

SPECIAL IMPROVEMENT DISTRICT NO. 3 OF THE
RIO GRANDE WATER CONSERVATION DISTRICT

ANNUAL REPORT FOR
2023 PLAN YEAR

Prepared

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By

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Abbreviations

ARP	Annual Replacement Plan
DWR	Division of Water Resources
NRCS	Natural Resources Conservation Service
Plan Year	The period May 1, 2023 through April 30, 2024
PWM	Plan of Water Management
PWR	Preliminary Water Report
Response Functions	RFApplcation_C_Conejos_6P98_V1.1
RGDSS	Rio Grande Decision Support System
RGWCD	Rio Grande Water Conservation District
Subdistrict No. 3	Special Improvement District No. 3
ARP Wells	Wells Benefitting Subdistrict No. 3 lands
SWSP	Substitute Water Supply Plan
USDA	United States Department of Agriculture
WDID	Water District Structure Identification Number

INTRODUCTION

The purpose of this report is to satisfy the requirements for an Annual Report to analyze the Annual Replacement Plan (ARP) for May 1, 2023, through April 30, 2024 (Plan Year). This Annual Report has been prepared in accordance with the requirements of the State Engineer and the Rules Governing the Withdrawal of Groundwater in Water Division No. 3 (the Rio Grande Basin) and Establishing Criteria for the Beginning and End of the Irrigation Season in Water Division No. 3 for All Irrigation Water Rights (Groundwater Rules).

As required by the Groundwater Rules, this report includes information necessary for the State Engineer and Subdistrict No. 3 staff to calculate stream depletions attributable to Subdistrict No. 3 Wells and Contract Wells (ARP Wells), as those terms are defined in the PWM, and information to assess the progress of replacement operations under the current approved ARP. This report includes a series of tables prepared by Subdistrict No. 3 staff utilizing the most current version of the Conejos Response Functions (Response Functions) to tabulate the location and quantities of stream depletions resulting from actual metered 2023 Subdistrict No. 3 ARP Well groundwater withdrawals and 2023 Rio Grande, Conejos and Alamosa River steam flows.

This Annual Report describes the amount and timing of replacements and/or remedies that have been completed by the Subdistrict under the 2023 ARP and the sources used to make those replacements.

1.0 DATABASE OF ARP WELLS COVERED BY THE 2023 ARP

A comprehensive ARP Well List was included in the 2023 ARP to identify the wells DWR permitted to continue operating in accordance with the PWM and the Groundwater Rules. This ARP Well List is necessary for DWR to identify which wells the Subdistrict has included. Further, the ARP Well List is a required input into the RGDSS Groundwater Model and Response Functions.

Appendix A is the most current tabulation of the WDID of each well included in the 2023 ARP and the preliminary groundwater withdrawals reported to DWR for each ARP Well for the 2023 Water Administration Year. Appendix A includes 166 ARP Wells.

2.0 CALCULATION OF STREAM DEPLETIONS TO THE RIO GRANDE, CONEJOS AND ALAMOSA RIVERS RESULTING FROM ARP WELL GROUNDWATER WITHDRAWALS FOR THE 2023 PLAN YEAR

The purpose of this section of the 2023 Annual Report is to present data the Subdistrict utilized to analyze stream depletions to the Rio Grande, Alamosa and Conejos rivers as a result of the actual 2023 groundwater withdrawals from Subdistrict No. 3 ARP Wells which were reported to DWR. This analysis compares the projected calculation of depletions presented in the 2023 ARP to the current calculation prepared using the most up-to-date information available from DWR for actual stream flows and groundwater withdrawals. Subdistrict No. 3 was directed by DWR to use the current 6P98 Response Functions to calculate stream depletions for the 2023 ARP.

2.1 2023 STREAM FLOW FORECASTS COMPARED TO ACTUAL FLOWS

2.1.1 2023 STREAM FLOW FORECASTS

The NRCS's April 1st, 2023, projected annual flow of the Conejos River System was used to estimate groundwater consumption attributable to ARP Wells based upon hydrologic conditions for the current Plan Year. The Division No. 3 Division Engineer also estimated the annual flow of the Rio Grande at the Rio Grande near Del Norte gauge and the Conejos at the gauge near Mogote in the March 31st, 2023, Rio Grande Compact Ten-Day Report, which was also reviewed to assist Subdistrict staff in projecting hydrologic conditions for the current Plan Year. These forecasts are shown in the table below.

**Table 2.0
Stream Flow Forecasts
(units in acre-feet)**

Conejos Stream Flow Forecast				
Analysis	Apr-Sept Forecast (acre-feet)	% of Avg.	Estimated Additional (acre-feet)	Annual Estimated Flow (acre-feet)
	(1)	(2)	(3)	
NRCS, 4/1/2023				
Conejos River near Mogote	280,000	167		
Los Pinos River near Ortiz	108,000	177		
San Antonio River at Ortiz	24,000	250		
Total Conejos River System	412,000			
Division Engineer, Ten Day, 3/31/2023				
Conejos River near Mogote	240,400	143		
Los Pinos River near Ortiz	117,700	193		
San Antonio River at Ortiz	15,500	162		
Total Conejos River System	373,600		26,400	400,000
Rio Grande Stream Flow Forecast				
Analysis	Apr-Sept Forecast (acre-feet)	% of Avg.	Estimated Additional (acre-feet)	Annual Estimated Flow (acre-feet)
	(1)	(2)	(3)	
NRCS, 4/1/2023				
	625,000	130		
Division Engineer, Ten Day, 3/31/2023	659,200	137	90,800	750,000
Alamosa Stream Flow Forecast				
Analysis	Apr-Sept Forecast (acre-feet)	% of Avg.	Estimated Additional (acre-feet)	Annual Estimated Flow (acre-feet)
NRCS, 4/1/2023				
	94,000	154		

- (1) Projected 50% exceedance streamflow at the gaging station
- (2) NRCS 20-yr Average Flow: Conejos-168,000, Rio Grande-480,000, Alamosa-61,000, Los Pinos-61,000, San Antonio-9,600
- (3) January through March and October through December

2.1.2 2023 ACTUAL STREAM FLOWS

Based on the Division 3 Division Engineer’s Preliminary Final Rio Grande Compact Ten-Day Report dated January 3th, 2024, the April-September Rio Grande flows were approximately 639,600 acre-feet and the Conejos flows were 241,500 acre-feet. This is a decrease on the Rio Grande and a increase on the Conejos compared to the forecasted amount for the same time period. A copy of the Division No. 3 Division Engineer’s Preliminary Rio Grande Compact Ten-Day Report is included as Appendix B.

2.2 PROJECTED 2023 GROUNDWATER WITHDRAWALS COMPARED TO ACTUAL METERED 2023 GROUNDWATER WITHDRAWALS

2.2.1 2023 PROJECTED GROUNDWATER WITHDRAWALS FROM ARP WELLS

The Subdistrict projected groundwater withdrawals from ARP Wells listed in the 2023 ARP based on projected Subdistrict No. 3 operations, weather predictions and antecedent conditions. The projected 2023 ARP Well groundwater withdrawals were **17,200 acre-feet**. It was anticipated that the vast majority of metered groundwater withdrawals from ARP Wells in 2023 would be used for irrigation through center pivot sprinklers.

2.2.2 2023 ACTUAL GROUNDWATER WITHDRAWALS FROM ARP WELLS

Based on information obtained from DWR’s published records on June 1, 2024, for the 2011-2022 metered withdrawals, preliminary meter records for 2023 downloaded from DWR’s HBDMC, and estimates made by Subdistrict staff, the actual metered groundwater withdrawals from Subdistrict No. 3 ARP Wells were **26,928 acre-feet** for the 2023 Water Administration Year. The significant increase in groundwater withdrawals may have been the result of a lack of monsoons that are typical during the summer months. A majority of the groundwater withdrawn from ARP Wells was used for irrigation through center pivot-sprinklers.

2.3 PROJECTED 2023 STREAM DEPLETIONS COMPARED TO ACTUAL STREAM DEPLETIONS

Subdistrict No. 3 staff were instructed by the State Engineer’s Office to predict stream depletions to the affected streams caused by groundwater withdrawals from ARP Wells utilizing the response functions developed for the Conejos Response Area under the RGDSS Groundwater Model Phase 6P98. For the Plan Year, stream depletions attributable to the groundwater withdrawals from ARP Wells were calculated using these Response Functions.

The Response Functions spreadsheet was built to be used for the whole Response Area. Two instruction sheets were prepared by DWR for additional inputs to the Response Functions when there is a need to use it for individual or group of wells. The instruction sheet, “How to Use the Application Workbook for a Subset (individual/group) of Wells” (9/23/2015), describes how to adjust the spreadsheet inputs to stream reaches that have been modeled with point source returns to streams. The instruction sheet, “How to Adjust the Application Workbook for use with a Subset of Wells” (10/15/2015), describes how to use the “Ratio Method” for Response Areas where it is necessary to apply this method. Both instruction sheets are included as Appendix E.

The first step in using the current 6P98 Response Functions is to input data for the whole Response Area, i.e., historical groundwater withdrawals for sprinkler irrigation, flood irrigation, “other” pumping with corresponding “other” consumptive use ratios for the years 2011 through 2023.

The Subdistrict elected to use the Response Functions spreadsheet for the subset of wells which are included in the ARP Well List. The Conejos Response Area requires adjustments for point source return flows and the stream ratios, as listed below.

- Conejos Response Area - Reach 7 (San Antonio River) from the Town of Antonito
- Conejos: Reach 1 Calculations Ratio and Reach 6 Calculations Ratio

Using the whole Response Area results, adjustments are made on appropriate pages of the Response Function spreadsheet. The Subdistrict 2023 ARP Well List does include the Town of Antonito point source return flow; therefore, the point source return flows were included in the spreadsheet. Adjustments for the Ratio Method were made for Reach 1: Conejos above Seledonia/Garcia and Reach 6: Alamosa River.

The next step was to calculate stream depletions by updating the Response Functions table contained in Table 2.1 to derive the annual net groundwater consumptive use. The consumptive use ratios for sprinkler and flood irrigation used in the RGDSS Model are standard factors of 83% and 60%, respectively. The consumptive use ratio for “other” wells is specific to the uses of those wells and can vary widely. The “Other Consumptive Use Ratio” for the whole Response Area is a composite derived from the individual well withdrawals and consumptive uses. The Subdistrict prepared a separate spreadsheet of “other” wells included in the Subdistrict 2023 ARP Well List to show the individual well groundwater withdrawals and consumptive use factors used to explain how the composite ratios were determined for the subset of wells represented in Table 2.1 of the ARP.

Historical groundwater withdrawal values for wells included in the ARP Well List were entered in Table 2.1 for years 2011 through 2023. The Subdistrict has no Recharge that Offsets Groundwater for calculation of the Net Groundwater Consumptive Use. Notes at the bottom of Table 2.1 provide a description of the calculations within this table.

Table 2.1
Estimated Net Groundwater Consumptive Use
(Units in acre-feet)

Year	Subdistrict No. 3 ARP Wells Groundwater Withdrawals					Recharge that Offsets Groundwater				Net Groundwater Consumptive Use
	Irrigation Pumping to Center Pivots	Irrigation Pumping to Flood Irrigation	Other Pumping	Other Consumptive Use Ratio	Groundwater Consumption	Recharge Source 1	Recharge Source 2	Other Recharge Offsets	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2011	19,078	2,431	9,724	46%	21,766	0	0	0	0	21,766
2012	27,152	2,409	11,137	50%	29,550	0	0	0	0	29,550
2013	27,387	3,235	12,140	54%	31,228	0	0	0	0	31,228
2014	21,218	2,624	9,444	44%	23,341	0	0	0	0	23,341
2015	15,419	2,496	7,828	46%	17,896	0	0	0	0	17,896
2016	14,822	1,724	8,694	46%	17,336	0	0	0	0	17,336
2017	12,170	2,007	7,096	41%	14,215	0	0	0	0	14,215
2018	24,114	2,724	8,923	45%	25,665	0	0	0	0	25,665
2019	9,323	1,177	5,730	30%	10,164	0	0	0	0	10,164
2020	24,123	1,641	8,845	43%	24,811	0	0	0	0	24,811
2021	16,241	1,758	7,910	41%	17,778	0	0	0	0	17,778
2022	15,148	2,561	7,357	42%	17,224	0	0	0	0	17,224

2023	17,306	2,312	7,311	42%	18,821					18,821
Avg	18,733	2,238	8,626	44%	20,753	0	0	0	0	20,753

Explanation of Columns

- (1) Calendar Year
- (2) Determined from metered groundwater pumping
- (3) Determined from metered groundwater pumping
- (4) Determined from metered groundwater pumping
- (5) Estimated based on operations metered in Col4
- (6) Calculated as $0.83 \times \text{Col2} + 0.60 \times \text{Col3} + \text{Col4} \times \text{Col5}$
(0.83 and 0.60 are the consumptive use ratios of total pumping associated with sprinkler and flood irrigation practices, respectively)
- (7) - (9) Determined by engineering consultant to the District from analysis of historic diversions and recharge decrees
- (10) Calculated as $\text{Col7} + \text{Col8} + \text{Col9}$
- (11) Calculated as $\text{Col6} - \text{Col10}$

Wells that are added or deleted to the ARP Well List affect historical groundwater withdrawals figures as follows:

- Any wells that are added to the ARP will have their historical groundwater withdrawals included
- Any wells that are deleted from the ARP will have their historical groundwater withdrawals included in the groundwater withdrawals until the year that the wells are dropped
- If any wells that were deleted from a previous ARP list are added back in, any historical groundwater withdrawals from the years they were out will have to be included in the groundwater withdrawals

The projected Net Groundwater Consumptive Use for the Plan Year is **18,821 acre-feet** as shown in Table 2.1.

The Net Groundwater Consumptive Use for 2023 derived in Table 2.1 above is then input into the Response Function table contained in Table 2.2 in Column 3 in the row for 2023 to calculate projected stream depletions for the 2023 Plan Year and into the future. The projected annual stream depletions resulting from the groundwater withdrawals of the wells included in the 2023 ARP Well list for the respective reaches and the total are shown in Columns 4 through 10.

Table 2.2
Estimated Historical and Projected Net Stream Depletions from
Groundwater Withdrawals in Subdistrict No. 3
 (Units in acre-feet)

Year	Conejos River near Mogote (Apr-Sep) (6)	Net Groundwater Consumptive Use (Jan-Dec) (3)	Annual Net Stream Depletions (May-Apr) a							Total
			Conejos above Seledonia/Garcia (4)	Conejos below Seledonia/Garcia (5)	Rio Grande Del Norte-Excelsior (6)	Rio Grande Excelsior-Chicago (7)	Rio Grande Chicago-State-Line (8)	Alamosa River (9)	San Antonio River (10)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1970	201,859	13,588	507	1,087	1	4	61	66	-109	1,615
1971	139,131	17,023	473	1,566	6	19	132	74	-109	2,161
1972	90,563	21,686	355	1,934	15	38	166	80	-108	2,480
1973	262,772	11,216	580	1,482	22	50	188	81	-108	2,294
1974	140,237	17,728	524	1,862	25	50	201	76	-108	2,629
1975	255,598	12,686	571	1,619	28	55	211	79	-108	2,455
1976	174,806	17,309	483	1,908	30	54	219	63	-107	2,649
1977	60,935	22,033	343	2,209	35	63	227	42	-107	2,811
1978	162,145	19,147	552	2,262	41	72	267	80	-107	3,167
1979	288,627	16,911	631	2,163	43	75	278	86	-107	3,170

1980	274,695	19,631	608	2,333	42	71	285	82	-104	3,317
1981	104,316	21,006	374	2,300	43	72	266	84	-96	3,041
1982	279,973	15,418	643	2,085	45	75	281	88	-93	3,125
1983	236,269	14,949	653	1,968	43	69	271	90	-93	3,000
1984	216,888	15,931	646	1,994	40	64	270	89	-89	3,014
1985	337,286	10,755	634	1,579	38	60	250	87	-80	2,567
1986	290,253	9,215	604	1,375	35	53	222	83	-81	2,292
1987	230,225	14,848	573	1,752	33	48	228	80	-79	2,634
1988	139,934	18,422	505	2,043	34	52	255	74	-69	2,894
1989	156,367	21,609	516	2,343	39	64	295	75	-60	3,271
1990	134,969	18,284	519	2,190	44	74	307	74	-54	3,154
1991	215,634	16,760	569	2,113	45	75	302	73	-53	3,125
1992	154,657	17,364	513	2,077	44	71	291	74	-100	2,971
1993	248,449	12,943	577	1,773	44	70	276	79	-162	2,657
1994	211,701	15,006	574	1,852	41	63	263	73	-175	2,691
1995	285,693	11,160	574	1,571	38	58	245	80	-182	2,383
1996	145,438	19,961	542	2,142	37	56	262	78	-182	2,935
1997	243,276	15,390	608	1,960	39	64	278	84	-196	2,837
1998	167,766	19,405	541	2,197	39	64	284	78	-239	2,965
1999	199,120	14,399	559	1,913	41	68	283	63	-262	2,667
2000	102,872	25,453	348	2,487	42	68	271	42	-295	2,963
2001	186,276	21,766	528	2,538	48	80	322	68	-282	3,303
2002	41,441	29,566	353	2,964	55	90	327	33	-199	3,621
2003	113,212	26,346	411	2,888	62	100	339	50	-192	3,658
2004	165,509	21,512	676	2,721	67	104	361	98	-214	3,813
2005	251,583	21,056	782	2,680	67	101	363	108	-209	3,893
2006	148,836	20,620	692	2,579	65	95	351	101	-180	3,701
2007	168,399	19,801	715	2,490	65	95	349	103	-125	3,692
2008	235,334	17,639	808	2,353	63	92	339	111	-95	3,672
2009	204,792	16,020	795	2,173	58	83	318	110	-93	3,444
2010	179,106	20,441	686	2,432	55	78	321	100	-129	3,543
2011	165,835	21,766	647	2,573	58	84	343	100	-106	3,700
2012	113,608	29,550	404	3,023	62	93	342	84	-106	3,903
2013	98,533	31,228	451	3,282	69	105	366	55	-106	4,222
2014	149,340	23,341	705	2,955	75	114	400	103	-106	4,246
2015	155,333	17,896	695	2,449	76	111	377	102	-106	3,704
2016	180,401	17,336	696	2,301	74	103	348	100	-106	3,518
2017	241,792	14,215	728	2,050	70	94	322	107	-106	3,265
2018	106,529	25,665	454	2,610	67	85	301	102	-106	3,515
2019	268,828	10,164	734	1,796	66	87	299	107	-106	2,984
2020	114,509	24,811	439	2,509	63	80	278	100	-106	3,365
2021	150,454	17,778	668	2,303	65	86	315	98	-106	3,428
2022	167,011	17,224	640	2,226	64	87	313	92	-106	3,318
2023	241,561	18,821	663	2,317	62	85	319	92	-106	3,431
2024			510	833	56	75	237	74	0	1,785
2025			453	475	47	53	156	66	0	1,251
2026			400	339	40	38	114	58	0	988
2027			346	252	33	27	89	50	0	798

2028			276	210	28	20	73	40	0		647
2029			232	147	24	15	59	34	0		511
2030			159	118	20	11	48	23	0		378
2031			102	70	16	9	39	15	0		251
2032			46	34	13	7	32	6	0		139
2033			0	0	10	5	27	0	0		42
2034			0	0	8	4	21	0	0		33
2035			0	0	7	2	17	0	0		26
2036			0	0	6	1	12	0	0		19
2037			0	0	4	0	8	0	0		12
2038			0	0	3	0	4	0	0		7
2039			0	0	2	0	1	0	0		4
2040			0	0	1	0	0	0	0		1
Avg 2001 - 2015	148,571	21,159	584	2,506	59	89	326	83	-140		3,507
Avg 2001 - 2010	154,044	19,524	586	2,347	55	83	308	80	-156		3,304
Post Plan			2,525	2,477	320	267	937	367	0		6,893

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) Conejos River near Mogote Gage streamflow in acre-feet for the NRCS streamflow forecast period of April through September.
- (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 2011 through 2023 were calculated using well meter data. NetGWCU data for 2023 is calculated using actual meter data for 2023 and diversions based on the actual Conejos River streamflows from DWR.
- (4) Net Stream Depletions in the Conejos above Seledonia/Garcia reach for the Plan Year (May through April) in ac-ft.
- (5) Net Stream Depletions in the Conejos below Seledonia/Garcia reach for the Plan Year (May through April) in ac-ft.
- (6) Net Stream Depletions in the Rio Grande Del Norte to Excelsior Ditch reach for the Plan Year (May through April) in ac-ft.
- (7) Net Stream Depletions in the Rio Grande Excelsior Ditch to Chicago Ditch reach for the Plan Year (May through April) in ac-ft.
- (8) Net Stream Depletions in the Rio Grande Chicago Ditch to the State Line reach for the Plan Year (May through April) in ac-ft.
- (9) Net Stream Depletions in the Alamosa River for the Plan Year (May through April) in ac-ft.
- (10) Net Stream Depletions in the San Antonio River for the Plan Year (May through April) in ac-ft.
- (11) Total Net Stream Depletions columns (4 + 5 + 6 + 7 + 8 + 9 + 10) in ac-ft.

Table 2.3 is an output from the Response Functions that calculates the annual total stream depletions and monthly replacement obligations for the two reaches of the Conejos River, the Alamosa River, and the three reaches of the Rio Grande. This table lists the 2023 Plan Year stream depletions as required under the Groundwater Rules.

As indicated in the lower right-hand corner of Table 2.3, the Response Functions calculated total stream depletions to the Conejos River, Alamosa River, and Rio Grande during the Plan Year due to both past ARP Well groundwater withdrawals and the preliminary actual 2023 ARP Well groundwater withdrawals are **3,431.5 acre-feet**. The Response Functions calculated total stream depletions to the Conejos River are **2,980.1 acre-feet**, to the Alamosa River **91.6 acre-feet**, and to the Rio Grande **465.6 acre-feet**. The locations of the stream depletions and monthly quantities are also tabulated in Table 2.3.

Table 2.3
Subdistrict No. 3 Monthly Stream Depletions for Plan Year
 (Units in acre-feet)

Stream Reach	Conejos Response Area Total												Total
	2023								2024				
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Conejos above Seledonia/Garcia	59.3	84.7	88.7	79.0	65.3	61.8	53.3	47.8	33.4	28.3	30.3	31.4	663.3
Conejos below Seledonia/Garcia	139.9	163.8	226.0	296.6	302.7	274.7	208.3	179.4	154.0	125.7	130.9	114.8	2,316.8
Rio Grande Del Norte-Excelsior	5.5	5.2	5.2	5.0	4.8	5.1	5.1	5.4	5.4	4.9	5.3	5.0	61.9
Rio Grande Excelsior-Chicago	7.9	7.2	7.2	6.4	6.3	6.6	6.6	7.3	7.5	7.0	7.8	7.2	85.1
Rio Grande Chicago-State Line	30.9	26.4	27.1	18.4	21.2	27.7	27.7	29.1	27.7	25.4	29.8	27.0	318.6
Alamosa River	22.9	21.6	14.4	7.6	1.1	3.9	0.0	0.0	0.0	0.0	0.1	19.9	91.6
San Antonio River	-9.6	-8.9	-10.6	-10.6	-8.0	-7.4	-8.5	-7.9	-7.9	-7.9	-8.5	-9.9	-105.8
Total	256.9	300.1	357.9	402.4	393.5	372.4	292.7	261.1	220.1	183.4	195.6	195.4	3,431.5

Explanation of Columns

- (1) Stream reach
- (2) - (13) Monthly Stream Depletions in acre-feet
- (14) Total Plan Year Stream Depletions in acre-feet

According to the RGDSS Groundwater Model, if Subdistrict No. 3 ARP Wells were shut off today, there would be a continuing depletion to the river for approximately 19 years. This is the calculated time required to recover to conditions that existed before groundwater withdrawals started. The volume of water required to replace stream depletions during this recovery period is called Post-Plan Stream Depletions. Based on predictions from the Response Functions, Table 2.4 shows there would be a total of **6,897 acre-feet** of Post-Plan Stream Depletions. The portion of the total Post-Plan Stream Depletions impacting each of the six designated reaches of the rivers are also included in the table.

Table 2.4
Subdistrict No. 3 Post-Plan Stream Depletions
 (Units in acre-feet)

Years (May-Apr)	Conejos above Seledonia/Garcia	Conejos below Seledonia/Garcia	Rio Grande Del Norte-Excelsior	Rio Grande Excelsior-Chicago	Rio Grande Chicago-State Line	Alamosa River	San Antonio River	Total
2024-2043	2,525	2,477	323	267	937	367	0	6,897

Table 2.5 below lists the April 2023 projected stream depletions and the June 2024 final calculated obligations to compare projected versus actual calculated depletions for the 2023 ARP Year.

The Response Functions prepared for the 2023 ARP projected **2,800.1 ac-ft.** of combined stream depletions throughout the 2023 ARP year. A Preliminary Water Report, submitted to DWR the beginning of March 2024, recalculated depletions based on DWR’s preliminary end-of-year records for 2023 for both Subdistrict No. 3 ARP Wells 2023 groundwater withdrawals and 2023 surface water flows. With the March calculation, the total combined stream depletions increased to **3,431.0 ac-ft.** A final calculation of stream depletions was prepared for this Annual Report based on actual metered 2023 groundwater withdrawals as reported to DWR and the actual stream flows for 2023 based on DWR records. The actual total combined depletions for 2023 is **3,431.5 acre-feet.** Table 2.5 below shows these calculated amounts individually for comparison. The final Response Functions showed only a slight change from the amounts calculated in the PWR. Appendix D includes a daily accounting of the amount and source of replacement to each calling right on the Rio Grande, Conejos and Alamosa rivers for the entire 2023 Plan Year.

Table 2.5
Comparison of Subdistrict No. 3 2023 Projected and Calculated Stream Depletions
 (Units in acre-feet)

Month	Rio Grande									Alamosa River			Conejos River						
	Stream Reach 1			Stream Reach 2			Stream Reach 3			Stream Reach 1			Stream Reach 1			Stream Reach 2			
	4/15/2023	3/1/2024	7/1/2024	4/15/2023	3/1/2024	7/1/2024	4/15/2023	3/1/2024	7/1/2024	4/15/2023	3/1/2024	7/1/2024	4/15/2023	3/1/2024	7/1/2024	4/15/2023	3/1/2024	7/1/2024	
May-23	5.5	5.5	5.5	7.9	7.9	7.9	30.7	30.9	30.9	22.0	22.9	22.9	57.0	59.2	59.3	127.0	139.8	139.9	
Jun-23	5.2	5.2	5.2	7.2	7.2	7.2	25.6	26.4	26.4	20.7	21.5	21.6	81.4	84.7	84.7	139.1	163.8	163.8	
Jul-23	5.2	5.2	5.2	7.2	7.2	7.2	24.7	27.1	27.1	13.8	14.4	14.4	85.2	88.6	88.7	172.9	226.1	226.0	
Aug-23	5	5.0	5.0	6.4	6.4	6.4	18	18.4	18.4	7.3	7.6	7.6	75.9	79.0	79.0	210.3	296.7	296.6	
Sep-23	4.8	4.8	4.8	6.3	6.3	6.3	19.8	21.2	21.2	1.1	1.1	1.1	62.8	65.3	65.3	211.1	302.9	302.7	
Oct-23	5.1	5.1	5.1	6.5	6.6	6.6	24.1	27.7	27.7	3.7	3.9	3.9	59.3	61.7	61.8	192.3	274.8	274.7	
Nov-23	5.1	5.1	5.1	6.5	6.6	6.6	23.8	27.7	27.7	0.0	0.0	0.0	51.2	53.3	53.3	150.2	208.4	208.3	
Dec-23	5.3	5.4	5.4	7.1	7.3	7.3	25.2	29.1	29.1	0.0	0.0	0.0	45.9	47.8	47.8	134.8	179.4	179.4	
Jan-24	5.3	5.3	5.4	7.2	7.5	7.5	23.9	27.7	27.7	0.0	0.0	0.0	31.9	33.4	33.4	118.5	154.1	154.0	
Feb-24	4.8	4.9	4.9	6.7	7.0	7.0	21.9	25.4	25.4	0.0	0.0	0.0	27	28.2	28.3	98.4	125.7	125.7	
Mar-24	5.2	5.3	5.3	7.4	7.8	7.8	25.9	29.8	29.8	0.1	0.1	0.1	28.9	30.3	30.3	103.6	130.9	130.9	
Apr-24	4.9	5.0	5.0	6.8	7.2	7.2	23.2	27.0	27.0	19.0	19.9	19.9	29.9	31.3	31.4	92.2	114.8	114.8	
Total Projected 2023 Plan Year	61.4			83.2			286.8			87.7			636.4			1,750.4			
Preliminary 2023 Plan Year Calculated Total		61.8			85.0			318.5			91.5			662.6				2,317.3	
Actual 2023 Plan Year Total			61.9			85.1			318.6			91.6				663.3			2,316.8

Based on actual data, Subdistrict No. 3 calculates that at times during the 2023 Plan Year the Subdistrict may have over- or under-paid depletions at times to the Rio Grande, Conejos and Alamosa Rivers based on information provided in Appendix C showing the projected depletions paid daily by the Subdistrict for the 2023 Plan Year in comparison to the actual daily depletions calculated with actual 2023 data from DWR. The Subdistrict will work with DWR staff to determine the appropriate method for which to remedy any over/under paid injurious depletions as of the end of the 2023 Plan Year. Appendix D includes a daily accounting of the amount and source of replacement to calling rights on the Rio Grande, Conejos and Alamosa Rivers during the 2023 Plan Year.

3.0 OPERATION OF THE SUBDISTRICT NO. 3 2023 ANNUAL REPLACEMENT PLAN

All 2023 Plan Year injurious stream depletions were replaced in the time, location and amount that they occurred, beginning May 1, 2023. Releases of water were performed under the provisions of section 37-87-103, C.R.S.

Subdistrict No. 3's 2023 replacement operations on the Rio Grande included wet water releases from stored water the Subdistrict maintained in Beaver Reservoir or the Subdistrict utilized Forbearance Agreements with a number of ditches on the Rio Grande. The replacement sources used by the Subdistrict during the 2023 Plan Year were approved by the State Engineer or by the Division No. 3 Division Engineer for the 2023 Plan Year.

Subdistrict No. 3's 2023 replacement operations on the Alamosa River included wet water releases from Terrace Reservoir or the Subdistrict utilized Forbearance Agreements with a number of ditches on the Alamosa River. Wet water releases consisted of excess augmentation water leased in prior years from EXPO, LLC. The Subdistrict also utilized its Taos Valley No. 3 "Depletion Bank Credits" to cover its injurious stream depletion obligations when the Rio Grande Compact was the calling right. SWSPs were filed for the use of the wet water replacement sources and were approved for depletion replacements during the 2023 Plan Year.

Subdistrict No. 3's 2023 replacement operations on the Conejos River included releases from water the Subdistrict had stored in Platoro Reservoir. The Subdistrict leased trans-mountain water rights from the San Luis Valley Water Conservancy District, and under an approved exchange, moved a portion of that water to Platoro Reservoir during the 2022 Plan Year, and utilized this water during the 2023 Plan Year to cover its injurious stream depletion obligations. The Subdistrict also leased water from the San Luis Valley Irrigation Well Owner's from their Taos Valley No. 3 water right on the San Antonio River. Taos Valley No. 3 water was approved to be use as a direct replacement in the stream when the right was on or it could also be sent to a depletion pool and used to offset injurious depletions through exchange when the Subdistrict had no forbearance and did not make a reservoir release. During the 2023 Plan Year the Subdistrict also used forbearance agreements secured from a number of ditches on the Conejos system. The replacement sources used by the Subdistrict during the 2023 Plan Year were approved by the State Engineer or by the Division No. 3 Division Engineer for the 2023 Plan Year.

In total, **245.482 acre-feet** of wet water was added to the Rio Grande during the 2023 Plan Year from releases from Beaver Reservoir. Forbearance agreements were used when the Subdistrict did not utilize wet water for its replacement source. The Subdistrict remedied **111.733 acre-feet** of depletions under forbearance agreements the Subdistrict had secured for the irrigation season months of May 2023-November 8, 2023 and April 2024. A portion of the Subdistrict's allocation of Closed Basin Project production in the amount of **191.590 acre-feet** was used to remedy all injurious depletions during the non-irrigation season months of November 9, 2023-March 31, 2024. To remedy the remaining non-irrigation season depletions owed by the Subdistrict and not covered by the Closed Basin Project, a release was made from the Subdistrict's stored water in Rio Grande Reservoir in the amount of **41.06 acre-feet** during April 2024. Table 3.1 below shows a summary of the replacement sources used each month for the individual stream reaches on the Rio Grande.

For replacement operations on the Conejos River, the Subdistrict released **980.734 acre-feet** of their leased water from storage in Platoro reservoir for replacement of injurious depletions or with Taos Valley No. 3 water. The Subdistrict was allowed to aggregate their depletions in stream reach 1 with accretions from the Town of Antonito. Accretions were only used as an offset on days the San Antonio River was connected to the Conejos River and the Subdistrict was not utilizing a forbearance agreement. In total, the Subdistrict used these accretions to offset depletions in Stream Reach 1 on the Conejos in the amount of **50.316 acre-feet** during the 2023 ARP Year. Most of this occurred in the non-irrigation season. When the Subdistrict did not utilize wet water for its replacement source, forbearance was used. The Subdistrict remedied **1,396.152 acre-feet** of depletions under forbearance agreements the Subdistrict had secured for the irrigation season months of May 2023-October 2023 and April 2024. The Subdistrict's allocation of Closed Basin Project production would have been sufficient to cover all the injurious depletions during the non-irrigation season but the production of the Closed Basin Project between January 1 and April 30, 2024, was insufficient to cover all of the depletions owed during this same period. The Subdistrict utilized **942.414 acre-feet** of the Subdistrict's Closed Basin Project allocation to remedy injurious depletions during the non-irrigation season months of November 2, 2023-March 31, 2024.

On the Alamosa River, the Subdistrict used both releases of stored water from Terrace Reservoir and forbearance agreements to remedy injurious stream depletions. During the 2023 Plan Year the Subdistrict released **9.219 acre-feet** of water from Terrace Reservoir. The Subdistrict utilized forbearance agreements held with a number of ditches for replacements when wet water was not being released. The Subdistrict used forbearance agreements to remedy a total of **79.383 acre-feet**. The Subdistrict was not required to replace any depletions to the Alamosa River during the non-irrigation season from November 2, 2023-March 31, 2024.

Appendix D shows the calling water rights, as identified by the daily District 20, 21 and 22 call sheets, and the daily replacement source used to remedy the injurious stream depletions to those calling rights during the 2023 Plan Year for the Rio Grande, Conejos and Alamosa Rivers.

Table 3.1 below shows a summary of the replacement sources used each month for each reach on the Rio Grande, the Alamosa and the Conejos Rivers during the 2023 Plan Year.

Table 3.1
Monthly Stream Depletions by Stream Reach for the 2023 ARP
and Replacement Sources Used to Remedy the Depletions
 (Units in acre-feet)

Rio Grande River												
Stream Reach Depletions	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24
SR-1	5.5	5.2	5.2	5.0	4.8	5.1	5.1	5.4	5.3	4.9	5.3	5.0
SR-2	7.9	7.2	7.2	6.4	6.3	6.5	6.6	7.3	7.5	7.0	7.8	7.2
SR-3	30.7	25.6	24.7	18.0	19.8	24.1	27.7	29.1	27.7	25.4	29.8	27.0
Total Depletions	44.1	38.0	37.1	29.4	30.9	35.7	39.4	41.8	40.5	37.3	42.9	39.2
Replacement Sources	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24
SR-1												
Taos Valley No. 3 SWSP	0.000	0.000	1.176	1.134	1.280	3.300	0.340	0.000	0.000	0.000	0.000	1.848
Creede Nelson Tunnel	1.602	0.870	0.168	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Taos Valley No. 3 Depletion Credits	1.424	2.088	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Forbearance	2.492	2.262	3.836	3.794	3.466	1.815	1.020	0.000	0.000	0.000	0.000	3.192
CBP Allocation	0.000	0.000	0.000	0.000	0.000	0.000	3.784	5.394	5.363	4.872	5.270	0.000
SR-2												
Taos Valley No. 3 SWSP	0.000	0.000	1.631	1.449	1.680	4.200	0.434	0.000	0.000	0.000	0.000	2.651
Creede Nelson Tunnel	2.295	1.200	0.233	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Taos Valley No. 3 Depletion Credits	2.040	2.880	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Forbearance	3.570	3.120	5.320	4.850	4.552	2.310	1.302	0.000	0.000	0.000	0.000	4.579
CBP Allocation	0.000	0.000	0.000	0.000	0.000	0.000	4.884	7.316	7.471	6.989	7.812	0.000
SR-3												
Taos Valley No. 3 SWSP	0.000	0.000	2.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.889
Creede Nelson Tunnel	8.919	4.270	0.797	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Taos Valley No. 3 Depletion Credits	7.928	10.248	2.391	18.011	19.800	24.118	6.352	0.000	0.000	0.000	0.000	0.000
Forbearance	13.874	11.102	18.196	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.081
CBP Allocation	0.000	0.000	0.000	0.000	0.000	0.000	20.328	29.109	27.683	25.462	29.853	0.000
Totals Replacements	44.144	38.040	36.274	29.238	30.778	35.743	38.444	41.819	40.517	37.323	42.935	39.240

Alamosa River												
Stream Reach Depletions	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24
SR-1	22.0	20.7	13.8	7.3	1.1	3.7	0.0	0.0	0.0	0.0	0.0	19.9
Total Depletions	22.0	20.7	13.8	7.3	1.1	3.7	0.0	0.0	0.0	0.0	0.0	19.9

Replacement Sources	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24

SR-1												
EXPO Augmentation Water	1.420	3.450	0.252	2.596	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.121
Forbearance	20.590	15.870	13.574	4.720	1.110	3.720	0.000	0.000	0.000	0.000	0.000	19.799
Taos Valley No. 3 Depletion Credits	0.000	1.380	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Totals Replacements	22.010	20.700	13.826	7.316	1.110	3.720	0.000	0.000	0.000	0.000	0.000	19.920

Conejos River												
Stream Reach Depletions	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24
SR-1	57.0	81.4	85.2	75.9	62.8	59.3	53.3	47.8	33.4	28.2	30.3	31.3
SR-2	127.0	139.1	172.9	210.3	211.1	192.3	208.4	179.4	154.1	125.7	130.9	114.8
Total Depletions	184.0	220.5	258.1	286.2	273.9	251.6	261.7	227.2	187.5	153.9	161.2	146.1

Replacement Sources	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24
SR-1												
Taos Valley No. 3 SWSP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.856
Taos Valley No. 3 Depletion Credits	24.774	28.992	2.407	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Town of Antonito Accretions	4.650	3.576	0.342	0.000	0.000	0.000	8.207	7.905	7.905	7.917	8.494	1.320
Forbearance	27.585	48.852	75.814	75.919	62.820	59.303	1.707	0.000	0.000	0.000	0.000	27.144
CBP Allocation	0.000	0.000	0.000	0.000	0.000	0.000	43.297	39.866	25.482	20.358	21.793	0.000
SLVWCD Fully Consumable Water	0.000	0.000	6.656	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SR-2												
Taos Valley No. 3 SWSP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.308
Taos Valley No. 3 Depletion Credits	65.552	55.644	5.578	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Town of Antonito Accretions	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Forbearance	61.455	83.466	153.840	210.304	211.110	192.324	5.007	0.000	0.000	0.000	0.000	99.502
CBP Allocation	0.000	0.000	0.000	0.000	0.000	0.000	201.492	179.459	154.070	125.715	130.882	0.000
SLVWCD Fully Consumable Water	0.000	0.000	13.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Totals Replacements	184.016	220.530	258.137	286.223	273.930	251.627	259.710	227.230	187.457	153.990	161.169	146.130

4.0 DOCUMENTATION OF PROGRESS TOWARDS ACHIEVING AND MAINTAINING A SUSTAINABLE WATER SUPPLY

Rule 8.1.7 of the Groundwater Rules includes provisions for meeting the requirements for achieving and maintaining a Sustainable Water Supply in the confined aquifer. Per the State Engineer’s approval letter for the PWM, dated August 27, 2018, the Conejos Response Area five-year running average groundwater withdrawals were below the 1978-2000 average groundwater withdrawals for the Conejos Response Area with a five-year average of 23,018 acre-feet. Per the July 1, 2023, memo from the State Engineer, “Five Year Groundwater Withdrawals in Confined Aquifer Response Area in Division 3: July 2023 Requirement of Division 3 Groundwater Rules Section 8.1.5,” the 2018-2022 five-year average groundwater withdrawals for the Conejos Response Area was **27,689 acre-feet**. The next five-year average

will drop the 2018 withdrawals of **35,842 acre-feet**. 2023 was a wetter year on the Conejos River, but despite the above average streamflow, average groundwater withdrawals saw a significant increase relative to what was predicted during in the 2023 ARP. With the 2018 year being removed, it is anticipated the State Engineer's next calculation of the Conejos Response Area five-year average will decrease by approximately **1,900 acre-feet** based on the trend in the Subdistrict. It's anticipated that the five-year average for the Conejos Response Area will remain below the 1978-2000 average groundwater withdrawals and remain below the average that was calculated at the time the Subdistrict's PWM was approved.

The current five-year running average groundwater withdrawals for ARP Wells, which includes contract wells, for the period 2019-2023 is **25,755 acre-feet**. The previous five-year running average from 2018-2022 for ARP wells, including contract wells, was **27,521 acre-feet**. The five-year running average decreased in 2023 by **1,766 acre-feet** for ARP Wells with the 2019-2023 five-year running average. This calculation is based on 2023 groundwater withdrawals downloaded on June 1, 2024, from the records of the Division of Water Resources for ARP wells.

Based on the trends of both the Conejos Response Area and the Subdistrict's five-year average, the Subdistrict will remain in compliance with the Sustainable Water Supply Requirement of the Rules.

5.0 ADDITIONAL INFORMATION TO EVALUATE 2023 ARP

The Subdistrict will provide the DWR with an electronic copy of the Response Functions used in this Annual Report at the same time they submit the Annual Report for review and approval. Additional supplemental information that is generally used by DWR in their evaluation of the Annual Report is also being included with the submission. The supplemental information being provided includes:

1. The list of Subdistrict Wells and the 2023 actual metered groundwater withdrawals for the ARP Wells included in the 2023 ARP in spreadsheet format matching the list provided in Appendix A.
2. Spreadsheet of the breakdown of "sprinkler", "flood" and "other" wells used to calculate the Consumptive Use Ratio in the Response Functions.