

2017 Conservation and Management Plan



Southeastern Colorado Water Conservancy District <u>www.secwcd.com</u>





INSIDE . . .

Introduction	Page 4			
Water Development History				
Project History	Pages 5-7			
District History	Page 7			
Enterprise Projects	Page 8			
Fry-Ark Diversions	Page 9			
Municipal Allocations	Page 10			
Municipal Conservation	Pages 11-12			
Major Conduits	Page 13			
Agricultural Benefits	Pages 14-15			
District Conservation Activities				
Water Storage, Supply	Page 16			
Water, Return Flow Sales	Page 17			
Conservation Outreach	Page 18			
Ark Basin Roundtable	Page 19			
Invasive Species	Page 20			
Weather Monitoring	Page 21			
Cooperative Programs	Pages 22-24			
Colorado River Issues	Page 25			
Watershed Health	Page 26			
Resource Management	Page 27			
Index of Appendices	Pages 28-29			
Next Steps	Page 30			



SOUTHEASTERN COLORADO

Water Conservancy District

"Your investment in water"

2017 WATER CONSERVATION AND MANAGEMENT PLAN



Public Law 87-590 authorized the Secretary of Interior to "construct, operate and maintain" the Fryingpan-Arkansas Project with the Bureau of Reclamation as the lead federal agency. President John F. Kennedy came to Pueblo on August 16, 1962, to sign the legislation into law. he Southeastern Colorado Water Conservancy District was formed in 1958 primarily to develop and administer the Fryingpan-Arkansas Project. The Project is rooted deeply in the history of the region, contemplated as early as 1925 when farmers and businesses in the Arkansas Valley looked to the other side of the Continental Divide to gain supplemental water supplies in a basin where claims to water often outstripped availability.

The need to use water wisely to sustain agriculture, develop industry, build cities, and preserve the environment is central to the mission of the District.

WATER IS ESSENTIAL FOR LIFE. WE EXIST TO MAKE LIFE BETTER BY EFFECTIVELY DEVELOPING, PROTECTING AND MANAGING WATER.

Mission statement of SECWCD

The creation of the District was preceded by the Water Development Association of Southeastern Colorado, a group which formed in 1945 and campaigned to create the Fryingpan-Arkansas Project by means such as selling golden frying pans to send supporters to Washington, D.C. The group had to overcome opposition from the western slope of Colorado to convince Congress to authorize the Fryingpan-Arkansas Project.

The Project finally was authorized in 1962.

Supply, Storage and Power

The Southeastern Colorado Water Conservancy District holds water rights to the Fry-Ark Project which were originally estimated to yield 80,000 acre-feet of water for agricultural, domestic, municipal and industrial uses within parts of nine counties.

The Project includes five major dams, 17 smaller dams, nine tunnels and a 200-megawatt power plant. An average of 55,000 acre-feet of water is imported each year from the Hunter Creek and Fryingpan River watersheds in the Upper Colorado River basin.

That's a lot of water. An acre-foot is 325,851 gallons. But to put the number in perspective, 55,000 acre-feet is roughly twice the amount pumped through the City of Pueblo's water system each year.

The water is a supplemental supply for the Arkansas River basin, and never was intended as a primary supply.

The goal of the Fryingpan-Arkansas Project always has been to provide storage for water in wet years, so that in dry times the Arkansas Valley has enough to maintain vital activities – for both agricultural and municipal uses.

In wet years, there even have been times when western slope interests have called upon the operators of the Fry-Ark system to divert water to ease the threat of flooding in communities such as Aspen.

The western slope also benefits from Ruedi Reservoir, which stores up to 102,000 acre-feet, produces power and in recent years has begun releasing water as part of a program to save endangered fish.

This section will explain the features and operation of the Fryingpan-Arkansas Project as it has developed over the past 55 years.

Documents relating to the creation of the Southeastern Colorado Water Conservancy District and Fryingpan-Arkansas Project are in Appendix I



RUEDI RESERVOIR

Construction of Ruedi Dam and Reservoir began in 1965. Water was first stored in 1968. Located near Basalt, its purpose is to serve Western Slope water needs, including storage, recreation, habitat and power generation. Ruedi Dam is 285 feet tall.



BOUSTEAD TUNNEL

Excavation of Boustead Tunnel began in 1965 and was completed in 1969. A stream above Turquoise collection system diverts and carries water to the 5.4 -mile tunnel, which diverts it into a tributary above Turquoise Lake.



TURQUOISE LAKE

Sugar Loaf Dam was enlarged from 1965-68, increasing the capacity of Turquoise Lake near the headwaters of the Arkansas River. The dam is 135 feet tall.

Need for conservation

Fryingpan-Arkansas Project western slope facilities are located in the Hunter Creek and Fryingpan River watersheds, and the east slope facilities are located in the Arkansas River watershed.

The Project consists of diversions, conveyances, and storage facilities designed primarily to divert water from Colorado River tributaries on the west slope for use in the water-short areas in the Arkansas River basin.

Diversions may be made only if target levels of western slope streams are met.

The Bureau of Reclamation is the lead federal agency for the Project and requires that the District use water wisely. That was a condition of the Project from the original legislation and first contracts.

The District also is required by Colorado's Constitution, statutes, and State Water Plan to ensure efficient use of water resources.



TWIN LAKES

Twin Lakes originally was enlarged by Crowley County farmers on the Colorado Canal in 1900, and it collects water diverted from the western slope through a tunnel constructed in the 1930s. A new 53-foot-tall dam was constructed 2,500 feet downstream of the existing dam in 1975 as part of the Fryingpan-Arkansas Project. Most of the shares in Twin Lakes are owned by Colorado Springs, Pueblo, Aurora, and Pueblo West, but some Project water is stored there. The Mount Elbert Power Plant is located at Twin Lakes.



PUEBLO DAM AND PUEBLO RESERVOIR

Construction of Pueblo Dam began in 1970 and the first water was stored in 1974. Lake Pueblo State Park was formed in 1975 and attracts nearly 2 million visitors every year. The earthen dam and 191-foot-tall concrete buttresses are continually monitored for safety by the Bureau of Reclamation. A Safety of Dams project in 1999 added strength and stability to the concrete portion of the Dam. Besides storage and recreation, Pueblo Reservoir provides flood control for downstream communities. The Dam also has connections which serve the Fountain Valley Conduit, another feature of the Fryingpan-Arkansas Project; Bessemer Ditch; Pueblo Board of Water Works; Southern Delivery System; Pueblo West; Pueblo State Fish Hatchery; and the future Arkansas Valley Conduit. The District also is working to construct a hydroe-lectric power plant near the North Outlet of the Dam.





MOUNT ELBERT POWER PLANT

The 10-mile-long Mount Elbert conduit brings water to the Mount Elbert Forebay (above), where it drops 445 feet through a penstock to the 14-story (right, mostly underground) Mount Elbert Power Plant. Twin turbines can generate 200 megawatts of power. The turbines also serve as 170,000horsepower engines that can pump water back to the forebay during off-peak hours.



District Boundaries

Parts of nine counties are included within the Southeastern Colorado Water Conservancy District. The original boundaries were determined when the District was formed on April 29, 1958 by the District Court in Pueblo, Colorado.

Since that time, the boundaries have been modified by inclusions, which can occur by annexation to an incorporated area already within the District, petition or by election.

All inclusions must have the assent of the Secretary of Interior, who oversees the Bureau of Reclamation, and comply with state statutes.

The District monitors the use of Project water to ensure that it is being used within the District in ways that are beneficial to communities within the District's boundaries.

Comanche North



Looking to the future: Enterprise Projects

The Fryingpan-Arkansas Project is not complete. The District continues to push for responsible development of water resources through its Enterprise Acitivity. At the forefront now are four activities:

Arkansas Valley Conduit (see map) will bring better quality water from Pueblo Reservoir to nearly 50,000 people in 40 communities when it is completed. Water providers have requested water deliveries of 10,256 acre-feet annually by 2070.

Excess Capacity Master Contract allows District water providers to store water in Pueblo Reservoir when the space is not needed for Project water. The 40-year Contract provides a long-term time frame rather than year-to-year opportunities for District members. It became effective in 2017.

Interconnection at Pueblo Dam will provide redundancy between the North and South outlets.



Lease of Power Privilege Agreement gives the District the franchise to harness the power of water from the North Outlet of Pueblo Dam (shown above) in a three-unit, 7.5-megawatt hydroelectric plant. The power would be sold, with the revenues used to finance District activities, programs, and projects.

For Enterprise Programs and Projects, see Appendix VI

Maan			
Year	Imports	Cumulative	Available
1972	32,000 af	32,000 af	
1973	36,800 af	68,800 af	16,000 af
1974	34,100 af	102,900 af	18,600 af
1975	37,200 af	140,100 af	25,000 af
1976	26,900 af	167,000 af	24,000 af
1977	11,400 af	178,400 af	25,000 af
1978	49,200 af	227,600 af	25,000 af
1979	53,700 af	281,300 af	25,600 af
1980	55,700 af	337,000 af	70,000 af
1981	34,600 af	371,600 af	25,000 af
1982	75,200 af	446,800 af	68,000 af
1983	90,810 af	537,610 af	125,000 af
1984	110,120 af	647,730 af	210,000 af
1985	70,200 af	717,930 af	289,900 af
1986	30,300 af	784,230 af	300,300 af
1987	2,200 af	750,430 af	288,000 af
1988	13,400 af	763,830 af	247,800 af
1989	36,200 af	800,030 af	197,600 af
1990	46,600 af	846,630 af	142,100 af
1991	59,100 af	905,730 af	58,700 af
1992	54,800 af	960,530 af	32,900 af
1993	86,600 af	1,047,130 af	70,100 af
1994	52,200 af	1,099,330 af	51,700 af
1995	90,500 af	1,189,830 af	55,000 af
1996	36,900 af	1,226,730 af	110,000 af
1997	78,600 af	1,305,330 af	116,000 af
1998	51,300 af	1,356,630 af	102,000 af
1999	40,800 af	1,397,430 af	127,500 af
2000	44,800 af	1,442,230 af	171,600 af
2001	45,300 af	1,487,530 af	67,500 af
2002	13,200 af	1,500,730 af	8,500 af
2003	54,900 af	1,555,630 af	37,500 af
2003	27,400 af	1,583,030 af	15,300 af
2004	54,600 af	1,637,630 af	40,800 af
2005	61,200 af	1,698,830 af	49,200 af
2000	54,200 af	1,753,030 af	40,400 af
2007	90,000 af	1,843,030 af	43,400 af
2008	82,700 af	1,925,730 af	78,000 af
2009	56,500 af	1,923,730 af	44,000 af
	98,900 af	2,081,130 af	75,000 af
2011	13,414 af	2,081,130 af	9,900 af
2012	13,414 ai 46,700 af	2,094,544 af	9,900 af 37,600 af
2013			
2014	80,300 af	2,221,544 af	68,500 af
2015	72,205 af	2,293,749 af	67,500 af
2016	59,214 af	2,352,963 af	45,000 af
Averag	e 1981-2016	55,907 acre-fe	et

Fry-Ark water diversions

Fryingpan-Arkansas Project Operating Principles adopted by the State of Colorado on April 30, 1959, allow diversions of up to 120,000 acre-feet of water in any year, but not more than 2,352,800 acre-feet in any period of 34 consecutive years. Deductions reduce the amount available in any given year, while carryover water has increased the amount available for allocation in some years.

How much water is available for allocation?

3,000 acre-feet

The Twin Lakes Exchange trades the first 3,000 acre-feet of water diverted from the southern tributaries of Hunter Creek, which flows into the Roaring Fork River at Aspen. The water is stored in Twin Lakes Reservoir and Canal Company's account in Twin Lakes Reservoir. The company then releases 3,000 acre-feet to the Roaring Fork River at predetermined rates to comply with the Operating Principles.

200 acre-feet

Another 200 acre-feet is deducted for use by Reclamation and Colorado Parks and Wildlife to replace evaporation from the Leadville and Pueblo fish hatcheries.

10% transit loss

Deducting the above 3,200 acre-feet from the average 55,907 acre-feet produces 52,707 acrefeet of water in Turquoise and Twin Lakes Reservoirs. This water is then moved to Pueblo Reservoir, where 10 percent is deducted for transit loss. Deducting that 5,270 acre-feet leaves 47,437 acre-feet.

5% evaporation loss

The last deduction in these calculations is for water lost due to evaporation. This is estimated to be five percent of the water arriving at Pueblo Reservoir or 2,372 acre-feet, netting 45,065 acre-feet available for allocation in an average year. As the table shows, there are few "average" years.

Allocation documents are in Appendix II

Growing cities

The population within the Southeastern Colorado Water Conservancy District has grown from about 330,000 when the District was formed to roughly 860,000 today. By the year 2030, the population is expected to be 1.3 million.

The District provides a supplemental supply of water for all of the cities within its boundaries, as well as domestic water for some unincorporated areas.

Allocation Principles reserve 51 percent of the water for municipal use:

•El Paso County	25 percent
-----------------	------------

•Cities, towns east of Pueblo 12 percent

•Pueblo Board of Water Works 10 percent

•Cities, towns west of Pueblo 4 percent

In 2006, the Allocation Principles were amended to allocate water from agricultural lands permanently dried up by water transfers to municipal use.

This new supply of municipal water, given the ungainly title Not Previously Allocated Non-Irrigation Water (NPANIW) totals 3.59 percent of diversions, and is allocated along proportional lines:

•Arkansas Valley Conduit (future), 2.18 percent

•Fountain Valley Conduit, 0.48 percent

•Cities, towns, entities west of Pueblo, 0.27 percent

•Pueblo West Metropolitan District, 0.34 percent

•Manitou Springs, 0.35 percent

The NPANIW allocation assisted in the shift of demand as municipalities began requesting their full amount of Project water.

The Operating Principles state:

"The Project will be operated in such a manner that those in eastern Colorado using Project water imported from the Colorado River basin for domestic purposes shall have preference over those claiming or using water for any other purpose."



Colorado Springs population was about 70,000 when the Southeastern District formed, and is now about 450,000.



The Historic Arkansas Riverwalk of Pueblo is a centerpiece of the City of Pueblo, which has increased to a population of 108,000, up from 91,000 in 1960.



Canon City, the largest of the cities west of Pueblo, doubled in size to more than 16,000 people in the last 55 years.

La Junta, with a population of about 7,000, has not grown over the life of the Fryingpan-Arkansas Project, but the Arkansas Valley Conduit offers the opportunity for a turnaround.





Best Management Practices Toolbox

The Southeastern District offers a BMP Toolbox to give participants an accessible, evolving resource to assist with water system management, production, treatment, distribution, deliver and customer demand management. It helps fulfill state expectations for water planning. It is available at: www.secwcd.org/ BMPtoolbox

Conservation planning efforts





The Southeastern District now is assisting with programs that will allow smaller water providers to reduce water loss through evaluation of their systems in order to find inefficiencies, detect leaks and implement their own strategies to conserve water.



The State of Colorado and U.S. Bureau of Reclamation require water providers to develop conservation plans in order to participate in state or federal programs. The Southeastern District supports these efforts among its members.

The latest versions of these plans may be found in Appendix III



One way of attacking urban water waste

Conservation plans and support

For several years, the Southeastern Colorado Water Conservancy District has encouraged and assisted the development and implementation of water conservation and drought management plans.

The Colorado Legislature in 2012 updated water conservation laws that began in 1991 and were revised in 2004. It requires providers of retail water in amounts of 2,000 acre-feet or above to submit a plan to the Colorado Water Conservation Board every seven years in order to receive state assistance.

The State requires elements within the plan that address watersaving measures, programs and goals, implementation review and intended actions.

Colorado's Water Plan, completed in 2015, includes the goal of reducing future water needs through cost-effective water efficiency measures, promoting technological and financial assistance.

The Bureau of Reclamation, in its contracts with the District, also asks for conservation plans that have goals, appropriate water conservation measures, and time schedules for meeting conservation objectives.

The District developed its first Conservation Plan in 2005, and revised it in 2010. It also developed a Regional Water Conservation Plan in support of the Arkansas Valley Conduit and related projects in 2013, followed by a Supplement in 2015 that placed emphasis on the cities and communities in the Master Contract process.

As a regional water provider, it is the District's responsibility to show stewardship in water conservation and promote wise use of this precious resource.

Conservation plans are included in Appendix III

Meeting State and Federal guidelines

"The objective of water conservation is a long-term increase in the productive use of water supply in order to satisfy water supply needs without compromising desired water services." — C.R.S. 37-60-126

"While the contents and standards of a given water conservation program are primarily matters of State and local determination, there is a strong Federal interest in developing an effective water conservation program because of this contract."

- Bureau of Reclamation

"Water conservation activities and water reuse will play an important role in balancing the need for additional water supply with strategies that lessen that need."

- Colorado's Water Plan



A 2010 meeting at District offices was part of the National Environmental Policy Act review of the Arkansas Valley Conduit, Interconnect at Pueblo Dam, and Excess Capacity Master Contract sought by the Southeastern District.

Plumbing the Valley: Arkansas Valley Conduit and Fountain Valley Conduit

Municipal water systems have been assisted by the Southeastern District in the past and will benefit in the future. The Fryingpan-Arkansas Project envisioned two major pipelines to serve those within the District's boundaries and both were part of the Fryingpan-Arkansas Act of 1962.

The Fountain Valley Conduit, completed in 1985, serves Colorado Springs, Fountain, Security, Stratmoor Hills, and Widefield, delivering about 20,000 acre-feet of Project water annually. The Fountain Valley Authority is responsible for administering the pipeline and collecting taxes to provide to the District for repayment to Reclamation.

The Arkansas Valley Conduit is still in its formulative stage. When completed, it will serve about 40 water systems that provide water to nearly 50,000 people. The District and Bureau of Reclamation are in the process of laying the groundwork so that final design and construction can begin. The District is working to secure funding and providing the means to repay the federal government for the work through legal, administrative, and legislative avenues.

Southern Delivery System

Colorado Springs, Fountain, Security, and Pueblo West are served by the Southern Delivery System, completed in 2016. It eventually could provide up to 93 million gallons daily to the communities.

SDS was funded by the participants, but has an impact on future operations within the Southeastern District. The new North Outlet provides the opportunity for an interconnection with the existing South Outlet.

In addition, the Southeastern District is working to develop the Lease of Power Privilege with the Bureau of Reclamation to build a hydroelectric generation plant at the newly built North Outlet.



Heavy equipment digs a trench for the Southern Delivery System pipeline at Pueblo Dam.

Water for Agriculture

The allocation principles provide 51 percent of Fry-Ark water for municipal use and 49 percent for agriculture. In 2006, a new category, Not Previously Allocated Non-Irrigation Water was added, contributing another 3.59 percent to municipal uses from ag land that was dried up by water sales to Aurora in Crowley County.

However, during the first 30 years of deliveries from the Project, about 75 percent of the water went for crop irrigation, as cities had not yet grown into their share.

In wet years, agriculture still receives more than its share.

In addition, the Winter Water program benefits from Project space in Pueblo Reservoir.



Water rushes into an irrigation ditch in the Lower Arkansas Valley.

Year	Storage	Year	Storage	Year	Storage
1975-76	107,009.86 af	1989-90	129,583.97 af	2003-04	81,077.67 af
1976-77	107,245.69 af	1990-91	144,625.26 af	2004-05	115,873.53 af
1977-78	no program	1991-92	159,278.13 af	2005-06	110,991.17 af
1978-79	94,793.25 af	1992-93	163,409.39 af	2006-07	149,014.47 af
1979-80	123,464.12 af	1993-94	154,289.15 af	2007-08	152,467.13 af
1980-81	139,404.52 af	1994-95	153,749.42 af	2008-09	139,731.46 af
1981-82	134,845.21 af	1995-96	177,589.91 af	2009-10	149,527.81 af
1982-83	189,976.93 af	1996-97	161,706.17 af	2010-11	118,798.47 af
1983-84	196,045.47 af	1997-98	124,607.18 af	2011-12	125,869.56 af
1984-85	180,555.76 af	1998-99	174,646.36 af	2012-13	67,123.58 af
1985-86	190,934.73 af	1999-00	178,579.18 af	2013-14	100,377.85 af
1986-87	216,886.16 af	2000-01	158,389.91 af	2014-15	128,647.43 af
1987-88	186,929.02 af	2001-02	134,664.53 af	2015-16	151,734.40 af
1988-89	148,072.07 af	2002-03	74,774.81 af	20-year	132,358.87 af

Winter Water

Old-timers will tell you, sometimes with a laugh and often with a shiver, of the days when irrigation was year-round. Chipping ice off headgates was no fun.

The Winter Water Storage Program began as a voluntary three-month program in 1975, and operated on that basis for many years.

The completion of Pueblo Dam, along with storage on some of the ditches in the Lower Arkansas Valley, made it possible to store water in the winter months for the times it would be needed during the growing season.

In 1990, a final decree (*Appendix II F*) in Water Court was signed, establishing Winter Water as a program to be administered by the Southeastern Colorado Water Conservancy District, working in cooperation with the Division Engineer and the the Bureau of Reclamation.

Participants in the program include Amity Mutual Irrigation Company, Bessemer Irrigating Ditch Company, Catlin Canal Company, Colorado Canal Company (including, Lake Henry Reservoir Company and Lake Meredith Reservoir Company), High Line Canal Company, Holbrook Mutual Irrigating Company, Fort Lyon Canal Company, Las Animas Consolidated Canal Company, Oxford Farmers Ditch Company, Riverside Dairy Ditch and West Pueblo Ditch.

Winter Water begins November 15 and ends on March 15 of the next year.



Agricultural benefits

In the lower Arkansas Valley, irrigation water is critical for the success of farming.

Fryingpan-Arkansas Project water amounts to only a small percentage of the total water supply for farms, but can be delivered at times that are crucial in some years. All of the agricultural entities requesting an allocation of Project water have their own decreed water rights as a source of primary supply.

The District does not control the water rights of farmers of conveyances such as diversion dams, canals laterals, and storage facilities.

> Agricultural programs and projects are covered in Appendix VII



District Conservation Activities

1. Water Storage and Supply

In the arid western United States, conservation starts with storage.

The reservoirs of the Fryingpan-Arkansas Project are its critical feature. The most basic function is to provide a way to capture flows during wet seasons in order to use the water when it is critically needed. That concept has long been understood, and was first applied in the early 1900s, as the limitations of direct-flow water rights in the overappropriated Arkansas River system became apparent.



Pueblo Reservoir provides storage, recreation, river stabilization and flood control benefits for the Arkansas Valley. In the future, it will also provide hydroelectric power generation.

The first reservoirs in the Arkansas Valley were built by farmers. Some reservoirs were in the mountains to hold back the spring runoff for release later in the year. Others were nearer to the irrigation ditches which were the lifeblood of rural communities in the region.

One of the benefits of storage was, through the early part of the previous century, gradually improved stream flows.

Like other western rivers, the Arkansas River experienced times of high flow and periods of barely any flow as it channeled water from the Rockies into a system that eventually merges with the Mississippi River and empties into the Gulf of Mexico.

Another benefit was water quality, which improved in two ways as a direct result of storage. First, the reservoirs as settling basins for sediment in the water.

Second, at low flows, Arkansas River water is brackish, and not fit for drinking. With more water in the river, the quality was more frequently suitable for human use.

Storage opened the way for greater imports of water from the western slope of the Colorado Rockies, where precipitation averages four times as great as on the Front Range. The first transmountain diversions were simple ditches dug at convenient points, dug by farmers to improve their yields.

The farmers of Crowley County on the Colorado Canal completed the Twin Lakes Tunnel in 1934, beginning a new era where water was added to the Arkansas River basin. The additional water in the basin improved the volume of flows for all concerned.

The completion of Pueblo Reservoir in 1974 as part of the Fryingpan-Arkansas Project, along with the enlargement of Twin Lakes and Turquoise Lake provided an entire system that allowed for more efficient movement of water.

The reservoirs provide additional benefits for recreation, habitat, flood control, and hydroelectric generation.

Cooperative agreements are in Appendix IV

2. Fryingpan-Arkansas Project Water Price and Surcharges

The District sells water for either municipal-industrial or agricultural use to qualified members within its boundaries.

The water rate has remained at \$7 per acre-foot for several years, but District staff is in the process of evaluating whether that charge truly reflects the cost of service or whether additional surcharges could provide funding for water conservation programs.

The base rate goes to repay the costs of the Fryingpan-Arkansas Project, and was periodically studied by Reclamation in a Payment Capacity Analysis. Reclamation has made no revisions to the Analysis since the mid-1990s. The District is now looking at potential changes to the rate structure.

Over the years, surcharges on water sales and storage have been added to pay for Enterprise activities:

- Safety of Dams: \$0.50 per acre-foot
- Water Enterprise Activity: \$1.50 per acre-foot municipal, \$0.75 per acre-foot agricultural
- Environmental Stewardship: \$0.75 per acre-foot
- Well Augmentation: \$2.60 per acrefoot

3. Return Flow Sales

Under its repayment contract with the United States, the Southeastern District retains dominion and control over water brought in through the Fry-Ark Project.

Return flows are simply the water that is not consumed, either by plants or people, and flows back into the Arkansas River. Elaborate calculations are used to determine consumptive use and to track the amount of water available to the District, and verified by the District's legal and engineering staff.



Fry-Ark water return flows from irrigation have typically been sold to wellaugmentation groups.

(Photo courtesy Colorado State University, Frank Milenski collection)

The District created the Southeastern Colorado Water Activity Enterprise to administer the sale of return flows, and adopted policies in 1996 and 2004 to guide how they may be sold or resold.

Agricultural return flows are used primarily for well augmentation, although farmers on the Fort Lyon Canal used their own return flows to augment surface-water sprinklers for the first time in a trial program that began in 2015.

Municipal return flows have been purchased by some, but not all municipal water users.

The District is investigating more efficient ways to track and administer return flows.

4. Conservation Outreach

The Southeastern Colorado Water Conservancy District continues to be a leader in Conservation Outreach, offering numerous programs which promote water-saving and preservation activities.

Recent activities include:

- The Xeriscape Demonstration Garden at the District's offices in the Pueblo Airport Industrial Park, which was installed in 2000.
- Sponsorship, along with other groups, of the Arkansas River Basin Water Forum which educates citizens in all parts of the basin about wise water use.
- Funding and coordination of Children's Water Festivals.
- Tours of the Fry-Ark Project collection systems on the western and eastern slopes, as well as the Lower Arkansas Valley agricultural areas.
- Southeastern Colorado SECO Water Wise, which collects information from weather stations and updates research on water conservation.
- Coordination of removal of invasive species, such as tamarisk or mussels, from the Arkansas River basin.
- Web site information on all District programs, easily accessible in one location to the public, is at www.secwcd.org.

The District's plans for the future include developing a "dashboard" which would give the public even more convenient access to a virtual stream of water information.



Xeriscape Demonstration Garden

The three-acre garden was installed when the District moved into its new offices in 2000, with cooperation from various water agencies, and is maintained by a Garden Coordinator.

The garden also is an award-winning Plant Select garden and part of the Habitat Heroes network.

The garden's purpose is to educate the public on the principles of xeriscape and to demonstrate that a low-water garden can be beautiful and functional. The garden provides unlimited access to the public.

The garden features interpretive signs stating the purpose of the garden and the xeriscape concepts. There also are 30 experimental grass plots that show how varieties of turf grass perform with varying amounts of water.

The District provides brochures, presentations, tours, classes, and workshops on xeriscape.

More information can be found under the Conservation and Education tab at <u>www.secwcd.org</u>

Arkansas River Basin Water Forum



The annual forum provides insight into the way water users in the Arkansas River basin interact with each other. Since 1995, it has provided a free exchange of ideas among participants, while moving to new sites throughout the region each year. The topics are tailored to the needs of the communities that host the event. Water leaders are honored and artwork and photos celebrated. An archive of information, in the form of videos of the presentations, is kept on the Web site: <u>www.arbwf.org</u>



Children's Water Festivals

Each year, the Southeastern Colorado Water Conservancy District helps plan, fund, and organize a Children's Water Festival at Colorado State University-Pueblo.

The event began in 1999, and has occurred every year since then, except in 2015 when it was ironically — called off because of thunderstorms!

The event teaches all aspects of wise water use and management to elementary students.

Other communities, such as Salida, Trinidad, and Colorado Springs now have water festivals as well, which are supported by the Arkansas Basin Roundtable.

Arkansas Basin Roundtable

The Southeastern Water Conservancy District works collaboratively with other water groups in the basin through the Arkansas Basin Roundtable.

State Legislation in 2005 established nine Basin Roundtables and the Interbasin Compact Committee to meet water needs within the state and resolve differences between basins.

Over the years, the Southeastern District has taken a lead role in establishing priorities and developing programs to improve water use throughout the region.

The Legislature also opened up a new funding source through the Water Supply Reserve Account administered by the Colorado Water Conservation Board. Funds from the account first are approved at the Roundtable level for this program.

The Roundtable also assisted the CWCB in public outreach for Colorado's Water Plan.

Information about the Roundtable can be found at the Web site: www.arkansasbasin.com





Tamarisk Removal

Heavy equipment removes tamarisk in the Arkansas River flood plain at Las Animas in a 2003 demonstration that launched projects to control the invasive species. Since then, other methods including spraying and biological control with beetles, have been employed as well. The Arkansas Watershed Invasive Plants Plan was formed in 2007 to organize resources in the Arkansas River basin, which has the greatest amount of tamarisk in the state. Today, the group is working with the Tamarisk Coalition to stop the spread of tamarisk. Information can be found at: www.tamariskcoalition.org



Zebra Mussels

The larvae, or veligers, of zebra mussels were identified in Pueblo Reservoir in 2008. Monitoring by the Bureau of Reclamation has found no live mussels since that time. Boat inspections by Colorado Parks and Wildlife continue as the most effective way to stop the spread of invasive species from one lake to another. Information about mussels can be found at: www.usbr.gov/mussels

Invasive Species

Controlling invasive species, which are non-native animals and plants that can cause problems to the environment and infrastructure, continues to be a priority for the Southeastern Colorado Water Conservancy District.

In 2003, the Southeastern District Board adopted a resolution that declared tamarisks "steal water" and launched a program to control the spread of the plant in the Arkansas River basin.

Tamarisks, or saltcedars as they are also known, were first imported to North America as an ornamental plant in the 1800's. They were planted along stream banks to control erosion in the 1900s, before the long-term effects were well understood.

Tamarisks out-compete native vegetation and increase the salinity of surrounding soils.

The District formed the Arkansas River Watershed Invasive Plants Plan in 2007, coordinating resources throughout the basin to employ a variety of strategies for removal of tamarisk and other invasive plants.

In 2008, the larvae of zebra mussels was first identified in Pueblo Reservoir. In other parts of the country, zebra and quagga mussels have been costly to water delivery infrastructure.

The Bureau of Reclamation continues to monitor Lake Pueblo for mussels, but so far no live mussels have been detected.

Colorado Parks and Wildlife continues to check boats at Pueblo Reservoir and other facilities for Aquatic Nuissance Species, which includes mussels as well as other invasive aquatic animals and plants.

The District remains vigilant about potential impacts on the Arkansas Valley Conduit and Interconnection at Pueblo Dam.

> Invasive Species activities are covered in Appendix V

Weather Programs

The Southeastern Colorado Water Conservancy District has worked with Colorado State University and the U.S. Department of Agriculture in setting up weather monitoring programs that provide information about water use to farmers throughout the Arkansas River basin.

In the past, the SECO Water Wise program filled an important niche in relaying this information to farmers.

With the advent of Internet and cell phone technology, the weather tracking programs available have become more sophisticated.

At this point, the Southeastern District is evaluating how to work with other agencies to establish an online dashboard that will provide reliable information about precipitation, streamflow, snowpack and other weather factors in order to give real-time information for the Fry-Ark Project.



Weather on the Web

Some suggested sites for weather buffs include: <u>secwcd.org</u>— Weather Management tab <u>coagmet.colostate.edu</u> — Daily ET reports, hourly data access <u>wcc.nrcs.usda.gov</u> — National Water & Climate Center <u>weather.gov</u> — National Weather Service, reports, forecasts, warnings <u>water.state.co.us</u> — Colorado Division of Water Resources water data <u>usgs.gov/water</u> — U.S. Geological Survey water, climate and streamflow data

Communications Plan

One of the things on the Southeastern District's "to-do" list is the development of a communications plan that will help the public have a better understanding of the District's goals and accomplishments.

While the District's staff is always focused on its mission, the value of the public's input cannot be emphasized enough.



(Smithsonian photo)

The growth of cities, preservation of communities, and development of new agricultural opportunities will continue to be a function of water resources development.

Getting concise, relevant, and accurate information to District members as well as the general public will be a top priority of the District as the plan is developed.

5. Cooperative Programs

The Southeastern District cooperates with other agencies in order to assure water is used wisely and efficiently. The District's goal is to see that programs are coordinated for the best interests of all involved.

U.S. Geological Survey

The District participates in several cooperative programs and studies with the U.S. Geological Survey.

These programs include: collection of stream-flow data, groundwater level data, continuous specific conductance data, water-quality study of the Arkansas River basin, long-term water quality monitoring network, and Pueblo Reservoir water quality monitoring.



USGS stream gauge at Parkdale on the Arkansas River



Chapman SNOTEL site

NRCS SNOTEL

Snowpack Telemetry, operated by the Natural Resources Conservation Service, gives water users more insight into the potential of spring runoff from snowpack. In 2006, the District received funding from the Bureau of Reclamation to install three SNOTEL stations at Chapman Control in the Fry-Ark Collection area, near Howard and at Cottonwood Pass near St. Elmo in order to improve data collection for water users in the Arkansas River basin.

Division of Water Resources

Colorado's stream gauge program provides nearly instantaneous river readings at strategic locations.

The state is developing the Arkansas Basin Water Operations Dashboard, which will provide tools for decision support when completed.

This is a top priority for the Southeastern District, which relies on accurate information about Arkansas River operations from its headwaters in Leadville to the point where it crosses the Kansas state line.

Because of the 1985-2009 U.S. Supreme Court lawsuit with Kansas, the development of a Decision Support System for the Arkansas River has lagged behind other areas of the state.

When fully operational, the dashboard is expected to fill that void, collecting information that is now available in several places and making it available at one convenient point.

This dovetails with the District's plan to create its own Fry-Ark dashboard.



Voluntary Flow Management Program

One of the more adventurous programs of the Southeastern District was the creation of the Voluntary Flow Management Program on the Arkansas River in 1991.

The Arkansas Headwaters Recreation Area was formed in 1989 to accommodate the growing interest in commercial and private boating on the Upper Arkansas River.

A citizen task force made up of volunteer citizens representing private boaters, environmental groups,

fishermen, cattlemen, water users, local governments, and commercial rafting companies was formed to advise Colorado Parks and Wildlife, which administers AHRA.

Working with the Colorado Department of Natural Resources, the Bureau of Reclamation and the Southeastern District, a Voluntary Flow Management Program was created. Other agencies also cooperate.

The program relies on the timing of Fryingpan-Arkansas Project releases to maintain a target flow of 700 cubic feet per second from late Spring through



August 15. It also promotes optimum flows during April and May to promote trout egg hatching and fly emergence.

The Voluntary Flow Management Program is a model of joint state, federal and local cooperation that has led to the Upper Arkansas River's status as a world-class rafting mecca and gold medal fishery, while still serving the needs of participants in the Southeastern District.

Please see Appendix IVA

Upper Colorado River Endangered Fish Recovery Program

A program to preserve the humpback chub, bonytail, Colorado pikeminnow, and razorback sucker on the Colorado River was established in 1988.

In 1999, the U.S. Fish and Wildlife Service completed the 15-mile Reach Programmatic Biological Opinion for the four species of endangered fish on the Colorado River.

The reach extends from the confluence of the Gunnison River to the headgate of the Grand Valley Irrigation Company diversion dam near Pallisade.

The Southeastern District joined other Front Range water providers in participating in the 10825 Water Program, which requires the state of Colorado to provide 10,825 acre-feet of water annually to boost flows at strategic times. The responsibility is divided equally between the west slope and east slope, with each responsible to supply 5,421.5 acre-feet annually.

In 2013, the District Board voted to contribute \$1.75 million toward the \$17.2 million purchase of a west slope ranch to provide the east slope's share. Releases are coordinated by Northern Water from Lake Granby.

The program provides environmental compliance with the Bureau of Reclamation for five transmountain diversions, including the Fryingpan-Arkansas Project.



Endangered fish, from top to bottom: bonytail, Colorado pikeminnow, razorback sucker, and humpback chub.

Please see Appendix IVD



USGS Water Quality Studies

The Southeastern District's Water Activity Enterprise has an agreement with the U.S. Geological Survey to conduct water quality studies for Enterprise projects, which include Enlargement, Excess Capacity, and the Arkansas Valley Conduit.

Participants in these activities have signed a Memorandum of Understanding to pay part of the costs.

Elements of the program include long-term water quality monitoring, collection of continuous specific conductance data, web site updates, collection of streamflow data for the Voluntary Flow Management Program, daily suspended sediment counts for Fountain Creek and Pueblo Reservoir monitoring.



Colorado River Issues

Water supplies for the Fryingpan-Arkansas Project are directly tied to the Colorado River basin.

Under the 1922 Colorado River Compact, the waters of the Colorado River are divided among upper and lower basin states. However, numeric limits were used, and the amount of water available each year was overestimated.

The upper basin states have never failed to deliver the required amount of water to Lake Powell, but the Compact states have investigated the possibility of a shortfall for years.

In 2001, California developed a plan to reduce its use to 4.4 million acre-feet annually.

Spurred by declining water levels at Lake Powell and Lake Mead, the states adopted Colorado River Management Strategies in 2007 that was termed "an agreement to share adversity" by Interior Secretary Dirk Kempthorne at the time.

The Southeastern Colorado Water Conservancy District has joined the Front Range Water Council for years in taking proactive steps to deal with the possibility of a Compact call. Most of the transmountain diversions in Colorado have rights that are junior to the 1922 Compact.

In addition, the upper basin states are not fully using the Colorado River allotment, leading to discussions within Colorado about how curtailments from a Compact call would be administered.

Most recently, the District has been an active participant in Interbasin Compact Committee and Basin Roundtable discussions and studies that would affect potential curtailments. The District wants to assure it would receive its fair share of water imports if a Compact call occurs.



1922 Colorado River Compact

Requires upper basin states (Colorado, New Mexico, Utah, Wyoming) to deliver 75 million acre-feet over a rolling 10-year period to the lower basin states (Arizona, California, Nevada), measured at Lees Ferry, Arizona.

1944 U.S.-Mexico Treaty

Requires the U.S. to deliver 1.5 million acre-feet annually to Mexico. The rules were adjusted in 2012 to restore the health of the delta in Mexico.

1948 Upper Colorado River Compact

The compact allows Arizona to use 50,000 acrefeet of water annually from the upper basin, and divides the remainder:

> Colorado: 51.75 percent Utah: 23 percent Wyoming: 14 percent New Mexico: 11.25 percent



Watershed Health

In the past two decades, the frequency of catastrophic wildfires and damaging floods has increased. Changes in weather patterns mean more droughts and more intense storms in years to come. Colorado's forests also suffer from large-scale maladies such as beetle kill.

The problem is complicated by changes in watersheds from increased urbanization, particularly on Fountain Creek, because of the increase in impermeable surfaces such as streets, parking lots, and pavement.

The Southeastern District has worked with other agencies to monitor and participate in activities related to watershed and forest health as a way to protect the Arkansas River and the reservoirs in the Fryingpan-Arkansas Project.

The Arkansas Basin Roundtable has made progress in identifying the areas facing the greatest water supply risks (detailed on the map above).



Wildfire and erosion have devastating impacts on watershed health.

See Appendix VIIB

Resource Management Planning

While the Southeastern District is responsible for managing the water resources of the Fryingpan-Arkansas Project, the facilities of the Project are a source of recreation and wildlife habitat. The District participates in the planning and development of those areas as well.

Colorado Parks and Wildlife (CPW) is developing a management plan for state lands at Lake Pueblo State Park, the Lake Pueblo State Wildlife Area, the former prison honor farm, and the Chain of Lakes complex on the Arkansas River below Pueblo Dam.

The Bureau of Reclamation is preparing its own Resource Management Plan for the Pueblo Reservoir area.

CPW also is for the second time revising the 1989 plan for the Arkansas Head-

waters Recreation Area, the 184-mile reach of river upstream of Pueblo Reservoir.

The Southeastern District is involved with the Voluntary Flow Management Program and has partnered with other agencies in the development of the area since its creation.

The U.S. Forest Service, Colorado State Forest Service, and local agencies have developed a Community Wildfire Protection Plan in Lake County, which is important to the District because of Twin Lakes, Mount Elbert, and Turquoise Lake, all key elements of the Fryingpan-Arkansas Project.



Bobcats at Lake Pueblo Wildlife Area



Boaters enjoy Lake Pueblo State Park

The District also monitors interagency cleanup efforts of old mining sites in Lake County for their potential impact on Fry-Ark assets.

On the Western Slope, the Roaring Fork Conservancy has developed its own watershed plan to protect fishing on the Fryingpan River below Ruedi Reservoir, among other streams in the area.

All of these activities protect the long-term viability of the Fryingpan-Arkansas Project as it continues its primary mission of providing supplemental water for farms and cities in the Arkansas River basin.

See Appendices IV, VIII

Appendices

Available on DVD attached to the plan

APPENDIX I: HISTORICAL DOCUMENTS

IA. House Document 187

A planning document in 1953 laid out the major features of the Fryingpan-Arkansas Project.

IB. Colorado Water Conservation Act

The Southeastern Colorado Water Conservancy District was formed in Pueblo District Court on April 29, 1958. The 1937 act was revised in 1991.

IC. Operating Principles

In advance of the Project, the guidelines flows are determined and sold. for operations were established in 1961.

ID. Public Law 87-590

The authorizing legislation for the Fryingpan-Arkansas Project signed by President John F. Kennedy in Pueblo in 1962.

IE. Repayment Contract

The first contract was issued in 1965, and has been amended 10 times since then.

IF. Reclamation Reform Act of 1982

Governs agriculture eligibility.

IG. 50th Anniversary History

A recap of the District's first 50 years was provided by longtime attorney Steve Leonhardt in 2008.

APPENDIX II: ALLOCATIONS

IIA. Allocation Principles

The principles for dividing water among

municipalities and farms were adopted by IIIC. Municipal Conservation Plans the District Board in 1979.

IIB. Allocation Policy

The policy for allocating supplemental water was last amended in 2013.

IIC. Water Rates and Surcharges

A history of water rates and surcharges which have been added over the years.

IID. Return Flow Policy

The District's return flow policy was amended in 2004. It outlines how return

IIE. NPANIW

The District adopted a policy for Not Previously Allocated Non Irrigation Water in 2007.

IIF. Winter Water

A 1987 court decree was issued to set out rules of how the Winter Water storage program would be administered by the District.

APPENDIX III: CONSERVATION PLANS

IIIA. Regional Water Conservation Plan

The 2013 plan supports the Arkansas Valley Conduit and related projects. **IIIB. Supplement to the Regional Water Conservation Plan**

The 2015 plan focuses on the Excess Capacity Master Contract participants who are not in the AVC.

These are required by the state for grant eligibility for water users above 2,000 acre-feet annually.

- 1. HB 04-1365
- 2. HB 10-1051
- 3. CWCB Guidance Document, 2012
- 4. Canon City, 1996
- 5. Colorado Springs, 2015 (4 parts)
- 6. Florence, 2003
- 7. Fountain, 2009 (2 parts)
- 8. La Junta, 2015
- 9. Lamar, 2010
- 10. Pueblo Water. 2016
- 11. Pueblo West, 2012
- 12. Salida, 2009
- 13. Security, 2009
- 14. St. Charles Mesa Water District, 2010
- 15. Widefield, 2009

IIID. Water District Plans

Southeastern assisted the Lower Arkansas Water Conservancy District and Upper Arkansas Conservancy District in developing conservation plans in 2015.

- 1. Lower Arkansas Valley Water Conservancy District
- 2. Upper Arkansas Water Conservancy District.

APPENDIX IV: AGREEMENTS

IVA. Upper Arkansas Voluntary Flow Management Program

The program started in 1991 as a way to manage water for the benefit of recreation and habitat as well as municipal, industrial and agricultural uses.

IVB. Aurora IGA

On October 3, 2003, the Southeastern District signed an agreement with Aurora to settle court issues and the District's Preferred Storage Options Plan.

IVC. 6-Party IGA

The Southeastern District signed an agreement with the City of Pueblo, Pueblo Board of Water Works, the City of Fountain, Colorado Springs Utilities and Aurora Water regarding flow management on the Arkansas River through Pueblo. At issue were several court cases, PSOP and Aurora's proposed storage contract.

IVD. 10825 Agreement

The 2010 agreement supports the Programmatic Biological Opinion for the Colorado River to provide water for habitat to aid four species of endangered fish. The Southeastern District joined the agreement along with other Front Range water providers who import water from the Western Slope.

APPENDIX V: INVASIVE SPECIES

VA. Tamarisks 'Steal Water'

The Southeastern Board in 2003 declared war on salt cedars, passing a resolution to mobilize the Arkansas River basin to control tamarisks.

VB. Mussels in Lake Pueblo

The Bureau of Reclamation performed a risk assessment for invasive aquatic species, such as zebra or quagga mussels, in Pueblo Reservoir in 2009, after larvae were detected the previous year.

VC. Mussels Upstream

An assessment of risk of invasive aquatic species in other facilities upstream **APPENDIX VII: AGRICULTURE** of Pueblo Reservoir was conducted later in 2009.

APPENDIX VI: ENTERPRISE PROGRAMS

VIA: Reservoir Enlargement

In 2000, the District released its Preferred Storage Options Plan, which led to enlargement and master lease studies.

VIB. Arkansas Valley Conduit

- 1. A 2001 resolution by the Board dedicated \$1 million toward studying the feasibility.
- 2. In 2009. S. 187 allow miscellaneous revenues to fund Fry-Ark structures, including the AVC.



The Environmental Impact Study Executive Summary for the AVC, Interconnect and Master Lease.

VIC. Excess Capacity Master Lease

The Master Lease for Excess Capacity storage contract between the District and Reclamation was completed in 2016. A total of 16 participants signed the agreement for the first year.

VID. Lease of Power Privilege

The Lease of Power Privilege cleared the way for construction of a hydropower plant off the North Outlet pipeline from Pueblo Dam.

VIIA. Canal Seepage Study

A 2000 study for Reclamation looked at reducing losses of water through seepage in dirt canals in the Lower Arkansas Valley.

VIIB. CSU Field Studies

A 2005 presentation to the Southeastern District by Dr. Tim Gates, who has led Colorado State University studies on waterlogging and salinity in the Lower Arkansas Valley.

VIIC. Surface Irrigation Rules

The Southeastern District participated in the effort to draft new rules on surface irrigation that protect the Arkansas River

APPENDIX VIII: NEW PARTNERSHIPS:

VIIIA: Colorado Water Plan

The Colorado Water Plan was adopted by the Colorado Water Conservation Board in 2015, and includes the Arkansas Basin Implementation Plan, which prioritizes projects such as the Arkansas Valley Conduit.

VIIIB: Arkansas River Collaborative

The District is working with the Arkansas Basin Roundtable's effort to protect watersheds before and after catastrophic fires and floods.

Southeastern Colorado Water Conservancy District 2017 Water Conservation and Management Plan

Next steps . . .

river does not become a great and rushing waterway under its own power. Instead, it is fed by many smaller streams and grows as it collects the contributions of others. It is timeless and ever-changing in its dimensions. Its uses vary according to needs, and this changes the perspective by which it is viewed.

For more than 150 years, the Arkansas River has nurtured a growing, shifting civilization which now realizes the benefit of protecting its most valuable resource, water, for the benefit of future generations.

This is reflected in our Mission Statement: "Water is essential for life. We exist to make life better by effectively developing, protecting, and managing water."

Like tributaries feeding a river, no one source can

sustain its energy. The Southeastern Colorado Water Conservancy District strives to foster collaboration among the many interests which depend on the Arkansas River to survive.

This is vocalized in our Vision Statement: "As we strive to realize our vision of the future, all our actions and efforts will be guided by communication, consultation and cooperation, focused in the direction of better accountability through modernization and integration across the District."

Finally, it is important how the resource is managed to fairly benefit all of those who rely on it, as our Statement of Values emphasizes: "Honesty and Integrity: Professional Service and Action; Fairness and Equity.

The Conservation Plan is how we focus on what we've accomplished and how we will surge into the future.



PLANNING EFFORTS

The Southeastern Colorado Water Conservancy District is committed to an integrated planning approach, which will include the Strategic Plan, which takes a long-range (15-year) view of the District's goals and projects; the Business Plan, which looks at intermediate steps in a 3-year timespan; the annual Budget, which covers the immediate financial situation and the Financial Report, which assesses how the District is doing its job. The Conservation Plan provides the thematic structure and how the District interacts with its members and partners.



The North Outlet Works at Pueblo Dam was constructed as part of the Southern Delivery System and is near the site of the future Southeastern Colorado Water Conservancy District hydropower project.