SPECIAL IMPROVEMENT DISTRICT #1 OF THE RIO GRANDE WATER CONSERVATION DISTRICT

ANNUAL REPORT FOR THE 2019 PLAN YEAR

Prepared

February 28, 2020

by

Rio Grande Water Conservation District
8805 Independence Way
Alamosa, Colorado 81101

in consultation with

Davis Engineering Service, Inc.
P.O. Box 1840, 1314 11th Street
Alamosa, Colorado 81101

Tables

Figures

Appendices

Executive Summary

The Rio Grande Water Conservation District (RGWCD) established Special Improvement District #1 (Subdistrict #1) in 2006. After extensive litigation and appeals over the Plan of Water Management (Plan), and decisions by both the District and the Colorado Supreme Courts in 2010 and 2011, respectively, the Plan was approved. The approved Plan guided the implementation of Subdistrict #1. In spring 2012, the State Engineer's Office (SEO) provided additional guidance regarding the Annual Replacement Plan (ARP).

After SEO approval of the 2012 Annual Replacement Plan for Subdistrict #1, objectors-initiated litigation over the ARP's suitability. On October 29 and 30, 2012, a Court trial was held to address the Subdistrict #1 augmentation plans and subject wells' description and whether Closed Basin Project (CBP) production could be used as a replacement water source. The District Court issued its ruling on the objections on April 10, 2013 approving the ARP, including the use of the CBP production as a replacement water source. Some of the objectors appealed the Court's ruling to the Colorado Supreme Court and arguments in the case were heard on September 30, 2014.

On June 29, 2015, the Colorado Supreme Court ruled in a unanimous opinion that the 2012 ARP's inclusion of Closed Basin Project water as a source of replacement water for depletions caused by Subdistrict groundwater withdrawals was adequate and suitable to prevent injury to senior surface water rights and the inclusion of augmentation plan wells as Subdistrict wells for the purpose of calculating total groundwater depletions did not render the ARP invalid.

On April 13, 2019, the 2019 ARP was finalized and provided to the SEO, the District Court and the public. On May 1, 2019, the SEO approved the 2019 ARP, enabling Subdistrict #1 staff to move forward remedying injurious depletions. The Plan and the Court require a detailed Annual Report (AR) to document Subdistrict #1's compliance with the decrees and the approved 2019 ARP. The AR is due on or before March 1, 2020.

The SEO and the Colorado Division of Water Resources (CDWR) generate much of the data required to be included in the AR. The data describes the various aspects of water use throughout the 2019 ARP year related to Subdistrict #1, including streamflow records, diversion records and Subdistrict #1 well groundwater withdrawals records.

Although the ARP year is not yet complete, Subdistrict #1 has accomplished a majority of the ARP's goals. This AR details how Subdistrict #1 has remedied all injurious depletions at the time the injury occurred, in the place the injury occurred and for the total amount of injury for the 2019 ARP year. This AR complies with the terms and conditions of the court decrees by permitting public access to data related to projections in the 2019 ARP and to Subdistrict #1's actual operations. It also details the outcomes of Subdistrict #1's actions during the 2019 ARP year.

Subdistrict #1 proceeded with proactive and conservative practices during the 2019 ARP Year to ensure senior water rights were not injured by groundwater withdrawals from Subdistrict #1 Wells. The 2019 AR describes the data, methodology and calculations that verify injurious depletions were remedied as required.

This AR confirms that Subdistrict #1 provided more replacement water to the Rio Grande than was necessary for the Plan Year to properly make the river "whole." The AR also describes Subdistrict #1's attempts to reduce groundwater withdrawals through use of the Conservation Reserve Enhancement Program (CREP).

The AR data is accurate as of March 1, 2020 but will not be complete until the end of the 2019 ARP year, April 30, 2020.

1.0 CALCULATIONS OF ACTUAL PLAN YEAR 2019 RIO GRANDE DEPLETIONS FROM SUBDISTRICT WELLS

This section of the 2019 AR presents data showing both projected and actual calculated depletions to the Rio Grande caused by groundwater withdrawals from Subdistrict #1 Wells. Depletions are calculated by a CDWR supplied Response Function spreadsheet that outputs total depletions for the ARP year and a breakdown of monthly depletions for three reaches of the Rio Grande.

Projected depletions were presented in the 2019 ARP completed on April 12, 2019. Forecasted calendar year flow through the Rio Grande near Del Norte gage (index gage) was the primary bench mark used to make projections. From this forecast, estimates of total well groundwater withdrawals, canal diversions and annual recharge credit were prepared and utilized in the depletion spreadsheet. In the following subsections, actual river depletions have been calculated for 2019 using recorded values for groundwater withdrawals, canal diversions and resulting recharge credit.

Full definitions of terms and the processes used in this section are included in the ARP and the Plan. As the AR is a summary report of the success of the ARP, definitions and extensive explanations are not repeated herein.

1.1 STREAM FLOW FORECASTS COMPARED TO ACTUAL FLOWS

1.1.2 2019 Stream Flow Forecasts

The Division Engineer for Water Division 3 elected to use a hybrid of both the NRCS Forecast and the National Weather Service Forecast for the Rio Grande gage near Del Norte (index gage) as well as the Conejos River system in 2019. Data collected from the Division 3 Engineer's Preliminary Rio Grande Compact Ten Day Report on March 29, 2019 estimated the flow for the period April – September 2019 for the index gage to be 704,000 ac-ft. Also, from the data contained in the report, 96,000 ac-ft is added to the April – September hybrid forecast for the

index gage to obtain the projected annual flow. Therefore, using the Division Engineer's March 29, 2019 hybrid forecast and the additional 96,000 ac-ft, the projected annual flow of the Rio Grande at the index gage was 800,000 ac-ft.

1.1.3 2019 Actual Stream Flow

Based on the Division 3 Engineer's Rio Grande Compact Ten Day Report for the end of 2019, see Appendix H of the Appendices, the actual annual flow of the Rio Grande through the index gage was 927,000 ac-ft. This increase above the projected flows resulted in a decrease in calculated stream depletions for the Subdistrict. See Table 1.7 below. The actual annual flow of the Conejos River through the index gage was 430,000 ac-ft, also included in Appendix H.

1.2 TOTAL GROUNDWATER WITHDRAWALS

Based on information obtained from the Division of Water Resources on February 7, 2020, the actual metered groundwater withdrawals from Subdistrict #1 Wells included in the 2019 ARP was 211,118.44 ac-ft for Irrigation Year 2019. Projected groundwater withdrawals for 2019, as contained in the 2019 ARP, was 235,000 ac-ft. All Subdistrict #1 metered groundwater withdrawals in 2019 was used for irrigation with the vast majority through center pivot sprinklers and only a small amount applied to flood irrigation.

1.3 ANNUAL RECHARGE CREDIT

Recharge credit is available to four canals/ditches that divert from the Rio Grande into Subdistrict #1 in accordance with their respective decrees. This recharge credit is used as an offset to groundwater consumption in accordance with the respective decrees and the method used to calculate depletions. The canals/ditches and their decrees are listed in the following tabulation:

Canal/Ditch	Decree
Rio Grande Canal	Case No. W-3979
San Luis Valley Irrigation District	Case No. W-3980
Prairie Ditch	Case No. 96CW45
San Luis Valley Canal	Case No. 96CW46

The actual 2019 annual calculated recharge credits for these four canals/ditches within Subdistrict #1 were prepared using end of irrigation year 2019 canal diversion records obtained from Division of Water Resources and information obtained directly from canal companies and irrigators. The actual recharge credit for each canal is adjusted through the following steps, which results in total consumable credit.

Information used in calculating total consumable credit for each canal/ditch was prepared using the entire irrigated service areas of each canal/ditch. Then the totals were reduced based on the

best estimated percentages of total pro rata ditch shares located within the Subdistrict # 1 boundary provided by each ditch company. The following percentages were used:

Rio Grande Canal = 91.68%
San Luis Valley Irrigation District = 100%
Prairie Ditch = 99.20%
San Luis Valley Canal = 78.82%

Further, it was necessary to reduce the totals by the actual consumptive use attributable to surface water used directly through sprinklers and for flood irrigation. This data was obtained from irrigators during 2019 and is listed below:

1) Rio Grande Canal: Surface water through sprinklers = 4,804 ac-ft and surface water applied to flood irrigation = 116.5 ac-ft.
2) San Luis Valley Irrigation District: Surface water through sprinklers = 220.96 ac-ft and surface water applied to flood irrigation = 0 ac-ft.
3) Prairie Ditch: Surface water through sprinklers = 712.87 ac-ft and surface water applied to flood irrigation = 0 ac-ft.
4) San Luis Valley Canal: Surface water through sprinklers = 1,240.38 ac-ft. and surface water applied to flood irrigation = 0 ac-ft.

Using the total consumable water derived from each of the four canals/ditches in accordance with the procedure described in the Court's ruling in Case Numbers 06CV64 & 07CW52 and reducing those totals using the above information and the approved estimated consumption for sprinkler (83%) and flood irrigation (60%), the following tabulation shows the actual resulting total of individual canal/ditch consumable credits and the total for all of the systems.

Table 1.1
Calculated Recharge Decree Credits for Subdistrict #1 During 2019
Prepared February 17, 2020
(All units in ac-ft)

	Rio Grande Canal	San Luis Valley I.D.	Prairie Ditch	SLV Canal	Totals
Total Consumable	148,536.48	46,035.83	22,971.00	30,002.62	**247,545.93**
% Within Subdistrict #1	91.68%	100%	99.20%	78.82%	
Total Consumable Within Subdistrict #1	136,178.25	46,035.83	22,787.23	23,648.06	**228,649.37**
Surface Water Through Sprinklers @83%	-3,987.33	-183.40	-591.69	-1,029.52	**-5,791.94**
Surface Water Used for Flood @60%	-69.9	0	0	0	**-69.90**
Totals	**132,121.02**	**45,852.43**	**22,195.54**	**22,618.54**	**222,787.53**

Therefore, the calculated consumable credit under the four recharge decrees for 2019 is 222,787.53 ac-ft.

1.4 CLASSIFICATION AS "WET," "AVERAGE," OR "DRY" YEAR

Response Functions generated from the RGDSS Groundwater Model Phase 6P98 were used in determining stream depletions as described in this section based on three types of weather conditions during the ARP year. These conditions are "Wet," "Average," or "Dry." A year is classified as being "Wet," "Average," or "Dry" based on the amount of Net Groundwater Consumptive Use for Subdistrict wells using the following criteria(1):

Table 1.2
Definition of "Wet," "Average," or "Dry" Year

Year Type	Net Groundwater Consumptive Use (ac-ft/yr)
Wet	Less than 10,000
Average	Between 10,000 and 180,000
Dry	Greater than 180,000

Reference: Updated information obtained March 20, 2012 from James R. Heath, P.E., Division of Water Resources Lead Modeler.

The Net Groundwater Consumptive Use for the 2019 ARP year was -47,559 ac-ft as shown in Table 1.3. Referencing the ranges in Table 1.2, the 2019 ARP year is classified as a "Wet" year.

1.5 2019 STREAM DEPLETIONS

Stream depletions attributable to the groundwater withdrawals from Subdistrict #1 Wells have been calculated using the Response Function spreadsheet produced by the RGDSS Groundwater Model Phase 6P98 (RGDSS Model) as operated by DWR. The first step in calculating depletions is to update Table 1.3 to derive annual Net Groundwater Consumptive Use. For reference, values for previous years 2014, 2015, 2016, 2017 and 2018 are included in the table along with the values for 2019. Notes are included at the bottom of the table to provide a description of the calculations. For 2019, the values in columns 5 through 9 are obtained from Table 1.1, above. The Net Groundwater Consumption Use data for 2019 is applied to the Response Function spreadsheet contained in Table 1.4 to calculate stream depletions for the 2019 Plan Year and lagged depletions into the future.

The Net Groundwater Consumptive Use derived in Table 1.3 is input into Column 3 of Table 1.4 for year 2019. The annual stream depletions resulting from Subdistrict #1 groundwater withdrawals for the respective reaches of the Rio Grande and the total are shown in columns 4 through 7 of Table 1.4.

Table 1.5 is an output from the Response Function spreadsheet that divides the annual total depletions into monthly replacement obligations for the three impacted reaches of the Rio Grande. This table lists the 2019 Plan Year stream depletions as required under the Plan and Decree.

Table 1.3
Estimated Net Groundwater Consumptive Use
(Units in ac-ft)

	Subdistrict #1 Total				Recharge that Offsets Groundwater Withdrawals					
Year	Irrigation Pumping to Center Pivots	Irrigation Pumping to Flood Irrigation	Other Pumping	Groundwater Consumption	Rio Grande Canal	San Luis Valley Irrigation District	Prairie Ditch	San Luis Valley Canal	Total	Net Groundwater Consumptive Use
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2011	328,387	0	0	272,561	83,801	9,981	8,325	8,204	110,310	**162,251**
2012	260,454	0	0	216,177	54,870	6,748	4,795	3,620	70,034	**146,143**
2013	229,992	0	0	190,894	84,919	5,477	4,227	4,782	99,404	**91,490**
2014	237,366	0	0	197,013	110,566	28,596	14,133	12,777	166,072	**30,941**
2015	206,354	0	0	171,274	122,980	34,685	15,139	15,608	188,412	**-17,138**
2016	236,995	0	0	196,705	125,562	32,064	12,873	14,396	184,894	**11,812**
2017	236,329	0	0	196,153	138,112	31,813	15,292	16,043	201,260	**-5,107**
2018	262,896	0	0	218,203	42,895	2,136	1,924	2,140	49,096	**169,108**
2019	211,118	0	0	175,228	132,121	45,852	22,196	22,619	222,788	**-47,559**
Avg	**245,544**	**0**	**0**	**203,801**	**99,536**	**21,928**	**10,989**	**11,132**	**143,586**	**60,216**

Explanation of Columns

(1) Calendar Year

(2) Determined from metered groundwater withdrawals

(3) Determined from metered groundwater withdrawals

(4) Determined from metered groundwater withdrawals

(5) Calculated as 0.83xCol2 + 0.60xCol3 +Col4xOther Consumptive Use Ratio depending on the year (Col5 of Net CU Worksheet)
(0.83 and 0.60 are the consumptive use ratios of total pumping associated with sprinkler and flood irrigation practices, respectively)

(6) - (9) To be determined by analysis of historic diversions and recharge decrees

(10) Calculated as Col6 + Col7 + Col8 + Col9

(11) Calculated as Col5 - Col10

Note: Table 2.4 – Column for "Other Pumping" was added as Column (4) and an explanation was added to the Column reference numbers, equations, and the descriptions were also adjusted accordingly

Table 1.4
Estimated Historical and Projected Net Stream Depletions from Groundwater Withdrawals in Subdistrict #1
(Units in ac-ft)

			Annual Net Stream Depletions (May-Apr) [a)]				
Year	Rio Grande near Del Norte Stream Gage (Apr-Sep)	Net Groundwater Consumptive Use (Jan-Dec)	Rio Grande Del Norte-Excelsior	Rio Grande Excelsior-Chicago	Rio Grande Chicago-State Line		Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1970	561,150	101,275	225	341	-116		450
1971	389,397	135,541	420	714	-169		965
1972	373,031	169,393	619	1,069	-223		1,465
1973	755,509	38,851	479	878	-91		1,266
1974	270,942	220,567	2,366	1,325	-285		3,406
1975	730,848	23,753	2,294	1,028	-137		3,185
1976	512,997	65,760	2,016	938	-164		2,790
1977	163,635	240,127	3,825	1,513	-347		4,991
1978	340,660	155,492	3,828	1,627	-328		5,127
1979	886,617	11,835	3,093	1,222	-153		4,162
1980	672,668	63,873	2,726	1,100	-189		3,637
1981	310,945	170,010	2,681	1,423	-300		3,804
1982	572,474	36,314	2,286	1,211	-156		3,341
1983	578,510	32,273	2,031	994	-138		2,887
1984	652,637	40,219	1,869	902	-137		2,634
1985	864,564	2,568	1,648	717	-87		2,278
1986	865,371	-37,341	-90	669	16		595
1987	907,650	109,992	43	858	-115		786
1988	346,087	177,158	593	1,246	-226		1,613
1989	407,389	169,478	883	1,485	-243		2,125
1990	424,033	88,971	886	1,371	-166		2,091
1991	529,567	46,509	826	1,117	-117		1,826
1992	415,482	67,128	861	1,040	-136		1,765
1993	577,831	-21,380	-193	847	-6		648
1994	444,629	100,660	-115	924	-117		692
1995	734,492	-68,610	-2,899	893	140		-1,866
1996	313,441	205,238	-960	1,265	-111		194
1997	781,596	-1,949	-462	906	9		453
1998	466,821	112,457	-70	1,003	-122		811
1999	799,489	-50,972	-2,204	916	110		-1,178
2000	312,094	213,180	-208	1,325	-142		975
2001	655,233	65,822	415	1,184	-91		1,508
2002	96,717	322,490	3,276	1,932	-378		4,830
2003	261,300	234,308	5,234	2,191	-388		7,037
2004	431,675	126,966	4,837	1,967	-322		6,482
2005	682,540	70,356	4,059	1,661	-234		5,486
2006	411,656	119,657	3,660	1,626	-273		5,013
2007	593,239	23,116	3,064	1,311	-155		4,220

2008	623,333	49,201	2,700	1,148	-166		3,682
2009	513,058	-4,448	2,119	911	-90		2,940
2010	453,063	76,286	2,013	968	-166		2,815
2011	415,182	162,251	2,118	1,317	-267		3,168
2012	328,382	146,143	2,101	1,509	-261		3,349
2013	344,435	91,490	1,982	1,406	-206		3,182
2014	518,599	30,941	1,790	1,131	-134		2,787
2015	555,700	-17,138	937	890	-49		1,778
2016	565,800	11,812	722	716	-54		1,384
2017	573,900	-5,107	558	565	-32		1,091
2018	213,100	169,108	959	1,015	-225		1,749
2019	900,000	-47,559	-1,144	904	57		-183
2020			-1,286	556	50		-680
2021			-889	392	27		-470
2022			-804	301	22		-481
2023			-715	238	19		-458
2024			-577	196	15		-366
2025			-477	164	13		-300
2026			-407	137	11		-259
2027			-343	106	10		-227
2028			-292	74	9		-209
2029			-245	50	8		-187
2030			-231	36	8		-187
2031			-233	29	9		-195
2032			-231	25	9		-197
2033			-218	22	8		-188
2034			-186	11	7		-168
2035			-136	-2	5		-133
2036			-119	-1	5		-115
2037			-107	0	5		-102
2038			-89	0	4		-85
2039			0	0	0		0
2040			0	0	0		0
Avg 2001-2019	480,890	85,563	2,179	1,282	-181		3,280
Avg 2001-2010	472,181	108,375	3,138	1,490	-226		4,401
Post Plan Depletion			-7,586	2,335	244		-5,007

a) Estimated net stream depletions shown in this table are greater than the stream depletions that potentially cause injury to surface water rights.

Explanation of Columns

(1) Year

(2) Rio Grande near Del Norte Gage streamflow in ac-ft for the NRCS streamflow forecast period of April through September. The streamflow value for 2019 is from the December 3, 2019 Rio Grande Compact Ten Day Report

(3) Net Groundwater Consumptive Use (NetGWCU) for January through December. NetGWCU values

for 2001 through 2010 were taken from the RGDSS Groundwater Model output. NetGWCU values for 2012 through 2019 were calculated using well meter data, diversion data, and irrigated acreage information

(4) Net Stream Depletions in the Rio Grande Del Norte to Excelsior Ditch reach for the plan year (May through April) in ac-ft

(5) Net Stream Depletions in the Rio Grande Excelsior Ditch to Chicago Ditch reach for the plan year (May through April) in ac-ft

(6) Net Stream Depletions in the Rio Grande Chicago Ditch to the State Line reach for the plan year (May through April) in ac-ft

(7) Total Net Stream Depletions columns (4+5+6) in ac-ft

Table 1.5
Subdistrict #1 Monthly Net Stream Depletions for Plan Year
Calculated February 17, 2020
(Units in ac-ft)

	Subdistrict #1 Total												
	2019								2020				
Stream Reach	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**Total**
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Rio Grande Del Norte-Excelsior	69	26	-41	-108	-131	-144	-142	-135	-140	-123	-144	-130	**-1,143**
Rio Grande Excelsior-Chicago	114	93	79	63	68	58	55	68	77	73	84	73	**905**
Rio Grande Chicago-State Line	7	10	13	-2	5	35	12	6	-3	-6	-10	-12	**55**
Total	**190**	**129**	**51**	**-47**	**-58**	**-51**	**-75**	**-61**	**-66**	**-56**	**-70**	**-69**	**-183**

As indicated in lower right-hand corner of Table 1.5, the calculated total depletions that will impact the Rio Grande during the 2019 ARP year, due to both past groundwater withdrawals and the 2019 groundwater withdrawals, using the RGDSS Groundwater Model Phase 6P98 Response Function is **-183** ac-ft. The locations of the depletions and monthly quantities are also tabulated in Table 1.5.

If wells that were groundwater withdrawals in 2019 were shut off today, there would be a continuing impact to the river for approximately 19 years according to the RGDSS Groundwater Model Phase 6P98. This is the calculated time required to recover to conditions that existed before well groundwater withdrawals started. The volume of water required to replace depletions during this recovery period is called Post-Plan Stream Depletions. Table 1.6 shows that the total post-plan stream depletions are calculated to be -5,007 ac-ft. The portion of the total depletions impacting each of the three designated reaches of the river is also included in Table 1.6.

Table 1.6
Subdistrict #1 Post-Plan Stream Depletions
(Units in ac-ft)

Years (May-Apr)	Rio Grande Del Norte-Excelsior	Rio Grande Excelsior-Chicago	Rio Grande Chicago-State Line	Total
2020-2039	-7,585	2,334	244	**-5,007**

Table 1.7 lists both the April 2019 projected obligations and the February 2020 final calculated obligations to compare projected versus actual calculated depletions for the 2019 ARP Year.

Table 1.7
Subdistrict # 1 Monthly Stream Replacement Obligation for 2019 ARP year
(Units in ac-ft)

	Reach #1				Reach # 2				Reach # 3					
Month	4/2018 Projection	2/2019 Calculation	4/1/2019 Projection	2/1/2020 Calculation	4/2018 Projection	2/1/2019 Calculation	4/1/2019 Projection	2/1/2020 Calculation	4/2018 Projection	2/2019 Calculation	4/12/2019 Projection	2/28/2020 Calculation	Projected Totals	Calculated Totals
19-Mar	72	73			132	133			-16	-16			188	190
19-Apr	83	83			106	107			-28	-28			161	162
19-May			87	69			111	114			1	7	199	190
19-Jun			88	26			75	93			-30	10	133	129
19-Jul			87	-41			68	79			0	13	155	51
19-Aug			75	-108			53	63			5	-2	133	-47
19-Sep			69	-131			53	68			3	5	125	-58
19-Oct			69	-144			50	58			6	35	125	-51
19-Nov			67	-142			44	55			2	12	113	-75
19-Dec			67	-135			57	68			3	6	127	-61
20-Jan			48	-140			64	77			-2	-3	110	-66
20-Feb			44	-123			64	73			-8	-6	100	-56
20-Mar			46	-144			74	84			-13	-10	107	-70
20-Apr			54	-130			62	73			-21	-12	95	-69
Total 2019 Plan Year Projected	155				238				-44					
Total 2019 Plan Year Calculated 2/17/2018		156				245				-44				
Total 2020 Plan Year Projected			801				775				-54			
Total 2020 Plan Year Calculated				-1,143				905				55	**1,522**	**-183**

* Total depletions entered in Table 1.7 have been rounded off to the nearest whole number.

The April 12, 2019 calculations used for the 2019 ARP Year Projections were based on the then best estimates of both stream flow and groundwater withdrawals. DWR's end-of-year meter and diversion records for 2019 groundwater withdrawals for Subdistrict Wells and surface water diversions into the Closed Basin under the Recharge Decrees resulted in an actual net-groundwater withdrawal significantly less than the calculations used for the 2019 ARP. Application of the actual net-groundwater withdrawals shows that, as of the date of this report, Subdistrict #1 has supplied 1,705 ac-ft more than the actual calculated injurious depletions by the approved Response Functions. Subdistrict #1 expects that CDWR will work with Subdistrict #1 to address this over-replacement to assure that, while all injurious depletions within Colorado are remedied, Subdistrict Wells replace or otherwise remedy depletions only in the minimum amount necessary to avoid injury to senior surface water rights and that any over-replacements will not accrue to the benefit of downstream States under the Rio Grande Compact and Colorado will continue to beneficially consume all of the water it is entitled to under the Compact.

2.0 TOTAL DIVERSION BY DITCHES

Table 2.1 shows the ditch service areas that have diversions in Subdistrict #1. The diversions shown are total irrigation water for the ditch for the 2019 irrigation year, but only a portion is delivered within Subdistrict #1.

Table 2.1
Ditch Service Areas with Diversions in Subdistrict #1
Total Ditch Diversions for the 2019 Irrigation Year

WDID	DITCH NAME	Diversions in ac-ft	Subdistrict Year
2000546	Billings Ditch	5,243.00	2019
2000556	Butler Ditch	1,770.64	2019
2000627	Excelsior Ditch	25,233.00	2019
2000631	Farmers Union Canal	62,851.00	2019
2000699	Kane Callan Ditch	2,420.90	2019
2000736	Mc Donald Ditch	6,096.10	2019
2000798	Prairie Ditch	25,972.00	2019
2000812	Rio Grande Canal	182,024.00	2019
2000814	Rio Grande Ditch #2	1,365.22	2019
2000829	San Luis Valley Canal	34,712.00	2019
2001820	Seepage	199.94	2019
2700518	Green D #1	1,200.90	2019
2700523	Johnnie Smith D 1	847.04	2019
2700533	McLeod No 3	0.00	2019
2700714	McLeod No 4 & 5	320.00	2019

Notes: New Structure 2700714 replaced (2700534) McLeod No. 4 and (2700535) McLeod No. 5

3.0 TOTAL IRRIGATED ACRES

Each irrigation season, the RGWCD conducts a field survey of the irrigated acreage on the Valley floor to record crop types grown. Table 3.1 is the summary of "irrigated acres, cropping patterns and irrigation methods" on parcels that are part of 2019 Subdistrict #1 Farm Units. The data was derived from the irrigated agriculture field survey by spatially "capturing" any fields that lie within any of the landowner parcels that are part of the 2019 Subdistrict #1 Farm Units. Only those fields that had entries updated during the 2019 crop survey were used in this analysis. The crop information and acreage from the irrigated agriculture shapefile attribute tables was compiled and is shown in Table 3.1.

Table 3.1
Cropping Patterns within Subdistrict #1 for 2019

Crop Type	Total Acres	Sprinkler	LEPA	Flood
Alfalfa	26,500.29	26,182.36	30.05	287.88
Canola	1,617.40	1,617.40	0	0
Carrots	1,273.36	1,273.36	0	0
Corn	125.06	125.06	0	0
Grain	38,159.28	38,044.67	114.61	0
Lettuce	1,631.37	1,631.37	0	0
Oats	2,725.10	2,718.72	0	6.38
Potatoes	45,126.36	45,060.40	60.27	5.70
Sudan Grass Hay	4,007.40	4,007.40	0	0
Vegetables	1,230.17	1,223.95	0	6.22
Triticale Hay	1,743.30	1,743.30	0	0
Grass Hay/Pasture	4,121.79	2,646.81	0	1,474.99
Fallowed	4,543.87	4,151.86	0	392.00
Cover Crop	17,669.76	17,602.68	59.27	7.81
CREP	8,768.63	8,768.63	0	0
Quinoa	1,919.96	1,919.96	0	0
Hemp	5,802.90	5,794.68	3.69	4.53
Totals	**166,965.99**	**164,512.60**	**267.89**	**2,185.50**

Information collected for 2019 Subdistrict #1 Farm Units included identification of the wells and surface rights allocated to the irrigated fields on the lands comprising each Farm Unit. A summary of the ditches and pro rata shares of surface water allocated to fields on Subdistrict #1 2019 Farm Units is included in Appendix B and represents the "surface water source" for Subdistrict #1.

The Plan timeline requires Subdistrict #1 to request well meter readings prior to the end of the irrigation season and, therefore, the meter readings were requested as of October 1, 2019. The diversion amounts for the Subdistrict #1 Wells is for the portion of the 2018 irrigation season through November 1, 2019. The groundwater withdrawals covered by augmentation plans during 2019 was not included in the total groundwater withdrawals used to calculate Recharge Credit in Section 4, below.

4.0 SURFACE WATER CREDIT

The amount of Surface Water Credit (SWC) exchanged both 2018 and 2019, between Farm Units and applied against the 2019 Variable Fees was 18,849.56 ac-ft.

At the time of submission of this AR, the estimated amount of 2018 carry-over SWC carried forward into 2019 that was not utilized and therefore extinguished by rule was 7,086.59 ac-ft. This number may change during the appeal process in 2020.

5.0 CLOSED BASIN PROJECT PRODUCTION-PROJECTED AND ACTUAL

According to accounting from the Bureau of Reclamation (BOR) Alamosa Field Division, Closed Basin Division, San Luis Valley Project, Colorado, the production of the CBP delivered to the Rio Grande was 8,567 ac-ft during the calendar year 2019. The 2019 ARP projected the production of the CBP to be 8,500.0 ac-ft.

6.0 AMOUNTS AND SOURCES OF REPLACEMENT WATER

The remaining amounts and sources of water available for the remainder of the 2019 ARP year and 2019 ARP is: ac-ft.

Table 6.1
Remaining Balances of Replacement Water Acquired by Subdistrict #1 for 2019

Water Right(s) Name	Quantity (ac-ft)	Water Previously Controlled By:	Decree(s)	Current Location
Williams Creek Squaw Pass	**370.56**	Navajo Development	CA73, CA308, W-1869-78	Rio Grande Reservoir
Williams Creek Squaw Pass	**56.49**	San Luis Valley Irrigation District	CA73, CA308, W-1869-78	Rio Grande Reservoir
Tabor Ditch # 2, Tabor Ditch # 2 Enlargement	**5.2**	Colorado Parks and Wildlife	W-3549	Rio Grande Reservoir

Piedra River TM, Piedra Water Rights	**500**	Colorado Parks and Wildlife	W-3549	Rio Grande Reservoir
Pine River Weminuche Pass	**1,000.0**	SLV Water Conservancy District	CA 1248-B, 84CW62, 94CW62	Rio Grande Reservoir
Treasure Pass Trans-basin Diversion	**730.76**	Evelyn Underwood and Patti Cook	CA 0308	Rio Grande Reservoir
Treasure Pass Trans-basin Diversion	**100**	Sid Klecker	CA 0308	Rio Grande Reservoir
SMRC 2015 Leases of 3095.8 shares in RG Canal @ 1.86 af/share	**5,568.2**	Santa Maria Reservoir Co.		Santa Maria & Continental Reservoirs
SMRC 2016 Leases of 1645.0 shares in RG Canal @ 0.968 af/share	**1,453.96**	Santa Maria Reservoir Co.		Santa Maria & Continental Reservoirs
SMRC Leases DWR Credit for Overpayment in 2015	**200**	Santa Maria Reservoir Co.		Santa Maria & Continental Reservoirs
Prairie Ditch Forbearance	**100**			
Farmers Union Canal Forbearance	**1,000**			
San Luis Valley Canal Forbearance	**400**			
Empire Canal Forbearance	**500**			
Centennial Ditch Forbearance	**100**			
Excelsior Ditch Forbearance	**1,000**			
Rio Grande Lariat Ditch Forbearance	**100**			
Closed Basin Project Allocation as of March 1, 2019	**163**	RGWCD		Closed Basin Project
Total Water Available	**12,348.17**			

6.1 2019 Plan Year Forbearance Agreements

Pursuant to section 37-92-501(4)(b)(I)(B), C.R.S., Subdistrict #1 reached an agreement with the Centennial Ditch, Empire Canal, Excelsior Ditch, Farmers Union Canal, Lariat Ditch, Prairie Ditch, and San Luis Valley Canal whereby these canals accept that, subject to the specific provisions of the forbearance agreement, injury to its water rights resulting from the withdrawal of groundwater by Subdistrict #1 Wells can be remedied by means other than providing water to replace stream depletions when one of these canals are the calling right on the Rio Grande. Based upon climate projections and historical diversion patterns, the agreements with these canals are predicted to result in a reduction of 1,200 to 1,800 ac-ft of the amount of water

Subdistrict #1 would otherwise have to supply to the Rio Grande-Del Norte to Excelsior Ditch headgate reach. During the 2019 Plan Year, the Board of Managers of Subdistrict #1 chose not to exercise any forbearance with any canal for projected well depletions from May 1st through November 1st due to abundant replacement water in storage located in the Rio Grande and Santa Maria Reservoir facilities. All projected well depletions on the Rio Grande from Subdistrict #1 wells during that time frame were remedied by replacement water releases to the Rio Grande from those facilities.

7.0 OPERATION OF THE SUBDISTRICT #1 WATER REPLACEMENT PLAN

Subdistrict #1 replacement water was released from the Santa Maria Continental Reservoir in the Upper Rio Grande at the direction of the Division Engineer and based on output from the RGDSS Model to offset injurious stream depletions. All injurious depletions shown to occur in the accepted model run were replaced in the time, place and amount that they occurred, beginning May 1, 2019 through February 28, 2020, the date of completion of this report. The remaining 2019 ARP year depletions will be replaced by Closed Basin Project releases to the river and water in storage.

The reaches, amounts and time that these depletions occurred are described in Appendix A. These releases of water were performed under the provisions contained in section 37-87-103, C.R.S.

The most current RGDSS Groundwater Model runs and Response Functions do not predict depletions in amounts above the minimum threshold established by the Water Court, Water Division No. 3 in Case Nos. 2006CV64 and 2007CW52 caused by the withdrawal of groundwater by Subdistrict #1 Wells to streams other than the Rio Grande. Therefore, Subdistrict #1 did not make replacements to any stream other than the Rio Grande.

7.1 Description of Monthly Operations

January

Under the direction of the Division 3 Division Engineer and the District 20 Water Commissioner, Subdistrict #1 continued replacing projected stream reach depletions on the Rio Grande for the month of January on a daily basis pursuant to the amounts presented in the approved Subdistrict's 2018 ARP. On January 1st, the Subdistrict's Replacement Water Plan resumed with CBP allocation releases to the Rio Grande replacing all three Subdistrict #1 projected stream reach obligations. Bureau of Reclamation staff attempted to keep the release rate from the CBP canal into the Rio Grande to at least 6.391 ac-ft/day to meet the daily obligation for the Subdistrict and were successful in doing so for the entire month of January. A request was made to the Division Engineer for the negative depletions from Stream Reach 3 for January and February to be aggregated with the positive depletions in Stream Reach 2, on a daily basis. This request was approved. The balance of the Subdistrict #1 CBP allocation available for replacement water for the 2018 ARP as of the end of January was 780.89 ac ft.

February

Under the direction of the Division 3 Division Engineer and the District 20 Water Commissioner, Subdistrict #1 continued replacing projected stream reach depletions on the Rio Grande for the month of February on a daily basis pursuant to the amounts presented in the approved Subdistrict's 2018 ARP. On February 1st, the Subdistrict's Replacement Water Plan resumed with CBP allocation releases to the Rio Grande replacing all three Subdistrict #1 projected stream reach obligations. Bureau of Reclamation staff attempted to keep the release rate from the CBP canal into the Rio Grande to at least 6.27 ac-ft/day to meet the daily obligation for the Subdistrict and were successful in doing so for the entire month of February. A request was made to the Division Engineer for the negative depletions from Stream Reach 3 for January through March, to be aggregated with the positive depletions in Stream Reach 2, on a daily basis. This request was approved. The balance of the Subdistrict #1 CBP allocation available for replacement water for the 2018 ARP as of the end of February was 604.89 ac ft.

March

Under the direction of the Division 3 Division Engineer and the District 20 Water Commissioner, Subdistrict #1 continued replacing projected stream reach depletions on the Rio Grande for the month of March on a daily basis pursuant to the amounts presented in the approved Subdistrict's 2018 ARP. On March 1st, the Subdistrict's Replacement Water Plan resumed with CBP allocation releases to the Rio Grande replacing all three Subdistrict #1 projected stream reach obligations. Bureau of Reclamation staff attempted to keep the release rate from the CBP canal into the Rio Grande to at least 6.06 ac-ft/day to meet the daily obligation for the Subdistrict and were successful in doing so for the entire month of March. A request was made to the Division Engineer for a solution to remedy un-replaced injurious stream depletion in the amount of 11 ac-ft for March. This request was approved and an additional 11 ac-ft was delivered to fulfill all depletion requirements. The balance of the Subdistrict #1 CBP allocation available for replacement water for the 2018 ARP as of the end of March was 403.59 ac-ft.

April

Under the direction of the Division 3 Division Engineer and the District 20 Water Commissioner, Subdistrict #1 continued replacing projected stream reach depletions on the Rio Grande for the month of April on a daily basis pursuant to the amounts presented in the approved Subdistrict's 2019 ARP. On April 1st, the ditches on the Rio Grande began diverting water for the 2019 Irrigation Season. In anticipation of this, Subdistrict #1 began a reservoir release on April 1st from the approved Williams Creek Squaw Pass TM replacement water pool in the amount of 5.4 ac-ft/day to begin replacing projected depletion obligations in Stream Reach 1 and 2.

May

Under the direction of the Division 3 Division Engineer and the District 20 Water Commissioner, Subdistrict #1 continued replacing projected stream reach depletions on the Rio Grande for the month of May on a daily basis pursuant to the amounts presented in the approved Subdistrict's 2019 ARP. Subdistrict #1 Replacement Water Plan began with a release from the approved Santa Maria shares on April 30th from the approved Santa Maria replacement water pool in the amount of 6.419 ac-ft/day to begin replacing injurious depletion obligations in Stream Reach 1, 2 and 3 of the

Rio Grande for the month of May.

June

Under the direction of the Division 3 Division Engineer and the District 20 Water Commissioner, Subdistrict #1 continued replacing projected stream reach depletions on the Rio Grande for the month of June on a daily basis pursuant to the amounts presented in the approved Subdistrict's 2019 ARP. Subdistrict #1 Replacement Water Plan began with a release from the approved Santa Maria shares on May 31st from the approved Santa Maria replacement water pool in the amount of 4.43 ac-ft/day to begin replacing injurious depletion obligations in Stream Reach 1, 2 and 3 of the Rio Grande for the month of June. The Division 3 Division Engineer granted Subdistrict #1 permission to exchange the negative projected depletion in Stream Reach 3 identified in the 2019 ARP upstream to offset Stream Reach 2 depletions on a daily basis. There were a total of 30.0 ac-ft of projected returns for Subdistrict #1 to Stream Reach 3 for the month of June.

July

Under the direction of the Division 3 Division Engineer and the District 20 Water Commissioner, Subdistrict #1 continued replacing projected stream reach depletions on the Rio Grande for the month of July on a daily basis pursuant to the amounts presented in the approved Subdistrict's 2019 ARP. Subdistrict #1 Replacement Water Plan began with a release from the approved Santa Maria shares on June 30th from the approved Santa Maria replacement water pool in the amount of 5.02 ac-ft/day to begin replacing injurious depletion obligations in Stream Reach 1, 2 and 3 of the Rio Grande for the month of July. The Division 3 Division Engineer granted Subdistrict #1 permission to exchange the negative projected depletion in Stream Reach 3 identified in the 2019 ARP upstream to offset Stream Reach 2 depletions on a daily basis. There was a total of 0 ac-ft of projected returns for Subdistrict #1 to Stream Reach 3 for the month of July.

August

Under the direction of the Division 3 Division Engineer and the District 20 Water Commissioner, Subdistrict #1 continued replacing projected stream reach depletions on the Rio Grande for the month of August on a daily basis pursuant to the amounts presented in the approved Subdistrict's 2019 ARP. Subdistrict #1 Replacement Water Plan began with a release from the approved Santa Maria shares on July 31st from the approved Santa Maria replacement water pool in the amount of 4.29 ac-ft/day to begin replacing injurious depletion obligations in Stream Reach 1, 2 and 3 of the Rio Grande for the month of August. The Division 3 Division Engineer granted Subdistrict #1 permission to exchange the negative projected depletion in Stream Reach 3 identified in the 2019 ARP upstream to offset Stream Reach 2 depletions on a daily basis. There were a total of 0 ac-ft of projected returns for Subdistrict #1 to Stream Reach 3 for the month of August.

September

Under the direction of the Division 3 Division Engineer and the District 20 Water Commissioner, Subdistrict #1 continued replacing projected stream reach depletions on the Rio Grande for the month of September on a daily basis pursuant to the amounts presented in the approved Subdistrict's 2019 ARP. Subdistrict #1 Replacement Water Plan began with a release from the approved Santa Maria shares on August 31st from the approved Santa Maria replacement water pool in the amount of 4.17 ac-ft/day to begin replacing injurious depletion obligations in Stream

Reach 1, 2 and 3 of the Rio Grande for the month of August. The Division 3 Division Engineer granted Subdistrict #1 permission to exchange the negative projected depletion in Stream Reach 3 identified in the 2019 ARP upstream to offset Stream Reach 2 depletions on a daily basis. There were a total of 0 ac-ft of projected returns for Subdistrict #1 to Stream Reach 3 for the month of September.

October

Under the direction of the Division 3 Division Engineer and the District 20 Water Commissioner, Subdistrict #1 continued replacing projected stream reach depletions on the Rio Grande for the month of October on a daily basis pursuant to the amounts presented in the approved Subdistrict's 2019 ARP. Subdistrict #1 Replacement Water Plan began with a release from the approved Santa Maria shares on September 30th from the approved Santa Maria replacement water pool in the amount of 4.02 ac-ft/day to begin replacing injurious depletion obligations in Stream Reach 1, 2 and 3 of the Rio Grande for the month of October. The Division 3 Division Engineer granted Subdistrict #1 permission to exchange the negative projected depletion in Stream Reach 3 identified in the 2019 ARP upstream to offset Stream Reach 2 depletions on a daily basis. There were a total of 0 ac-ft of projected returns for Subdistrict #1 to Stream Reach 3 for the month of October.

November

Under the direction of the Division 3 Division Engineer and the District 20 Water Commissioner, Subdistrict #1 continued replacing projected stream reach depletions on the Rio Grande for the month of November on a daily basis pursuant to the amounts presented in the approved Subdistrict's 2019 ARP. Subdistrict #1 Replacement Water Plan began with a release from the approved Closed Basin Project allocation on October 31st from the approved CBP replacement water pool in the amount of 3.77 ac-ft/day to begin replacing injurious depletion obligations in Stream Reach 1, 2 and 3 of the Rio Grande for the month of November. The Division 3 Division Engineer granted Subdistrict #1 permission to exchange the negative projected depletion in Stream Reach 3 identified in the 2019 ARP upstream to offset Stream Reach 2 depletions on a daily basis. There was a total of 0 ac-ft of projected returns for Subdistrict #1 to Stream Reach 3 for the month of November.

December

Under the direction of the Division 3 Division Engineer and the District 20 Water Commissioner, Subdistrict #1 continued replacing projected stream reach depletions on the Rio Grande for the month of December on a daily basis pursuant to the amounts presented in the approved Subdistrict's 2019 ARP. On December 1st, the Subdistrict's Replacement Water Plan resumed with CBP allocation releases to the Rio Grande replacing all three Subdistrict #1 projected stream reach obligations. Bureau of Reclamation staff attempted to keep the release rate from the CBP canal into the Rio Grande to at least 4.096 ac-ft/day to meet the daily obligation for the Subdistrict and were successful in doing so for the entire month of December.

January

Under the direction of the Division 3 Division Engineer and the District 20 Water Commissioner, Subdistrict #1 continued replacing projected stream reach depletions on the Rio Grande for the month of January on a daily basis pursuant to the amounts presented in the approved Subdistrict's 2019 ARP. On January 1st, the Subdistrict's Replacement Water Plan resumed with CBP allocation releases to the Rio Grande replacing all three Subdistrict #1 projected stream reach obligations. Bureau of Reclamation staff attempted to keep the release rate from the CBP canal into the Rio Grande to at least 3.54 ac-ft/day to meet the daily obligation for the Subdistrict and were successful in doing so for the entire month of January.

Remaining 2019 ARP Year

Because of the timing of this report, Subdistrict #1 will continue the same protocol to replace stream reach depletions for all three stream reaches of the Rio Grande on a monthly basis with CBP allocation for the months of February and March of 2020 or until the start of the next irrigation season. Subdistrict #1 will follow the direction of the Division 3 Division Engineer when the irrigation season begins for replacing stream reach depletions on the Rio Grande with trans-mountain reservoir releases and CBP allocation that Subdistrict #1 is in control of for the remaining period of the 2019 ARP year through April 30, 2020.

Table 7.1 illustrates the replacement water accounting for Subdistrict #1 during the 2019 ARP year on a monthly basis.

Table 7.1
Subdistrict #1 Monthly Stream Replacement Obligation for the 2019 ARP Year with Replacement Source to Fulfill Obligation. (Units in ac ft)

Stream Reach Obligation	March 2019	April 2019	May 2019	June 2019	July 2019	August 2019	September 2019	October 2019	November 2019	December 2019	January 2020	February 2020	March 2020	April 2020
SR-1	73	83	87	88	87	75	69	69	67	67	48	44	-144	-130
SR-2	133	107	111	75	68	53	53	50	44	57	64	64	84	73
SR-3	-16	-28	1	-30	0	5	3	6	2	3	-2	-8	-10	-12
Total	89	162	199	133	155	133	125	125	113	127	110	100	-70	-69
Replacement														
SR-1														
RGR TM Water														-130
Forbearance														
Compact Subst.														
SMRC Water			87	88	87	75	69	69						
CBP Allocation									67	67	48	44	-144	
SR-2														
RGR TM Water														73
Forbearance														
Compact Subst.														
SMRC Water			111	75	68	53	53	50						
CBP Allocation									44	57	64	64	84	
SR-3														
RGR TM Water														-12
SMRC Water			1	-30	0	5	3	6						
CBP Allocation									2	3	-2	-8	-10	
Creditable CBP Production at Rio Grande	584	793	1,024	809	526	433	577	457	583	956	921			

Explanation of Abbreviations:
*RGR TM Water: Rio Grande Reservoir Pool Trans-mountain Water
*Forbearance: No Forbearance with any of the 9 Ditches in agreement with Subdistrict #1 for the 2019 Plan Year
*SMRC Water: Subdistrict #1 Santa Maria Reservoir Company (SMRC) Reservoir Water
*Compact Subst.: Subdistrict #1 SMRC Reservoir Water Exchange with Rio Grande Compact Storage
*CBP Allocation: Closed Basin Project Allocation for Subdistrict #1
Notes:
March and April stream depletions have not yet been delivered but are calculated by the response function using final 2019 CDWR data.

Summary

Pursuant to the 2019 ARP for Subdistrict #1 of the RGWCD and by the direction of the SEO, Subdistrict #1 has met and will continue to meet the requirements for replacing injurious depletions to the Rio Grande attributable to groundwater withdrawals by Subdistrict #1 Wells for the 2019 ARP year. The projected depletions on the Rio Grande for all three stream reaches in the 2019 ARP for Subdistrict #1 approved by the SEO for the 2019 Plan Year was 1,522 ac-ft. The actual amount of depletions for all three stream reaches on the Rio Grande is -183 ac-ft.

Subdistrict #1 will have over paid in replacement water for actual stream depletions on the Rio Grande during the 2019 Plan Year.

Beginning May 1, 2019, Subdistrict #1 has met stream depletion obligations for all 3 stream reaches of the Rio Grande with replacement water releases from Rio Grande Reservoir and the Closed Basin Project on a daily basis. As documented with supporting data from the Colorado

Division of Water Resources Division 3 Office, Subdistrict #1 staff did not identify any day during the term of the 2019 ARP year that the daily and monthly stream depletion obligation for any of the stream reaches was not met.

8.0 CENTENNIAL DITCH COMPANY AGREEMENT

After the last three years of operation, Subdistrict #1 did not feel it necessary to continue the Centennial Ditch Agreement to carry replacement water to calling water rights below the Excelsior Ditch diversion dam during the 2019 Plan Year. Even with below average river flows experienced on the Rio Grande the last 5 years, the river below the Excelsior Ditch diversion dam has been a live stream servicing calling water rights in Stream Reaches 2 and 3. Subdistrict #1 will monitor the lower stream reaches in the future and reinstate this agreement if necessary.

9.0 FALLOWING OF SUBDISTRICT #1 LANDS - TEMPORARY AND PERMANENT

9.1 Conservation Reserve Enhancement Program

Subdistrict #1 continued to sign up contractors into the Conservation Reserve Enhancement Program (CREP) in an attempt to fallow up to 40,000 acres of previously irrigated lands on a long-term or permanent basis during the 2019 Plan Year. Sign-up into CREP in Subdistrict #1 is ongoing now with the approval of the new Farm Bill in 2018. As of the time of this report, Subdistrict #1 has a total of 76 CREP contracts that include 8,714 acres and 143 irrigation wells that have approximately 17,428 ac ft of recent groundwater withdrawals annually in Subdistrict #1. Of the total acres enrolled, 3,120 acres are enrolled into a permanent CREP contract term while 5,594 acres are enrolled into a temporary CREP contract term. The USDA FSA found all but one existing 2014 thru 2018 fiscal year CREP contracts in Subdistrict #1 to be in cropping and water use compliance at the end of the 2019 fiscal year, September 30, 2019, and all were paid their annual rental payments as well as any additional incentives provided by the Subdistrict. The one CREP contract that was not in compliance has been revoked both at the FSA level and with RGWCD Subdistrict #1. The Subdistrict's incentive and annual payments alone were approximately $1,755,000. A map of the locations of these CREP parcels is included in Appendix F.

Subdistrict #1 established a Four-Year Fallow program in 2018. A total of 2,546 acres were fallowed with the requirement that zero water will be applied to the field in 2019. Over the term of the contract the producer is able to rotate which field is set out of production, allowing a different parcel to be dormant each year. This ultimately will help with overall soil health, flexibility for the producer and other benefits such as allowing grazing on field to control weeds. The amount of water saved from the fallowing of these fields is approximately 5,092 ac-ft of water.

9.2 Permanent Land Purchases

Subdistrict #1 is still actively pursuing opportunities to acquire water rights. In 2017 the District on behalf of the Subdistrict purchased the West Medano Ranch. The Ranch consists of approximately 7,996 acres with 1,000 shares of the San Luis Valley Canal, 7 quarters of the San

Luis Valley Irrigation District, three irrigation groundwater wells and several small stock water wells.

Based on total head-gate diversions for the Rio Grande Canal, SLV Canal and Farmers Union during the irrigation season the Subdistrict with their 2,019.5 shares of surface water diverted approximately 3,329.06 ac-ft towards recharge to the unconfined aquifer on the White, McConnell, Lacy and West Medano Ranch properties during the irrigation season. Subdistrict #1 did not use the wells located on these parcels for any purpose in 2019. The RGWCD staff will continue experimenting with different aquifer recharge strategies within CDWR regulation on these properties to increase surface water recharge efficiencies. A map identifying the locations of the permanent land purchases acquired by the RGWCD for Subdistrict #1 is included in Appendix G.

10.0 PLANS FOR AUGMENTATION

The Subdistrict #1 Well list includes some wells that are involved in a decreed plan for augmentation (Augmentation Plan Wells). The plans for augmentation vary in their conditions, but they coordinate surface rights and other wells in administration of their respective plan. They are included in the list for fee determination, and if any pre-existing groundwater right portion of their groundwater withdrawals are not covered by their plans, such groundwater withdrawals are subject to Subdistrict #1 fees and Subdistrict #1 will, and in fact did, replace injurious depletions due to these groundwater withdrawals. See Appendix I for the augmentation plan well list as classified for Subdistrict #1 purposes and a location map of the parcels involved in the plans listed below.

10.1 Description of Court Approved Plans for Augmentation

Case No. 81CW69, Application of Alan and Dorothy Beard (related case 02CW65, In the Matter of the Application of John Slane)

The decrees in Cases No. 81CW69 and 02CW65 are actually changes of water rights, not plans for augmentation. The wells operated pursuant thereto have been classified as Augmentation Plan Wells by Subdistrict #1 for accounting purposes with the Division 3 Engineer.

The decree in Case No. 81CW69 specifically found that the applicants sought to change their method of irrigation whereby the water diverted by the San Luis Valley Irrigation District and attributable to the applicants' land that was historically directly applied by flood irrigation, may be first used to recharge the unconfined aquifer and then withdrawn by a well for the irrigation by center pivot sprinkler of crops in the NE¼ and the SE¼ of Section 19, T41N, R10E, N.M.P.M. The decree authorized the applicants to construct two wells, Beard Irrigation Wells No. 2 and 3, into the unconfined aquifer to withdraw the water recharged for the irrigation of the described lands.

Because this decree is a change in method of irrigation, not a plan for augmentation, the wells are not Augmentation Plan Wells and may be properly included within the Amended Plan and the ARP. Because the wells' withdrawals are limited by the quantity of water recharged, there is no net depletion to the aquifer system and no resulting stream depletions the Amended Plan is

required to replace.

The decree in Case No. 02CW65 changed the point of diversion of Well Permit # 9343-F, decreed as Well No. 2 in Case No. W-1505, WDID 2705546, to Beard Irrigation Well No. 3, Permit # 44595-F WDID 2905547 decreed in Case No. 81CW69. The total quantity of water changed is a long-term average of 32 ac-ft per year of historical consumptive use. The water right decreed to Well No. 2 in Case No. W-1505 is a decreed right to the use of groundwater, the injurious depletions from which are replaced pursuant to the Amended Plan and ARP. Because neither Case No. 81CW69 nor Case No. 02CW65 is a plan for augmentation, Beard Irrigation Wells No. 2 and 3 are Subdistrict Wells and the lands irrigated by these wells are Subdistrict Lands within the ambit of the Amended Plan.

https://dnrweblink.state.co.us/dwr/DocView.aspx?id=1948738&page=1&cr=1

Case No. 81CW72, Application of Ray and Sally Slane

Case No. 81CW72, like Case No. 81CW69, involved an application for a change in the manner of application of irrigation water allocated to lands located within the San Luis Valley Canal service area from direct flood irrigation to recharge and subsequent irrigation by means of a center pivot sprinkler. The decree specifically finds that the application seeks a change of water rights to change the method of irrigation. Accordingly, this is not a plan for augmentation and the well authorized by this decree is not an Augmentation Plan Well. However, the Division Engineer and Subdistrict #1consider it as such for accounting purposes.

The decree in Case No. 81CW72 authorized the construction of Slane Irrigation Well No. 3, Well Permit # 47246-F, WDID 2006662, to be located in the center of the NE¼ of Section 2, T40N, R10E, N.M.P.M. Withdrawals by that well, like the wells authorized under the decree in Case No. 81CW69, are limited by the amount of recharge credit accrued in accordance with the terms of the decree. Well WDID 2014257, Well Permit # 58972-F is an alternate point of diversion for Slane Irrigation Well No. 3 and is subject to the same limitations as Slane Irrigation Well No. 3 and is also a Subdistrict Well. Because these are not Augmentation Plan Wells, the lands irrigated by these wells are Subdistrict Lands within the ambit of the Amended Plan.

In 2019, the provisions of this case were not invoked and the owner instead elected to receive surface water credit which was used to offset groundwater withdrawals that occurred within the Subdistrict #1 Farm Unit. The owner received surface water credit for all 200.0 shares dedicated to the augmentation plan in the amount of 123.70 ac-ft to offset groundwater withdrawals that occurred within the Subdistrict #1 Farm Unit for 2019.

https://dnrweblink.state.co.us/dwr/DocView.aspx?id=1949350&page=1

Case No. 99CW09, Application of Off Ranches, Inc.

The application in this case sought an alternate point of diversion for Well #1, Case W-914, Permit #1970-R, WDID 2009876, and sought to increase the number of acres that could be irrigated by Well #1 and its alternate point of diversion. The original well, in combination with water available from applicant's shares in the Rio Grande Canal Water Users' Association and the Santa Maria Reservoir Company, historically had been used to flood irrigate the SW¼ of

Section 30, T40N, R7E, N.M.P.M. The decree granted the alternate point of diversion well and limited the combined annual withdrawal from the original well and the alternate point of diversion well WDID 2013756 to 132.2 ac-ft per year for irrigation of the SW¼ of Section 30.

The plan for augmentation portion of the decree authorizes the withdrawal of additional water beyond 132.2 ac-ft through these two wells for purposes of irrigation on the SW¼ of Section 30, based upon recharge of applicant's surface water rights. The "augmentation credits" allowed under the decree are limited to the applicant's historical consumptive use from its *first use* of Rio Grande Canal (as opposed to reuse and successive use recognized by the Rio Grande Canal's recharge decree) and Santa Maria Reservoir Company water for irrigation of this land. Because the diversion of 132.2 ac-ft by Wells #1 and #1A is considered in the decree to be the existing groundwater right of Well #1 and is not included in the plan for augmentation, the injurious depletions from that use are remedied pursuant to the Amended Plan. Accordingly, these wells are Subdistrict Wells and the irrigated lands are Subdistrict Lands.

In 2017, a Variable Fee was assessed to the first 132.2 ac-ft of groundwater withdrawals that was not covered by the plan for augmentation, and no Surface Water Credit was given for the surface water consumed under the plan for augmentation. These wells are also part of a larger Farm Unit and therefore must be included in the Amended Plan and ARP to correctly compute the Surface Water Credit available to offset the Variable Fee assessed against the Farm Unit.

https://dnrweblink.state.co.us/dwr/DocView.aspx?id=358993&page=1

Case No. 99CW25, Application of James Bradley

This case involved a change of water right to obtain an alternate point of diversion well and a plan for augmentation to increase the amount of water that could be withdrawn through both wells to irrigate the NW¼ of Section 31, T40N, R7E, N.M.P.M. The wells involved are Well No. 2, Case No. W-1153, Permit # 727-R, WDID 2010235, and its alternate point of diversion, Well No. 2A, WDID 2013884. The decree limits the annual withdrawals from Wells No. 2 and 2A to 150 ac-ft annually under the existing groundwater right of Well No. 2. The decree allows these wells to withdraw no more than 150 ac-ft annually, or 510 ac-ft in any 10 consecutive years pursuant to the plan for augmentation.

The plan for augmentation portion of the decree authorizes the applicant to recharge the water available to its shares in the Rio Grande Canal and Santa Maria Reservoir Company. The decree allows the applicant to increase the total annual withdrawals from the well for irrigation of the NW¼ of Section 31 to the extent of the Allowable Pumping Credit calculated under the terms of the decree. The annual groundwater withdrawals credit is based upon the historical irrigation consumptive use that resulted from the *first use* of the surface water.

Because Well Nos. 2 and 2A had an existing groundwater right limited to 150 ac-ft annually and not included in the plan for augmentation, the injurious stream depletions from that groundwater withdrawals are remedied pursuant to the Amended Plan. This means that Well No. 2 and 2A are Subdistrict Wells, and the irrigated land is Subdistrict Land within the ambit of the Amended Plan.

The unconsumed portion of any recharge of the surface water rights can be used as a surface water credit to offset the calculation of any Variable Fee assessed against groundwater withdrawals of up to 150 ac-ft under the existing groundwater right for Well Nos. 2 and 2A. Accordingly, Well Nos. 2 and 2A and their associated surface water right also must be included in the Amended Plan for purposes of correctly calculating the surface water credit and Variable Fees for the Farm Unit.

https://dnrweblink.state.co.us/dwr/DocView.aspx?id=359154&page=1

Case No. 00CW19, Application of Roger and Julia Ensz

This plan for augmentation involves Well No. 2, Case No. W-2058, Permit #1843-R, WDID 2005728; Well No. 2-A, Case No. 82CW119, Permit # 21996-F, WDID 2005729; and Well No. 3, Case No. W-2058, Permit # 9503-F, WDID 2011878. Wells No. 2 and 3 were historically used for the irrigation of the SW¼ of Section 8, T40N, R7E, N.M.P.M. The decree found that the applicants' 25 shares in the Rio Grande Canal and 45 shares in the Santa Maria Reservoir Company historically had been used to irrigate up to 300 acres in the E½ of Section 7, T40N, R7E, N.M.P.M. The application sought to increase withdrawals through Wells No. 2 and 3 in order to use the wells to irrigate the E½ of Section 7. The decree authorized that use based on recharging of the water available from the applicants' shares in the Rio Grande Canal and the Santa Maria Reservoir Company. The increased amount of water that can be withdrawn through the wells for irrigation in the E½ of Section 7 is based upon the quantity of water recharged as calculated by procedures set forth in the decree.

The decree states that it does not limit the use of the wells for the irrigation of the SW¼ of Section 8, and authorizes the use of the wells for irrigation of the E½ of Section 7 under the plan for augmentation when augmentation credit is available. Wells No. 2 and 3 divert water under their own decreed groundwater rights for irrigation of the SW¼ of Section 8, the injurious depletions from which are remedied pursuant to the Amended Plan. Accordingly, the wells are Subdistrict Wells and the SW¼ of Section 8 is Subdistrict Land. The E½ of Section 7 is treated as Non-Benefitted Subdistrict Land and is assessed no Subdistrict fees. These wells also are part of a Farm Unit, and therefore it is necessary to include these wells in the Amended Plan and the ARP to correctly calculate surface water credits available to offset the Farm Unit's Variable Fees.

https://dnrweblink.state.co.us/dwr/DocView.aspx?id=709008&page=1

Case No. 00CW42, Application of James and Donna Cooley

This case was an application for a change of water rights and plan for augmentation. The applicants sought to use water from one share in the Prairie Ditch Company associated with the W½ of the SE¼ of Section 8, T39N, R10E, N.M.P.M. for direct irrigation and/or as a source of augmentation for two existing irrigation wells. The two existing irrigation wells are Well #1, Case No. W-245, Permit #12178-R, WDID 2008692; and Permit # 57923-F, WDID 2014243. Those two wells were permitted only for use on the E½ SE¼ of Section 8.

The plan for augmentation allows the wells to irrigate the W½ SE¼ of Section 8 by pumping

against credits accumulated from surface water recharge from one share in the Prairie Ditch. The decree contains the manner for quantification of the recharge credits and limits groundwater withdrawals by the wells for irrigation of the W½ SE¼ of Section 8 to the amount of accumulated augmentation credit. Nothing in the decree limits the exercise of the decreed water rights for the wells for the irrigation of the E½ SE¼ of Section 8.

The E½ SE¼ of Section 8 is Subdistrict Land, and the use of these wells to irrigate that land makes them Subdistrict Wells. The injurious stream depletions from the irrigation of the E½ SE¼ of Section 8 are remedied pursuant to the Amended Plan as implemented by the ARP. The W½ SW¼ of Section 8 is treated as Non-Benefitted Subdistrict Land and is not assessed Subdistrict fees. In addition, the SE¼ of section 8 is part of a larger Farm Unit, so it is necessary to include the entire SE¼ in the Amended Plan and ARP for purposes of determining surface water credit available to offset the Farm Unit's Variable Fees.

https://dnrweblink.state.co.us/dwr/DocView.aspx?id=360867&page=1

Case No. 07CW64, Application of JDS Farms, LLC and Allen Entz

This case involves Well No. 2, Case No. W-635 WDID 2009403, Permit #1534-F; Well No. 4, Case No. W-635 WDID 2009405, Registration #1297-R; and Well #1, Case No. W-485 WDID 2009165, Registration #19606-R. The decree finds that Wells No. 2 and 4 in Case No. W-635 were historically used in conjunction with one share of Prairie Ditch for the irrigation of the E½ SE¼ of Section 7, T39N, R9E, N.M.P.M. Well #1, Case No. W-485 was historically used in conjunction with two shares of the Prairie Ditch for the irrigation of the W½SE¼ of Section 7. The plan for augmentation sought authorization for the three wells to irrigate the entire SE¼ of Section 7 and to divert more groundwater than the historical use by these wells.

The decree quantifies the combined historical groundwater use of the three wells for irrigation under their own priorities as approximately 160 ac-ft. The decree authorizes groundwater withdrawals of more than 160 ac-ft based on surface water recharge to the unconfined aquifer and a calculation of a recharge credit pursuant to a formula set forth in the decree. The recharge credit is based on the historical consumptive use from the *first use* of the surface water.

These wells are Subdistrict Wells, and the SE¼ of Section 7 irrigated by these wells is Subdistrict Land because the wells withdraw groundwater under their decreed water rights, the injurious depletions from which are remedied pursuant to the Amended Plan. The owners of these wells have not exercised their rights under the plan for augmentation, and therefore the wells have been treated solely as Subdistrict Wells. No Variable Fee will be assessed for groundwater withdrawals under the plan for augmentation, and no surface water credit will be given for surface water consumed by the plan for augmentation. Because these wells are part of two separately owned Farm Units, it is also necessary to include the land and wells in the Amended Plan and the ARP for purposes of calculation of surface water credits available to offset the Farm Units' Variable Fees.

https://dnrweblink.state.co.us/dwr/DocView.aspx?id=2082833&page=1

Case No. 82CW17, Application of SRS Ranch, Inc.

This case involves an application for change of water rights and a plan for augmentation. The applicant owned approximately 946 acres comprised of Section 23 and the S½ of Section 22 and the north portion of Section 27, T40N, R6E, N.M.P.M. The land was historically served with water from the Rio Grande Canal, the Midland Ditch, and irrigation Wells No. 2, 4, and 5, Case No. W-713. The application proposed to plug the three existing wells and to construct five replacement wells, one each in the center of the NE¼, NW¼, SE¼, and SW¼ of Section 23 and the center of the SE¼ of Section 22 all in T40N, R6E, N.M.P.M. At the time the application was filed, the applicant used the three original wells to operate five center pivots irrigating all of Section 23, the S½ of Section 22, and a portion of Section 27 using both groundwater and surface water rights. The decree granted the proposed change of water rights allowing the construction of the five wells as replacement wells and new points of diversion for the water rights decreed to the original three wells on the ranch. The court approved the plan for augmentation conditioned upon the applicant's continued ownership and recharge of the surface water available to its shares in the Rio Grande Canal and the Midland Ditch. All groundwater withdrawals from the 5 wells is to be fully augmented by the recharge of the surface water shares identified in the decreed plan of augmentation and should not create net depletions from their operations.

The replacement wells are Well #1R, Permit # 37045-F, WDID 2008188; Well No. 2R, Permit # 30339-F, WDID 2008189; Well No. 3R, Permit # 41845-F, WDID 2008190; Well # 4R, Permit # 37047-F, WDID 2008191; and Well No. 5R, Permit # 3032-F, WDID 2008192. These wells and the lands they irrigate are in three separate ownerships.

The quarter section served by Well #1R is separately owned and was treated as Non-Benefitted Subdistrict Land with no Subdistrict fees assessed in 2019. This quarter section is part of a larger Farm Unit.

Well No. 3R and the quarter section it irrigates are also separately owned and are included in a larger Farm Unit. In 2019 this land was treated as Non-Benefitted Subdistrict Land, and no Subdistrict fees were assessed on this land.

Well Nos. 2R, 4R, and 5R, and the lands irrigated thereby are separately owned. These wells and the lands irrigated are not part of a larger Farm Unit. This land is treated as Non-Benefitted Subdistrict Lands, and no Subdistrict fees are assessed on this land.

https://dnrweblink.state.co.us/dwr/DocView.aspx?id=705848&page=1

For the 2019 ARP Year, the Division Engineer approved the operation of these wells under the Subdistrict #1 ARP, with certain terms and conditions. During the 2019 ARP Year these wells operated solely under the Subdistrict #1 ARP and the decreed plan for augmentation was not operated. The Subdistrict accounted for all groundwater withdrawals from these wells and provided the appropriate remedy for injurious depletions in the same manner as Subdistrict Wells.

Case No. 89CW45, Application of Monte Vista PCA

This case is a change of water rights and plan for augmentation that changed surface water rights in the Excelsior Ditch and the San Luis Valley Canal historically used, along with groundwater, to irrigate 140 acres in the SE¼ of Section 34, T39N, R9E, N.M.P.M. The application sought to use the surface water to recharge the unconfined aquifer and then withdraw that water and apply it by center pivot sprinkler to the historically irrigated land. The well historically used on this land is Well No. 5, Case No. W-1181, Permit # R13476-RF, WDID 2006555, located in the center of the SE¼ of Section 34. The decree authorizes the applicant to divert additional groundwater through the supplemental well and to recharge to the aquifer an amount equal to the consumptive use of the water diverted by the supplemental well. The supplemental well was constructed pursuant to Well Permit # 38425-F, WDID 2006633. Both Well No. 5 and the supplemental well supply water to the same sprinkler system for the irrigation of the SE¼ of Section 34.

The supplemental well's groundwater withdrawals is offset by the quantity of water recharged by the applicant under the decree in 89CW45. Accordingly, the augmented portion, per decree, of the water diverted by the supplemental well, WDID 2006633, was not assessed a Variable Fee for 2019 and was not given surface water credit for the recharged surface water consumed by this practice. Because Well No. 5 had a pre-existing groundwater right that is not included in the plan of augmentation, it is a Subdistrict Well and the injurious stream depletions occurring from the original use are being remedied pursuant to the Amended Plan. Because a Subdistrict Well irrigates this land, the land is Subdistrict Land within the ambit of the Amended Plan.

https://dnrweblink.state.co.us/dwr/DocView.aspx?id=711074&page=1

Case No. 96CW5, Application of George Kirkpatrick

This case authorizes the construction of "auxiliary wells." The auxiliary wells are permits # 45102-F WDID 2013719, 45103-F WDID 2013721, and WDID's 2013720, 2013722 and 2008241 to be used in conjunction with existing wells for the irrigation of the SE¼ of Section 6 and the SW¼ of Section 5 in T39N, R10E, N.M.P.M. The "auxiliary wells" are intended to supplement the water supply available from Well #1, Permit # 22543-F, WDID 2008240 located in the center of the SW¼ of Section 5, and Well No. 2, Permit # 22542-F, WDID 2008241 located in the center of the SE¼ of Section 6. Shares in the San Luis Valley Canal Company and the Prairie Ditch Company represent the surface water rights involved. The plan for augmentation operates by allowing the "auxiliary wells" to withdraw a portion of the water recharged under the surface water rights. The decree limits the consumptive use credits under the surface water rights to 50% of the amount diverted to recharge, and limits the consumptive use that can be made of water diverted by the auxiliary wells to the consumptive use credit calculated under the decree.

This land is Subdistrict Land because it is irrigated by Wells #1 and 2 under their pre-existing groundwater rights, the injurious depletions from which are remedied by the Subdistrict pursuant to the Amended Plan as implemented by the ARP. Although the auxiliary wells operate pursuant to a decreed plan for augmentation, they irrigate Subdistrict Land that is also irrigated by

Subdistrict Wells. While the auxiliary wells were not assessed a Variable Fee and no surface water credit was given for the water consumed by these wells in 2019, it is necessary to account for these wells in the Amended Plan in order to correctly determine the Farm Unit's Variable Fee and Surface Water Credit.

https://dnrweblink.state.co.us/dwr/DocView.aspx?id=712895&page=1

Case No. 01CW06, Application of Kimothy and DeAnn Cooley

Case No. 01CW06, the application of Kimothy and De Ann Cooley, involves 200 shares of the San Luis Valley Canal that historically have been used for the irrigation of the NE¼ of Section 35, T40N, R10E, N.M.P.M. Prior to 1966, this land was flood irrigated; in 1966 a sprinkler was installed and the San Luis Valley Canal shares were diverted into a holding pond and then used for irrigation through a center pivot sprinkler. The application in Case No. 01CW06 sought to change the manner of irrigation from direct application to the land through the center pivot sprinkler to recharge of the aquifer and then withdrawal of the recharged water through wells supplying the center pivot sprinkler. The decree permits the applicants to use the 200 shares in the San Luis Valley Canal for direct irrigation and as a source of augmentation for up to 4 wells. WDID Nos. 2014013, 2014014, 2014016 are currently located on the NE¼ of Section 35. The decree authorizes the applicants to recharge the unconfined aquifer and, pursuant to a formula in the decree, to withdraw a portion of the groundwater so recharged through wells for continued irrigation of the NE¼ of Section 35 by center pivot sprinkler.

Because these wells are limited to the withdrawal of recharge, they create no net depletions from their operations that must be replaced under the Amended Plan. Therefore, they are not considered Subdistrict #1 Wells, and the land irrigated by the wells is treated as Non-Benefitted Subdistrict #1 Lands and assessed no Subdistrict #1 fees. However, the land and wells are part of a larger Farm Unit, and it is necessary to continue to account for the wells and surface water in the Amended Plan in order to properly calculate the Farm Unit's Surface Water Credit and Variable Fees.

https://dnrweblink.state.co.us/dwr/DocView.aspx?id=361006&page=1

Case No. W-3847, Application of Gary Seger

This case involves an application and decree for conditional alternate points of diversion and a plan for augmentation. The proposed wells in the decree were completed and are being used pursuant to this decree. This operation is not what is commonly described as a plan for augmentation but the court has decreed it as such, so it is included.

The two alternate points of diversion wells are WDID 2005398, Permit # 25360-F, Well number 1A, W-3847 which irrigates the SW¼ S13, T40N, R06E, N.M.P.M. and WDID 2005399, Permit # 25361-F, Well number 2-A, W-3847 which irrigates the NE¼ S13, T40N, R06E, N.M.P.M. both in Rio Grande County, Colorado. These two wells are alternate points to WDID 2005933, Permit # 6885RR, Well Number 1, W-1231, WDID 2005931, Permit # 16941-F, Well Number 1 and WDID 2005932, Permit # 16940-F, Well Number 2 both of W-3325 which also irrigated the SE¼ S13, T40N, R06E, N.M.P.M. and the SW¼ S18, T40N, R07E,

N.M.P.M.

All five wells have a combined groundwater withdrawal limitation of 4,480 gpm. The yield of the two wells subject to this decree is to be no more than a maximum of 895 gpm each. Mr. Seger has 45 shares of Rio Grande Canal water and 40 shares of Santa Maria Reservoir Company water to serve the four quarters that are associated with this overall plan. As a condition of the decree in this case, half of the water associated with these shares must be recharged in pits on the quarters in order for this plan to operate according to the decree. The court calculated that the water attributable to half of the total shares would be recharged and thence used for irrigation by means of groundwater withdrawals. It also required that none of the shares attributable to the subject plan could be used for flood irrigation purposes.

https://dnrweblink.state.co.us/dwr/DocView.aspx?id=555628&page=1

11.0 HYDRAULIC DIVIDE

The hydraulic divide (Divide) is a shallow groundwater divide, that when present, separates the closed basin in the San Luis Valley from the remainder of the Rio Grande Basin. The divide has been historically mapped generally paralleling and lying northerly of the Rio Grande ±½ to ±2 miles through the reach from near Del Norte to Alamosa. The Divide extends northwest of Del Norte to the Continental Divide and from Alamosa northeast to the basin divide along the Sangre de Cristo Mountains. Recent water level measurements in wells along the north side of the Rio Grande indicate that the Divide has retreated south to the Rio Grande or very near the river. A goal of the Plan of Water Management is to recover and re-establish the Divide northerly of the river which is likely to reduce depletions to the Rio Grande from groundwater withdrawals within Subdistrict #1.

Appendix C contains maps showing the results of groundwater measurements collected during spring 2019. These maps include interpreted groundwater elevation contours and vectors showing direction of groundwater flow. If a well-defined Divide lying northerly of the Rio Grande exists, groundwater flow vectors would indicate a groundwater flow from the Divide along the southerly side toward the river and on the northerly side toward the Closed Basin. The groundwater flow vectors do not provide evidence of a well-defined Divide with the possible exception of an area between Monte Vista and Alamosa where there is some evidence for a few miles. The interpreted location of the Divide is shown on the maps prepared from the 2019 groundwater measurements. The approximate Divide location in the area between Del Norte and the 7-Mile Plaza is uncertain due to the perched river condition, so it is shown as a dotted line on the maps included in Appendix C.

12.0 GROUNDWATER LEVELS IN THE UNCONFINED AQUIFER AND UNCONFINED AQUIFER STORAGE LEVELS

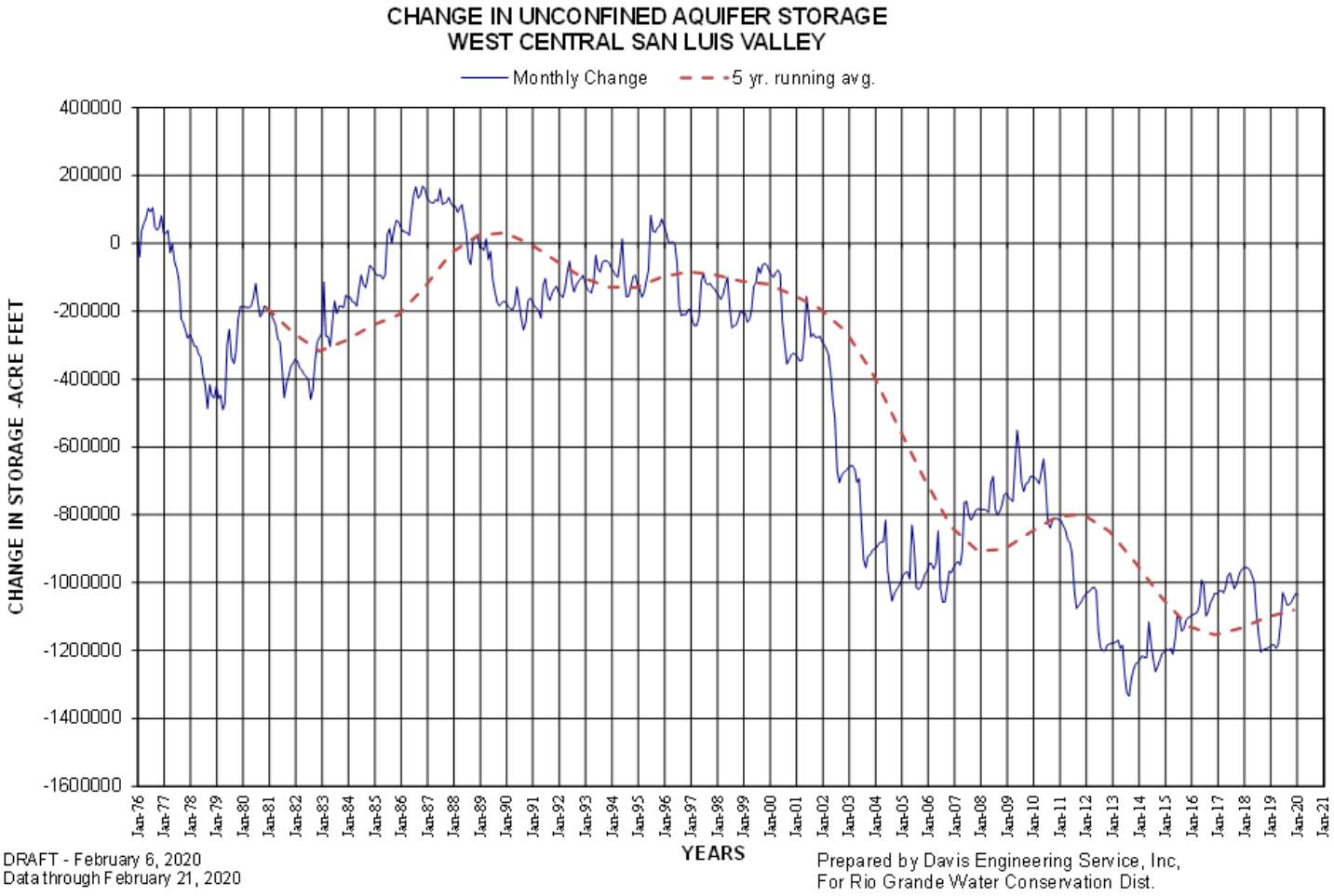
12.1 Groundwater Levels in the Unconfined and Confined Aquifer

A tabulation of groundwater levels measured in unconfined and confined wells both within the boundaries of Subdistrict #1 and the study area for the Change in Unconfined Aquifer Storage – West Central San Luis Valley are provided in Appendix D. This tabulation includes measured values for each of the wells obtained during the previous 12-months. A map showing the location of each well is also included in Appendix D.

12.2 Unconfined Aquifer Change in Storage Volumes

A map showing the study area for the Change in Unconfined Aquifer Storage – West Central San Luis Valley and a tabulation of the data is included in Appendix E. The calculated monthly change in unconfined aquifer storage volumes have been accumulated and plotted on a chart and included as Figure 12.1. The monthly change in storage volumes are plotted on the chart and connected by a line on the chart with the horizontal axis divided into years and the vertical axis divided into change in storage in acre-feet. An additional line is plotted on the chart representing the 5-year running average of the annual average of the monthly change in unconfined storage volume.

Figure 12.1
Chart Showing Change in Unconfined Aquifer Storage



The change in unconfined aquifer storage based on measurements through February 6, 2020 and calculated on February 21, 2020 was -1,037,181 ac-ft on an accumulated monthly basis. The accumulated 5-year running average of the annual average of the monthly change through December 1, 2019 was -1,080,972 ac-ft. As previously noted, the goal in the Plan is to achieve recovery and maintain storage at a level between -200,000 and -400,000 ac-ft. The December 1, 2019 storage value is 680,972 ac-ft below the lowest goal level.