

RESPONSE AREA SUMMARY PACKAGE

RIO GRANDE ALLUVIUM RESPONSE AREA (Includes only unconfined wells)

Table of Contents

Figure 1	<p><i>Rio Grande Alluvium Response Area, Stream Reaches with Response Functions</i> - This figure shows the stream reaches for which Response Functions were calibrated. For the Rio Grande Alluvium Response Area there are three stream reaches with Response Functions:</p> <ol style="list-style-type: none">1. Rio Grande Del Norte to Excelsior Ditch2. Rio Grande Excelsior Ditch to Chicago Ditch3. Rio Grande Chicago Ditch to the State Line
Table 1a	<p><i>Estimated Historical and Current Year Net Stream Depletions from Groundwater Withdrawals in the Rio Grande Alluvium Response Area (acre-feet)</i> - This table provides a summary of the Rio Grande Alluvium Response Area's groundwater withdrawal impacts to streams using Response Functions calibrated to the RGDSS Groundwater Model for the time frame of 2001 through 2015. For illustrative purposes, groundwater withdrawal was discontinued after 2015 and the Response Functions were applied to estimate post plan depletions. Net Groundwater Consumptive Use is defined as the groundwater consumed by the operations of one or more wells and represents the difference between groundwater withdrawals less any return flow to the hydrogeologic system.</p>
Table 1b	<p><i>Estimated Post Plan Net Stream Depletions from Groundwater Withdrawals in the Rio Grande Alluvium Response Area (acre-feet)</i></p>
Figure 2	<p><i>2001-2015 Estimated Net Stream Depletions and Post 2015 Projected Net Stream Depletions from Groundwater Withdrawals in the Rio Grande Alluvium Response Area</i> - The stacked graph shows the combination of Table 1a (historical and current year depletions) and Table 1b (post-plan depletions).</p>
Table 2	<p><i>Monthly Net Stream Depletions for 2015 Plan Year in the Rio Grande Alluvium Response Area (acre-feet)</i> - This table provides the monthly distribution of Net Stream Depletions for the 2015 Plan Year.</p>

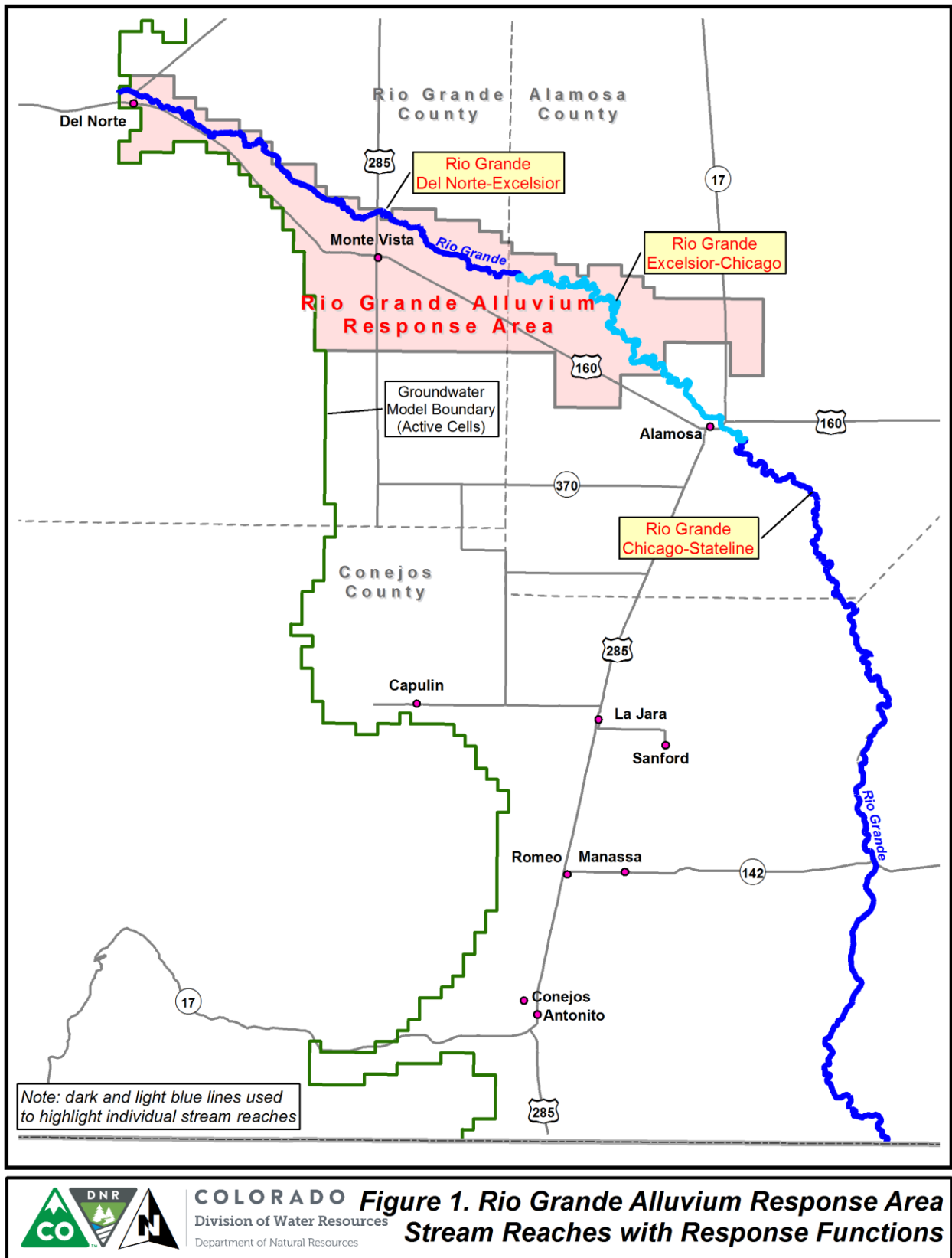


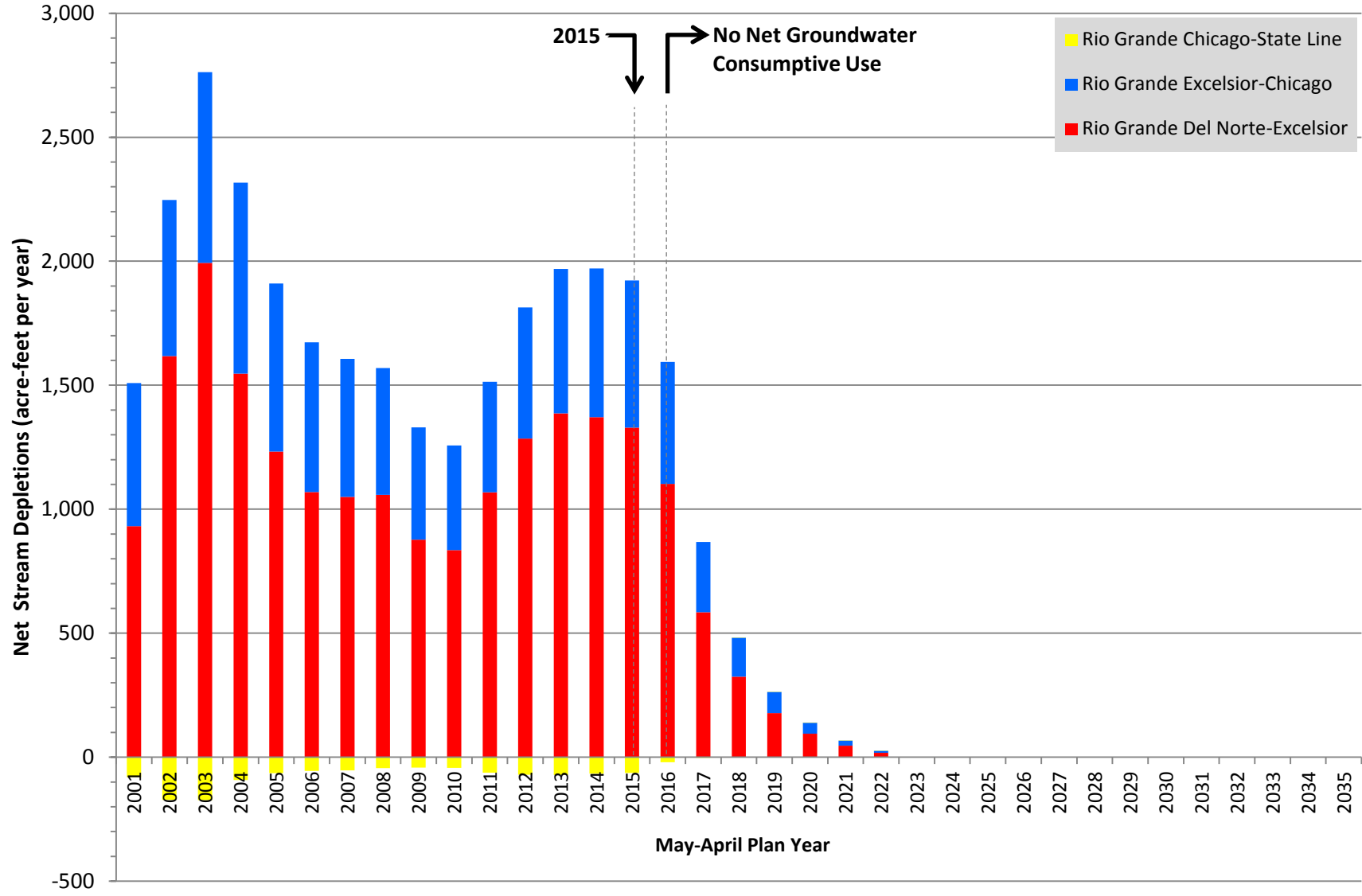
Table 1a: Estimated Historical and Current Year Net Stream Depletions from Groundwater Withdrawals in the Rio Grande Alluvium Response Area (acre-feet)						
Year	Rio Grande near Del Norte Stream Gage (Apr-Sep)	Net Groundwater Consumptive Use (Jan-Dec)	Net Stream Depletions (May – April)			Total
			Rio Grande Del Norte-Excelsior	Rio Grande Excelsior-Chicago	Rio Grande Chicago-State Line	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2001	655,233	9,777	931	577	-81	1,427
2002	96,717	18,297	1,618	629	-172	2,075
2003	261,300	15,249	1,994	769	-173	2,590
2004	431,675	10,110	1,547	770	-92	2,225
2005	682,540	9,370	1,233	677	-65	1,845
2006	411,656	9,087	1,070	604	-55	1,619
2007	593,239	9,419	1,049	557	-53	1,553
2008	623,333	7,142	1,058	511	-44	1,525
2009	513,058	7,406	877	453	-42	1,288
2010	453,063	7,479	835	423	-43	1,215
2011	415,182	12,334	1,068	446	-62	1,452
2012	328,382	12,600	1,285	529	-71	1,743
2013	344,435	12,302	1,386	583	-71	1,898
2014	518,599	11,095	1,371	599	-67	1,903
2015	518,599	11,095	1,329	593	-63	1,859
Average	456,467	10,851	1,243	581	-77	1,748

Table 1b: Estimated Post Plan Net Stream Depletions from Groundwater Withdrawals in the Rio Grande Alluvium Response Area (acre-feet)						
Year	Rio Grande near Del Norte Stream Gage (Apr-Sep)	Net Groundwater Consumptive Use (Jan-Dec)	Net Stream Depletions (May – April)			
			Rio Grande Del Norte-Excelsior	Rio Grande Excelsior-Chicago	Rio Grande Chicago-State Line	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2016		0	1,101	492	-20	1,573
2017		0	584	284	-2	866
2018		0	324	158	1	483
2019		0	178	85	1	264
2020		0	95	44	1	140
2021		0	46	20	1	67
2022		0	18	8	0	26
2023		0	0	1	0	1
2024		0	0	0	0	0
2025		0	0	0	0	0
2026		0	0	0	0	0
2027		0	0	0	0	0
2028		0	0	0	0	0
2029		0	0	0	0	0
2030		0	0	0	0	0
2031		0	0	0	0	0
2032		0	0	0	0	0
2033		0	0	0	0	0
2034		0	0	0	0	0
2035		0	0	0	0	0
Post Plan Depletions		0	2,346	1,092	-18	3,420

Notes for Tables 1a and 1b columns:

1. Year
2. Rio Grande near Del Norte Gage streamflow in acre-feet for April through September. The 2015 streamflow value was estimated to be the same as in 2014.
3. Net Groundwater Consumptive Use (NetGWCU) for January through December.
 - a. NetGWCU values for 2001 through 2010 were taken from the RGDSS Groundwater Model output.
 - b. NetGWCU values for 2011 through 2014 were calculated using well meter data, diversion data, and irrigated acreage information.
 - c. NetGWCU data for 2015 was estimated to be the same as in 2014.
4. Net Stream Depletions in the Rio Grande Del Norte to Excelsior Ditch reach for the plan year (May through April) in acre-feet
5. Net Stream Depletions in the Rio Grande Excelsior Ditch to Chicago Ditch reach for the plan year (May through April) in acre-feet
6. Net Stream Depletions in the Rio Grande Chicago Ditch to the State Line reach for the plan year (May through April) in acre-feet
7. Total Net Stream Depletions columns (4+5+6) in acre-feet.

Figure 2: 2001-2015 Estimated Net Stream Depletions and Post 2015 Projected Net Stream Depletions from Groundwater Withdrawals in the Rio Grande Alluvium Response Area



**Table 2: Monthly Net Stream Depletions for 2015 Plan Year in
the Rio Grande Alluvium Response Area (acre-feet)**

Stream Reach	2015							2016				Total	
	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)
Rio Grande Del Norte-Excelsior	109	100	93	93	98	114	119	132	134	119	116	101	1,328
Rio Grande Excelsior-Chicago	59	50	46	32	34	42	49	56	57	54	61	53	593
Rio Grande Chicago-State Line	8	-2	-7	-20	-13	-9	-6	-2	-6	-4	0	-4	-65
Total	176	148	132	105	119	147	162	186	185	169	177	150	1,856

Notes for columns:

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