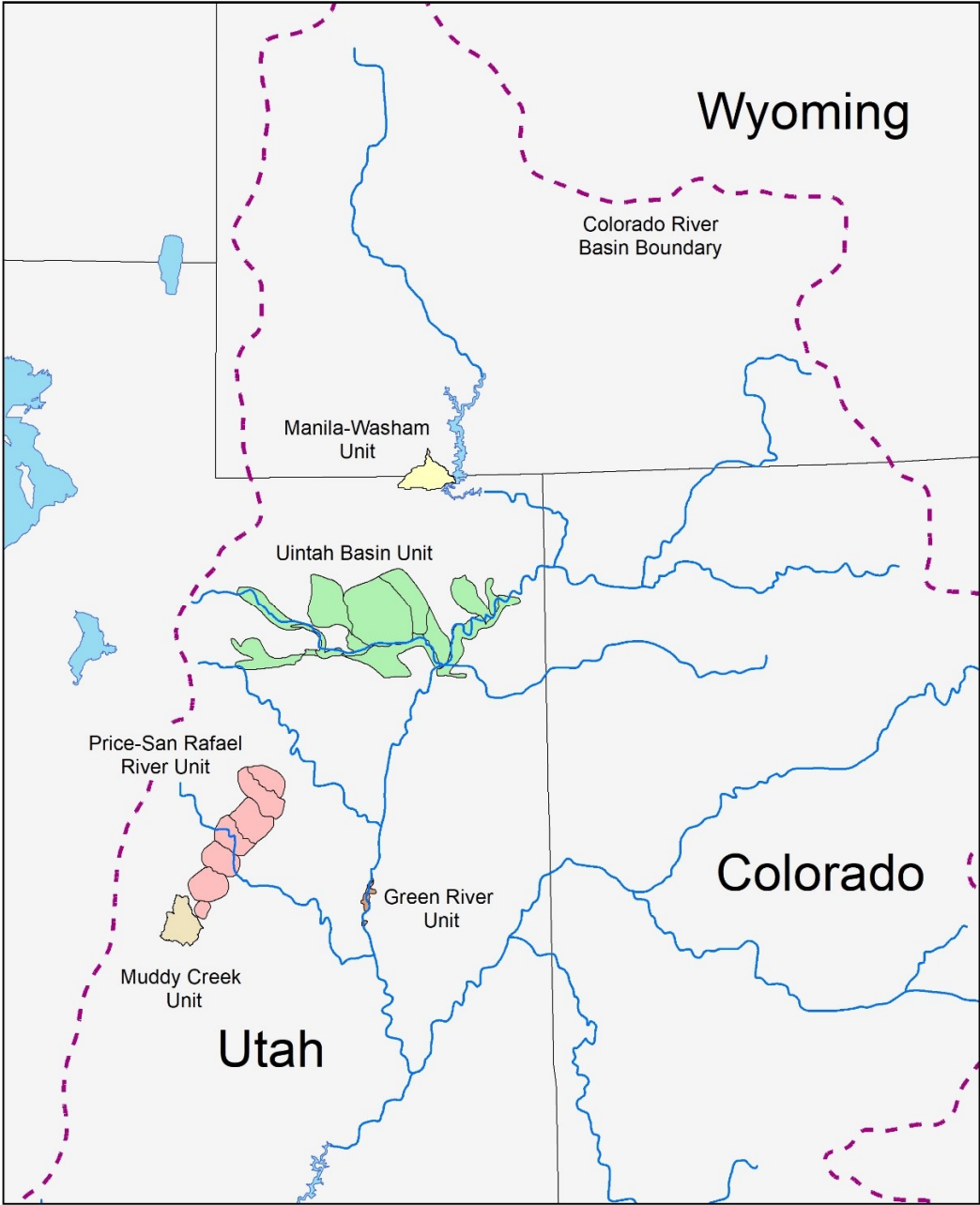


Colorado River Basin Salinity Control Program: Utah Monitoring and Evaluation Report, FY2019

USDA, Natural Resources Conservation Service



Utah Salinity Control Units Location Map

Contents

Salinity Control Project Overview	4
Achievement Summary.....	4
Applications and Contracts.....	6
Wildlife Habitat Replacement.....	7
Economic Impacts.....	7
Utah Salinity Unit Progress Reports.....	8
Green River Unit	8
Manila – Washam Unit	9
Muddy Creek Unit.....	10
Price-San Rafael Rivers Unit.....	11
Uintah Basin Unit	12
Contact Information	13
Non-Discrimination Statement.....	14
Appendix A: Wildlife Case Study.....	15
Background	16
Results.....	16

Tables and Figures

Figure 1: Acres Treated, FY 2019	5
Figure 2: Salt Savings, FY 2019 (On-Farm and Off/Near-Farm)	5
Table 1: Salinity Control Unit Applications and Contracting, FY2019	6
Table 2: Salinity Wildlife Habitat Replacement	7
Figure 3: Green River Unit Location Map	8
Figure 4: Manila-Washam Unit Location Map	9
Figure 5: Muddy Creek Unit Location Map.....	10
Figure 6: Price-San Rafael Rivers Unit Location Map.....	11
Figure 7: Uintah Basin Unit Location Map	12
Figure 8: Pre-Project Stream Condition May, 2019	17
Figure 9: Newly Installed BDA May, 2019	17
Figure 10: Newly Installed BDA September 5 th , 2019	18
Figure 11: Newly Installed BDA October 4 th , 2019	18

Salinity Control Project Overview

It is estimated that in the 1960's more than two-thirds of water taken from the Colorado River was used to irrigate agricultural lands. Excessive deep percolation from flood irrigation (a common irrigation practice in the west) dissolves salt from saline soils commonly found in the Upper Colorado River Basin. Highly saline groundwater eventually returns to the Colorado River increasing its salinity. Elevated salinity in the river results in significant damage to agricultural, municipal, and industrial users in the Lower Colorado River Basin.

The Colorado River Basin Salinity Control Act (SCA) of 1974 (PL-93-320) authorized federal funding of salinity control projects to manage salinity in the Colorado River. Salinity studies determined that irrigation system improvements that increase irrigation efficiencies (thus reducing deep percolation), both on-farm and off-farm, are the most economical salinity control. In Utah five Salinity Control Units were facilitated through the SCA and subsequent legislation authorizes the USDA Soil Conservation Service, now the Natural Resources Conservation Service (NRCS), to implement and manage salinity control throughout the Colorado River Basin. The Uintah Basin Unit was established in 1982, Price-San Rafael Rivers Unit in 1997, Manila-Washam Unit in 2007, Green River Unit in 2010 and Muddy Creek Unit in 2010. (Cover: Utah Salinity Control Units Location Map)

USDA/NRCS initiated a funding program to promote irrigation system improvements on the land to reduce deep percolation and subsequent salt loading in the Colorado River. The Colorado River Salinity Control Forum (CRSCF), through Basin States funding, has supported many special projects in the designated salinity units. In 2010 CRSCF recommended to NRCS that irrigation improvement work should include Basin State Funding for small individual projects in areas of the Colorado River basin not included in the established Units. These projects became known as Out-of-Project Units-Tier 2 improvement projects and are funded based on their predicted salinity control savings in tons per year of salt reduction.

Achievement Summary

NRCS has reached acreage treatment goals in the Price-San Rafael and Uintah Basin units. In the Price-San Rafael Unit 38,122 acres of 36,050 acres goaled have been treated. Uintah Basin unit has treated 160,641 acres of 160,000 acres goaled. NRCS continues to accept applications and obligate new contracts for salinity controls in both units.

Salinity removal lags behind acreage treatment somewhat. In Price-San Rafael it was originally anticipated that 120,220 tons would be removed on-farm and 7,940 tons would be removed off-farm. 111,409 tons have been removed; 109,334 tons of removal has occurred on-farm and 2,075 tons of removal off-farm. As in the Price-San Rafael unit, actual on-farm treatment has lagged behind goaled treatment in the Uintah Basin. NRCS has applied treatments to remove 132,163 tons of salt annually on-farm of a goaled 140,500 tons of salt removal on-farm. No off-farm salt removal was goaled, but 28,134 ton of salt has been removed through off-farm treatments.

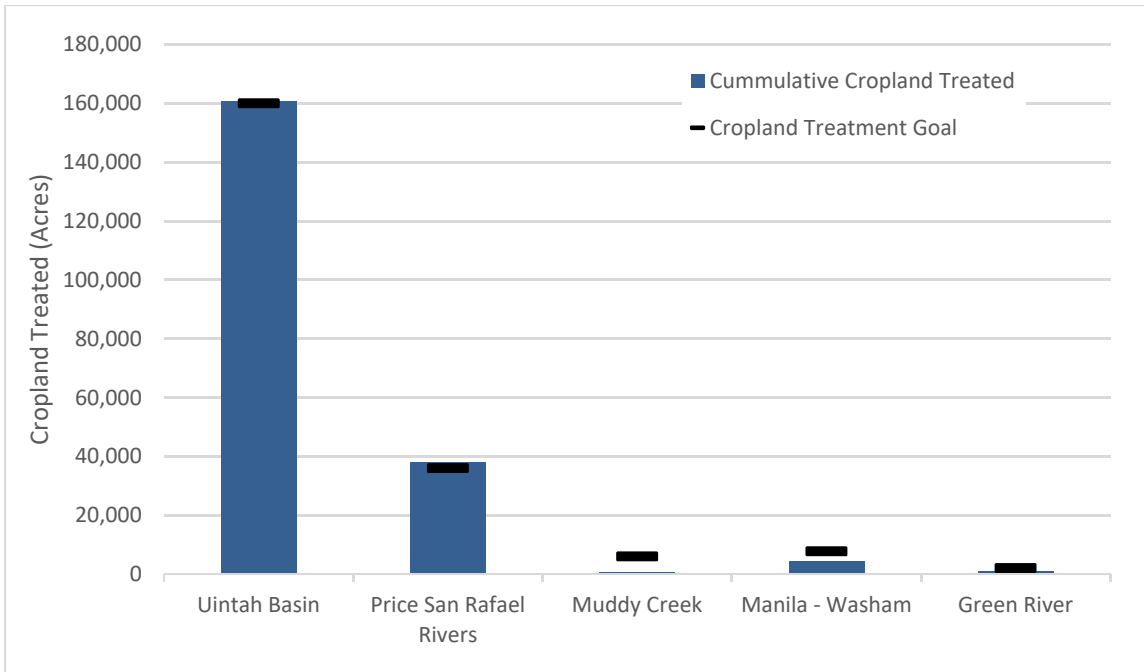


Figure 1: Acres Treated, FY 2019

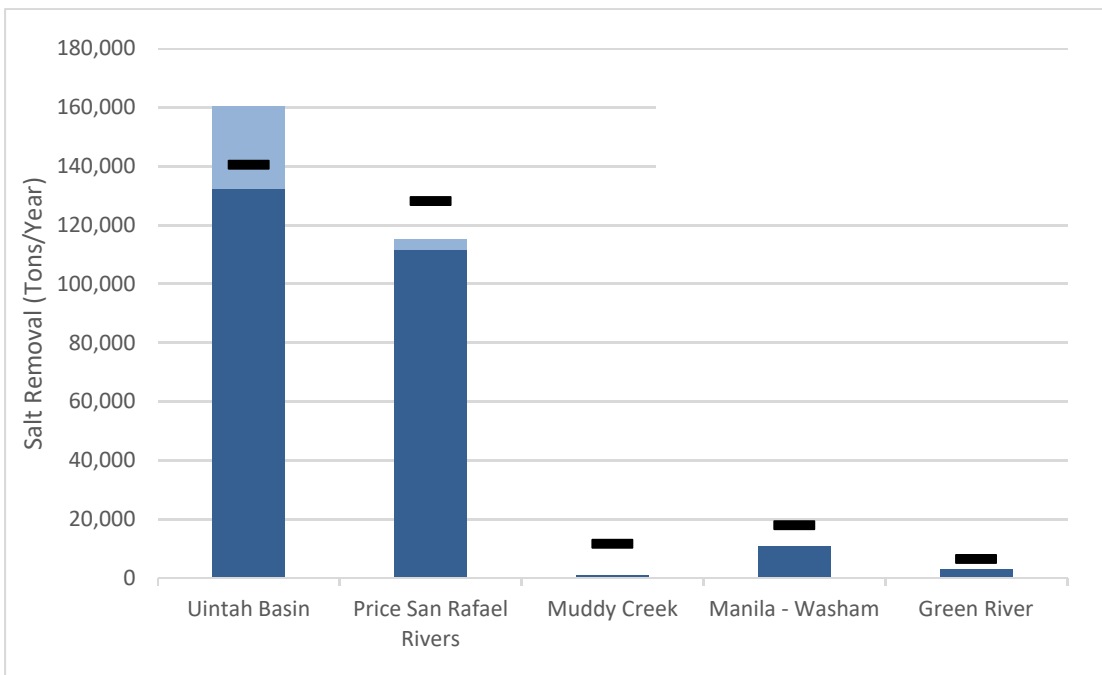


Figure 2: Salt Savings, FY 2019 (On-Farm and Off/Near-Farm)

Applications and Contracts

In FY2019 NRCS received new applications to the salinity control program and obligated new contracts at rates in line with historic trends (See Table 1: Salinity Control Units Applications and Contracting, FY2019).

Table 1: Salinity Control Unit Applications and Contracting, FY2019

Project Unit	New Applications**	Contracts Obligated***	Contract Costs	Contract Acres
Green River	1	1	\$114,964	57
Green River Wildlife	0	0	\$0	0
Manila - Washam	6	2	\$40,797	20
Manila - Washam Wildlife	2	2	\$24,607	32
Muddy Creek	73	6	\$242,941	127
Muddy Creek Wildlife	0	0	\$0	0
Price - San Rafael Rivers	43	29	\$2,585,771	1,318
Price - San Rafael Wildlife	1	1	\$2,999	5
Uintah Basin	103	40	\$3,629,810	1,492
Uintah Basin Wildlife	1	1	\$8,700	25
Tier 2*	0	0	\$0	0
Total	230	81	\$ 6,635,959	3,075

* Projects outside of salinity units. Tier 2 Projects are not required to provide offsetting wildlife habitat.

** Applications received during the fiscal year

*** Contracts obligated under the EQIP program during the fiscal year

Wildlife Habitat Replacement

The Salinity Control Act amendment of 1984 (PL 98-569) requires voluntary replacement of incidental fish and wildlife values foregone resulting from irrigation improvements within project units. In 2012 the USFWS approved a policy change to allow replacement of wildlife habitat on a 1:1 acreage basis with a wildlife acreage target of 2% of acres treated with salinity controls. NRCS continues to promote wildlife habitat replacement and will continue to monitor and evaluate the extent and quality of wildlife habitat. A case study to demonstrate the type of project NRCS is contracting is included in Appendix A. Annual and cumulative statistics for wildlife habitat are given below in Table 2: Salinity Wildlife Habitat Replacement.

Table 2: Salinity Wildlife Habitat Replacement

Project Unit	Habitat Replacement Goal*	Cumulative Habitat Applied	Current Status	Habitat Surplus/ (Deficit)	Habitat in Active Contracts
	Acres	Acres	%	Acres	Acres
Green River	20	0	0%	(20)	0
Manila - Washam	89	10	11%	(79)	32
Muddy Creek	12	0	0%	(12)	0
Price-San Rafael Rivers	762	3,446	452%	2,684	26
Uintah Basin	3,213	21,610	673%	18,397	3

* Habitat Replacement Goal = 2% of the cumulative acres on-farm acres treated.

Economic Impacts

The regional economic impact of the salinity program has been studied and reported in previous monitoring and evaluation reports. The salinity program is assumed to impact the region much the same as it has in the past.

Utah Salinity Unit Progress Reports

Green River Unit

Background

The Green River Salinity Control Unit (GR) straddles the Green River and the county line between Emery and Grand Counties including 4,000 agricultural acres irrigated with water diverted from the Green River. This area is approximately 3 miles east to west and 16 miles north to south. Excess irrigation water deep percolates through the Cretaceous marine deposits dissolving and transporting salts to the river system.

The Green River Unit was established by a 2009 Environmental Assessment (EA) with a Finding of No Significant Impact (FONSI). The first USDA projects were funded in FY 2010. Salt load reduction is achieved by improving irrigation efficiency and reducing deep percolation. The 2009 EA anticipated treating 2,080 acres, controlling 6,540 tons/year of salt at a cost of \$115/ton.

Current Year

During FY 2019 NRCS treated 103 acres, controlling 458 tons of salt annually at a cost of \$10/ton. Cumulative through FY 2019 NRCS has treated 976 acres (48% of the project goal), controlling 3,134 tons of salt annually at a cost of \$26/ton (2019 dollars).

In FY 2019 no wildlife habitat replacement was implemented in the Green River Unit. Total habitat replacement through FY 2019 is 0 acres of 20 acres required to be concurrent and proportional.



Figure 3: Green River Unit Location Map

Manila – Washam Unit

Background

The Manila-Washam Salinity Control Unit (MW) located on the north slope of the Uinta Mountains, encompasses 11,100 agricultural acres irrigated with water diverted from tributaries to Flaming Gorge Reservoir in Daggett County, Utah. The irrigated portion of the area is approximately 20 miles east to west and 8 miles north to south. Excess irrigation water deep percolates through Tertiary Lacustrine deposits in the south and Cretaceous marine Mancos Shale deposits in the north dissolving and transporting salts to the river system.

Manila-Washam was established by a 2006 Environmental Assessment (EA) with a Finding of No Significant Impact (FONSI). NRCS first funded salinity control projects in FY 2007. Salt load reduction is achieved by improving irrigation efficiency and reducing deep percolation. The 2006 EA anticipated treating 7,780 acres, controlling 18,000 tons of salt annually at a cost of \$98/ton.



Figure 4: Manila-Washam Unit Location Map

Current Year

During FY 2019 NRCS treated 20 acres, controlling 153 tons of salt annually at a cost of \$88/ton. Through FY 2019, NRCS has treated 4,441 acres (57% of the project goal), controlling 10,674 tons of salt annually at a cost of \$71/ton (2019 dollars). Approximately 3,339 acres (43% of the project goal) remains to be treated.

In FY 2019 NRCS obligated 2 salinity related wildlife habitat contracts in Manila-Washam Unit on 32 acres. Total habitat replacement through FY 2019 is 10 acres of 89 acres required to be concurrent and proportional.

Muddy Creek Unit

Background

The Muddy Creek Salinity Control Unit (MC) located in the southern portion of Emery County, Utah, includes 6,050 agricultural acres irrigated with water diverted from Muddy Creek and its tributaries. The Unit is approximately 13 miles east to west and 17 miles north to south. Excess irrigation water deep percolates through Cretaceous marine deposits dissolving and transporting salts to the river system.

Muddy Creek Unit was established by a 2004 Environmental Assessment (EA) with a Finding of No Significant Impact (FONSI). The first NRCS projects were funded in FY 2010. Salt load reduction is achieved by improving irrigation efficiency and reducing deep percolation. The 2004 EA anticipated treating 6,050 acres, controlling 11,677 tons of salt annually at a cost of \$153/ton.

Current Year

During FY 2019 NRCS treated 2 acres, controlling 64 tons of salt annually at a cost of \$54/ton.

Through FY 2019, NRCS has treated 599 acres (10% of the project goal), controlling 820 tons of salt annually at a cost of \$156/ton (2019 dollars). Approximately 5,451 acres (90% of the project goal) remains to be treated.

Canals within the Unit are currently being piped as of the writing of this report. NRCS is currently collaborating with Technical Service Providers to implement approximately 34 miles of canal laterals and their associated on-farm salinity control practices.

In FY 2019 no wildlife habitat replacement was implemented in the Muddy Creek Unit. Total habitat replacement through FY 2019 is 0 acres of 12 acres required to be concurrent and proportional.

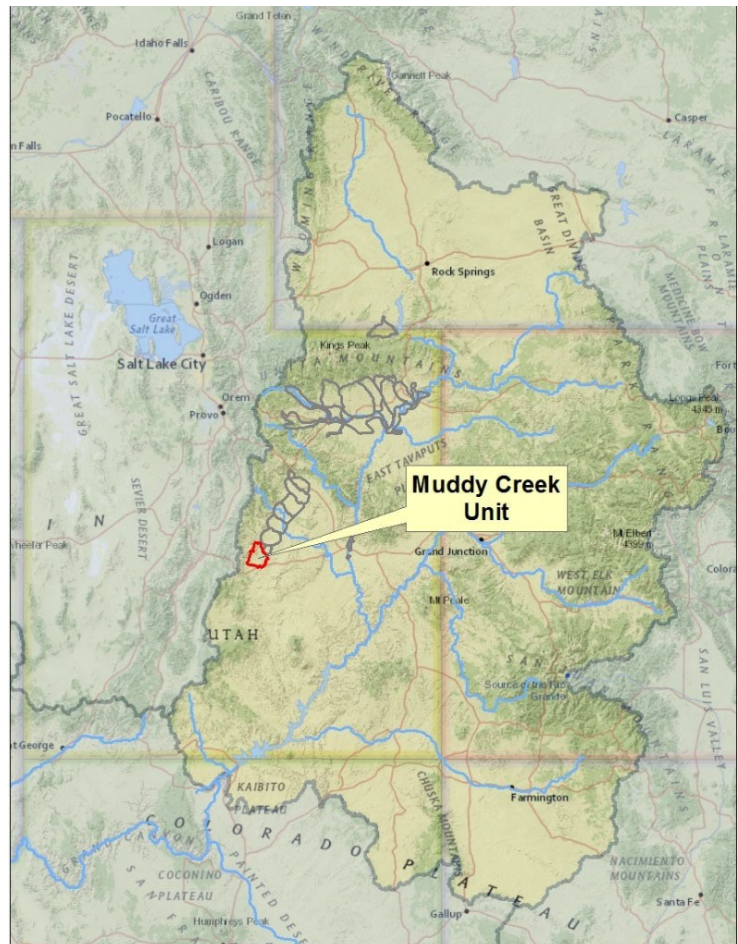


Figure 5: Muddy Creek Unit Location Map

Price-San Rafael Rivers Unit

Background

The Price San Rafael Rivers Unit (PSR) is located in east central Utah and encompasses 66,450 agricultural acres of irrigated land. Water is diverted for irrigation from tributaries of the Price and San Rafael Rivers in Carbon and Emery Counties. Excess irrigation water deep percolates through the surface soil originating from Cretaceous marine Mancos Shale deposits dissolving and transporting salts back into the river system.

In 1993 an Environmental Impact Statement (EIS) prepared jointly by U.S. Bureau of Reclamation (USBR) and Soil Conservation Service (now NRCS), established the PSR Salinity Control Unit. The first salinity control projects in the PSR were funded in FY1996. Salt load reduction is achieved by improving irrigation efficiency to reduce deep percolation in saline soils. The 1993 EIS anticipated treating 36,050 acres, controlling 120,220 tons of salt annually on-farm and 7,940 tons of salt off-farm at a cost of \$65/ton.

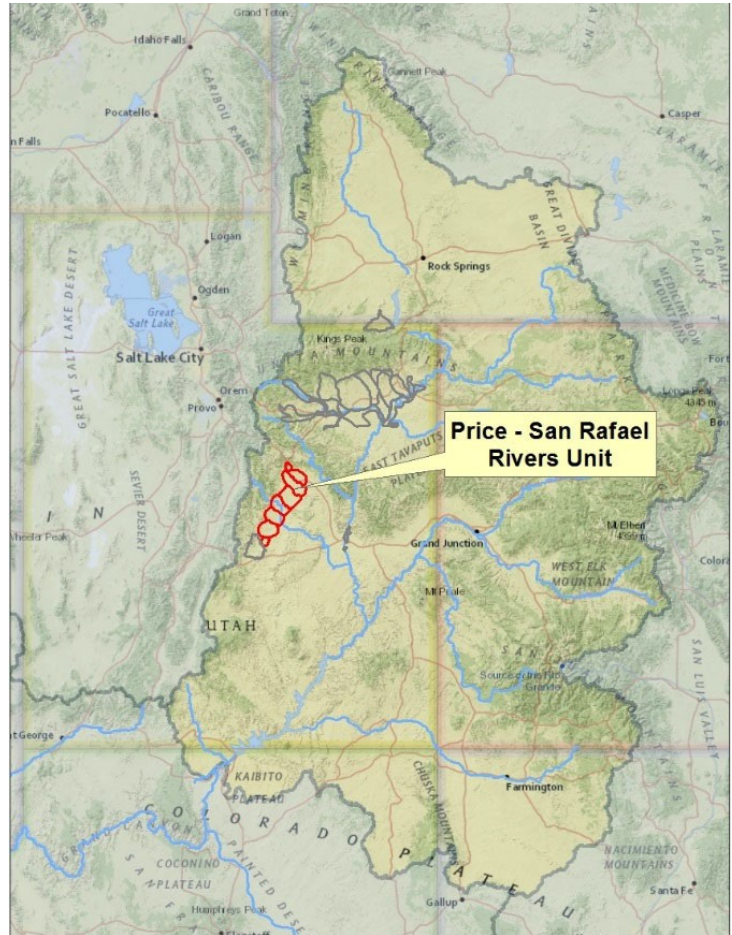


Figure 6: Price-San Rafael Rivers Unit Location Map

Current Year

During FY 2019 NRCS treated 1732 acres, controlling 4,885 tons of salt annually at a cost of \$56/ton. Through FY 2019 NRCS has treated 38,122 acres, controlling 111,409 tons of salt annually at a cost of \$57/ton (2019 dollars). The PSR is goaled to treat 36,050 acres. This Unit has reached its acreage goal. NRCS will continue supporting salinity control in this unit.

In FY 2019 no wildlife habitat replacement was implemented in the Price San Rafael Unit, but one additional wildlife habitat contract was obligated on 5 acres. Total habitat replacement through FY 2019 is 3,446 acres of 762 acres required to be concurrent and proportional.

Uintah Basin Unit

Background

The Uintah Basin Salinity Control Unit (UB) located in northeastern Utah, encompasses 225,000 irrigated agricultural acres irrigated with water diverted from tributaries of the Duchesne and Green Rivers south of the Uinta Mountains and north of Ouray, Utah. The 1974 SCA named four specific salinity control projects (Paradox Valley Unit, Grand Valley Unit, Crystal Geyser Unit, Las Vegas Wash Unit) which directed expedited planning reports for irrigation source control in Uinta Basin (UB), Lower Gunnison, Colorado River Indian Reservation, and Palo Alto Irrigation District. After multiple studies, UB was established by a 1982 environmental impact statement, although USDA funding of salinity control projects started in 1980 using grant programs already in place. Salt load reduction is achieved by improving irrigation efficiency and reducing deep percolation. The 1982 EIS anticipated treating 122,200 acres, controlling 76,600 tons of salt annually at a cost of \$199/ton (2019 dollars). Initial success of the program resulted in the preferred treatment shifting from improved flood to more efficient sprinkler systems. The EIS was amended in 1991 increasing the UB treatment goal to 160,000 acres (70% of 225,000 irrigated acres in the unit).

Current Year

During FY 2019 NRCS treated 823 acres, 105 acres of which were conversion from improved surface systems (typically gated pipe) to sprinklers, to control 997 tons of salt annually at a cost of \$204/ton. No wheel line systems were upgraded to pivots. Through FY 2019 NRCS has treated 160,651 acres, controlling a total of 160,297 tons (132,163 tons on-farm and 28,134 tons off-farm) of salt annually at a cost of \$155/ton (2019 dollars). This Unit has reached its acreage goal. NRCS will continue supporting salinity control in this unit.

In FY 2019 one new wildlife habitat replacement project was contracted on 25 acres in the Uintah Basin Unit. Total habitat replacement through FY 2019 is 21,610 acres of 3,213 acres required to be concurrent and proportional.

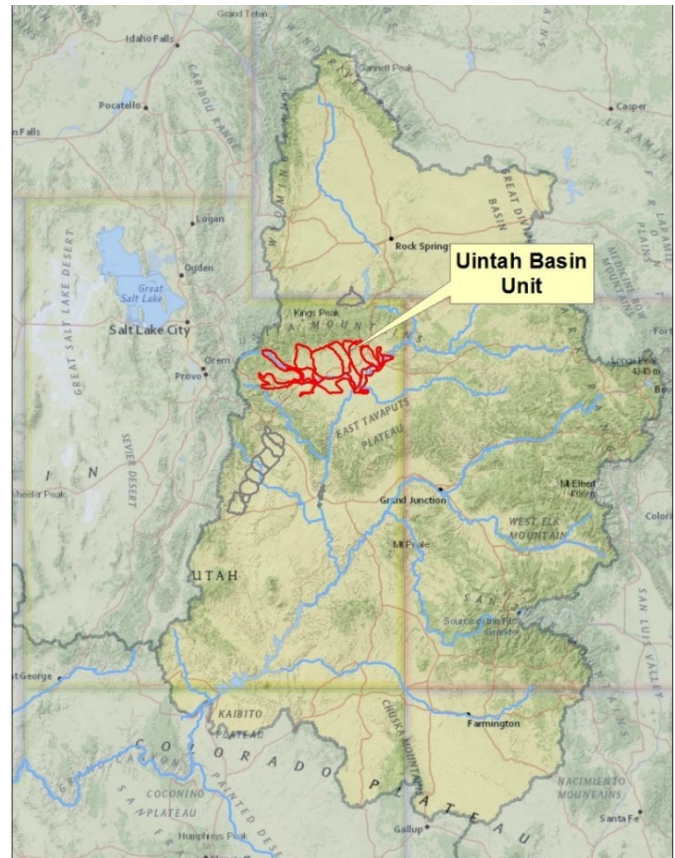


Figure 7: Uintah Basin Unit Location

Contact Information

This report is limited in scope. For additional information on the Colorado River Salinity Control Program visit:

Natural Resources Conservation Service web site:

www.nrcs.usda.gov/wps/portal/nrcs/detail/ut/programs/financial/eqip/

Bureau Reclamation web site: www.usbr.gov/uc/progact/salinity/

Colorado River Salinity Control Forum web site: <http://coloradoriversalinity.org/>

For additional Monitoring and Evaluation reports search the internet under “USDA Monitoring & Evaluation Reports for Salinity Projects”.

Other information please contact:

Jim Spencer, Wildlife Biologist
USDA – NRCS
815 South 400 West
Roosevelt, UT 84066
(435) 722-4621 Ext. 128
jim.spencer@ut.usda.gov

Anders Fillerup, Salinity Engineer
USDA - NRCS
815 South 400 West
Roosevelt, UT 84066
(435) 789-4621 Ext. 124
anders.fillerup@ut.usda.gov

Utah NRCS offices within the Salinity Area are located in the following communities: Roosevelt, Vernal, Price, and Castle Dale, UT.

Non-Discrimination Statement

The U.S. Department of Agriculture (USDA) prohibits discrimination against its customers. If you believe you experienced discrimination when obtaining services from USDA, participating in a USDA program, or participating in a program that receives financial assistance from USDA, you may file a complaint with USDA. Information about how to file a discrimination complaint is available from the Office of the Assistant Secretary for Civil Rights. USDA prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex (including gender identity and expression), marital status, familial status, parental status, religion, sexual orientation, political beliefs, genetic information, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.)

To file a complaint of discrimination, complete, sign, and mail a program discrimination complaint form, available at any USDA office location or online at www.ascr.usda.gov, or write to:

USDA
Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, SW.
Washington, DC 20250-9410

Or call toll free at (866)632-9992 (voice) to obtain additional information, the appropriate office or to request documents. Individuals who are deaf, hard of hearing, or have speech disabilities may contact USDA through the Federal Relay service at (800)877-8339 or (800)845-6136 (in Spanish). USDA is an equal opportunity provider, employer, and lender.

Persons, with disabilities who require alternative means for communication of program information (e.g., Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202)720-2600 (voice and TDD).

Appendix A: Wildlife Case Study

Background

This project will implement five Beaver Dam Analog (BDA) structures, stream and shoreline protection practices, pollinator seeding, windbreak establishment, an irrigation system for windbreak establishment, and livestock exclusion fencing on a half mile of stream passing through existing pasture. This is the first BDA project completed by NRCS Uintah Basin staff. The project is ongoing and livestock exclusion fences are to be installed in FY2020 to enclose an area of approximately 9 acres.

This project required a state issued stream alteration permit. The state engineer determined that no new water right was required for this project since the BDA does not impound water above the ordinary highwater mark.

Life expectancy of BDA's is one year, although they can last several years to a lifetime under favorable conditions. While the lifespan of the practice is relatively short the long-term impacts can be significant. The stream is widened, slowed, and begins to move laterally, taking material from the stream bank instead of the stream bed. By reducing incision flood plains are restored and riparian habitat can become established leading to more permanent change.

Results

The producer has subsequently applied to participate in the Conservation Stewardship Program (CSP) which compensates producers for conservation activity. The BDA will be part of his long-term strategy for conservation, thus improving the long-term sustainability of participation and operation and maintenance.

One of the BDA's was installed adjacent to a road where members of the community would be able to see its benefits. Shortly thereafter, local Conservation District (CD) board members saw it and invited Jim Spencer to attend the next Board meeting and explain the practice to them.

The following pictures show the stream condition prior to installation, one of the newly constructed BDA's, and the same BDA and its impacts later in the year.



Figure 8: Pre-Project Stream Condition May, 2019



Figure 9: Newly Installed BDA May, 2019



Figure 10: Newly Installed BDA September 5th, 2019



Figure 11: Newly Installed BDA October 4th, 2019