Appendix C3
New Mexico Water Demand Scenario Quantification

Appendix C3—New Mexico Water Demand Scenario Quantification

1.0 Introduction

This appendix summarizes the data sources used in scenario quantification for Colorado River demand[1] for the state of New Mexico and presents the results of quantification. As presented in figure C3-1, New Mexico is divided into a number of planning areas that align with Colorado River Basin (Basin) tributaries (San Juan, Northwest [Little Colorado tributaries], and Southwest [Gila tributaries]), and Adjacent Areas that are served by Colorado River water. Data collection and development were completed at the planning area level.

The following sections present background information that summarizes the state's planning areas, as well as data sources used to quantify demand scenarios by category. Following the background section, results of demand scenario quantification are presented. The results section is broken out into a New Mexico Study Area summary, followed by Colorado River demand by geography and finally by category.

2.0 Background

The New Mexico Office of the State Engineer and the New Mexico Interstate Stream Commission (NMISC) are responsible for regional and state-level water resource planning in New Mexico. As part of New Mexico's state water planning process, regional plans were developed by a number of regional planning entities. The NMISC coordinated these efforts, and once they were final, adopted the resulting regional plans.

The NMISC also coordinated the efforts to provide information for scenario quantification. These efforts largely relied on information previously generated through regional plans and demographic studies. However, new assumptions and/or data development were required where the assumptions of the Colorado River Basin Water Supply and Demand Study (Study) required information not developed as part of the regional planning effort.

2.1 Data Sources for Quantification

This section discusses data sources for demand quantification by use category. Some category projections were based on relevant parameter data, while other category projections were developed directly as water demand. Sources include state, regional, and national agency reports.

[1] Potential Colorado River demand as computed by Study Area demand minus other supplies.

FIGURE C3-1
Colorado River Hydrologic Basin and Export Service Areas in New Mexico

- **Agricultural Demand:** Irrigated acreage, agricultural applied water use, and agricultural demand estimates were derived from the *San Juan Regional Water Plan* (San Juan Water Commission, 2003), the *Southwest New Mexico Regional Water Plan* (Daniel B. Stephens & Associates [DBSA], 2005), *Taos Regional Water Plan* (DBSA, 2008), *Middle Rio Grande Water Supply Study* (S.S. Papadopoulos and Associates, 2000), and additional information provided by the NMISC.
- **Municipal and Industrial (M&I):** Population and per capita water use values for the San Juan, Southwest, and Taos planning areas were derived from the same Regional Plans as agricultural parameters, and additional information provided by NMISC. Additional information for Adjacent Areas was derived based on the City of Albuquerque's reported efficiency and Albuquerque population estimates prepared by the Bureau of Business and Economic Research.
- **Energy:** Energy demands were derived from personal communication with NMISC for the San Juan planning area. Some additional energy use in the Taos and Southwest planning areas was derived from the regional plans.
- **Minerals:** Minerals demands were derived from personal communication with NMISC for the San Juan planning area. Some additional energy use in the Taos and Southwest planning areas was derived from the regional plans.
- **Fish, Wildlife, and Recreation:** Water demands for fish, wildlife, and recreation were derived from contracted amounts based on the San Juan Chama contract.
- **Tribal:** Tribal demands were derived from personal communication with NMISC, input from the Jicarilla Apache Nation and Navajo Nation, and San Juan Chama contract amounts.

3.0 Results of Water Demand Scenario Quantification[2]

This section summarizes New Mexico's Colorado River water demand trends by category across the scenarios. The purpose of this section is to describe changes in demands, both temporally and geographically, parameters that influence changes in demands, and how the parameters and demands differ among scenarios.

Demands were first developed for areas that may be potentially served by Colorado River water ("Study Area" demands); independent of the source of supply. However, for areas outside of the hydrologic basin, a portion of the Study Area demand is satisfied from other supplies, such as the Rio Grande water and local groundwater. The communities within the Basin, including the Southwest and Northwest planning areas, also rely on non-tributary groundwater for a portion of their supply. To develop estimates of the Colorado River demand, the Study Area demand was reduced by estimates of available supply from other sources. This appendix focuses on Colorado River demands, but includes discussion of the Study Area parameters that led to these demands.

[2] By definition, scenarios representing future, projected, estimated, or potential demands are uncertain and are only one possible realization of unknown events. All scenarios represent potential Colorado River Water demand. However, for readability purposes, potential Colorado River water demand will also be varyingly referred to as Colorado River demand, or in some cases, just demand.

Sections 3.1 through 3.3 summarize the results of demand scenario quantification, with section 3.1 presenting Study Area demand and Colorado River water demand, section 3.2 presenting Colorado River demand for the state and individual planning areas across the six scenarios, and section 3.3 presenting Colorado River water demand by category across the six scenarios. Parameters and demands for all categories and all scenarios, along with references for data sources, are detailed in tables C3-2 to C3-7 in section 3.4.

3.1 Summary Results of Scenario Quantification

Values were developed for Study Area parameters to quantify Study Area demand for each of the scenarios. Colorado River demand was calculated as Study Area demand minus other supplies. Table C3-1 presents summary results for the demand scenarios considered in the Study. The table presents agricultural and M&I demand parameters for the entire Study Area that distinguish the scenarios, the resulting Study Area demands, and finally the Colorado River demands by category. Because other supplies may vary among scenarios, trends observed in the parameters and Study Area demands may not be reflected identically in Colorado River demand trends.

New Mexico estimates that about 1.5 million people will be in New Mexico's Study Area by 2015. This number is expected to increase to about 2 to 3 million by 2060. The greatest population growth is associated with the Rapid Growth (C1 and C2) and Enhanced Environment (D2) scenarios. The Slow Growth (B) scenario has the lowest population growth of the scenarios (2 million by 2060) but still represents a growth of about 37 percent over 2015 estimates.

The growing municipal population, however, will continue to be more efficient in its per capita water use than today. Per capita water use, based solely on passive or existing conservation targets, is expected to be 11 to 24 percent less in 2060 than in 2015. While usage rates vary across New Mexico's planning areas, per capita reductions are assumed to be consistent across the planning areas.

Irrigated acreage is projected to decrease slightly (2 percent or 3,000 acres) through 2060 under all scenarios. Water delivery per acre does not change in the Current Projected (A), Rapid Growth (C1), and Enhanced Environment (D1) scenarios; increases slightly (4 percent) in the Slow Growth (B) scenario; and decreases by about 15 percent in the Rapid Growth (C2), and Enhanced Environment (D2) scenarios.

Study Area demand for energy is projected to increase slightly under all scenarios due to the growing need for energy sources (coal and solar). The greatest increases in Study Area demand for energy are anticipated in the San Juan planning area, with an increase of about 1,500 acre-feet per year (afy) (4 percent).

Study Area demand for minerals is projected to remain constant through time and across all scenarios.

TABLE C3-1
Summary Results of New Mexico Water Demand Scenario Quantification by 2060

Key Study Area Demand Scenario Parameters							
	2015[1]	2060 Scenario Parameters					
		A	B	C1	C2	D1	D2
Population (millions)	1.5	2.6	2.0	3.0	3.0	2.6	3.0
Change in per capita water usage (%), from 2015	--	-11%	-11%	-11%	-15%	-24%	-22%
Irrigated acreage (millions of acres)	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Change in per acre water delivery (%), from 2015	--	+0%	+4%	+0%	-15%	+0%	-15%
Study Area Demand (thousand acre-ft)							
	2015[1]	2060 Scenario Demands					
		A	B	C1	C2	D1	D2
Ag demand	723	718	748	718	592	718	592
M&I demand	252	414	322	477	453	346	407
Energy demand	40.7	42.2	42.2	42.2	42.2	38.0	42.2
Minerals demand	6.2	6.2	6.2	6.2	6.2	6.2	6.2
FWR demand	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Tribal demand	303	367	367	529	529	367	529
Total Study Area Demand[2]	**1,330**	**1,551**	**1,490**	**1,777**	**1,627**	**1,480**	**1,581**
Colorado River Demand (thousand acre-ft)							
	2015[1]	2060 Scenario Demands					
		A	B	C1	C2	D1	D2
Ag demand	111	111	111	111	106	111	106
M&I demand	141	230	169	293	149	163	102
Energy demand	40.0	41.5	41.5	41.5	41.5	37.4	41.5
Minerals demand	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FWR demand	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Tribal demand	303	367	367	529	529	367	529
Total Colorado River Demand[2]	**600**	**754**	**693**	**979**	**831**	**683**	**785**

1. If range across scenarios is less than 10%, Current Projected (A) is presented. Otherwise, range (min - max) is presented.

2. Excludes potential losses (reservoir evaporation, phreatophytes, and/or operational inefficiencies) that may be charged to state.

Study Area demand for tribal use is projected to increase across all scenarios between about 20 and 75 percent. The larger increase occurs in the Rapid Growth (C1 and C2) and Enhanced Environment (D2) scenarios.

Figure C3-2 presents demands across the scenarios in three panels as follows: 1) Study Area demand with other supplies and Colorado River demand identified, 2) Colorado River demand, and 3) change in Colorado River demand by demand category.

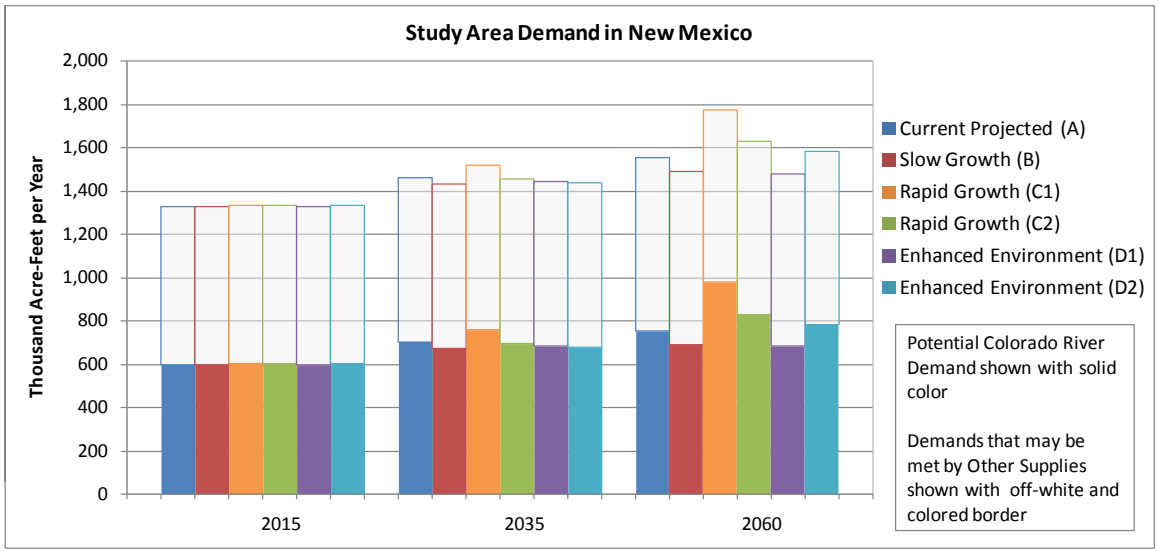
From panel one it can be seen that Study Area demand increases from about 1.3 million acre-feet (maf) in 2015 to between 1.5 and 1.8 maf in 2060. The range in Study Area demand growth across scenarios in 2060, however, is projected to be as low as 149 thousand acre-feet (kaf) or as high as 448 kaf. About half of the Study Area demand is expected to be met by other supplies.

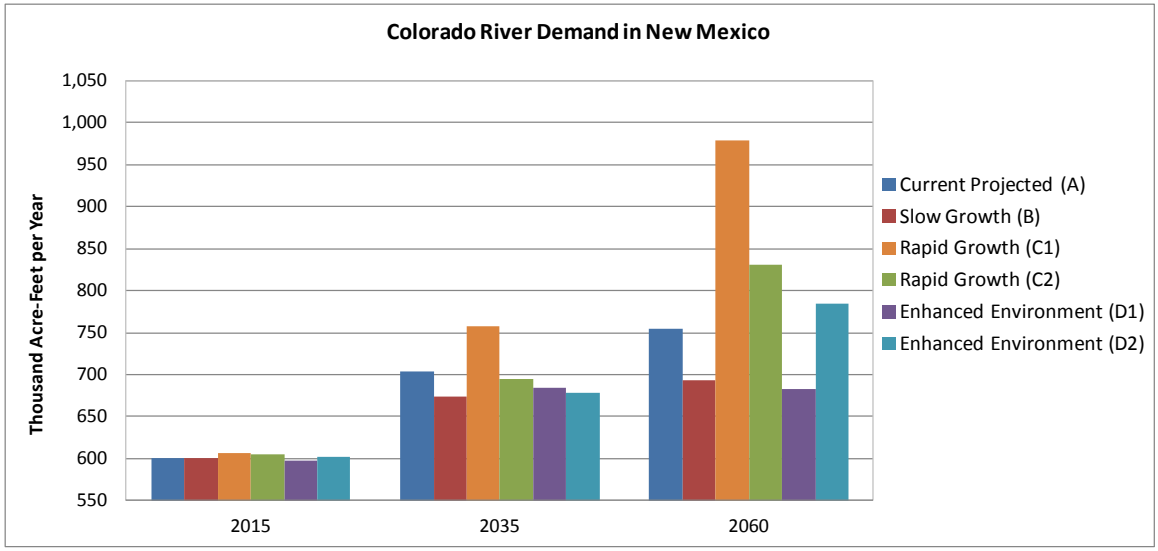
Panel two provides a view of the range across scenarios of Colorado River demand. This demand increases from about 600 kaf in 2015 to between 683 and 980 kaf in 2060 (or 14 to 63 percent), depending on the scenario. This difference results in a Colorado River demand range of about 298 kaf across the scenarios in 2060, or about 40 percent.

Panel three shows how specific categories affect the projected change in Colorado River demand by scenario. Growth in tribal demand across all scenarios results in the greatest increase in demand (between 41 and 100 percent), followed closely by M&I demand (between 3 and 60 percent).

Figure C3-3 ties historical water use to the range of Colorado River demand in the quantified scenarios. The 298 kaf range across scenarios in 2060 is easily discernible, with a relatively even spread over the range across the scenarios. In addition, it appears that the quantified scenarios track well with the peaks in historical uses that likely represent the least supply-limited conditions or actual demand.

FIGURE C3-2
Study Area, Colorado River, and Change in Colorado River Demand





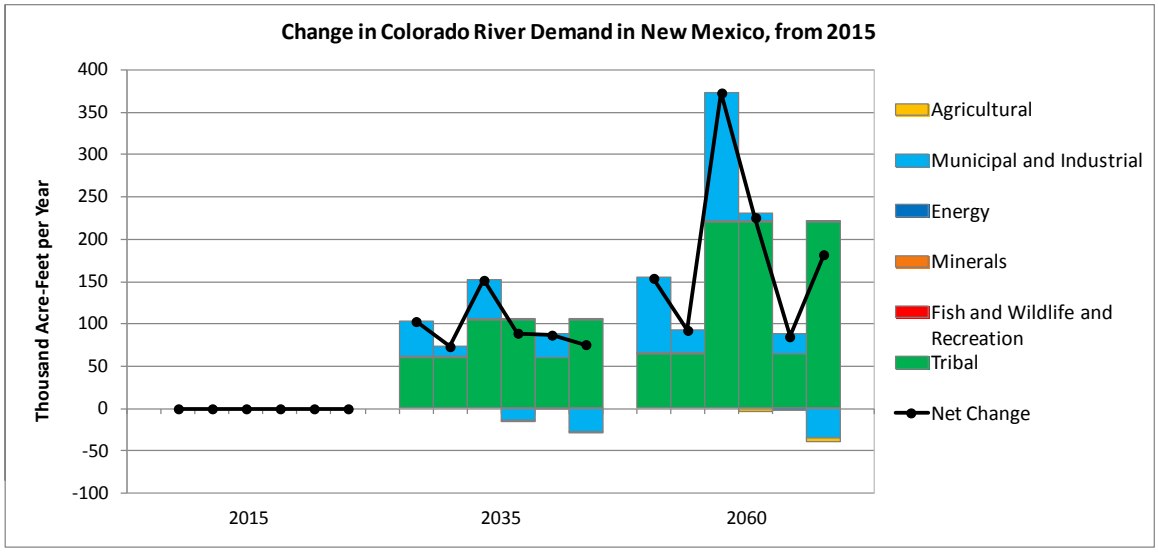
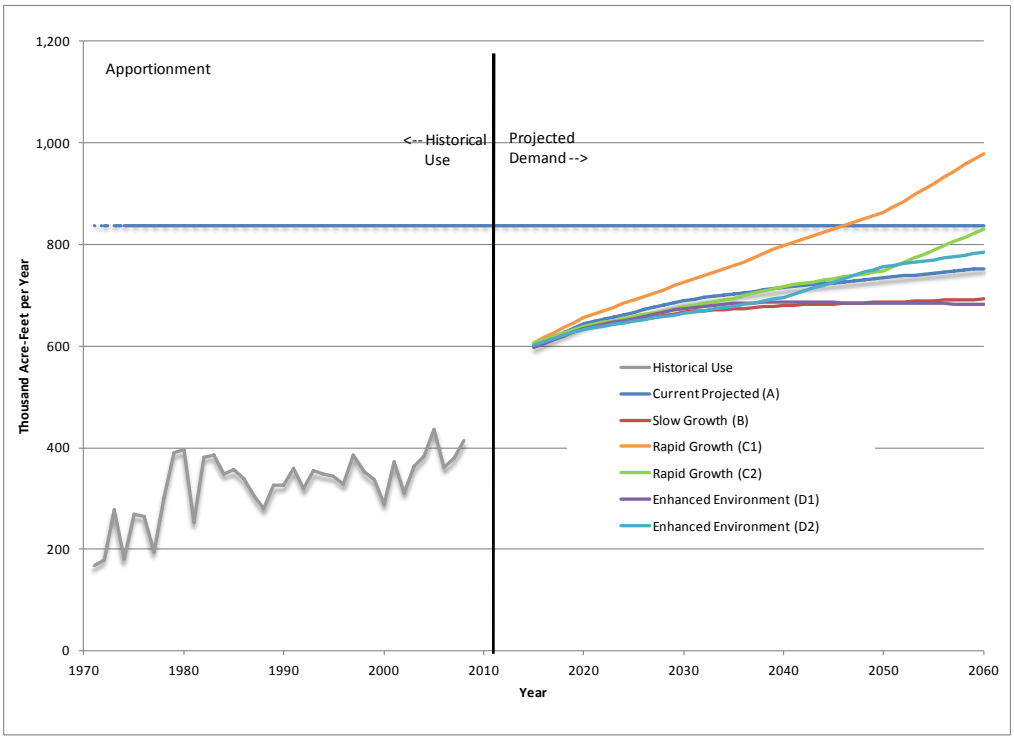


FIGURE C3-3
Historical Use and Future Projected Demand Excluding Reservoir Evaporation[1]



[1]Reservoir evaporation on the order of 70 kaf is not included in this plot.

3.2 Colorado River Water Demand by Geography

Colorado River water demand for areas served by the Colorado River is presented in figures C3-4 and C3-5. These figures show two geographic levels: Study Area in New Mexico, and individual planning areas. Demands at each geographic level are shown across the scenarios. The columns to the right show the Colorado River demand at a point in time (2015, 2035, or 2060) by relative contribution of the categories.

Colorado River demand[3] in New Mexico is primarily in the San Juan and Adjacent Areas planning areas. The San Juan planning area has the greatest magnitude of Colorado River demand, with tribal demands making up the majority of those demands, along with some energy and agricultural demands. The primary demand category in the Adjacent Areas planning is M&I, with a small amount of agricultural demand.

Figure C3-6 shows the change in Colorado River demand by category from 2015 across the scenarios. Change in Colorado River demand is roughly similar in magnitude on both the San Juan and Adjacent Areas planning areas, with tribal demand making up the vast majority of change in San Juan, and M&I making up all of the change in Adjacent Areas.

[3]Potential Colorado River demand is based on changes in parameters such as population and for the purpose of the Study is not limited by apportionment.

FIGURE C3-4
Colorado River Demand in New Mexico

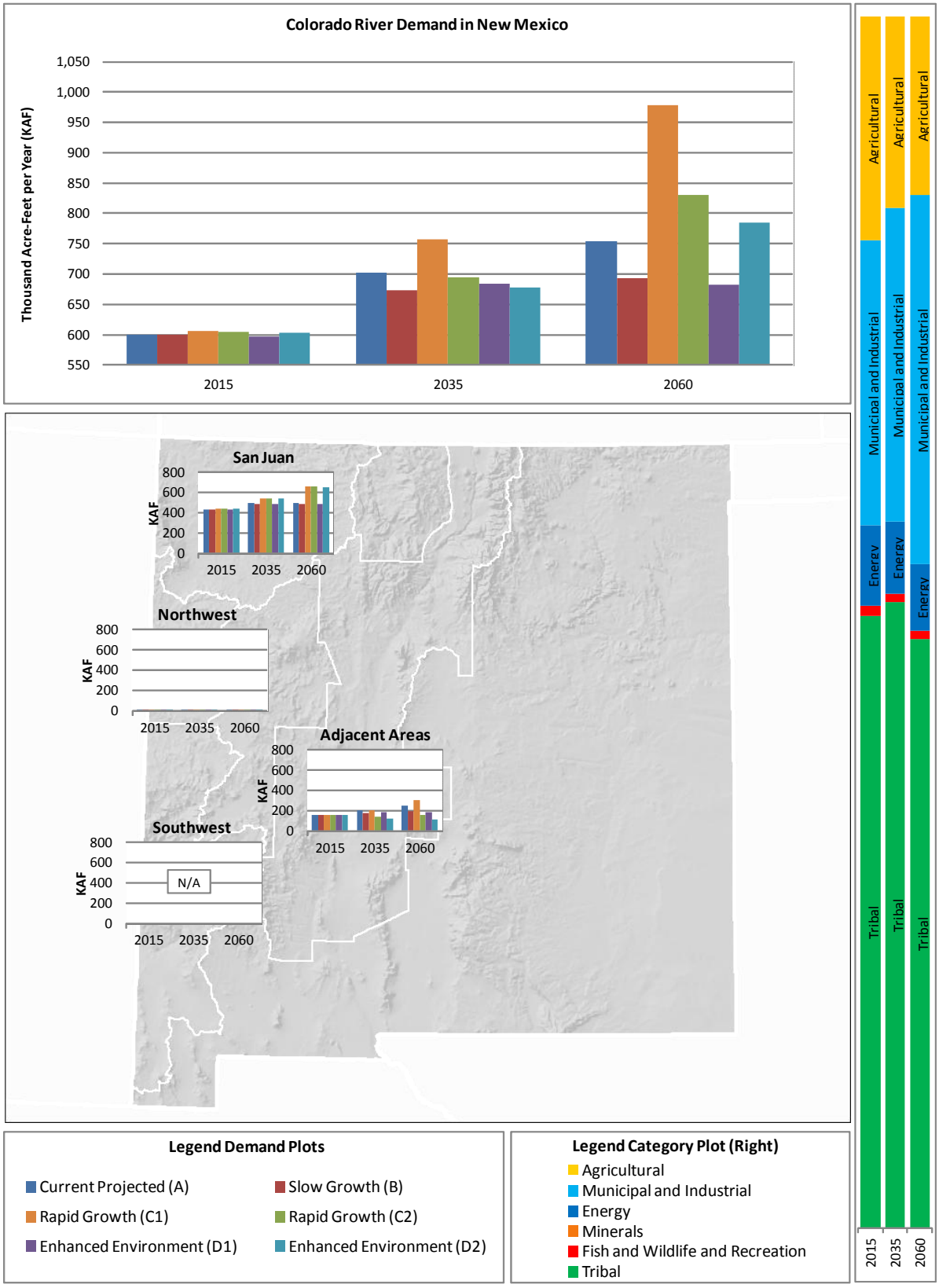


FIGURE C3-5
Colorado River Demand by Category

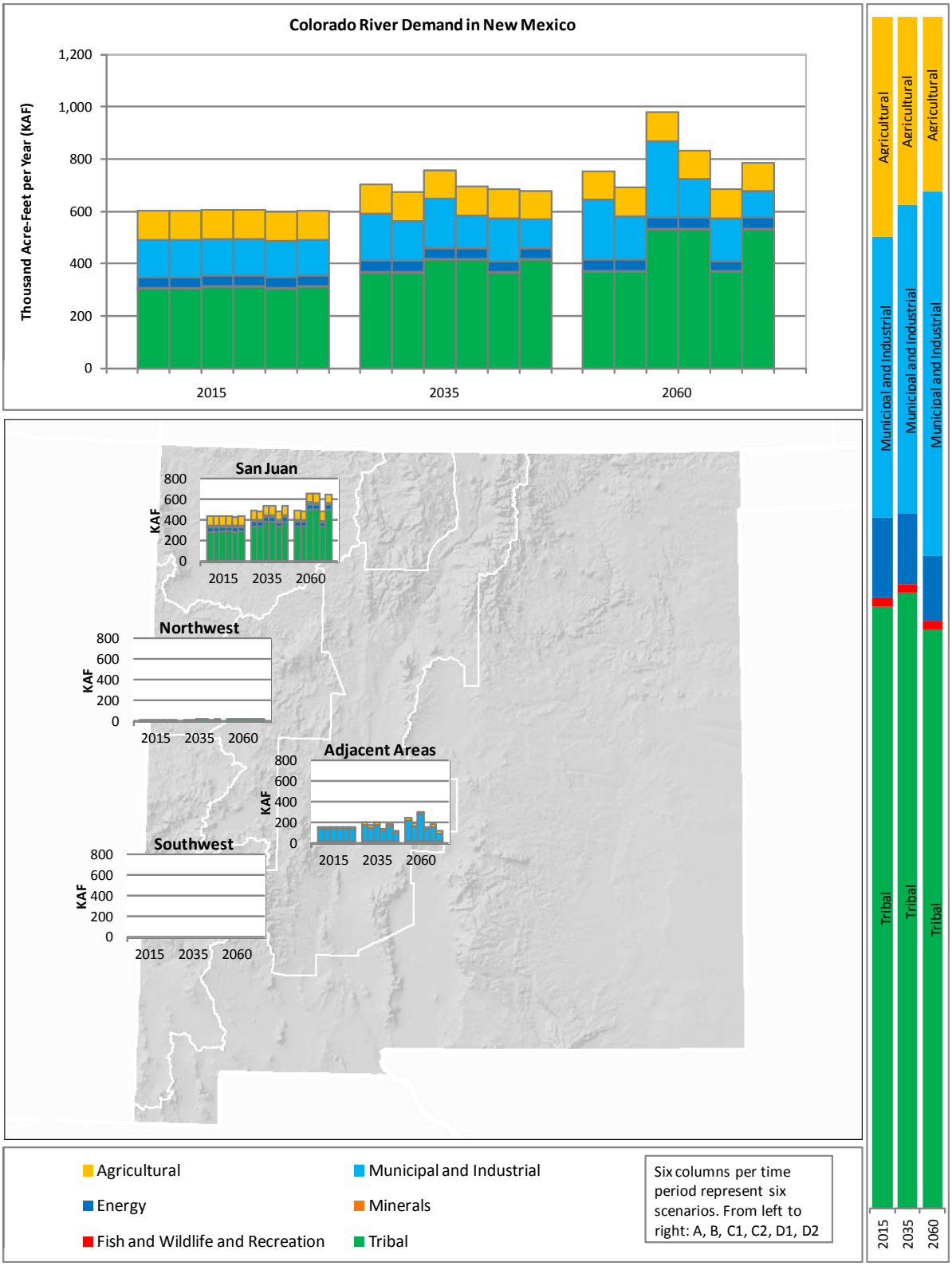
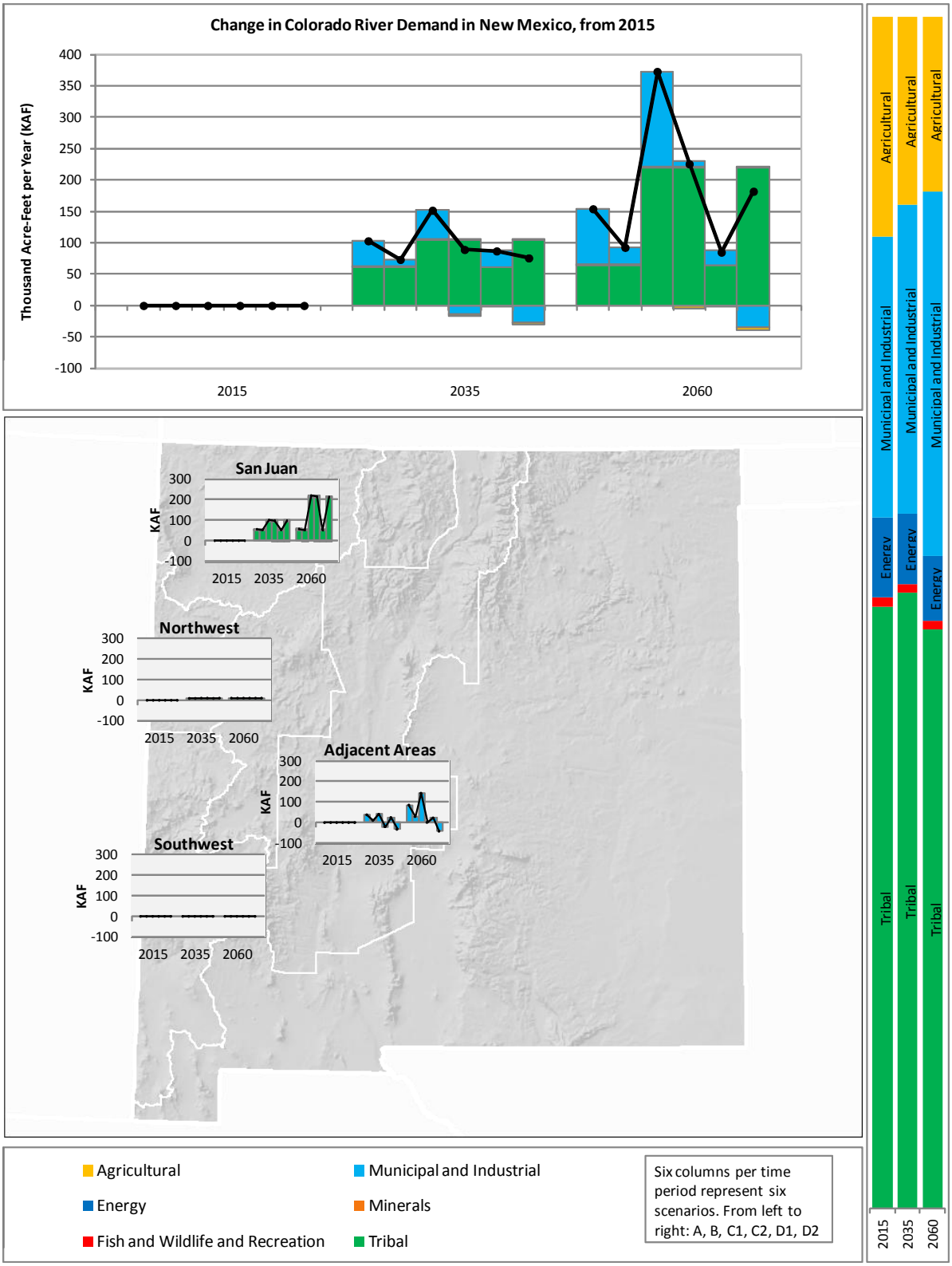


FIGURE C3-6
Change in Colorado River Demand in New Mexico from 2015 by Category



3.3 Colorado River Demand by Category

3.3.1 Agricultural

Agricultural water demand is driven by irrigated acreage and water delivery per acre. Water delivery per acre is the amount of water diverted per irrigated acre. Components of this use include transmission and delivery losses (surface evaporation, riparian demand, and seepage), and on-farm losses that are made up of evaporation, crop irrigation requirements, and tail water (return). Each of these factors will vary by location (precipitation, growing season, etc.), irrigation method, and crop type.

Figure C3-7 presents the following by scenario in 2015, 2035, and 2060:

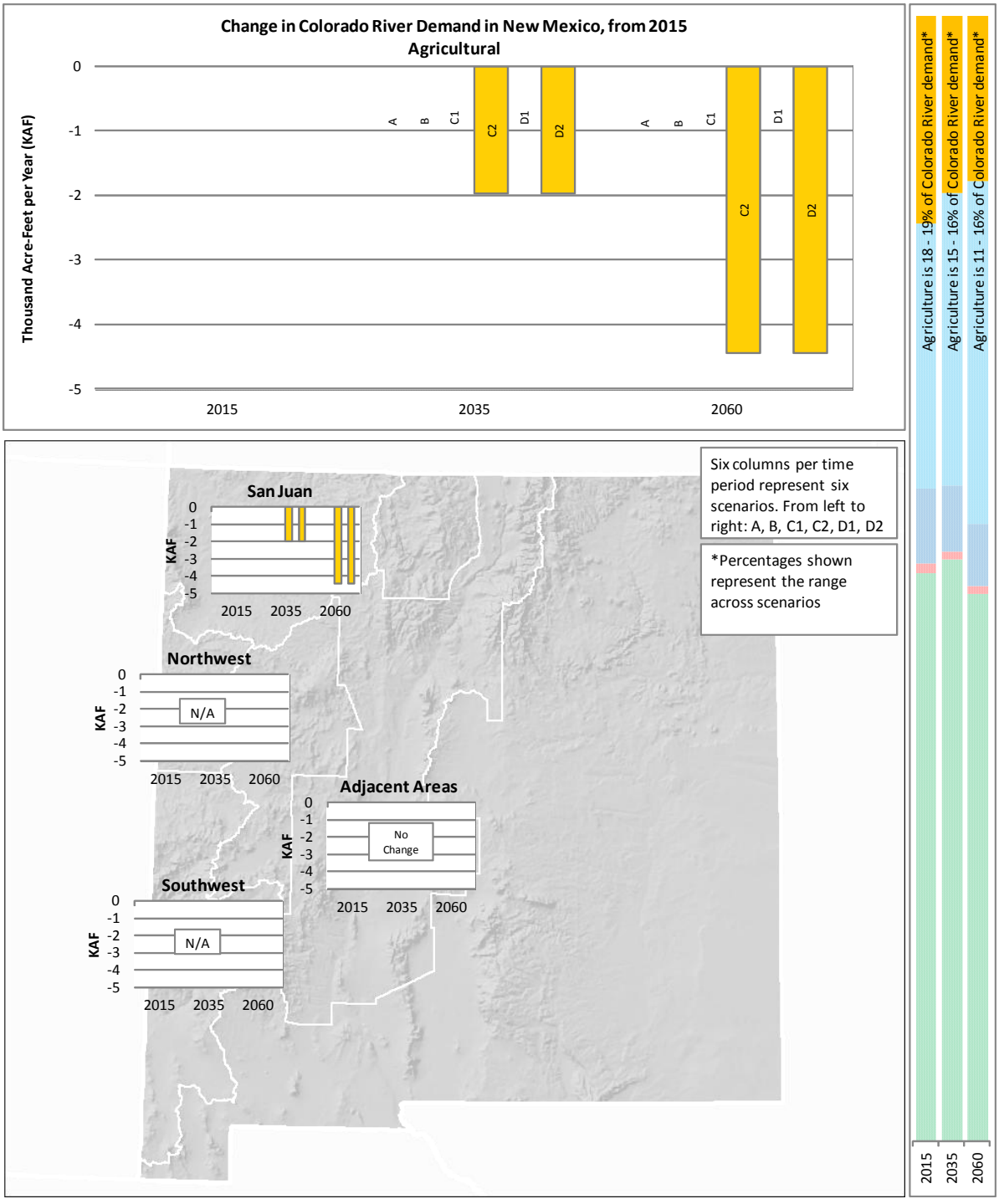
- Change in agricultural demand for Colorado River water
- Change in agricultural demand for Colorado River water by planning area
- Agricultural demand as a portion of Colorado River water demand (right hand side of graph)

As can be seen from figure C3-7, agricultural water demand[4] makes up about 19 percent of Colorado River demand in New Mexico in 2015, and drops to between 11 and 16 percent of demand in 2060. This drop results from both a decrease in agricultural water demand and an increase in other categories of demand. The majority of Colorado River demand for agriculture is located in the San Juan planning area.

In the San Juan planning area, Colorado River demand for agriculture decreases in the Rapid Growth (C2) and Enhanced Environment (D2) scenarios, by about 4.5 kaf (5 percent of Colorado River demand). The decrease is due entirely to reduced water delivery per acre; irrigated acreage is forecast to remain constant in the San Juan planning area across all scenarios. Colorado River demand for agriculture in all other planning areas is forecast to remain constant through time across all scenarios.

[4] Tribal demand currently includes a significant quantity of agriculture demand that is included in the tribal category and not represented here. Agricultural use in the tribal category continues to grow as settlements are implemented.

FIGURE C3-7
Change in Colorado River Demand in New Mexico from 2015 for Agriculture



3.3.2 Municipal and Industrial

M&I water demand can be estimated from population and M&I per capita water use, with the addition of self-served industrial (SSI) demand. M&I per capita water use is a measure of the amount of water produced or diverted per person in a given municipality. Because this measure examines all water produced by a given municipality, it often includes industrial, commercial, and institutional demand as well as residential demand. A number of factors may influence the M&I per capita water use of a given community, including the amount of industrial demand, climate, number of institutional facilities, and number of visitors.

SSI are industries located in a given area that have their own water supply systems and are therefore not directly related to local measures of population and M&I per capita water use.

Figure C3-8 presents the following by scenario in 2015, 2035, and 2060:

- Change in M&I demand for Colorado River water in the Study Area
- Change in M&I demand for Colorado River water in individual planning areas
- M&I demand as a portion of Colorado River water demand (right hand side of graph)

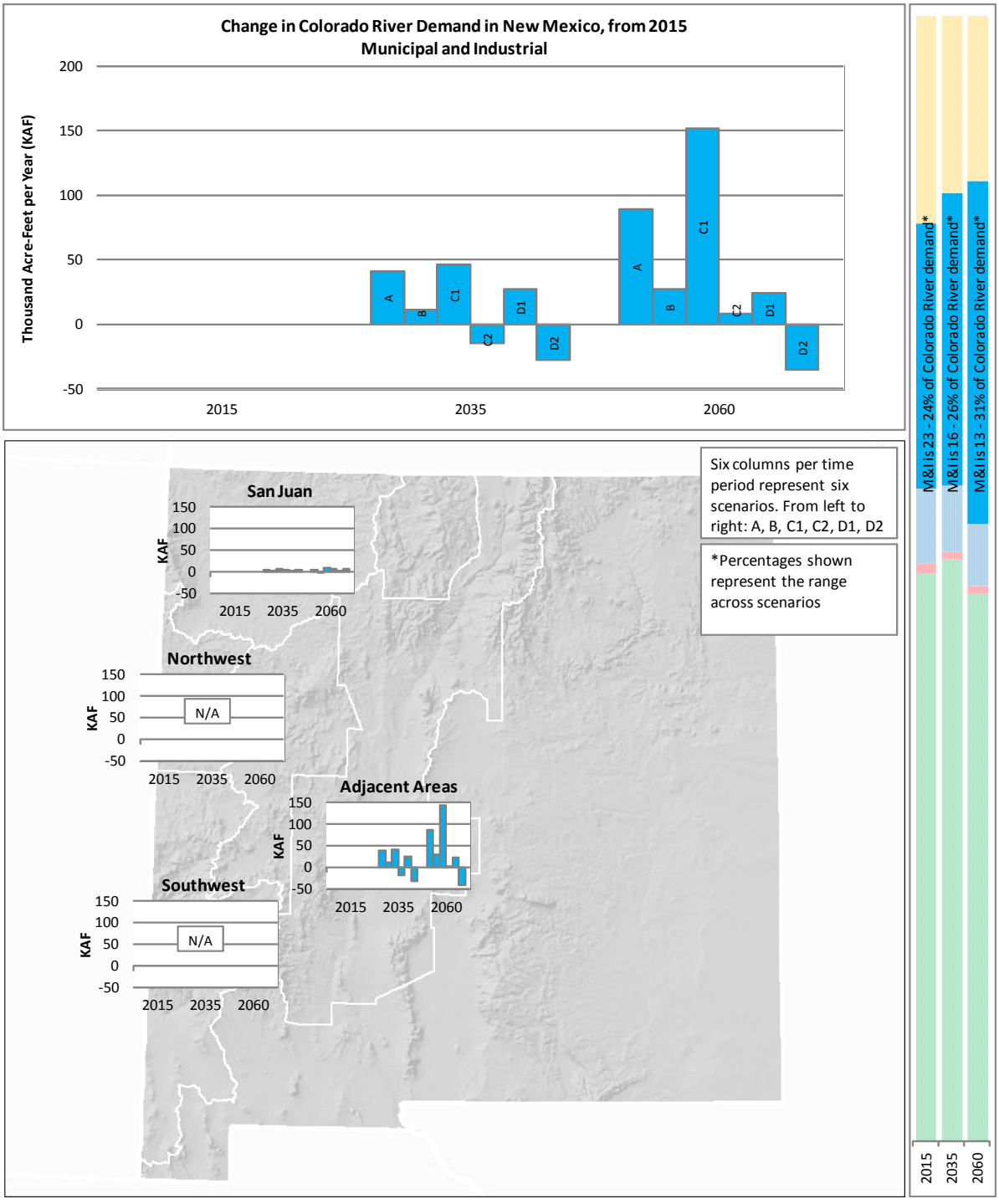
As can be seen from figure C3-8, M&I water demand is the second-largest component of Colorado River demand, changing from about 24 percent in 2015 to between 13 and 31 percent of Colorado River demand in 2060, depending on which scenario is considered.

Colorado River demand for M&I use increases over time from 2015 to 2060 in the Current Projected (A), Slow Growth (B), Rapid Growth (C1), and Enhanced Environment (D1) scenarios. This increase is primarily due to population increase, as M&I per capita water use decreases over time across all scenarios and self-served industrial demand nominally increases. Decrease in the M&I demand in the Rapid Growth (C2) and Enhanced Environment (D2) scenarios is due to decrease in per capita water use.

In examining the planning areas, nearly all of the increase in M&I demand for Colorado River water from 2015 to 2060 over time is due to population increase in the Adjacent Areas across all scenarios. The remaining increase in demand is primarily from M&I demand in the San Juan planning area.

Increases in population are somewhat tempered by decreases in M&I per capita water use. Per capita water use decreases in all scenarios with reductions ranging from 11 to 24 percent by 2060.

FIGURE C3-8
Change in Colorado River Demand in New Mexico from 2015 for M&I



3.3.3 Energy

Water demand for energy can be estimated through known plans for new power plants or through applying a per capita energy water use factor. Power facilities often serve areas remote from their locations and therefore potentially represent exports or imports of water from the Study Area to meet these distributed needs.

Figure C3-9 presents the following by scenario in 2015, 2035, and 2060:

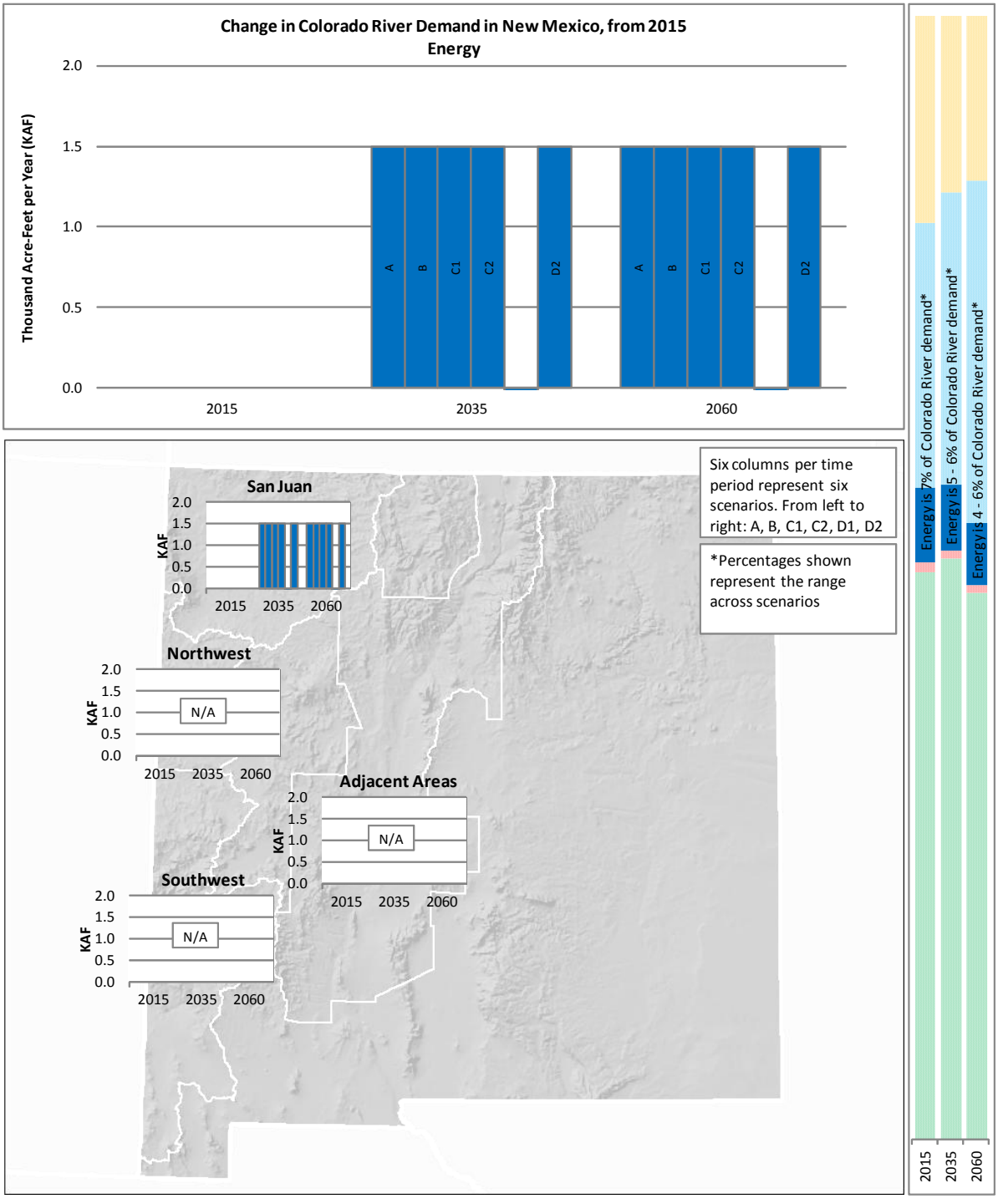
- Change in energy demand for Colorado River water
- Change in energy demand for Colorado River water in individual planning areas
- Energy demand as a portion of Colorado River water demand (right hand side of graph)

As can be seen from figure C3-9, energy water demand is a relatively small fraction of Colorado River demand, decreasing from about 7 percent of in 2015 to between 4 and 6 percent of demand in 2060, depending on which scenario is considered. The decreasing percentage is due to demands in other categories increasing at a faster rate than energy demands increase.

Energy demand for Colorado River water increases over time from 2015 to 2060 across all scenarios, with notable increases for the Current Projected (A) and Rapid Growth (C1) scenarios.

Energy demands are shown only in the San Juan planning areas. Consistent increases occur in the San Juan planning area across all scenarios, with an increase of 1.5 kaf to a total of 41.5 kaf.

FIGURE C3-9
Change in Colorado River Demand in New Mexico from 2015 for Energy



3.3.4 Minerals Extraction

Although there is some demand for minerals in the Southwest (about 900 afy in Current Projected [A] scenario) and the Adjacent Areas (about 5,300 afy in Current Projected [A] scenario), these demands are met by other supplies. There is no reported Colorado River demand for minerals extraction under the scenarios analyzed for the Study.

3.3.5 Fish, Wildlife, and Recreation

There are no reported consumptive fish, wildlife, and recreation demands on Colorado River water in New Mexico.

3.3.6 Tribal

Tribal water demands were provided by the Jicarilla Apache Nation and the Navajo Nation in cooperation with the State of New Mexico. The projected Navajo Nation demands were provided by the Navajo Nation Department of Water Resources and modified to fit the storyline narratives regarding tribal use under each scenario.

Figure C3-10 presents the following by scenario in 2015, 2035, and 2060:

- Change in tribal demand for Colorado River water
- Change in tribal demand for Colorado River water in individual planning area
- Tribal demand as a portion of Colorado River demand (right hand side of graph)

As can be seen from figure C3-10, tribal water demand is the largest component of Colorado River demand in New Mexico, decreasing from about 50 percent in 2015 to between about 49 and 67 percent of Colorado River demand in 2060, depending on which scenario is considered. The decreasing percentage is due to demands in other categories increasing at a faster rate than tribal demands increase.

Colorado River tribal demand increases over time from 2015 to 2060 across all scenarios. These increases are primarily due to development of demands under water rights settlements. Increases occur mostly in the San Juan planning area, but there is also some increase in the Northwest planning area. The rate of increase is similar across all scenarios.

For additional information on tribal water demands, see appendix C9.

3.4 Summary Tables of Parameters and Demands by Category

Tables C3-2 to C3-7 present the specific parameter data collected by planning area. Each table is a complete set of data for a given scenario. These data were used to develop Study Area demands and subsequently Colorado River demands once other supplies were considered. These tables provide the specific information used in the creation of the summary and category plots previously discussed and provide reference information for the data provided.

FIGURE C3-10
Change in Colorado River Demand in New Mexico from 2015 for Tribal

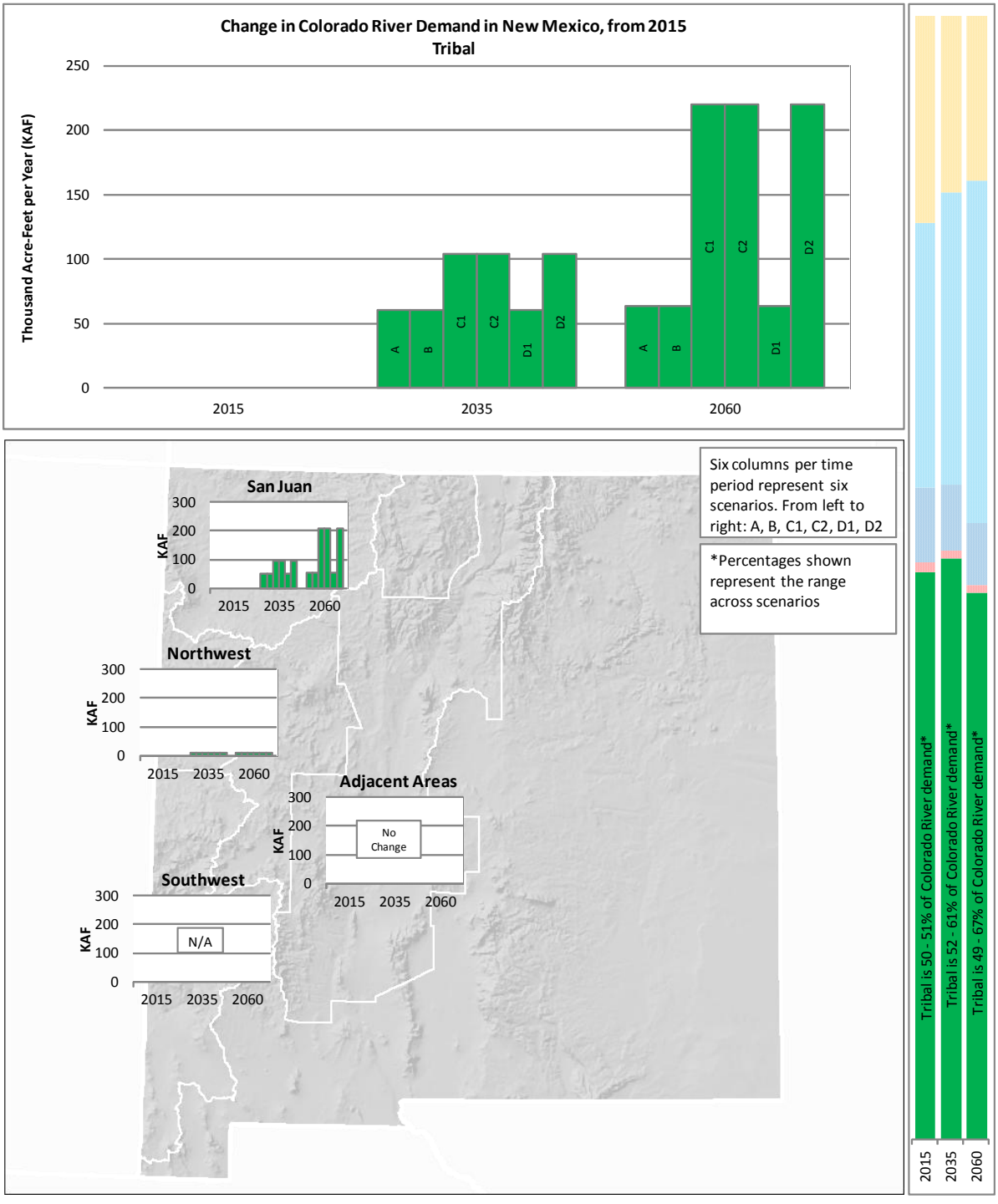


TABLE C3-2
Total Demand within Study Area under Current Projected (A) Scenario

999 From States
999 Calculated
999 From State Plans
999 From Study Team

		Planning Area	San Juan			Southwest			Northwest			Adjacent Areas			STATE TOTAL			Source and
Hydrologic Basin		Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	comments
Agricultural	Irrigated Acreage	acres	34,300	34,300	34,300	16,859	15,492	13,954	0	0	0				51,159	49,792	48,254	1)
	Per-Acre Water Delivery (Diversion)	af/ac/yr	5.08	5.08	5.08	5.89	5.89	5.89	0.00	0.00	0.00				5.34	5.33	5.31	1b)
	Consumptive factor	%	51%	51%	51%	33%	33%	33%	0%	0%	0%				45%	45%	45%	2), 2b)
	Demand (Consumptive)	af/yr	88,805	88,805	88,805	33,167	30,478	27,450	0	0	0				**121,972**	**119,283**	**116,255**	3), 3b)
Municipal and Industrial	Population		186,300	214,332	266,577	10,149	10,126	9,688	0	0	0				196,449	224,458	276,265	4), 4b)
	Municipal and Industrial Per Capita Use (Diversion)	gpcd	200	181	146	193	192	193	0	0	0				200	181	148	5)
	Consumptive factor	%	44%	50%	50%	50%	50%	50%	0%	0%	0%				45%	50%	50%	6)
	Municipal and Industrial Demand (Consumptive)	af/yr	18,450	21,700	21,800	1,096	1,087	1,047	0	0	0				19,546	22,787	22,846	7), 7b)
	Self Served Industrial Demand (Consumptive)	af/yr	100	100	100	0	0	0	0	0	0				100	100	100	8)
	Demand (Consumptive)	af/yr	**18,550**	**21,800**	**21,900**	**1,096**	**1,087**	**1,047**	**0**	**0**	**0**				**19,646**	**22,887**	**22,946**	
Energy	**Demand (Consumptive)**	af/yr	40,000	41,500	41,500	640	640	640	**0**	**0**	**0**				**40,640**	**42,140**	**42,140**	9), 9b)
Minerals	**Demand (Consumptive)**	af/yr	0	0	0	933	933	933	**0**	**0**	**0**				**933**	**933**	**933**	10), 10b)
Fish, Wildlife, and Recreation	**Demand (Consumptive)**	af/yr	0	0	0	0	0	0	**0**	**0**	**0**				**0**	**0**	**0**	11)
Tribal	**Demand (Consumptive)**	af/yr	287,615	338,730	340,595	0	0	0	4,350	13,500	15,100				**291,965**	**352,230**	**355,695**	12), 12b)
Total Hydrologic Basin	**Demand (Consumptive)**	af/yr	**434,970**	**490,835**	**492,800**	**35,836**	**33,138**	**30,070**	**4,350**	**13,500**	**15,100**	**0**	**0**	**0**	**475,156**	**537,473**	**537,970**	
Adjacent Areas																		
Agricultural	Irrigated Acreage	acres										93,301	93,301	93,301	93,301	93,301	93,301	13)
	Per-Acre Water Delivery (Diversion)	af/ac/yr										6.45	6.45	6.45	6.45	6.45	6.45	14)
	Consumptive factor	%										33%	33%	33%	33%	33%	33%	
	Demand (Diversion)	af/yr										**601,391**	**601,391**	**601,391**	601,391	601,391	601,391	
	Demand (Consumptive)	af/yr										**195,932**	**195,932**	**195,932**	**195,932**	**195,932**	**195,932**	15)
Municipal and Industrial	Population											1,277,435	1,802,403	2,326,427	1,277,435	1,802,403	2,326,427	16)
	Municipal and Industrial Per Capita Use (Diversion)	gpcd										163	150	150	163	150	150	17)
	Consumptive factor	%										40%	40%	40%	40%	40%	40%	18)
	Municipal and Industrial Demand (Diversion)	af/yr										232,539	302,863	390,917	232,539	302,863	390,917	
	Self Served Industrial Demand (Diversion)	af/yr										17	23	27	17	23	27	19)
	Demand (Diversion)	af/yr										**232,556**	**302,886**	**390,944**	**232,556**	**302,886**	**390,944**	
	Demand (Consumptive)	af/yr										**93,022**	**121,154**	**156,377**	**93,022**	**121,154**	**156,377**	
Energy	**Demand (Diversion)**	af/yr										17	23	29	**17**	**23**	**29**	20)
Minerals	**Demand (Diversion)**	af/yr										5,252	5,255	5,258	**5,252**	**5,255**	**5,258**	21)
Fish, Wildlife, and Recreation	**Demand (Diversion)**	af/yr										5,000	5,000	5,000	**5,000**	**5,000**	**5,000**	22)
Tribal	**Demand (Diversion)**	af/yr										10,900	10,900	10,900	**10,900**	**10,900**	**10,900**	23)
Total Adjacent Areas	Demand (Diversion)	af/yr	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**855,115**	**925,455**	**1,013,521**	**855,115**	**925,455**	**1,013,521**	
Total Demand in the Study Area		af/yr	**434,970**	**490,835**	**492,800**	**35,836**	**33,138**	**30,070**	**4,350**	**13,500**	**15,100**	**855,115**	**925,455**	**1,013,521**	**1,330,270**	**1,462,928**	**1,551,491**	24)
Demand that may be met by Other Supplies		af/yr	0	0	0	35,836	33,138	30,070	0	0	0	694,415	726,755	767,321	730,250	759,893	797,391	
Potential Colorado River Demand		af/yr	**434,970**	**490,835**	**492,800**	0	0	0	4,350	13,500	15,100	160,700	198,700	246,200	**600,020**	**703,035**	**754,100**	25), 12b)
Agricultural	Colorado River Demand	af/yr	88,805	88,805	88,805	0	0	0	0	0	0	22,000	22,000	22,000	110,805	110,805	110,805	26)
Municipal and Industrial	Colorado River Demand	af/yr	18,550	21,800	21,900	0	0	0	0	0	0	122,800	160,800	208,300	141,350	182,600	230,200	
Energy	Colorado River Demand	af/yr	40,000	41,500	41,500	0	0	0	0	0	0	0	0	0	40,000	41,500	41,500	
Minerals	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	5,000	5,000	5,000	5,000	5,000	5,000	
Tribal	Colorado River Demand	af/yr	287,615	338,730	340,595	0	0	0	4,350	13,500	15,100	10,900	10,900	10,900	302,865	363,130	366,595	

Source and Comments

1) San Juan: New Mexico Interstate Stream Commission, personal communication, 2011.
1b) Southwest New Mexico Regional Water Plan, 2005, Tables 6-8 through 6-12. Total diversion / total acres (for Catron, Grant, and 90% of Hidalgo Counties; Luna County excluded). Average of 1990, 1995, 2000.
2) San Juan Regional Water Plan, 2003, consumptive factor of 51% based on agricultural diversion as twice the depletion plus 10% for incidental losses.
2b) Southwest New Mexico Regional Water Plan, 2005, Tables 6-8 through 6-12. Weighted average (based on acreage for Catron, Grant, and 90% of Hidalgo Counties; Luna County excluded) of depletion/diversion, average of 1990, 1995, 2000
3) San Juan: New Mexico Interstate Stream Commission, personal communication, 2011. Current and forecast = 90,500 afy, minus 4,000 afy stockpond evaporation and use.
3b) Southwest New Mexico Regional Water Plan, 2005. Based on Appendix E5 (assume Catron, Grant, and 90% of Hidalgo Counties), average of low and high scenarios (diversion), multiplied by consumptive factor. Extrapolate to 2060.
4) San Juan: San Juan Regional Water Plan, 2003.
4b) Southwest New Mexico Regional Water Plan, 2005, Appendix E5; Sum of Catron and Hidalgo Counties. Average of low and high estimates; extrapolated to 2060
5) San Juan Regional Water Plan, 2003 - weighted average of year 2000 calculated M&I efficiency by planning area for year 2011. 2015 based on 2011 to 2035 interpolation. New Mexico Interstate Stream Commission, personal communication, 2011 provided 2035 and 2060 values.
6) San Juan: Consumptive factor calculated from demand and M&I water use efficiency for 2015 (within reported range). This value moves to 50% by 2035 as per NMISC, 2011.
7) San Juan: New Mexico Interstate Stream Commission, personal communication, 2011; 100 afy moved to reservoir evaporation.
7b) Southwest New Mexico Regional Water Plan, 2005. Sum of Public (Tbl 6-15), Commercial, Industrial, and Domestic (Appendix E5) (Catron and Hidalgo Counties only), multiplied by consumptive use factor to get consumptive demand. Extrapolated for 2060
8) San Juan: New Mexico Interstate Stream Commission, personal communication, 2011.
9) San Juan: New Mexico Interstate Stream Commission, personal communication, 2011.
9b) Southwest New Mexico Regional Water Plan, 2005, Appendix E5, Grant, Hidalgo, and Catron Counties. Average of low and high scenario. Assume 2060 remains same as 2020-2040.
10) San Juan: New Mexico Interstate Stream Commission, personal communication, 2011.
10b) Southwest New Mexico Regional Water Plan, 2005, Appendix E5 (Hidalgo and Catron Counties only). Average of low and high scenario. Assume 2060 remains same as 2020-2040.
11) San Juan: New Mexico Interstate Stream Commission, personal communication, 2011; 100 afy moved to reservoir evaporation.
12) San Juan: New Mexico Interstate Stream Commission, personal communication, 2011; 1,000 moved to reservoir evaporation.
12b) Northwest: Build-out of Navajo-Gallup pipeline.
13) 63,551 from Middle Rio Grande Regional Water Supply Study, S.S. Papadopulos & Associates, 2000. + 29,750 from Taos Regional Water Plan (SSPA, 2008)
14) New Water Use by Categories 2005, Pg. 92. Applied water rate 7.8 estimated from Middle Rio Grande Conservancy District total diversion 39,403 divided by 5,004 acres, and applied to 63,551 acres. 3.55 afy/acre calculated for Taos based on 105,693 afy divided by 29,750 acres (Taos Regional Water Plan). Weighted average calculated
15) Calculated based on consumptive water use of 2.10 af/ac/yr from New Mexico Interstate Stream Commission, personal communication, 2011.
16) Middle Rio Grande: BBER Regional Water Planning Areas, Middle Rio Grande Area, 2008 + Taos: Taos Regional Plan Table 6-20 (SSPA, 2008) interpolated for 2015/2035 and extrapolated past 2050 for 2060
17) Taken from current Albuquerque reported M&I efficiency and planning. Assumed population of Albuquerque heavily influences overall average.
18) 40% assumed, based on Albuquerque's current use. Assumed population of Albuquerque heavily influences overall average.
19) Taos Regional Plan Tbl 6-25 (SSPA, 2008) interpolated for 2015/2035 and extrapolated past 2050 for 2060
20) Taos Regional Plan Tbl 6-26 (SSPA, 2008) interpolated for 2015/2035 and extrapolated past 2050 for 2060
21) Taos Regional Plan Tbl 6-27 (SSPA, 2008) interpolated for 2015/2035 and extrapolated past 2050 for 2060
22) Contracted amount from San Juan Chama contracts.
23) Contracted amount from San Juan Chama contracts for 2015.
24) Calculated from the sum of Hydrologic Basin (Consumptive) Demand and Adjacent Areas (Diversion) Demand.
25) Adjacent areas: Potential Colorado River Demand is San Juan Chama Contract plus unsustainable portion of supply from Middle Rio Grande Regional Water Plan, 2004.
26) For Adjacent Area, 25,000 afy of Colorado River Demand is agricultural, per contracts. Assume full tribal is met by Colorado River. Remaining Colorado River demand is all M&I

TABLE C3-3
Total Demand within Study Area under Slow Growth (B) Scenario

From Current Projected Data Sheet
Input Parameter
Computed

			NEW MEXICO															
	Planning Area		San Juan			Southwest			Northwest			Adjacent Areas			STATE TOTAL			Source and
Hydrologic Basin		Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	comments
Agricultural	Irrigated Acreage	acres	34,300	34,300	34,300	16,859	15,492	13,954	0	0	0				51,159	49,792	48,254	1)
	Per-Acre Water Delivery (Diversion)	af/ac/yr	5.08	5.08	5.08	5.89	5.89	5.89	0.00	0.00	0.00				5.34	5.33	5.31	2)
	Consumptive factor	%	51%	51%	51%	33%	33%	33%	0%	0%	0%				45%	45%	45%	
	Demand (Consumptive)	af/yr	**88,805**	**88,805**	**88,805**	**33,167**	**30,478**	**27,450**	**0**	**0**	**0**				**121,972**	**119,283**	**116,255**	
Municipal and Industrial	Population		186,300	188,612	199,933	10,149	8,911	7,266	0	0	0				196,449	197,523	207,199	3)
	Municipal and Industrial Per Capita Use (Diversion)	gpcd	200	181	146	193	192	193	0	0	0				200	181	148	4)
	Consumptive factor	%	44%	50%	50%	50%	50%	50%	0%	0%	0%				45%	50%	50%	
	Municipal and Industrial Demand (Consumptive)	af/yr	18,450	19,096	16,350	1,096	957	785	0	0	0				19,546	20,053	17,135	
	Self Served Industrial Demand (Consumptive)	af/yr	100	100	100	0	0	0	0	0	0				100	100	100	5)
	Demand (Consumptive)	af/yr	**18,550**	**19,196**	**16,450**	**1,096**	**957**	**785**	**0**	**0**	**0**				**19,646**	**20,153**	**17,235**	
Energy	**Demand (Consumptive)**	af/yr	**40,000**	**41,500**	**41,500**	**640**	**640**	**640**	**0**	**0**	**0**				**40,640**	**42,140**	**42,140**	6)
Minerals	**Demand (Consumptive)**	af/yr	**0**	**0**	**0**	**933**	**933**	**933**	**0**	**0**	**0**				**933**	**933**	**933**	7)
Fish, Wildlife, and Recreation	**Demand (Consumptive)**	af/yr	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**				**0**	**0**	**0**	8)
Tribal	**Demand (Consumptive)**	af/yr	**287,615**	**338,730**	**340,595**	**0**	**0**	**0**	**4,350**	**13,500**	**15,100**				**291,965**	**352,230**	**355,695**	9)
Total Hydrologic Basin	**Demand (Consumptive)**	af/yr	**434,970**	**488,231**	**487,350**	**35,836**	**33,007**	**29,808**	**4,350**	**13,500**	**15,100**	**0**	**0**	**0**	**475,156**	**534,738**	**532,258**	
Adjacent Areas																		
Agricultural	Irrigated Acreage	acres										93,301	93,301	93,301	93,301	93,301	93,301	10)
	Per-Acre Water Delivery (Diversion)	af/ac/yr										6.45	6.59	6.77	6.45	6.59	6.77	11)
	Consumptive factor	%										33%	33%	33%	33%	33%	33%	
	Demand (Diversion)	af/yr										601,391	614,742	631,460	601,391	614,742	631,460	
	Demand (Consumptive)	af/yr										**195,932**	**200,282**	205,729	**195,932**	**200,282**	**205,729**	
Municipal and Industrial	Population											1,277,435	1,562,000	1,814,000	1,277,435	1,562,000	1,814,000	12)
	Municipal and Industrial Per Capita Use (Diversion)	gpcd										163	150	150	163	150	150	13)
	Consumptive factor	%										40%	40%	40%	40%	40%	40%	
	Municipal and Industrial Demand (Diversion)	af/yr										232,539	262,468	304,812	232,539	262,468	304,812	
	Self Served Industrial Demand (Diversion)	af/yr										17	23	27	17	23	27	14)
	Demand (Diversion)	af/yr										**232,556**	**262,491**	**304,839**	**232,556**	**262,491**	**304,839**	
	Demand (Consumptive)	af/yr										**93,022**	**104,996**	**121,936**	**93,022**	**104,996**	**121,936**	
Energy	**Demand (Diversion)**	af/yr										17	23	29	**17**	**23**	**29**	15)
Minerals	**Demand (Diversion)**	af/yr										5,252	5,255	5,258	**5,252**	**5,255**	**5,258**	16)
Fish, Wildlife, and Recreation	**Demand (Diversion)**	af/yr										5,000	5,000	5,000	**5,000**	**5,000**	**5,000**	17)
Tribal	**Demand (Diversion)**	af/yr										10,900	10,900	10,900	**10,900**	**10,900**	**10,900**	18)
Total Adjacent Areas	Demand (Diversion)	af/yr	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**855,115**	**898,411**	**957,486**	**855,115**	**898,411**	**957,486**	
Total Demand in the Study Area		af/yr	**434,970**	**488,231**	**487,350**	**35,836**	**33,007**	**29,808**	**4,350**	**13,500**	**15,100**	**855,115**	**898,411**	**957,486**	**1,330,270**	**1,433,149**	**1,489,744**	
Demand that may be met by Other Supplies		af/yr	0	0	0	35,836	33,007	29,808	0	0	0	**694,415**	**726,755**	**767,321**	730,250	759,762	797,130	19)
Potential Colorado River Demand		af/yr	**434,970**	**488,231**	**487,350**	0	0	0	**4,350**	**13,500**	**15,100**	**160,700**	**171,655**	**190,165**	**600,020**	**673,386**	**692,615**	
Agricultural	Colorado River Demand	af/yr	88,805	88,805	88,805	0	0	0	0	0	0	22,000	22,000	22,000	110,805	110,805	110,805	20)
Municipal and Industrial	Colorado River Demand	af/yr	18,550	19,196	16,450	0	0	0	0	0	0	122,800	133,755	152,265	141,350	152,951	168,715	
Energy	Colorado River Demand	af/yr	40,000	41,500	41,500	0	0	0	0	0	0	0	0	0	40,000	41,500	41,500	
Minerals	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	5,000	5,000	5,000	5,000	5,000	5,000	
Tribal	Colorado River Demand	af/yr	287,615	338,730	340,595	0	0	0	4,350	13,500	15,100	10,900	10,900	10,900	302,865	363,130	366,595	

Source and Comments

1) No changes from current projected
2) No changes from current projected
3) Based on regional trends, assume 2060 population is 25% less than that of current projected.
4) No changes from current projected
5) No changes from current projected
6) No changes from current projected
7) No changes from current projected
8) No changes from current projected
9) Assumed 2035 demand from current projected is the new 2060 demand and interpolated for the 2035 demand
10) No changes from current projected
11) Used 5% increase from current projected in 2060, no changes from current projected in 2015, and interpolated for 2035
12) Will come from BBER (1995)
13) No changes from current projected
14) No changes from current projected
15) No changes from current projected
16) No changes from current projected
17) No changes from current projected
18) San Juan Chama at full contract amount
19) No changes from current projected
20) For Adjacent Area, 25,000 afy of Colorado River Demand is agricultural, per contracts. Assume full tribal is met by Colorado River. Remaining Colorado River demand is all M&I

TABLE C3-4
Total Demand within Study Area under Rapid Growth (C1) Scenario

From Current Projected Data Sheet
Input Parameter
Computed

			NEW MEXICO															
	Planning Area		San Juan			Southwest			Northwest			Adjacent Areas			STATE TOTAL			Source and
Hydrologic Basin		Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	comments
Agricultural	Irrigated Acreage	acres	34,300	34,300	34,300	16,859	15,492	13,954	0	0	0				51,159	49,792	48,254	1)
	Per-Acre Water Delivery (Diversion)	af/ac/yr	5.08	5.08	5.08	5.89	5.89	5.89	0.00	0.00	0.00				5.34	5.33	5.31	2)
	Consumptive factor	%	51%	51%	51%	33%	33%	33%	0%	0%	0%				45%	45%	45%	
	Demand (Consumptive)	af/yr	**88,805**	**88,805**	**88,805**	**33,167**	**30,478**	**27,450**	**0**	**0**	**0**				**121,972**	**119,283**	**116,255**	
Municipal and Industrial	Population		186,300	240,052	333,221	10,149	11,341	12,110	0	0	0				196,449	251,393	345,331	3)
	Municipal and Industrial Per Capita Use (Diversion)	gpcd	200	181	146	193	192	193	0	0	0				200	181	148	4)
	Consumptive factor	%	44%	50%	50%	50%	50%	50%	0%	0%	0%				45%	50%	50%	
	Municipal and Industrial Demand (Consumptive)	af/yr	18,450	24,304	27,250	1,096	1,217	1,308	0	0	0				19,546	25,522	28,558	
	Self Served Industrial Demand (Consumptive)	af/yr	100	100	100	0	0	0	0	0	0				100	100	100	5)
	Demand (Consumptive)	af/yr	**18,550**	**24,404**	**27,350**	**1,096**	**1,217**	**1,308**	**0**	**0**	**0**				**19,646**	**25,622**	**28,658**	
Energy	**Demand (Consumptive)**	af/yr	**40,000**	**41,500**	**41,500**	**640**	**640**	**640**	**0**	**0**	**0**				**40,640**	**42,140**	**42,140**	6)
Minerals	**Demand (Consumptive)**	af/yr	**0**	**0**	**0**	**933**	**933**	**933**	**0**	**0**	**0**				**933**	**933**	**933**	7)
Fish, Wildlife, and Recreation	**Demand (Consumptive)**	af/yr	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**				**0**	**0**	**0**	8)
Tribal	**Demand (Consumptive)**	af/yr	**293,855**	**387,169**	**503,195**	**0**	**0**	**0**	**4,350**	**15,100**	**15,100**				**298,205**	**402,269**	**518,295**	9)
Total Hydrologic Basin	**Demand (Consumptive)**	af/yr	**441,210**	**541,878**	**660,850**	**35,836**	**33,268**	**30,332**	**4,350**	**15,100**	**15,100**	**0**	**0**	**0**	**481,396**	**590,246**	**706,281**	
Adjacent Areas																		
Agricultural	Irrigated Acreage	acres										93,301	93,301	93,301	93,301	93,301	93,301	10)
	Per-Acre Water Delivery (Diversion)	af/ac/yr										6.45	6.45	6.45	6.45	6.45	6.45	11)
	Consumptive factor	%										33%	33%	33%	33%	33%	33%	
	Demand (Diversion)	af/yr										601,391	601,391	601,391	601,391	601,391	601,391	
	Demand (Consumptive)	af/yr										**195,932**	**195,932**	195,932	**195,932**	**195,932**	**195,932**	
Municipal and Industrial	Population											1,277,435	1,816,000	2,666,000	1,277,435	1,816,000	2,666,000	12)
	Municipal and Industrial Per Capita Use (Diversion)	gpcd										163	150	150	163	150	150	13)
	Consumptive factor	%										40%	40%	40%	40%	40%	40%	
	Municipal and Industrial Demand (Diversion)	af/yr										232,539	305,148	447,976	232,539	305,148	447,976	
	Self Served Industrial Demand (Diversion)	af/yr										17	23	27	17	23	27	14)
	Demand (Diversion)	af/yr										**232,556**	**305,171**	**448,003**	**232,556**	**305,171**	**448,003**	
	Demand (Consumptive)	af/yr										**93,022**	**122,068**	**179,201**	**93,022**	**122,068**	**179,201**	
Energy	**Demand (Diversion)**	af/yr										17	23	29	**17**	**23**	**29**	15)
Minerals	**Demand (Diversion)**	af/yr										5,252	5,255	5,258	**5,252**	**5,255**	**5,258**	16)
Fish, Wildlife, and Recreation	**Demand (Diversion)**	af/yr										5,000	5,000	5,000	**5,000**	**5,000**	**5,000**	17)
Tribal	**Demand (Diversion)**	af/yr										10,900	10,900	10,900	**10,900**	**10,900**	**10,900**	18)
Total Adjacent Areas	Demand (Diversion)	af/yr	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**855,115**	**927,740**	**1,070,581**	**855,115**	**927,740**	**1,070,581**	
Total Demand in the Study Area		af/yr	**441,210**	**541,878**	**660,850**	**35,836**	**33,268**	**30,332**	**4,350**	**15,100**	**15,100**	**855,115**	**927,740**	**1,070,581**	**1,336,510**	**1,517,986**	**1,776,862**	
Demand that may be met by Other Supplies		af/yr	0	0	0	35,836	33,268	30,332	0	0	0	**694,415**	**726,755**	**767,321**	730,250	760,023	797,653	19)
Potential Colorado River Demand		af/yr	**441,210**	**541,878**	**660,850**	0	0	0	**4,350**	**15,100**	**15,100**	**160,700**	**200,985**	**303,259**	**606,260**	**757,963**	**979,209**	
Agricultural	Colorado River Demand	af/yr	88,805	88,805	88,805	0	0	0	0	0	0	22,000	22,000	22,000	110,805	110,805	110,805	20)
Municipal and Industrial	Colorado River Demand	af/yr	18,550	24,404	27,350	0	0	0	0	0	0	122,800	163,085	265,359	141,350	187,489	292,709	
Energy	Colorado River Demand	af/yr	40,000	41,500	41,500	0	0	0	0	0	0	0	0	0	40,000	41,500	41,500	
Minerals	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	5,000	5,000	5,000	5,000	5,000	5,000	
Tribal	Colorado River Demand	af/yr	293,855	387,169	503,195	0	0	0	4,350	15,100	15,100	10,900	10,900	10,900	309,105	413,169	529,195	

Source and Comments

1) No changes from current projected
2) No changes from current projected
3) Based on regional trends, assume 2060 population is 25% greater than that of current projected.
4) No changes from current projected
5) No changes from current projected
6) No changes from current projected
7) No changes from current projected
8) No changes from current projected
9) Northwest: Assumed 2060 demand from current projected would be reached in 2035 demand and that no new claims are filed; San Juan: Personal communication, Navajo Nation, April 16, 2012.
10) No changes from current projected
11) No changes from current projected
12) Will come from BBER (1995)
13) No changes from current projected
14) No changes from current projected
15) No changes from current projected
16) No changes from current projected
17) No changes from current projected
18) San Juan Chama at full contract amount
19) No changes from current projected
20) For Adjacent Area, 25,000 afy of Colorado River Demand is agricultural, per contracts. Assume full tribal is met by Colorado River. Remaining Colorado River demand is all M&I

TABLE C3-5
Total Demand within Study Area under Rapid Growth (C2) Scenario

From Current Projected Data Sheet
Input Parameter
Computed

			NEW MEXICO															
	Planning Area		San Juan			Southwest			Northwest			Adjacent Areas			STATE TOTAL			Source and
Hydrologic Basin	Year		2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	comments
Agricultural	Irrigated Acreage	acres	34,300	34,300	34,300	16,859	15,492	13,954	0	0	0				51,159	49,792	48,254	1)
	Per-Acre Water Delivery (Diversion)	af/ac/yr	5.08	4.96	4.82	5.89	5.76	5.60	0.00	0.00	0.00				5.34	5.21	5.05	2)
	Consumptive factor	%	51%	51%	51%	33%	33%	33%	0%	0%	0%				45%	45%	45%	
	Demand (Consumptive)	af/yr	**88,805**	**86,834**	**84,365**	**33,167**	**29,801**	**26,078**	**0**	**0**	**0**				**121,972**	**116,634**	**110,443**	
Municipal and Industrial	Population		186,300	240,052	333,221	10,149	11,341	12,110	0	0	0				196,449	251,393	345,331	3)
	Municipal and Industrial Per Capita Use (Diversion)	gpcd	199	176	139	192	187	183	0	0	0				199	177	140	4)
	Consumptive factor	%	44%	50%	50%	50%	50%	50%	0%	0%	0%				45%	50%	50%	
	Municipal and Industrial Demand (Consumptive)	af/yr	18,358	23,697	25,887	1,091	1,187	1,243	0	0	0				19,448	24,884	27,130	
	Self Served Industrial Demand (Consumptive)	af/yr	100	98	95	0	0	0	0	0	0				100	98	95	5a), 5b)
	Demand (Consumptive)	af/yr	**18,457**	**23,794**	**25,982**	**1,091**	**1,187**	**1,243**	**0**	**0**	**0**				**19,548**	**24,981**	**27,225**	
Energy	**Demand (Consumptive)**	af/yr	**40,000**	**41,500**	**41,500**	**640**	**640**	**640**	**0**	**0**	**0**				**40,640**	**42,140**	**42,140**	6)
Minerals	**Demand (Consumptive)**	af/yr	**0**	**0**	**0**	**933**	**933**	**933**	**0**	**0**	**0**				**933**	**933**	**933**	7)
Fish, Wildlife, and Recreation	**Demand (Consumptive)**	af/yr	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**				**0**	**0**	**0**	8)
Tribal	**Demand (Consumptive)**	af/yr	**293,855**	**387,169**	**503,195**	**0**	**0**	**0**	**4,350**	**15,100**	**15,100**				**298,205**	**402,269**	**518,295**	9)
Total Hydrologic Basin	**Demand (Consumptive)**	af/yr	**441,117**	**539,297**	**655,042**	**35,830**	**32,561**	**28,894**	**4,350**	**15,100**	**15,100**	**0**	**0**	**0**	**481,297**	**586,957**	**699,035**	
Adjacent Areas																		
Agricultural	Irrigated Acreage	acres										93,301	93,301	93,301	93,301	93,301	93,301	10)
	Per-Acre Water Delivery (Diversion)	af/ac/yr										6.45	5.87	5.16	6.45	5.87	5.16	11)
	Consumptive factor	%										33%	33%	33%	33%	33%	33%	
	Demand (Diversion)	af/yr										601,391	547,867	481,113	601,391	547,867	481,113	
	Demand (Consumptive)	af/yr										**195,932**	**178,494**	156,746	**195,932**	**178,494**	**156,746**	
Municipal and Industrial	Population											1,277,435	1,816,000	2,666,000	1,277,435	1,816,000	2,666,000	12)
	Municipal and Industrial Per Capita Use (Diversion)	gpcd										162	146	143	162	146	143	13)
	Consumptive factor	%										40%	40%	40%	40%	40%	40%	
	Municipal and Industrial Demand (Diversion)	af/yr										231,376	297,519	425,577	231,376	297,519	425,577	
	Self Served Industrial Demand (Diversion)	af/yr										17	23	27	17	23	27	14)
	Demand (Diversion)	af/yr										**231,393**	**297,542**	**425,604**	**231,393**	**297,542**	**425,604**	
	Demand (Consumptive)	af/yr										**92,557**	**119,017**	**170,242**	**92,557**	**119,017**	**170,242**	
Energy	**Demand (Diversion)**	af/yr										17	23	29	**17**	**23**	**29**	15)
Minerals	**Demand (Diversion)**	af/yr										5,252	5,255	5,258	**5,252**	**5,255**	**5,258**	16)
Fish, Wildlife, and Recreation	**Demand (Diversion)**	af/yr										5,000	5,000	5,000	**5,000**	**5,000**	**5,000**	17)
Tribal	**Demand (Diversion)**	af/yr										10,900	10,900	10,900	**10,900**	**10,900**	**10,900**	18)
Total Adjacent Areas	Demand (Diversion)	af/yr	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**853,952**	**866,588**	**927,904**	**853,952**	**866,588**	**927,904**	
Total Demand in the Study Area		af/yr	**441,117**	**539,297**	**655,042**	**35,830**	**32,561**	**28,894**	**4,350**	**15,100**	**15,100**	**853,952**	**866,588**	**927,904**	**1,335,249**	**1,453,545**	**1,626,939**	
Demand that may be met by Other Supplies		af/yr	0	0	0	35,830	32,561	28,894	0	0	0	**694,415**	**726,755**	**767,321**	730,245	759,316	796,215	19)
Potential Colorado River Demand		af/yr	**441,117**	**539,297**	**655,042**	0	0	0	**4,350**	**15,100**	**15,100**	**159,537**	**139,832**	**160,583**	**605,005**	**694,229**	**830,724**	
Agricultural	Colorado River Demand	af/yr	88,805	86,834	84,365	0	0	0	0	0	0	22,000	22,000	22,000	110,805	108,834	106,365	20)
Municipal and Industrial	Colorado River Demand	af/yr	18,457	23,794	25,982	0	0	0	0	0	0	121,637	101,932	122,683	140,095	125,726	148,665	
Energy	Colorado River Demand	af/yr	40,000	41,500	41,500	0	0	0	0	0	0	0	0	0	40,000	41,500	41,500	
Minerals	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	5,000	5,000	5,000	5,000	5,000	5,000	
Tribal	Colorado River Demand	af/yr	293,855	387,169	503,195	0	0	0	4,350	15,100	15,100	10,900	10,900	10,900	309,105	413,169	529,195	

Source and Comments

1) No changes from current projected
2) Used 5% growth from current projected in 2060, no change from current projected in 2015, and interpolated for 2035
3) Based on regional trends, assume 2060 population is 25% greater than that of current projected.
4) Assume 1% reduction per decade relative to current projected
5a) Used same percentage change as GPCD section for San Juan Area
5b) Assumed no increase from current projected in Southwest Area
6) No changes from current projected
7) No changes from current projected
8) No changes from current projected
9) Northwest: Assumed 2060 demand from current projected would be reached in 2035 demand and that no new claims are filed; San Juan: Personal communication, Navajo Nation, April 16, 2012.
10) No changes from current projected
11) Used 20% growth from current projected in 2060, no change from current projected in 2015, and interpolated for 2035
12) Will come from BBER (1995)
13) Assume 1% reduction per decade relative to current projected
14) No changes from current projected
15) No changes from current projected
16) No changes from current projected
17) No changes from current projected
18) San Juan Chama at full contract amount
19) No changes from current projected
20) For Adjacent Area, 25,000 afy of Colorado River Demand is agricultural, per contracts. Assume full tribal is met by Colorado River. Remaining Colorado River demand is all M&I

TABLE C3-6
Total Demand within Study Area under Enhanced Environment (D1) Scenario

From Current Projected Data Sheet
Input Parameter
Computed

			NEW MEXICO															
	Planning Area		San Juan			Southwest			Northwest			Adjacent Areas			STATE TOTAL			Source and
Hydrologic Basin	Year		2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	comments
Agricultural	Irrigated Acreage	acres	34,300	34,300	34,300	16,859	15,492	13,954	0	0	0				51,159	49,792	48,254	1)
	Per-Acre Water Delivery (Diversion)	af/ac/yr	5.08	5.08	5.08	5.89	5.89	5.89	0.00	0.00	0.00				5.34	5.33	5.31	2)
	Consumptive factor	%	51%	51%	51%	33%	33%	33%	0%	0%	0%				45%	45%	45%	
	Demand (Consumptive)	af/yr	**88,805**	**88,805**	**88,805**	**33,167**	**30,478**	**27,450**	**0**	**0**	**0**				**121,972**	**119,283**	**116,255**	
Municipal and Industrial	Population		186,300	214,332	266,577	10,149	10,126	9,688	0	0	0				196,449	224,458	276,265	3)
	Municipal and Industrial Per Capita Use (Diversion)	gpcd	198	172	131	191	172	148	0	0	0				198	172	132	4)
	Consumptive factor	%	44%	50%	50%	50%	50%	50%	0%	0%	0%				45%	50%	50%	
	Municipal and Industrial Demand (Consumptive)	af/yr	18,266	20,615	19,620	1,085	976	803	0	0	0				19,351	21,591	20,423	
	Self Served Industrial Demand (Consumptive)	af/yr	99	95	90	0	0	0	0	0	0				99	95	90	5a), 5b)
	Demand (Consumptive)	af/yr	**18,365**	**20,710**	**19,710**	**1,085**	**976**	**803**	**0**	**0**	**0**				**19,450**	**21,686**	**20,513**	
Energy	**Demand (Consumptive)**	af/yr	**40,000**	**39,176**	**37,350**	**640**	**604**	**576**	**0**	**0**	**0**				**40,640**	**39,780**	**37,926**	6)
Minerals	**Demand (Consumptive)**	af/yr	**0**	**0**	**0**	**933**	**933**	**933**	**0**	**0**	**0**				**933**	**933**	**933**	7)
Fish, Wildlife, and Recreation	**Demand (Consumptive)**	af/yr	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**				**0**	**0**	**0**	8)
Tribal	**Demand (Consumptive)**	af/yr	**287,615**	**338,730**	**340,595**	**0**	**0**	**0**	**4,350**	**13,500**	**15,100**				**291,965**	**352,230**	**355,695**	9)
Total Hydrologic Basin	**Demand (Consumptive)**	af/yr	**434,785**	**487,421**	**486,460**	**35,825**	**32,990**	**29,763**	**4,350**	**13,500**	**15,100**	**0**	**0**	**0**	**474,959**	**533,911**	**531,322**	
Adjacent Areas																		
Agricultural	Irrigated Acreage	acres										93,301	93,301	93,301	93,301	93,301	93,301	10)
	Per-Acre Water Delivery (Diversion)	af/ac/yr										6.45	6.45	6.45	6.45	6.45	6.45	11)
	Consumptive factor	%										33%	33%	33%	33%	33%	33%	
	Demand (Diversion)	af/yr										601,391	601,391	601,391	601,391	601,391	601,391	
	Demand (Consumptive)	af/yr										**195,932**	**195,932**	195,932	**195,932**	**195,932**	**195,932**	
Municipal and Industrial	Population											1,277,435	1,802,403	2,326,427	1,277,435	1,802,403	2,326,427	12)
	Municipal and Industrial Per Capita Use (Diversion)	gpcd										161	143	125	161	143	125	13)
	Consumptive factor	%										40%	40%	40%	40%	40%	40%	
	Municipal and Industrial Demand (Diversion)	af/yr										230,213	287,720	325,764	230,213	287,720	325,764	
	Self Served Industrial Demand (Diversion)	af/yr										17	23	27	17	23	27	14)
	Demand (Diversion)	af/yr										**230,230**	**287,743**	**325,791**	**230,230**	**287,743**	**325,791**	
	Demand (Consumptive)	af/yr										**92,092**	**115,097**	**130,316**	**92,092**	**115,097**	**130,316**	
Energy	**Demand (Diversion)**	af/yr										17	22	26	**17**	**22**	**26**	15)
Minerals	**Demand (Diversion)**	af/yr										5,252	5,255	5,258	**5,252**	**5,255**	**5,258**	16)
Fish, Wildlife, and Recreation	**Demand (Diversion)**	af/yr										5,000	5,000	5,000	**5,000**	**5,000**	**5,000**	17)
Tribal	**Demand (Diversion)**	af/yr										10,900	10,900	10,900	**10,900**	**10,900**	**10,900**	18)
Total Adjacent Areas	Demand (Diversion)	af/yr	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**852,789**	**910,311**	**948,366**	**852,789**	**910,311**	**948,366**	
Total Demand in the Study Area		af/yr	**434,785**	**487,421**	**486,460**	**35,825**	**32,990**	**29,763**	**4,350**	**13,500**	**15,100**	**852,789**	**910,311**	**948,366**	**1,327,749**	**1,444,222**	**1,479,688**	
Demand that may be met by Other Supplies		af/yr	0	0	0	35,825	32,990	29,763	0	0	0	**694,415**	**726,755**	**767,321**	730,239	759,745	797,084	19)
Potential Colorado River Demand		af/yr	**434,785**	**487,421**	**486,460**	0	0	0	**4,350**	**13,500**	**15,100**	**158,375**	**183,556**	**181,044**	**597,509**	**684,477**	**682,604**	
Agricultural	Colorado River Demand	af/yr	88,805	88,805	88,805	0	0	0	0	0	0	22,000	22,000	22,000	110,805	110,805	110,805	20)
Municipal and Industrial	Colorado River Demand	af/yr	18,365	20,710	19,710	0	0	0	0	0	0	120,475	145,656	143,144	138,839	166,366	162,854	
Energy	Colorado River Demand	af/yr	40,000	39,176	37,350	0	0	0	0	0	0	0	0	0	40,000	39,176	37,350	
Minerals	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	5,000	5,000	5,000	5,000	5,000	5,000	
Tribal	Colorado River Demand	af/yr	287,615	338,730	340,595	0	0	0	4,350	13,500	15,100	10,900	10,900	10,900	302,865	363,130	366,595	

Source and Comments

1) No changes from current projected
2) No changes from current projected
3) No changes from current projected
4) Assume 2% reduction per decade relative to current projected
5a) Used same percentage change as GPCD section for San Juan Area
5b) Assumed no increase from current projected in Southwest Area
6) No changes from current projected
7) No changes from current projected
8) No changes from current projected
9) No changes from current projected
10) No changes from current projected
11) No changes from current projected
12) Will come from BBER (1995)
13) Assume 2% reduction per decade relative to current projected
14) No changes from current projected
15) No changes from current projected
16) No changes from current projected
17) No changes from current projected
18) No changes from current projected
19) No changes from current projected
20) For Adjacent Area, 25,000 afy of Colorado River Demand is agricultural, per contracts. Assume full tribal is met by Colorado River. Remaining Colorado River demand is all M&I

TABLE C3-7
Total Demand within Study Area under Enhanced Environment (D2) Scenario

From Current Projected Data Sheet
Input Parameter
Computed

			NEW MEXICO																
	Planning Area		San Juan			Southwest			Northwest			Adjacent Areas			STATE TOTAL			Source and
Hydrologic Basin		Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	comments
Agricultural	Irrigated Acreage	acres	34,300	34,300	34,300	16,859	15,492	13,954	0	0	0				51,159	49,792	48,254	1)
	Per-Acre Water Delivery (Diversion)	af/ac/yr	5.08	4.96	4.82	5.89	5.76	5.60	0.00	0.00	0.00				5.34	5.21	5.05	2)
	Consumptive factor	%	51%	51%	51%	33%	33%	33%	0%	0%	0%				45%	45%	45%	
	Demand (Consumptive)	af/yr	**88,805**	**86,834**	**84,365**	**33,167**	**29,801**	**26,078**	**0**	**0**	**0**				**121,972**	**116,634**	**110,443**	
Municipal and Industrial	Population		186,300	240,052	333,221	10,149	11,341	12,110	0	0	0				196,449	251,393	345,331	3)
	Municipal and Industrial Per Capita Use (Diversion)	gpcd	198	172	131	191	182	174	0	0	0				198	172	133	4)
	Consumptive factor	%	44%	50%	50%	50%	50%	50%	0%	0%	0%				45%	50%	50%	
	Municipal and Industrial Demand (Consumptive)	af/yr	18,266	23,089	24,525	1,085	1,157	1,177	0	0	0				19,351	24,246	25,702	
	Self Served Industrial Demand (Consumptive)	af/yr	99	95	90	0	0	0	0	0	0				99	95	90	5a), 5b)
	Demand (Consumptive)	af/yr	**18,365**	**23,184**	**24,615**	**1,085**	**1,157**	**1,177**	**0**	**0**	**0**				**19,450**	**24,341**	**25,792**	
Energy	**Demand (Consumptive)**	af/yr	**40,000**	**41,500**	**41,500**	**640**	**640**	**640**	**0**	**0**	**0**				**40,640**	**42,140**	**42,140**	6)
Minerals	**Demand (Consumptive)**	af/yr	**0**	**0**	**0**	**933**	**933**	**933**	**0**	**0**	**0**				**933**	**933**	**933**	7)
Fish, Wildlife, and Recreation	**Demand (Consumptive)**	af/yr	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**				**0**	**0**	**0**	8)
Tribal	**Demand (Consumptive)**	af/yr	**293,855**	**387,169**	**503,195**	**0**	**0**	**0**	**4,350**	**15,100**	**15,100**				**298,205**	**402,269**	**518,295**	9)
Total Hydrologic Basin	**Demand (Consumptive)**	af/yr	**441,025**	**538,686**	**653,674**	**35,825**	**32,530**	**28,828**	**4,350**	**15,100**	**15,100**	**0**	**0**	**0**	**481,199**	**586,317**	**697,603**	
Adjacent Areas																		
Agricultural	Irrigated Acreage	acres										93,301	93,301	93,301	93,301	93,301	93,301	10)
	Per-Acre Water Delivery (Diversion)	af/ac/yr										6.45	5.87	5.16	6.45	5.87	5.16	11)
	Consumptive factor	%										33%	33%	33%	33%	33%	33%	
	Demand (Diversion)	af/yr										601,391	547,867	481,113	601,391	547,867	481,113	
	Demand (Consumptive)	af/yr										**195,932**	**178,494**	156,746	**195,932**	**178,494**	**156,746**	
Municipal and Industrial	Population											1,277,435	1,816,000	2,666,000	1,277,435	1,816,000	2,666,000	12)
	Municipal and Industrial Per Capita Use (Diversion)	gpcd										160	139	128	160	139	128	13)
	Consumptive factor	%										40%	40%	40%	40%	40%	40%	
	Municipal and Industrial Demand (Diversion)	af/yr										229,051	282,262	380,780	229,051	282,262	380,780	
	Self Served Industrial Demand (Diversion)	af/yr										17	23	27	17	23	27	14)
	Demand (Diversion)	af/yr										**229,068**	**282,285**	**380,807**	**229,068**	**282,285**	**380,807**	
	Demand (Consumptive)	af/yr										**91,627**	**112,914**	**152,323**	**91,627**	**112,914**	**152,323**	
Energy	**Demand (Diversion)**	af/yr										17	23	29	**17**	**23**	**29**	15)
Minerals	**Demand (Diversion)**	af/yr										5,252	5,255	5,258	**5,252**	**5,255**	**5,258**	16)
Fish, Wildlife, and Recreation	**Demand (Diversion)**	af/yr										5,000	5,000	5,000	**5,000**	**5,000**	**5,000**	17)
Tribal	**Demand (Diversion)**	af/yr										10,900	10,900	10,900	**10,900**	**10,900**	**10,900**	18)
Total Adjacent Areas	Demand (Diversion)	af/yr	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**851,627**	**851,330**	**883,106**	**851,627**	**851,330**	**883,106**	
Total Demand in the Study Area		af/yr	**441,025**	**538,686**	**653,674**	**35,825**	**32,530**	**28,828**	**4,350**	**15,100**	**15,100**	**851,627**	**851,330**	**883,106**	**1,332,826**	**1,437,647**	**1,580,709**	
Demand that may be met by Other Supplies		af/yr	0	0	0	35,825	32,530	28,828	0	0	0	**694,415**	**726,755**	**767,321**	730,239	759,286	796,150	19)
Potential Colorado River Demand		af/yr	**441,025**	**538,686**	**653,674**	0	0	0	**4,350**	**15,100**	**15,100**	**157,212**	**124,575**	**115,785**	**602,586**	**678,361**	**784,559**	
Agricultural	Colorado River Demand	af/yr	88,805	86,834	84,365	0	0	0	0	0	0	22,000	22,000	22,000	110,805	108,834	106,365	20)
Municipal and Industrial	Colorado River Demand	af/yr	18,365	23,184	24,615	0	0	0	0	0	0	119,312	86,675	77,885	137,676	109,859	102,499	
Energy	Colorado River Demand	af/yr	40,000	41,500	41,500	0	0	0	0	0	0	0	0	0	40,000	41,500	41,500	
Minerals	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	5,000	5,000	5,000	5,000	5,000	5,000	
Tribal	Colorado River Demand	af/yr	293,855	387,169	503,195	0	0	0	4,350	15,100	15,100	10,900	10,900	10,900	309,105	413,169	529,195	

Source and Comments

1) No changes from current projected
2) Used 5% increase from current projected in 2060, no change from current projected in 2015, and interpolated for 2035
3) Based on regional trends, assume 2060 population is 25% greater than that of current projected.
4) Assume 3% reduction per decade relative to current projected
5a) Used same percentage change as GPCD section for San Juan Area
5b) Assumed no increase from current projected in Southwest Area
6) No changes from current projected
7) No changes from current projected
8) No changes from current projected
9) Northwest: Assumed 2060 demand from current projected would be reached in 2035 demand and that no new claims are filed; San Juan: Personal communication, Navajo Nation, April 16, 2012.
10) No changes from current projected
11) Used 20% increase from current projected in 2060, no change from current projected in 2015, and interpolated for 2035
12) Will come from BBER (1995)
13) Assume 3% reduction per decade relative to current projected
14) No changes from current projected
15) No changes from current projected
16) No changes from current projected
17) No changes from current projected
18) San Juan Chama at full contract amount
19) No changes from current projected
20) For Adjacent Area, 25,000 afy of Colorado River Demand is agricultural, per contracts. Assume full tribal is met by Colorado River. Remaining Colorado River demand is all M&I

4.0 References

Daniel B. Stephens & Associates (DBSA), 2005. *Southwest New Mexico Regional Water Plan.* Prepared for Southwest New Mexico Regional Water Plan Steering Committee, City of Deming, New Mexico, Fiscal Agent. Accepted by New Mexico Interstate Stream Commission, 2005.

Daniel B. Stephens & Associates (DBSA), 2008. *Taos Regional Water Plan*. Prepared for Taos Regional Water Planning Steering Committee. Accepted by New Mexico Interstate Stream Commission, 2008.

San Juan Water Commission, 2003. *San Juan Regional Water Plan*.

S.S. Papadopoulos and Associates, 2000. *Middle Rio Grande Water Supply Study*. August.