

[9] A copy of the 1041 is available at: http://www.co.pueblo.co.us/cgi-bin/webformbroker.wsc/cases3.p?caseNum=1041%202008-002). Section 5.2-Carriage of Water to Entities That are Not SDS Project Participants includes Pueblo County's stormwater and water quality requirements for third party contracts or agreements for transportation of water through the SDS Project.

siemens (µS/cm) (Lewis, 1999). In general, specific conductance concentrations equal to or greater than 950 to 1,200 µS/cm can impact agricultural crops and concentrations greater than 2,250 µS/cm are considered a very high irrigation salinity hazard. Historic irrigation salinity hazard in the Arkansas River has been moderate (250-750 µS/cm) to high (750- 2,250 µS/cm) (Lewis 1999).

Using the 2006-2010 EA methodology and predicted flows from the Fry-Ark RiverWare Model, Reclamation estimated changes in specific conductance at Portland, above Pueblo, and near Avondale gages are included in Tables 11 to 13. For the 2032 and 2058 scenarios, all changes in specific conductance associated with the Proposed Actions are predicted to be less than 1 percent and considered insignificant.

Table 11-Predicted Changes in Mean Monthly Specific Conductance at the Portland Gage

Month	2032 No Action (µS/cm)	2032 Proposed Action (µS/cm)	2032 Percent Change	2058 No Action (µS/cm)	2058 Proposed Action (µS/cm)	2058 Percent Change
Jan	497.9	497.1	-0.15%	488.0	489.1	0.21%
Feb	498.3	497.2	-0.22%	492.1	492.9	0.16%
Mar	472.8	473.2	0.08%	475.6	474.4	-0.25%
Apr	508.7	513.6	0.96%	508.4	513.3	0.98%
May	290.8	290.9	0.04%	297.2	297.8	0.21%
Jun	214.3	214.1	-0.11%	216.5	216.4	-0.06%
Jul	283.1	283.9	0.30%	284.1	283.8	-0.10%
Aug	373.4	373.5	0.02%	377.1	375.8	-0.37%
Sep	475.8	474.7	-0.23%	469.7	467.8	-0.42%
Oct	504.4	505.2	0.16%	494.3	496.9	0.53%
Nov	453.5	453.5	0.00%	448.7	449.2	0.12%
Dec	483.2	482.7	-0.11%	480.8	478.7	-0.45%

Table 12- Predicted Changes in Mean Monthly Specific Conductance at the above Pueblo Gage.

Month	2032 No Action (µS/cm)	2032 Proposed Action (µS/cm)	2032 Percent Change	2058 No Action (µS/cm)	2058 Proposed Action (µS/cm)	2058 Percent Change
Jan	569.7	569.7	0.00%	569.8	569.7	0.00%
Feb	593.7	593.8	0.03%	591.8	591.9	0.03%
Mar	595.3	595.1	-0.03%	596.1	595.8	-0.05%
Apr	552.7	550.8	-0.34%	558.4	557.8	-0.11%
May	485.8	487.1	0.26%	496.3	497.4	0.23%
Jun	403.9	404.7	0.21%	410.6	411.4	0.19%
Jul	412.4	411.9	-0.12%	414.8	414.7	-0.02%
Aug	425.6	425.5	-0.01%	427.2	426.7	-0.11%
Sep	441.2	441.1	-0.01%	442.7	442.4	-0.06%
Oct	462.1	461.9	-0.05%	462.7	462.5	-0.05%
Nov	493.5	493.8	0.05%	494.3	494.3	0.00%

Dec	531.9	531.9	0.00%	531.9	531.9	0.00%

Table 13-Predicted Changes in Mean Monthly Specific Conductance near the Avondale Gage

Month	2032 No Action (µS/cm)	2032 Proposed Action (µS/cm)	2032 Percent Change	2058 No Action (µS/cm)	2058 Proposed Action (µS/cm)	2058 Percent Change
Jan	1046.4	1046.4	-0.40%	1070.9	1066.6	-0.08%
Feb	1031.3	1029.0	0.13%	1113.3	1114.8	0.08%
Mar	932.6	933.1	-0.51%	968.7	963.7	-0.01%
Apr	745.8	741.7	0.10%	767.9	768.6	0.06%
May	607.4	609.4	0.29%	606.2	607.9	0.03%
Jun	527.4	528.2	0.25%	528.8	530.1	0.01%
Jul	562.1	561.1	-0.12%	562.1	561.5	0.01%
Aug	626.5	626.4	-0.30%	624.8	622.9	-0.02%
Sep	738.7	740.4	-0.17%	738.4	737.1	-0.07%
Oct	849.8	849.8	-0.87%	857.3	849.8	0.07%
Nov	892.5	896.6	0.31%	860.5	863.1	0.09%
Dec	1011.3	1011.3	-0.03%	972.7	972.4	-0.01%

Under both the No Action and Proposed Actions, Pueblo Reservoir would continue to be classified as a large deep reservoir, and subject to summer stratification and fall mixing. As predicted in the 2006-2010 EA, continuation of the Temporary Program may increase detention time for the reservoir which could result in increased algae growth, and overtime, result in a more eutrophic condition.

Based on the water quality analysis for the AVC/Master Contract EIS, negligible affects to Pueblo Reservoir's dissolved oxygen, nutrients, and total-iron concentrations are predicted and algae concentrations would not pose a health issue or produce taste and odor problems in Pueblo Reservoir (Reclamation 2013, Appendix F https://www.usbr.gov/avceis/avc_final_eis_appendices_e1_g1.pdf).

Although salinity contributions between the Arkansas River at Portland gage and Pueblo Reservoir would not be expected to alter significantly, changes in storage volumes, releases, chemical and physical processes in Pueblo Reservoir could affect salinity concentration of reservoir outflows. These flows are calculated at the Above Pueblo Gage (see Appendix B, Table B-8 (Ortiz 2013)).

Donala 40-Year Excess Capacity Contract

Comparisons between 2058 Proposed Actions and 2058 No Action Donala contract model run are even smaller, as shown in Table 14. Execution of the proposed Donala 40-Year Excess Capacity Contract is predicted to have no measurable effect on total dissolved solid concentrations.

Donala, as a water and sanitation district, has no stormwater regulatory or management powers. El Paso County is responsible for stormwater management within Donala's service area. Donala has agreed with Colorado Springs Utilities to support and cooperate in regional stormwater

Table 14- 2058 Mean Monthly Specific Conductance without Donala Contract

Month	At Portland Gage (µS/cm)	At Portland Gage Percent Change	Above Pueblo Gage (µS/cm)	Above Pueblo Gage Percent Change	Near Avondale Gage (µS/cm)	Near Avondale Gage Percent Change
Jan	489.3	-0.04%	569.7	0.00%	1067.5	-0.08%
Feb	492.8	0.00%	591.9	0.01%	1113.9	0.08%
Mar	474.2	0.03%	595.8	0.00%	963.7	-0.01%
Apr	513.5	-0.03%	557.7	0.01%	768.1	0.06%
May	297.7	0.02%	497.3	0.01%	607.7	0.03%
Jun	216.3	0.04%	411.3	0.02%	530.1	0.01%
Jul	283.8	0.00%	414.7	0.01%	561.4	0.01%
Aug	375.7	0.01%	426.6	0.03%	623.1	-0.02%
Sep	468.1	-0.07%	442.4	0.00%	737.6	-0.07%
Oct	496.9	0.01%	462.5	0.00%	849.2	0.07%
Nov	449.5	-0.06%	494.3	0.00%	862.3	0.09%
Dec	479.2	-0.11%	531.9	0.00%	972.4	-0.01%

management efforts to the extent of its authority. Historical stormwater runoff analysis by LRE (2017) predicts future runoff in Donala associated with reasonably foreseeable future development outside its current service area as previously discussed.

Table 15 shows the results of the stormwater runoff analysis. The changes in stormwater runoff are predicted to occur independent of a Donala 40-year excess capacity storage contract. While the amount of stormwater runoff for future land use within the Donala service area is expected to increase, runoff volumes from the Donala service area under current and future land use conditions remain well below average for a typical urbanized area (LRE, Inc 2017). A copy of the analysis is included as Appendix F.

Table 15-Estimated Donala Stormwater Runoff

Scenario	Area (ac)	Percent Impervious	Curve Number	Annual Avg. Runoff (ac-ft)	Annual Avg. Runoff (ac-ft/ac)
Current Runoff	1,645.1	36.6%	73	120.55	0.073
Future Runoff	1,675.3	38.9%	74	127.11	0.076
Typical Urban Runoff w/ Future Service Area*	1,675.3	50.0%	80	172.80	0.103
*Typical Urban Runoff = Moderate to high density development (50% impervious); remaining pervious area assumed to be grass pasture in good condition (CN = 61). 61 + (50/100) (98-61) = 80.					

3.7 Aquatic Life & Recreation

The Arkansas River supports both cold-water and warm-water aquatic life as it travels from the Continental Divide to the eastern plains. Although the fish species assemblages do not change sharply throughout Colorado, Pueblo Reservoir and sections of the Arkansas River between Canyon City, Grape Creek, and Fountain Creek are in the transition zone and contain species typical of both assemblages (Reclamation 2013). Sensitive, threatened and endangered species are discussed in Section 3.9. The Arkansas River Basin also provides abundant recreational opportunities for anglers, rafters and boaters.

3.7.1 Upper Arkansas River

Cold-water species are dominated by brown and rainbow trout, while brook, cutthroat, cutbow trout, longnose and white sucker, and longnose dace occur in lower numbers in the cooler upper reaches.

The Arkansas River is Colorado's longest reach of "Gold Medal" water extending a total length of 102 miles and supports one of the state's best-loved wild brown trout fisheries (Trout Unlimited 2018). It is also one of the most popular destinations for whitewater boating and is one of the most commercially rafted rivers in the United States (BLM 2017). With over 80 miles of public access for walk/wade angling, and numerous boat access points, the Arkansas Headwaters Recreation Area is a popular recreation destination. It is jointly managed by the BLM and CPW.

Upper Arkansas Voluntary Flow Management Program

River and stream aquatic life and recreation depend on quantity, quality and timing of flows in a given stream segment. The Upper Arkansas Volunteer Flow Management Program strives for adequate flows essential to high quality recreation on the Arkansas River. Respective consumptive water users through a cooperative agreement work closely with Reclamation, Southeastern, UARWCD, Pueblo Water, CSU, and other irrigation districts, state and federal agencies, municipalities, etc. to maintain water levels to benefit biological and recreational needs. Cooperative agreement signatories include Southeastern, CPW, Chaffee County, Arkansas River Outfitters Association, and Trout Unlimited. It is a cooperative program to provide recreational flows in the summer and stable flows for trout spawning and incubation through the fall and winter (Trout Unlimited 2018). The cooperative agreement was renewed in 2016 and extends through June of 2021. The Upper Arkansas Voluntary Flow Management Program's goal is to provide flows for fisheries and recreation in the Upper Arkansas River. Fry-Ark Project operations target the desired flows and many other entities also voluntarily agree to comply with the Upper Arkansas Voluntary Flow Management Program's recommendations as much as possible.

Up to 10,000 ac-ft of Fry-Ark Project Water may be released each year to maintain targeted flows at the Wellsville gage when native river flows drop below the requirements. These releases are from Twin Lakes if Fry-Ark Project Water is available, and from Turquoise Reservoir when Fry-Ark Project Water is unavailable. The highest priority is minimum flow of 250 cfs year-round. During July 1 to August 15, Wellsville gage flows are targeted at 700 cfs. From November 16 to April 30, the minimum winter incubation flow levels may be increased

above the base minimum of 250 cfs if dictated by flow levels observed in the proceeding October 15 to November 15 spawning period.

Minimum Reservoir Releases

The Fry-Ark Project Environmental Statement required minimum streamflow below Turquoise Reservoir (Lake Fork Creek) of 3 cfs during the winter months and 15 cfs in the summer, May through September. This was modeled in the Fry-Ark Project RiverWare Model as 15 cfs from March 15 to November 15 to limit the total exchange potential into Turquoise and Twin Lakes reservoirs. The minimum release from Turquoise Reservoir of 3 cfs from November 15 to March 14 is also included in the model. CSU may exchange/store native flows down to zero but if this occurs, Reclamation is committed to release Fry-Ark Project Water to maintain the 3 cfs minimum (Reclamation 1975).

The minimum instream flow for Lake Creek below Twin Lakes is 15 cfs year-round water right with a May 1, 1975, priority date for "Preservation of the natural environment" (Case No. 75W4271 & 77W4653). In addition, the 1978 USACE 404 Permit to enlarge Twin Lakes required that 15 cfs flow or the natural flow, whichever is less, be maintained at the dam outlet through the life of the project (USACE 1978).

3.7.2 Pueblo Reservoir

Fish species in Pueblo Reservoir with active stocking programs include black crappie, cutbow, flathead catfish, largemouth bass, rainbow trout, walleye, and wiper. Other fish species include blue gill, yellow perch, smallmouth bass and spotted bass (CPW 2018a).

Pueblo Reservoir and the surrounding lands are within the Lake Pueblo State Park are managed by CPW under agreements with Reclamation. With a maximum water surface area of 5,356 acres, Lake Pueblo State Park supports water recreation including sailing, motor-boating, waterskiing, river tubing, swimming and fishing. CPW operates two boat ramps, two concession marinas, three campgrounds with 400 camp sites, 202 picnic sites, and 53 miles of hiking trails.

Reclamation is revising its 1981 Pueblo Resource Management Plan to provide for the development, use, conservation, enhancement, and management of resources. Revision is needed to address issues and concerns and guide future development, maximize recreational benefits, minimize resource use conflicts, and manage and protect resources on Reclamation lands.[10]

3.7.3 Arkansas River through Pueblo

Immediately downstream of Pueblo Dam, the Arkansas River through Pueblo provides excellent fishing for rainbow and brown trout in a 9-mile stretch of the river as well as walleye/saugeye and bass (CPW 2018b). Recreational boating from Pueblo Dam through Pueblo includes kayaks, canoes, and inner tubes. Near downtown Pueblo, a whitewater park offers about a half-mile of constructed drops and other water features. American Whitewater's (2018) recommended runnable flows for the Pueblo Whitewater Park range from 400 cfs to 4,000 cfs (Table 16).

[10] Documents relating to the Pueblo Reservoir RMP can be accessed at: https://www.usbr.gov/gp/ecao/nepa/pueblo_rmp.html.

Table 16-Pueblo Whitewater Park Boatable Flow Range

Flow Range	Water Level	Class	Comment
400-600 cfs	barely to medium runnable	II+	Very low to low-boatable flow.
600-1,000 cfs	barely to medium runnable	II+	Low to low-moderate flow.
1,000-2000 cfs	medium to a bit pushy runnable	II+	Low-moderate to high-moderate flow
2,000-4,000 cfs	A bit pushy to high runnable	II+	High-moderate to high flow.

Source: American Whitewater 2018

From a boater's perspective, desired flows for kayaking are about 450 cfs, while optimal flows are at or above 700 cfs (Reclamation 2013).

Pueblo Flow Management Program

Developed in the early 2000 shortly after filing the Pueblo Recreation In-channel Diversion water right, the Pueblo Flow Management Program began through an interagency agreement stipulating a voluntary reduction of decreed exchanges to meet instream flow requirements. Two intergovernmental agreements were developed between City of Pueblo, CSU, Pueblo Water, Aurora, and Southeastern for a target flow program on the Arkansas River through Pueblo.

The Pueblo Flow Management Program targets the Arkansas River above Pueblo (Above Pueblo Location) and above its confluence with Fountain Creek (Combined Location). The Above Pueblo location includes the Arkansas River above Pueblo gage and the Pueblo Fish Hatchery return flows. The Combined Location is a calculated flow location below the Moffat Street gage, SCMWD pump diversion, and Pueblo Riverwalk return flows and Runyan Lake inflows.

General components of the Pueblo Flow Management Program include targeted year-round flows of 100 cfs and recreation flows of up to 500 cfs during the summer months at the Above Pueblo Location. A breakdown of the Pueblo Flow Management Program component is discussed below:

- Exchanges are reduced or curtailed as necessary to attain a mean daily flow of 100 cfs. Also, exchanges are reduced or curtailed to attain a mean daily flow of 85 cfs at the Combined Flow location (downstream from the inflow from Runyon Lake, and above the confluence with Fountain Creek).
- From March 16 through November 14, exchanges will be reduced or curtailed as necessary to maintain the mean flows specified in Figure 8. The "Above Mean" flows shown on the graph apply when the Natural Resource Conservation Service "most probable" forecast for the Arkansas River at Salida gage is 100 percent or more. The "Below Mean" flow is applied when the forecast is less than 100 percent.
- The program includes an Equitable Allocation of Operational Hours clause which generally achieves monthly a 50/50 balance of time between periods of reduction of the Intergovernmental Agreement parties' exchanges and periods of no reduction.
  It includes a no obligation to reduce or curtail exchanges for dry years when the "Most Probable Flow" forecast by the Natural Resource Conservation Service is below 70%.

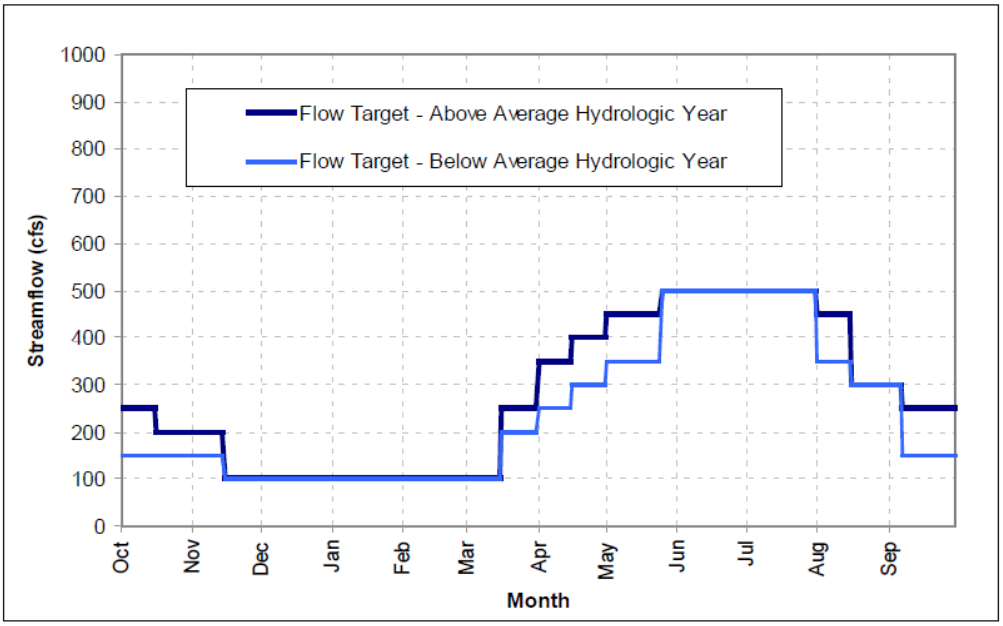

Figure 8-Pueblo Flow Management Program Recreational Flow Targets at the Above Pueblo Location

3.7.4 Lower Arkansas River and John Martin Reservoir

Warm-water species in the Lower Arkansas River include minnows, suckers, sunfish and other species that can survive seasonally high water temperatures. CPW reports quality fishing opportunities at John Martin Reservoir for saugeye, wiper, white bass, crappie, and largemouth and smallmouth bass (CPW 2018c). CPW manages recreation of John Martin Reservoir and adjoining lands as John Martin State Park under agreements with USACE.

With water surface of 17,151 acres, John Martin Reservoir State Park supports water recreation and is open to all types of water sports, including boating windsurfing, waterskiing, personal watercraft, swimming, fishing, and waterfowl hunting. CPW operates three boat ramps, two campgrounds with 213 camp sites, and picnic sites and 4.5-miles of hiking trails (USACE 2018). USACE is revising the John Martin Reservoir Master Plan, a comprehensive land and recreation management plan with a life span of 25 years. Like Reclamation's Pueblo Reservoir RMP, the Master Plan guides the stewardship of natural and cultural resources and the provision of outdoor recreation facilities and opportunities to ensure sustainability of federal land associated with John Martin Reservoir.[11]

Recreation use in the Lower Arkansas River is primarily includes bank fishing and occasional canoeing. This reach of the Arkansas River is not stocked or managed as a sport fishery; however, the Lower Arkansas River corridor is a major destination for hunting and wildlife viewing for big game, waterfowl, small game, and wild turkey.

[11] Additional information about the John Martin Reservoir Master Plan Update can be found at: http://www.spa.usace.army.mil/Missions/Civil-Works/Recreation/John-Martin-Reservoir/ Master-Plan/.

3.7.5 Grape Creek and DeWeese Reservoir

Grape Creek is a tributary to the Arkansas River upstream of Pueblo Reservoir with an unusually long, undeveloped creek corridor, given its extensive agricultural operations (BLM 2017a). The creek has easy access, provides a broad range of recreational activities and opportunities, and includes the Upper and Lower Grape Creek Wilderness Study Areas. From DeWeese Reservoir to Grape Creek's confluence with the Arkansas River, the BLM manages the majority of Grape Creek. Cañon's City's 600-acre red stone Temple Canyon Park and a 1,280 acres parcel of State Trust land managed by CPW for hiking, hunting, fishing and watchable wildlife also occur along the lower reach of Grape Creek.

Contrary to the relatively undeveloped landscape, flows in Grape Creek are highly modified and managed with flow rates controlled by releases from DeWeese Reservoir. Flows in Grape Creek below DeWeese Reservoir can vary from 30 cfs to close to zero daily depending on agricultural demands. The CWCB has not established an instream flow right on Grape Creek; however, the BLM has a permanent cooperative agreement with DeWeese-Dye Ditch and Reservoir Company that provides BLM with storage space in DeWeese Reservoir. The BLM uses this space to store purchased water that is released during periods when flows in Grape Creek are low. The releases are to maintain habitat for the brown trout fishery, and to maintain adequate water in the root zone for the riparian community along the creek (BLM 2017a).

DeWeese Reservoir is about 300 acres in size with rainbow trout and smallmouth bass the dominate sport fisheries. In 2017 CPW stocked the reservoir with brown trout, cutbow, rainbow trout, and tiger muskie (CPW 2018c). White sucker is also present. DeWeese Reservoir is contained within DeWeese Reservoir State Wildlife Area. Recreational boating (jet skis, ski boats, etc.) are prohibited at DeWeese Reservoir, except for individuals identified as owning recreational rights.

Historically, winter storage at DeWeese Reservoir eliminated outflow from November 15 until February. This practice severely limited brown trout egg incubation and subsequent fry production and the only water reaching the stream during this period was from dam leakage, groundwater recharge, and/or tributary inflow (BLM 2015).

3.7.6 Effects to Aquatic Life and Recreation

Under the No Action Alternative, Reclamation would try to meet annual Upper Arkansas Voluntary Flow Management Program recommendations. Without temporary excess capacity storage and exchange contracts, some entities would have limited exchange and operational flexibility potential to benefit aquatic resources and recreation in the Arkansas River above Pueblo Reservoir and Grape Creek.

Under both the No Action and Proposed Action alternatives, the AVC/Master Contract ROD's environmental commitments would be met. Reclamation's commitments include:

- Incorporating excess capacity storage and exchange contract language to continue voluntary commitments to operations of the Fry-Ark Project and other Non-Fry-Ark Project Water supplies in accordance with the Upper Arkansas Voluntary Flow Management Program.

- Incorporating excess capacity storage and exchange contract language for participation and compliance with Southeastern's commitments in the Pueblo Flow Management Program.
- Limit excess capacity storage and exchange contract operations when streamflow is less than 50 cfs, as measured by adding streamflow at the Arkansas River above Pueblo gage to fish hatchery return flows from the current hatchery discharge point, to mitigate moderate effects of occasional low streamflow on water quality and aquatic life.
- Provide coordination assistance with contractors in managing storage and water releases in a manner that will assist in augmenting occasionally moderate low streamflow effects in the Arkansas River downstream of Pueblo to the Fountain Creek confluence. However, Reclamation will not modify operations that would impact Fry-Ark Project yield.

Upper Arkansas River Aquatic Life and Recreation Impacts

Under the Proposed Actions, Non-Project Water could be physically or contractually exchanged from Pueblo Reservoir to upstream reservoirs. To minimize exchange impacts, contractors shall not make physical exchanges against releases made by Reclamation in support of the Upper Arkansas Voluntary Flow Management Program or make any exchanges from Pueblo Reservoir which would require Reclamation to release additional water to meet the objectives of the Upper Arkansas Voluntary Flow Management Program. The 2006-2010 EA also committed Reclamation delay contract exchanges until the Natural Resources Conservation Service makes its annual water supply forecast based on May 1st snow pack, and Reclamation has determined contract exchanges will not affect Reclamation's ability to operate in accordance with the Upper Arkansas Voluntary Flow Program's annual recommendations.

While there is no legal obligation for Reclamation to deliver flows to meet Upper Arkansas Voluntary Flow Management Program objectives, Reclamation compared the mean daily flow at the Wellsville Gage under the No Action and Proposed Action alternatives as shown in Table 16. Reclamation has operated the Fry-Ark Project to meet water delivery and storage requirements while benefitting many of the resource needs. The Fry-Ark RiverWare Model predicts the mean daily flow at the Wellsville Gage decreases of 7.1 cfs or less than 1 percent with the Temporary Program through 2032; daily flows under for the No Action and Proposed Actions are predicted to remain well above the 700 cfs target.

A 2058 Proposed Action model run compared to a 2058 Proposed Action run minus Donala excess capacity storage isolated cumulative effects associated with the Donala 40-Year Excess Capacity Contract. The Fry-Ark RiverWare Model predicts mean daily flows between July 1 and August 15th at the Wellsville Gage would increase from 1,110.4 cfs to 1,110.7 cfs with the Donala 40-Year Excess Capacity Contract in place. Reclamation also evaluated potential effects of the Proposed Actions to meet the Upper Arkansas River minimum flow objective of 250 cfs at the Wellsville Gage between November 16th and April 30th. Minimum flow is 140.8 cfs on April 7th when using 2002-2003 hydrology in all demand scenarios for the No Action and Action alternatives.

Table 17 compares mean flows at the Wellsville Gage during this time-period. Even though the model predicts increases in minimum flows under the Proposed Actions, the increases are so small that they are considered insignificant. Modeling also predicted mean daily flows November 16th and April 30 at the Wellsville Gage would increase from 340.1 cfs to 340.3 cfs with the Donala contract under the 2058 scenario. This difference is small; it is considered insignificant.

Table 17-Predicted July 1st to August 15th Mean Daily Flows at the Wellsville Gage

Demand Scenario	Flow Target	No Action July 1st - August 15th Mean Daily Flow (cfs)	Proposed Actions July 1st - August 15th Mean Daily Flow (cfs)	Change	
				cfs	% Diff.
2032	700 cfs	1114.0 cfs	1,106.9 cfs	-7.1	-0.6%
2047	700 cfs	1,106.3 cfs	1,110.4 cfs	+4.1	+0.4%
2058	700 cfs	1,105. cfs	1,110.7 cfs	+5.4	0.8%

To summarize, effects of the Proposed Action on the Upper Arkansas River with the Temporary Program through 2032 would not significantly impact meeting Upper Arkansas Voluntary Flow Management Program's goals. The predicted 0.6% or 7.1 cfs decrease in mean flows between July 1st to August 15th daily mean flows at the Wellsville Gage would not impact the Program's ability to meet the 700 cfs target and is not predicted to adversely impact aquatic life or recreation.

Pueblo Reservoir Aquatic Life and Recreation Impacts

Under the No Action Alternative, Pueblo Dam would continue to be operated pursuant to existing operational and management plans. Pueblo Reservoir would be limited to storage of its estimated mean annual Fry-Ark imports of about 56,000 ac-ft, Fry-Ark Project Carryover Water, and the Donala and BLM 40-year excess capacity storage contracts previously listed in Table 3.

Under the Proposed Actions, in addition to storing annual Fry-Ark imports of about 56,000 ac-ft, Fry-Ark Project Carryover Water, and the existing long-term excess capacity storage contracts previously listed in Table 3, Reclamation would enter into temporary excess capacity storage contracts with multiple entities for up to 25,000 ac-ft per year. The mean surface area of Pueblo Reservoir would increase from 3,963 acres to 4,052 acres with the Temporary Program through 2032, as shown in Table 18. The minimum surface area is predicted to increase by 132 surface acres under the Proposed Action. Predicted increases in mean surface and minimum surface area are considered beneficial for aquatic life in and water recreation on Pueblo Reservoir.

Table 18- Predicted November 16th to April 30th Mean Daily Flows at the Wellsville Gage

Demand Scenario	Min. Flow Target	No Action Mean Daily Flow	Proposed Action Mean Daily Flow	Difference	
2032	250 cfs	332.5 cfs	332.8 cfs	+0.3	+0.1%
2047	250 cfs	340.1 cfs	340.2 cfs	+0.1	+0.04%
2058	250 cfs	339.8 cfs	340.3 cfs	+0.5	+0.16%

Arkansas River though Pueblo Aquatic Life and Recreation Impacts

Mitigation measures included in the AVC/Master Contract would continue including mitigating moderate effects of occasional low stream flow immediately below Pueblo Reservoir, and the effects of this low streamflow on water quality and aquatic life. Reclamation will limit excess capacity storage and exchange contract operations when streamflow is less than 50 cfs as measured by adding the streamflow at the Arkansas River above Pueblo gage to fish hatchery return flows from the current hatchery discharge point.

Mean and minimum monthly flows at Above Pueblo Location are compared in Table 19 for the various demand scenarios. General components of the Pueblo Flow Management Program include targeted year-round flows of 100 cfs and recreation flows of up to 500 cfs during the summer months at the Above Pueblo Location. Modeling predicts about a 5 percent increase in the April 2032, March 2047 and March 2058 mean monthly flows under the Proposed Actions. A 4 percent decrease in November 2032 mean monthly flows, and about 4 percent in increase in November 2047 and 2058 mean monthly flows are also predicted. A 15 percent to 17 percent reduction in the minimum flow to 86.1 cfs occurs in one day in June with 2002 hydrology under the Proposed Action demand scenarios. A 13 to 17 percent increase in September 2032 and October 2047 and 2058 minimum flow also occurs in 2002 and 2012.

Table 19-Pueblo Reservoir Modeled Surface Area

	Mean Surface Area (ac)			**Min. Surface Area** (ac)			**Max. Surface Area** (ac)		
Demand Scenario	**No Action**	**Proposed Action**	**Diff.**	**No Action**	**Proposed Action**	**Diff.**	**No Action**	**Proposed Action**	**Diff.**
2032	3,963	4,052	+89	3,002	3,134	+132	5,356	5,356	0
2047	3,664	3,724	+60	2,701	2,748	+47	5,356	5,356	0
2058	3,655	3,711	+56	2,710	2,748	+38	5,356	5,356	0

As shown in Table 20, the number of days with flows below 50 cfs is greatly reduced when comparing No Action and Proposed Action alternatives. For the 2032 Demand Scenarios, the total number of days below 50 cfs drops from 122 days to 25 days for October 1, 1991, to December 31, 2015. With exception of the 2003, 2013, and one day in 2015, all flow increases are generally in August to October. The Temporary Program would increased the number of days above 50 cfs benefiting aquatic life.

Table 21 predicts the number of days above 100 cfs and 500 cfs for meeting Pueblo Flow Management Program targets. The Temporary Program is predicted to increase the number of days with flows greater 100 cfs between 0.7% and 3.4% under the Proposed Actions. Flow greater than 500 cfs are predicted to decrease by 0.5% to 1.4% under the 2032 Proposed Action, as shown in Table 22. Reductions and curtailments of exchanges under the Pueblo Flow Management Program, as previously described, would continue independent of the Proposed Actions and the Proposed Actions will not significantly impact the Intergovernmental Agreement parties' ability to meet Pueblo Flow Management Program targets.

Table 20- Predicted Mean and Minimum Monthly Flows at the Above Pueblo Location*

Month	2032 Demand Scenario							
	No Action		Proposed Action		Mean Flow Difference		Minimum Flow Difference	
	Mean	Min.	Mean	Min.	cfs	Percent	cfs	Percent
Jan	100.9	100.0	100.9	100.0	0.0	0.01%	0.0	0.00%
Feb	120.0	100.0	122.6	100.0	2.7	2.23%	0.0	0.00%
Mar	186.8	50.5	190.6	50.5	3.9	2.07%	0.0	0.00%
Apr	467.8	45.7	491.2	45.7	23.3	4.98%	0.0	0.00%
May	937.0	46.2	914.6	46.2	-22.4	-2.39%	0.0	0.00%
Jun	2,062.8	101.6	2,035.5	86.1	-27.2	-1.32%	-15.5	-15.26%
July	1,110.4	50.5	1,121.3	50.5	11.0	0.99%	0.0	0.00%
Aug	528.5	50.0	529.1	50.0	0.6	0.12%	0.0	0.00%
Sep	274.1	45.2	274.8	51.3	0.7	0.26%	6.2	13.61%
Oct	185.6	45.9	191.1	47.9	5.5	2.96%	2.0	4.29%
Nov	179.6	47.0	172.2	47.0	-7.4	-4.12%	0.0	0.00%
Dec	101.0	100.0	101.1	100.0	0.0	0.01%	0.0	0.00%
2047 Demand Scenario								
Month	**No Action**		**Proposed Action**		**Mean Flow Difference**		**Minimum Flow Difference**	
	Mean	**Min.**	**Mean**	**Min.**	**cfs**	**Percent**	**cfs**	**Percent**
Jan	100.8	100.0	100.9	100.0	0.1	0.10%	0.0	0.00%
Feb	104.4	100.0	104.9	100.0	0.5	0.50%	0.0	0.00%
Mar	167.7	50.5	176.2	50.5	8.4	5.02%	0.0	0.00%
Apr	403.0	45.1	411.3	45.3	8.2	2.04%	0.2	0.44%
May	769.5	45.6	751.5	45.8	-18.0	-2.34%	0.2	0.44%
Jun	1,868.7	82.7	1,841.3	68.3	-27.4	-1.47%	-14.4	-17.36%
July	1,068.1	50.0	1,064.7	50.0	-3.5	-0.33%	0.0	0.00%
Aug	503.5	49.6	513.8	49.6	10.3	2.05%	0.0	0.00%
Sep	250.8	44.5	254.6	44.7	3.7	1.48%	0.2	0.45%
Oct	170.2	45.9	177.1	52.1	7.0	4.09%	6.2	13.39%
Nov	152.1	46.8	150.7	46.8	-1.4	-0.90%	0.0	0.00%
Dec	100.9	100.0	101.1	100.0	0.2	0.17%	0.0	0.00%
2058 Demand Scenario								
Month	**No Action**		**Proposed Action**		**Mean Flow Difference**		**Minimum Flow Difference**	
	Mean	**Min.**	**Mean**	**Min.**	**Mean**	**Min.**	**Mean**	**Min.**
Jan	100.9	100.0	101.0	100.0	0.0	0.04%	0.0	0.00%
Feb	102.4	100.0	103.7	100.0	1.3	1.24%	0.0	0.00%
Mar	166.6	50.5	175.0	50.5	8.4	5.03%	0.0	0.00%
Apr	398.1	44.9	405.6	45.1	7.5	1.88%	0.2	0.45%
May	761.4	45.2	743.3	45.4	-18.1	-2.37%	0.2	0.44%
Jun	1,849.2	80.5	1,825.7	66.1	-23.6	-1.27%	-14.4	-17.83%
July	1,056.6	49.7	1,058.7	49.7	2.1	0.20%	0.0	0.00%
Aug	501.9	49.2	509.6	49.2	7.6	1.52%	0.0	0.00%
Sep	247.6	44.1	252.2	44.3	4.6	1.86%	0.2	0.45%
Oct	167.6	45.9	174.9	52.1	7.3	4.38%	6.2	13.39%
Nov	150.6	46.7	150.4	46.7	-0.2	-0.12%	0.0	0.00%
Dec	101.0	100.0	101.0	100.0	0.1	0.05%	0.0	0.00%

*Above Pueblo Location flows equals Above Pueblo Gage plus Pueblo Fish Hatchery Return Flows.

Table 21- Number of Days that Flows at the Above Pueblo Location are less than 50 cfs.

Year	Hydrologic Year Type*	2032 No Action	2032 Proposed Action	2047 No Action	2047 Proposed Action	2058 No Action	2058 Proposed Action
1991	Mean	7	0	9	0	10	0
1999	Mean	0	0	0	0	3	2
2002	Dry	35	5	39	4	37	4
2003	Mean	23	13	26	14	28	14
2004	Dry	2	0	4	0	4	0
2005	Mean	1	1	1	1	1	1
2010	Mean	2	0	3	0	3	0
2011	Wet	2	0	2	1	2	2
2012	Dry	23	1	32	1	33	1
2013	Dry	26	4	36	2	37	1
2015	Mean	1	1	1	1	1	1
Total		**122**	**25**	**153**	**24**	**159**	**26**

*See Section 1.3 of Appendix A for addition description regarding Hydrologic Year Types.

Table 22- Flows greater than 100 cfs and 500 cfs at the Above Pueblo Location

Flow Target (cfs)	2032 No Action (days)	2032 Proposed Action (days)	2032 Percent Change	2047 No Action (days)	2047 Proposed Action (days)	2047 Percent Change	2058 No Action (days)	2058 Proposed Action (days)	2058 Percent Change
>100	7,615	7,670	0.7%	7,198	7,443	3.4%	7,160	7,326	2.3%
>500	2,202	2,171	-1.4%	1,924	1,914	-0.5%	1,909	1,896	-0.7%

Lower Arkansas River and John Martin Reservoir Aquatic Life and Recreation Impacts

As shown previously in Tables 14 and 15, annual flows in the Lower Arkansas River are predicted to change by less than 0.5 percent. Changes in mean monthly flows would vary between 2.5 percent and 5 percent at the Avondale, Catlin, La Junta, and Las Animas gages. Changes in John Martin mean annual flows increase between 0.2 percent and 0.3 percent for the Proposed Action. However, March mean flows below John Martin Reservoir are predicted to increase by 11 percent in 2032, 59.5 percent in 2047, and 64.3 percent in 2057.

Percentages are misleading because in all modeled years except 2000, all March releases flows below John Martin Reservoir are at 1 cfs, which greatly skews the mean monthly release. When comparing the No Action and Proposed Action flows, the March 2000 mean monthly flow differences are greatly reduced as shown in Table 23.

Table 23- Modeled March 2000 Mean, Minimum and Maximum Flows at the Below John Martin Gage

Modeled 2000 March Flows	2032 No Action (cfs)	2032 Proposed Action (cfs)	2032 Percent Change	2047 No Action (cfs)	2047 Proposed Action (cfs)	2047 Percent Change	2058 No Action (cfs)	2058 Proposed Action (cfs)	2058 Percent Change
Mean	109.0	123.5	13.3%	68.5	124.8	82.2%	45.8	90.5	97.6%
Min.	1.0	1.0	0%	1	1	0%	1.0	1.0	0%
Max	492.7	520.5	5.6%	357.9	384.58	7.5%	356.4	382.3	7.3%

Using 2000 hydrology, spring releases from John Martin Reservoir begin one day earlier in the 2032 Proposed Action model run, and five days earlier in 2047 and 2058 Proposed Action model

runs. Early increases in release in March are not common but do occur 9 times between 1948 and 2017 within the historic record (1966, 1986, 1987, 1988, 1996, 1997, 1998, 2000, and 2004). The mean monthly March flow for the historic period is 46 cfs (USGS 2018). These changes in flows are predicted to have no measurable effect on aquatic life or recreation in the Lower Arkansas River.

Mean annual EOM elevation changes for John Martin Reservoir are predicted to increase between 0.41 inches and 0.6 inches under the 2032 and 2047 Proposed Action and decrease by 0.24 inches in the 2057 Proposed Action as shown previously in Table 23. These changes are not predicted to result in measurable effects to aquatic life or recreation on John Martin Reservoir.

Grape Creek and DeWeese Reservoir Aquatic Life and Recreation Impacts

Grape Creek is an unmodeled tributary, and DeWeese Reservoir is not included in the Fry-Ark RiverWare Model. The River Ware Model simulates a basic exchange from Pueblo Reservoir to approximately the confluence of Grape Creek. The potential exchanges of up to 400 ac-ft per month during the April through November assumes even distribution throughout the months, which results in an exchange demand of approximately 6.5 cfs throughout the period (see Appendix B).

To improve fisheries in Grape Creek, BLM actively pursued an arrangement to improve winter flows in Grape Creek. In 2004, BLM signed an agreement with DeWeese-Dye Ditch and Reservoir Company for 500 acre-feet of storage space in DeWeese Reservoir. The water stored in this space is leased from Upper Arkansas Water Conservancy District or exchanged from Pueblo Reservoir. These agreements have resulted in average winter releases from the BLM account of 1 cfs to 2.5 cfs per day from November 15 until DeWeese Reservoir spills, usually in January (BLM 2015).

Under the No Action without a storage and exchange contract, winter flows in Grape Creek would fall to pre-2004 levels and adversely affect aquatic life and associated recreation downstream of DeWeese Reservoir. Under the Proposed Action, BLM would enter into a 40-year contract for excess capacity storage in Pueblo Reservoir to facilitate exchanges and releases from DeWeese Reservoir during winter months benefiting fisheries and associated recreation in Grape Creek below DeWeese Reservoir.

3.8 Historic Properties

No construction activities or development are associated with Proposed Actions. The Temporary Program and Donala and BLM 40-year excess capacity storage contracts rely on use of existing facilities, infrastructure, and reservoir storage. All dam releases will be made to the Arkansas River within historic release ranges in the existing river channel. Table 23 in the Surface Water Resource section shows changes in reservoir elevations are primarily in Pueblo Reservoir with negligible changes in reservoir elevations at Turquoise, Twin Lakes, Clear Creek, John Martin, and Trinidad reservoirs.

Reclamation and the Colorado State Historic Preservation Office entered into a Programmatic Agreement (PA) for Reservoir Operations and Storage Contracts on January 23, 2007, pursuant

to National Historic Preservation Act. The PA states there is a theoretical possibility of effects at non-Eastern Colorado Area Office reservoirs. However, Reclamation determined that the effects will occur with or without the water contracts. The PA allows for implementation of the Temporary Program without further consultation when the expected changes will not exceed the existing high and low pool levels originally established (Reclamation 2007b and 2009). The PA was extended on January 20, 2017, for another 10 year-period.

3.8.1 Pueblo Reservoir

Modeled Pueblo Reservoir mean, minimum and maximum EOM elevations are included in Table 24. All mean and minimum Proposed Action Alternative EOM elevations increase to the predicted EOM elevations under the No Action Alternative. Maximum reservoir elevations are predicted to remain unchanged at 4,893.9 feet. The 2006-2010 EA identified and evaluated three archaeological sites along the shoreline between elevations 4,775 and 4,888 ft that would be equally affected under both the No Action and Proposed Action. Reclamation consulted with the Colorado State Historic Preservation Office and received concurrence with Reclamation's determination of no historic resources affected under both alternatives analyzed in the 2006-2010 EA (Reclamation 2006).

Table 24- Pueblo Reservoir Mean. Minimum and Maximum End of Month Elevations for the No Action and Proposed Action Alternatives

Demand Scenario	Mean EOM Elevation (ft)		Min. EOM Elevation (ft)		Max. EOM Elevation (ft)		Mean EOM Change	
	No Action	Proposed Action	No Action	Proposed Action	No Action	Proposed Action	ft.	in.
2032	4,872.2	4,873.9	4,852.9	4,855.2	4,893.9	4,893.9	+1.66	+19.9
2047	4,866.1	4,867.7	4,841.6	4,843.0	4,893.9	4,893.9	+1.64	+19.68
2058	4,865.9	4,867.3	4,841.9	4,843.0	4,893.9	4,893.9	+1.40	+16.80

The AVC/Master Contract EIS identified a total of 45 sites and 7 isolated finds within the Pueblo Reservoir's maximum pool elevation (Reclamation 2013). Only two sites, the Bessemer Ditch and a segment of the Denver and Rio Grande Railroad, are recommended as eligible for the National Register of Historic Places. Remaining sites include 18 recommended as not eligible and 26 unevaluated sites. Thirty-three of these sites are prehistoric (open artifact scatters), 11 are historic, and 1 is a paleontological site. Twenty-three archaeological sites previously documented within the maximum pool elevation (before inundation) were unable to be relocated (Brant et al. 2010), presumably because are underwater.

3.8.2 DeWeese Reservoir

Use of DeWeese Reservoir was previously included in all BLM and Upper Arkansas Water Conservancy District annual excess capacity storage contracts. With the Temporary Program and the BLM 40-Year Excess Capacity Storage Contract, there are no proposed operation changes for DeWeese Reservoir. The 2007 PA allows for implementation of temporary excess capacity storage and exchange contracts without further consultation when the expected changes do not exceed the existing high and low pool levels originally established.

3.8.3 Effects to Historic Properties

Operations of Pueblo and DeWeese reservoirs under the Temporary Program, Donala-40 year, and BLM 40-year excess capacity contracts will not exceed the existing high and low pool levels originally established and the effects will occur with or without the Proposed Actions being implemented. The 2007 PA describes Pueblo Reservoir's maximum and minimum water lines as 4,898 feet and 4,764 feet, respectively. The Proposed Actions meet the requirements of the 2007 PA and no additional consultation with the Colorado State Historic Preservation Office is required.

Potential contractors under the Temporary Program would be required to submit annual applications (see Appendix E) that include:

- A descriptions of water rights, including dates, type of right, and origin of adjudicated water for water that will be stored in Pueblo Reservoir;
- A description of type water use or uses (i.e. irrigation, municipal and industrial);
- A description of the water service area;
- A list of facilities used to transport water to Pueblo Reservoir;
- A list of facilities used to deliver from Pueblo Reservoir to the service area;
- A water storage and release plan including a breakdown of water sources and monthly inflow and outflows;
- Disclosure of a proposed change in water use or construction of facilities affect listed in or eligible for listing in the National Register of Historic Places; and
- other resource information, as appropriate.

Reclamation will review each contractor's application for compliance with the environmental commitments included in this EA and the 2007 PA. If during review, Reclamation identifies and changes in or additional 1) water rights, 2) uses, 3) transportation or deliver facilities uses, 4) water service area, or 5) construction activities with potential to affect National Register of Historic Places eligible historic resources, Reclamation will complete additional NEPA and National Historic Preservation Act compliance.

3.9 Threatened, Endangered and Candidate Species

This section of the EA constitutes Reclamation's biological assessment of threatened and endangered species under Section 7 of the Endangered Species Act (ESA). Reclamation used the U.S. Fish and Wildlife Service's (Service) ECOS-IPaC system to request a species lists of proposed, candidate, threatened, and endangered candidate species, as well as proposed and final designated critical habitat, within the boundary of the proposed project and/or could be affected by the proposed project.

The Service identified fifteen species potentially within the project area, as shown in Table 25. The action area for this project includes the Arkansas River between Turquoise Reservoir and Pueblo Reservoir, Fountain Creek, and the Arkansas River from Pueblo Reservoir to the Colorado-Kansas State line. The Proposed Actions have no potential to affect habitats associated with black-footed ferret, Canada lynx, and North American wolverine, and Mexican spotted owl. All other species are discussed in greater detail.

Table 25- Species Potentially within the Arkansas River Basin

Common Name	Scientific Name	Status	Aquatic Dependent	General Habitat
Black-footed Ferret	*Mustela nigripes*	E	No	Depends exclusively on prairie dog burrows for shelter.
Canada Lynx	*Lynx canadensis*	T	No	Coniferous and mixed forests with thick undergrowth, deep snow, and high-density snowshoe hare prey base.
North American Wolverine	*Gulo luscus*	P	No	Alpine, boreal, and arctic habitats including boreal forests, tundra, and western mountains.
Mexican Spotted Owl	*Strix occidentalis*	T	No	Old-growth or mature forest and canyons with riparian or conifer communities. Critical habitat has been designated within the Arkansas River Basin.
Greenback Cutthroat Trout	*Oncorhynchus clarkia stomias*	T	Yes	Cold-water streams and cold-water lakes with adequate stream spawning habitat present during spring. It is assumed that the original distribution included all mountain and foothill habitats of the South Platte and Arkansas river drainage systems, including drainages at lower elevations.
Least Tern	*Sterna altrillarum athalassos*	E	Yes	Sandy/pebble beaches on lakes, reservoirs, and rivers.
Piping Plover	*Charadrius melodus*	T	Yes	Sandy lakeshore beaches and river sandbars.
Whooping Crane	*Grus americana*	E	Yes	Breeds in freshwater marshes and prairies and uses grain fields, shallow lakes and marshes during migration.
Preble's Meadow Jumping Mouse	*Zapus hudsonius preblei*	T	yes	Inhabits well-developed riparian areas with adjacent, relatively undisturbed grassland communities, and nearby water sources. Critical habitat has been designated in the Fountain Creek watershed.
Bonytail Chub	*Gila elegans*	E	Yes*	Colorado River and major tributaries.
Colorado Pikeminnow	*Ptychocheilus lucius*	E	Yes*	Colorado River and major tributaries.
Razorback Sucker	*Xyrauchen texanus*	E	Yes*	Colorado River and major tributaries.
Humpback Chub	*Gila cypha*	E	Yes*	Colorado River and major tributaries.
Greenback Cutthroat Trout	*Oncorhynchus clarkia stomias*	T	Yes	Cold-water streams and cold-water lakes with adequate stream spawning habitat present during spring. It is assumed that the original distribution included all mountain and foothill habitats of the South Platte and Arkansas river drainage systems, including drainages at lower elevations.
Ute ladies'-tresses	*Sprianthes divluvalis*	T	Yes	Moist to wet alluvial meadows, floodplains of perennial streams, and around springs and lakes below 6,500 feet in elevation. Known or believed to occur in El Paso County.

E=Endangered. T=Threatened, P=Proposed

*West-Slope only

3.9.1 Least Tern and Piping Plover

The Least tern and piping plover depend on playas and sandbars/shorelines along rivers and reservoirs in the Lower Arkansas River Basin. Neither species is known to occur at Fry-Ark Project reservoirs, although they inhabit shorelines of John Martin, Adobe Creek, Great Plains, Timber Lake and many other reservoirs in southeast Colorado (CPW et al. 2018). Nesting success varies from year to year depending upon water levels, vegetation encroachment, local weather conditions, predators, and human disturbance. The AVC/Master Contract (Reclamation 2013) reported that seven nesting pairs of least terns and five nesting pairs of piping plovers at John Martin Reservoir in 2010. Table 26 shows predicted changes in John Martin Reservoir elevations under the Proposed Action scenarios. The USACE manages John Martin Reservoir for flood control, irrigation, and recreation purposes and the predicted reservoir elevation changes would be so small as to not affect least tern or piping plover.

Table 26- Predicted Mean, Minimum and Maximum John Martin Reservoir EOM Elevations

Demand Scenario	Mean EOM Elevation (ft)		Min. EOM Elevation (ft)		Max. EOM Elevation (ft)		Mean Change	
	No Action	Proposed Action	No Action	Proposed Action	No Action	Proposed Action	ft.	in.
2032	3,815.88	3,815.90	3,795.10	3,795.20	3,852.60	3,852.60	+0.03	0.36
2047	3,815.24	3,815.29	3,794.50	3,794.40	3,852.50	3,852.50	+0.05	0.60
2058	3,815.25	3,815.23	3,794.50	3,794.40	3,852.30	3,852.30	-0.02	-0.24

3.9.2 Greenback Cutthroat Trout

No known populations of greenback cutthroat trout live in the main stem of the Arkansas River. Metcalf et al (2012) coauthored a study finding the only true greenback trout survive in Bear Creek, a small tributary of the Arkansas River west of Colorado Springs and suggests that these fish were stocked from sources in the South Platte River Basin in the early 1880s (Service 2012). The Service is currently undergoing a 5-year status review of native cutthroat trout in Colorado to determine if a species, subspecies, or Distinct Population Segments warrant listing or a change in listing status. The Service hosted an expert panel workshop in 2013 including experts in the field of native trout genetics, meristics, and taxonomy. Yellowfin cutthroat trout were the native trout to the Arkansas River and Twin Lakes but became extinct 1903. There were revisions to historic range, taxonomy, or nomenclature (Service 2014). The Proposed Actions would have no effect on greenback cutthroat trout.

3.9.3 Whooping Crane

The whooping crane breeds, migrates, winters, and forages in a variety of wetland and other habitats, including marshes, lakes, ponds, wet meadows, rivers and agricultural fields. The historic range of whooping crane included Colorado, but wild populations are now limited to three locations and captive populations at 12 sites. The only one self-sustaining wild population nests in Wood Buffalo National Park and adjacent areas in Canada (Service 2018a). The Proposed Action will have no effect on whooping cranes.

3.9.4 Preble's Meadow Jumping Mouse

Preble's meadow jumping mouse inhabit well-developed riparian habitat with adjacent, relatively undisturbed grassland communities near water sources with adjacent forbs and shrubs (Service 2018a). Designated critical habitat for Preble's meadow jumping mouse is in

northwestern El Paso County within the Monument Creek drainage. Critical habitat ranges from 110 meters to 140 meters outward on each side of stream and includes portions of Colorado Springs and unincorporated El Paso County, as shown in Appendix I.

Temporary Contract Program

Except for CSU parcels, all other lands with designated reaches of critical habitat are outside of Southeastern's boundaries and not in the Temporary Program. Like environmental commitments for protection of historic resources, all Temporary Program contractors' applications will be reviewed by Reclamation for compliance with the ESA, including presence of designated critical habitat. In the unlikely event that an annual excess capacity contract application includes construction and/or changes in water use or water service with the potential to affect Preble's meadow jumping mouse or its designated critical habitat, Reclamation would complete ESA Section 7 consultation prior to issuance of a temporary contract.

Donala-40 Year Excess Capacity Storage Contract

No designated critical habitat is in Donala's service area. However, portions of Jackson Creek and Smith Creek adjacent to the Donala service Area (Appendix G) are designated as critical habitat for Preble's meadow jumping mouse. The Chaparral Hills and Mining Museum Area were identified by Donala as reasonably foreseeable for future connection to Donala's system. The Donala 40-Year Excess Capacity Storage Contract will have no effect on the Preble's meadow jumping mouse or its designated critical habitat.

Other water service areas within the Temporary Program and BLM 40-Year Contract include the Arkansas River, Grape Creek, and Fry-Ark Project and DeWeese reservoirs and are outside the historic range of the Preble's meadow jumping mouse. The Proposed Actions will have no effect on this species.

3.9.6 Ute Ladies'-Tresses

Over one-third of all known Ute ladies'-tresses populations are found on alluvial banks, point bars, floodplains, or ox-bows associated with perennial streams (Service 2018). Ute ladies'-tresses potentially grow in El Paso County based on a single 1896 record and the Service considered the Fountain Creek drainage to possibly have Ute ladies-tresses' habitat although no occurrences of the species have been document since that time. There is no construction associated with the Temporary Program in the Fountain Creek Basin and mean annual flows at the Fountain Creek at Pueblo gage predicted to increase by only 0.1 percent are within the historic minimum and maximum capacity of the stream channel. The Proposed Actions are predicted to have no effect on Ute ladies'-tresses.

3.9.7 Transbasin Diversions

Colorado River Endangered Fishes

In this EA, Colorado pikeminnow, razorback sucker, humpback chub and bonytail are all West-Slope species and collectively referred to as the Colorado River endangered fishes. Designated critical habitat in the Colorado River Basin includes portions of the mainstem Colorado, Gunnison, Yampa, and White rivers. Potential contractors may store decreed water rights originating in the Colorado River Basin under the Temporary Program.

Entities, including Reclamation that import water from the Colorado River Basin to the Arkansas River Basin rely on a programmatic biological opinion and the Upper Colorado River Endangered Fish Recovery Implementation Program to meet their ESA obligations for effects to the Colorado River endangered fishes. The Final *Programmatic Biological Opinion for Bureau of Reclamation's Operations and Depletions, Other Depletions* (*and Funding and Implementation of the Recovery Program Actions in the Upper Colorado River Above the Confluence with the Gunnison River (*Service 1999) addresses operational and depletion impacts associated with the federal and non-federal water projects.[12]

Continuing the Temporary Program and the proposed Donala and BLM 40-year contracts will not increase the volume of Non-Fry-Ark Project water diverted from the west slope. The Fry-Ark RiverWare model relies on historic west slope imports produced by past hydrologic conditions and no new depletions are included in the modeling. Excess capacity storage and exchange contractors that propose to store Non-Fry-Ark Project water originating in the Upper Colorado River basin must sign a recovery agreement with the Service. In the event an applicant identifies new Colorado River depletions associated with their proposed contract (Appendix E), Reclamation would complete additional Section 7 consultation with the Service to ensure that the applicant can rely on Upper Colorado River Endangered Fish Recovery Implementation Program for any impacts to the Colorado River endangered fishes. Environmental commitments will assure the storage of Non-Fry-Ark Project water will have no effect on the Upper Colorado River Endangered Fish or the program.

Platte River Basin Endangered Species

Under the 2006-2010 Temporary Program, the potential for entities to import water into the South Platte River basin via temporary excess capacity contracts was considered but dismissed after conversations with the Service in 2004. The rational for not analyzing impacts to the South Platte River Basin is this. Imports result in accretions to the South Platte upstream of the Denver metro area with imported water used and reused to extinction. A determination was made that the Temporary Program would not result in depletions to the Central and Lower Platte River and would not affect the whooping crane, interior least tern, piping plover, or pallid sturgeon or their designated critical habitat (Reclamation 2006).

No new trans-basin diversions are anticipated with the Temporary Program. However, the Fry-Ark Project RiverWare modeling includes Aurora's long-term excess capacity storage and exchange contract that facilitates movement of water from the Arkansas River basin to the South Platte River basin via the Otero pump stations and pipeline. Reclamation previously determined that the Aurora Long-Term Contract will not affect listed species in the South Platte River basin and no additional consultation is necessary (Reclamation 2007a).

3.10 Socioeconomic Resources

The analysis area for socioeconomic resources effects is broader than the Arkansas River and Fry-Ark Project facilities and includes those counties within Southeastern's District (Chaffee,

[12] More information on the program can be found at: http://www.coloradoriverrecovery.org/index.html.

Fremont, Custer, El Paso, Pueblo, Crowley, Otero, Bent, Prowers, and Kiowa counties) as shown in Figure 1. The AVC/Master Contract EIS (Reclamation 2013) and the SDS EIS (2008) provide a good overview of socioeconomic conditions within the 10 counties. Population changes in the period from 2000 to 2010 included a greater than 10 percent increases in El Paso, Pueblo, Custer, and Lake counties, while Chaffee and Crowley counties saw increases in the 5 percent to 10 percent range. Bent County experienced population decreases of up to 5%, while Otero, Kiowa, and Prowers each saw population decreases of greater than 10% (Colorado Department of Local Affairs 2018).

Table 27 includes median income and percent in poverty by county for the period 2012-2016 using 2016 dollars (U.S. Census 2018). For comparison, Colorado's mean household income for this period was $62,520 with 10.3 percent of the population below the poverty level.[13]

Table 27- Median Household Income and Poverty Level by County

County	Median Household Income	Percent below the Poverty Level
Bent	$34,773	34.1%
Chaffee	$50,993	11.4%
Crowley	$31,719	48.0%
Custer	$38,605	13.6%
El Paso	$60,219	11.5%
Fremont	$42,308	17.5%
Kiowa	$38,385	13.9%
Lake	$46,928	14.6%
Otero	$34,477	23.6%
Prowers	$41,037	20.9%
Pueblo	$42,000	19.9%
Colorado	**$62,520**	**10.3%**

Since there are no construction activities or development of new water supplies associated with the Proposed Actions, socioeconomic effects of the Proposed Actions are primarily limited to the economic cost of using excess capacity storage in Pueblo Reservoir. In-District Temporary Program excess capacity and long-term excess capacity contract entities are charged a calculated storage fee for the use of Fry-Ark Project facilities and separately pay through Southeastern an annually accessed operation, maintenance and replacement (OM&R) fee for actual OM&R cost. The 2019 rate for annual excess capacity storage of water in Pueblo Reservoir will be $44.04 per acre-foot for In-District entities.

Out-of-District Temporary Program excess capacity contract entities are accessed both a storage and OM&R fee based on projected OM&R rates defined in the contract, while Out-of-District long-term contract entities pay the actual O&MR costs each year over the life of the contract. The rate of $112.89 per acre-foot for Out-of-District entities includes an additional charge for OM&R of Fry-Ark Project facilities at a rate of $57.34 per acre-foot. Projected OM&R costs were increased significantly in 2018 and will continue to rise until the Pueblo Dam Joint

[13] Additional census data can be viewed at the Colorado Department of Local Affairs Website at: https://demography.dola.colorado.gov /census-acs/2010-census-data/ and the U.S. Census Website at: https://www.census.gov/quickfacts/fact /table/co/INC110216#viewtop.

Contraction Project is complete. The OM&R costs will be revised annually based on actual work performed each year. For Out-of-District entities, the 2019-2022 estimated OM&R costs are shown in Table 28. In-District entities are not charged for OM&R in excess capacity contracts, as they already directly pay OM&R costs through Southeastern.

Table 28- Annual OM&R Costs for Out-of-District Entities

2019 Actual	2020 Projected	2021 Projected	2022 Projected
$57.34	$52.02	$67.92	$13.34

Total Fry-Ark Project excess capacity contracting revenue for 2018 was $3,397,402. Of this $361,853.00 or approximately 10 percent of the revenues were generated by the Temporary Program. If all 25,000 ac-ft of the Temporary Program is contracted, maximum revenues could range between $1.1 and $1.8 million per year.

3.11 Environmental Justice

Executive Order 12898, issued on February 11, 1994, directs federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law. Table 27 previously displayed household income data by county and Table 29 below compares race and ethnicity composition in the analysis area to Colorado based on 2010 U.S. Census data. Race and Hispanic origin percentages within the eleven-county analysis area track closely with the total percentages for the State of Colorado.

Table 29- 2017 Race and Hispanic Origin Percentages in the Analysis Area

County	White	African American	American Indian	Asian	Pacific Islander	Two or More Races	Hispanic or Latin
Analysis Area	85.7%	5.7%	1.8%	2.4%	0.3%	4.1%	22.1%
State of Colorado	87.3%	4.5%	1.6%	3.4%	0.2%	3.0%	21.5%

Source: U.S. Census 2018

There are no proposed construction activities associated with the Proposed Actions and no disproportionate adverse impacts to minority and/or low-income populations are predicted. Revenues from the excess capacity contracting program equally benefits all water users and property owners within Southeastern. Southeastern is responsible for repaying the cost of construction and OM&R of the Fry-Ark Project that supplies M&I and agricultural water to its district which in turn supports the local and regional economies. Excess capacity revenues can also be used to support future Fryingpan-Arkansas Project capital improvements like AVC as authorized in Public Law 111-11. When built, AVC will provide improved drinking water conditions for many economically disadvantaged communities in Southeastern Colorado and the Interconnect will provide redundancy for water deliveries from Pueblo Reservoir.

3.12 Indian Trust Assets

Indian trust assets are legal interests in property held in trust by the United States for Indian tribes or individuals. The Secretary of the Interior acts as the trustee and all Department of the Interior agencies share the Secretaries duty to act responsibly to protect and maintain Indian trust assets reserved or granted by the United States to Indian tribes or individuals by treaty, statue, and executive orders. Examples include lands, minerals, hunting and fishing rights, and water rights. To date, none have been identified through the numerous government to government consultations associated with excess capacity storage and exchange contracts for the use of Fry-Ark Project facilities with the Arkansas River Basin.

In accordance with NEPA and related laws, regulations and policies, Reclamation identified 15 tribes within the Arkansas River Basin culturally affiliated with the study area. Reclamation has sent a letter to each tribe and Bureau of Indian Affairs Agencies describing the Proposed Actions. Each tribe and BIA agency will be forwarded a copy of this draft EA. Results of the tribal consultations and any tribal responses will be incorporated into the final EA.

3.13 Other Resources

Other resources evaluated included wildlife, floodplain, wetlands, migratory birds, paleontological resources.

Because contracts issued under the Temporary Program are short-term in duration and provide no firm water supply, new construction activities are not likely to occur because of continuation of Temporary Program. Fry-Ark Project operational changes are primarily limited to additional storage and release from Pueblo Reservoir based on each contractors' water rights administered by the State Engineer. Modeled Pueblo Reservoir fluctuations are minor with slightly higher average reservoir elevations but within the minimum and maximum No Action Alternative Pueblo Reservoir elevation range. The Proposed Actions are predicted to have no measureable effect on wildlife, wetlands, migratory birds, and paleontological resources.

Releases from Pueblo Reservoir for excess capacity contracts would be within Pueblo Dam's normal operating range and all exchanges administered by the State Engineer. Pueblo Dam would continue to meet its flood control purposes through operations in accordance with the Pueblo Dam Water Control Manual (USACE 1994). Flood control releases when combined with downstream inflow will not exceed 6,011 cfs at the Arkansas River at Avondale gage. The availability of 27,000 ac-feet of year-round flow control space and 66,000 ac-ft of flood control space between April 15 and October 31 will not be affected and the Proposed Actions are predicted to have no measurable effect on the Arkansas River floodplain. Pueblo Dam releases to meet augmentation requirements for contracts issued under the Temporary Program would be contained within the existing river channel. Reclamation has also included an environmental commitment to limit temporary contract operations when Arkansas River below Pueblo Reservoir flows are $\leq$ 500 cfs and $\geq$ 50 cfs, and temporary contract operations that could cause a 50% decrease or greater in mean daily flow, as measured by adding the flow at the Above Pueblo stream gage with Pueblo Fish Hatchery return flows. This commitment in addition to recreation and fisheries benefits, benefits the Arkansas River floodplain downstream of Pueblo Dam.

3.14 Climate Change

Several climate models and future energy use scenarios have been developed by many entities to evaluate potential effects on temperature, rainfall, runoff, etc. resulting in hundreds of different climate projects. The AVC/Master Contract EIS evaluated 112 monthly simulated runoff projections for one location in the Arkansas River Basin, Arkansas River at Cañon City gage using a study-period representing current runoff from 1950—1999 and future runoff from 2060-2079 (Reclamation 2013). The AVC EIS analysis compared current Arkansas-Red Rivers and Colorado River conditions with hydrologic scenarios that resulted from water supply reductions of 7, 14 and 21 percent. Changes in annual deliveries varied from 0 to 5.6 percent under the No Action Alternative with only Fry-Ark Project Releases to a range of 1.0 to 12.8 percent under the AVC alternatives. Additional detail on the AVC/Master Contract EIS's climate change assessment can be found in the EIS's Appendix C.2 available at: https://www.usbr.gov/avceis/.

For this EA, Reclamation relied on existing climate change data and publications; no climate change modeling was conducted. Less water, or shortages in both the No Action and Proposed Action Alternatives as described in this EA would likely require Temporary Program participants and BLM to secure additional water supplies to meet their future demands. To secure these additional water supplies, entities likely would require additional permanent agricultural transfers, additional use of reusable return flows, or temporary leases from a leasing program or other excess capacity contractors with excess supply (Reclamation 2013 Appendix C2).

Donala, on the other hand, in the event of such shortages would likely revert to pumping more groundwater, as previously discussed in the groundwater resources section, to augment decreases in its Willow Creek Ranch surface water supply.

3.15 Summary of Impacts

Table 30 summarizes impacts associated with each of the three Proposed Actions when compared to the No Action Alternative. With implementation of the environmental commitment listed in Section 3.16, the predicted changes in streamflow in the Arkansas River Basin and Pueblo Reservoir storage results in negligible to minor effects to the human environment.

Table 30- Summary of Impacts from Proposed Actions as Compared to No Action

Resource Category	Temporary Program	Donala 40-Year Contract	BLM 40-Year Contract
Surface Waters Resources-Rivers and Streams	Negligible increases in annual streamflow at the Catlin, La Junta, and John Martin stream gage locations Negligible decreases in annual streamflow at the Twin Lakes, Portland, Above Pueblo Combined Flow, Moffat, Avondale, and Coolidge stream gage locations.	Negligible changes at all modeled streamflow except at two locations: Lake Creek below Twin Lakes – 2 modeled years (one dry and one mean) where decreases ranged from 2.8% in Feb. and 6.8% in Sept. Above Pueblo –Maximum decrease in flow of up to	Predicted changes included in Temporary Program analysis 1 cfs to 3 cfs increase in winter flows in Grape Creek with release from DeWeese Reservoir

		39.9% in Oct. in dry years. Represents 0.3 cfs decrease. Changes < 0.11% in annual flow at modeled stream gage locations for Fry-Ark Riverware Model Changes in mean monthly flows < than 1%, except increase in mean March monthly flow of 0.4 cfs or 10% for below John Martin and Coolidge locations	
Surface Waters-Reservoirs	All reservoir elevation changes would be negligible, except Pueblo Reservoir's average EOM elevation increases by 1.66 ft	Pueblo Reservoir EOM elevation increase of ~1 inch.	
Groundwater Resources	Entities relying on groundwater could use excess capacity storage when available for to meet some augmentation requirements for out-of-priority pumping	Donala would continue to use its Willow Creek Ranch water rights to reduce dependency on non-renewable groundwater resources and increase operational flexibility	BLM would continue to store a portion of the water from the BLM's Park Well water right in Pueblo Reservoir and exchange it to DeWeese Reservoir to augment winter flows in Grape Creek below DeWeese Reservoir and its confluence with the Arkansas River.
Water Rights	Complies with Colorado Water law as administered by CDWR and no adversely effects to senior water rights		
Water Quality	Negligible changes in water quality		
Aquatic Life and Recreation	Upper Arkansas River Flow Management Program - decrease of 7.1 cfs in July 1st to August 15th flows Mean flows avg. 1,106.9 cfs (>700 cfs goal) Reservoir Recreation-Increase in Pueblo mean surface area of 89 surface areas Minimum surface area increases by 132 acres, minimally Increased in EOM elevations generally	Upper Arkansas River Flow Management Program - increase of 0.2 cfs mean flow from July 1st to August 15th November 16th to April 30th flows increase by 0.2 cfs	Predicted changes included in Temporary Program analysis

	benefit recreation and aquatic resources		
Historic Properties	No effects to Historic Properties		
Threatened, Endangered and Candidate Species	No effects to listed species but requires Upper Colorado River Endangered Fish Recovery Program Agreements for historic Colorado River Basin imports if not previously executed		
Socioeconomic Resources	Potential Fry-Ark Project revenues between of $1.1 and $1.8 million per year under the Temporary Program	Additional Fry-Ark Project revenues	Additional Fry-Ark Project revenues
Environmental Justice	Additional Fry-Ark Revenues to support Fry-Ark Project repayment, O&M and AVC.		
Indian Trust Assets	None identified		
Other Resources	No effect		

3.15 Environmental Commitments & Mitigation Measures

The following environmental commitments would be implemented by Reclamation and followed by Donala, BLM, and all contractors who participate in the Temporary Program:

1. All water must be transported, stored, and released in accordance with Colorado water law.
2. All contractors shall comply with all sections of the Clean Water Act.
3. The Temporary Program is limited to using up to 25,000 ac-ft of excess capacity storage in Pueblo Reservoir.
4. All Temporary Program participants must complete a Temporary Program Application that discloses the following:
    - A description of water rights, including dates, type of right, and origin of adjudicated water for water that will be stored in Pueblo Reservoir;
    - A description of the types of water use or uses (i.e. irrigation, municipal and industrial);
    - A description of the water service area;
    - A list of facilities used to transport water to Pueblo Reservoir;
    - A list of facilities used to deliver from Pueblo Reservoir to the service area;
    - A water storage and release plan including a breakdown of water sources and monthly inflow and outflows;
    - Disclosure of a proposed change in water use or construction of facilities listed in or eligible for listing in the National Register of Historic Places; and
    - Other resource information, as appropriate.
5. Reclamation will continue to monitor temporary excess capacity operations including daily storage and release data for contractors' accounts to adaptively manage future temporary excess capacity storage and exchange contract operations.

6. Any future Pueblo Reservoir temporary excess capacity storage and exchange contract environmental compliance may be tiered to the EA so long as:
   a) Only the duration of the contract is changed (annual contract to long-term contract), or
   b) All proposed contract changes to water use, water rights, and exchanges are analyzed using the Fry-Ark Project RiverWare Model and found to be within the range of effects disclosed in this EA.
7. Any future long-term contract will decrease the 25,000 ac-ft available to the Temporary Program as described and analyzed in this EA.
8. All future proposed Fry-Ark Project long-term contracts will use the Fry-Ark Project RiverWare Model or its future version to analyze and describe effects to the Arkansas River Basin including effects to the Temporary Program.
9. In support of the Upper Arkansas River Flow Management Program, contractors may not exchange water from Pueblo Reservoir to upstream locations against releases made by Reclamation in support of the Upper Arkansas River Flow Program, or make any exchanges from Pueblo Reservoir, which would require Reclamation to release additional water to meet the objectives of the Upper Arkansas River Flow Management Program.
10. Fry-Ark excess capacity contractors will not execute contract exchanges until the Natural Resources Conservation Service makes its annual May 1st water supply forecast, and Reclamation has determined whether contract exchanges will affect its ability to operate in accordance with Flow Program recommendations or impair the operation of Fremont Sanitation District's and City of Salida wastewater treatment plants.
11. Reclamation will limit temporary contract operations when Arkansas River below Pueblo Reservoir flows are ≤ 500 cfs and ≥ 50 cfs, and the operation can result in a 50% decrease or greater in mean daily flow as measured by adding the flow at the Above Pueblo stream gage with Pueblo Fish Hatchery return flows.
12. Reclamation will limit temporary contract operations that can affect the Arkansas River when flows at the Above Pueblo gage combined with Pueblo Fish Hatchery return flows are ≤ 50 cfs.
13. Fry-Ark Project excess capacity contractors must sign a recovery agreement with the U.S. Fish and Wildlife Service if they propose to store water that originates in Upper Colorado or Gunnison river basins.
14. Reclamation will consult with the Service if any proposed Colorado or Gunnison River Basin depletion are not included in the 15-Mile Reach programmatic biological opinion or other ESA Section 7 consultation.
15. Any future contract requests with effects not evaluated in this EA may require additional environmental compliance.
16. All excess capacity contract shall comply with all applicable federal, state and local laws and regulations.

Chapter 4–Consultation & Coordination

Reclamation conducted informal discussions with federal, state and local agencies to identify issues and concerns association with proposed continuation of the Temporary Program and the proposed Donala and BLM 40-years contracts. In addition, Reclamation relied heavily on the

numerous environmental documents prepared by Reclamation over the history of the Temporary Program. Table 1 in Chapter 1 and the references list includes many of the documents used during preparation of the draft EA.

Reclamation has contacted and/or coordinated with the following local, state and federal agencies during the development of the Fry-Ark Project RiverWare Model and preparation of this draft EA. Reclamation will continue to coordinate with agencies through the drafting of the Final EA. The list of agencies is as follows:

Federal Agencies
Bureau of Land Management
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service
U.S. Geological Survey

State Agencies
Colorado Division of Water Resources
Colorado Division of Parks and Wildlife

Local Agencies and Organizations
Arkansas Groundwater Users Association
Arkansas River Farms Group
Donala Water and Sanitation District
City of Aurora
Catlin Canal Company
Colorado Springs Utilities
Colorado Water Protective District
Lower Arkansas Water Conservancy District
Pueblo Water
Pueblo West Metropolitan Water District
Southeastern Colorado Water Conservancy District
Upper Arkansas Water Conservancy District

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