

Appendix C5
Wyoming Water Demand
Scenario Quantification

Appendix C5 — Wyoming Water Demand Scenario Quantification

1.0 Introduction

This appendix summarizes the data sources used in scenario quantification for Colorado River demand¹ for the state of Wyoming and presents the results of quantification. As presented in figure C5-1, Wyoming is divided into a number of planning areas that align with Colorado River Basin (Basin) tributaries (Green River above Fontenelle, Fontenelle to Green River, Green River to Greendale, and Little Snake) as well as 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 Wyoming Study Area summary, followed by Colorado River demand by geography, and finally by category.

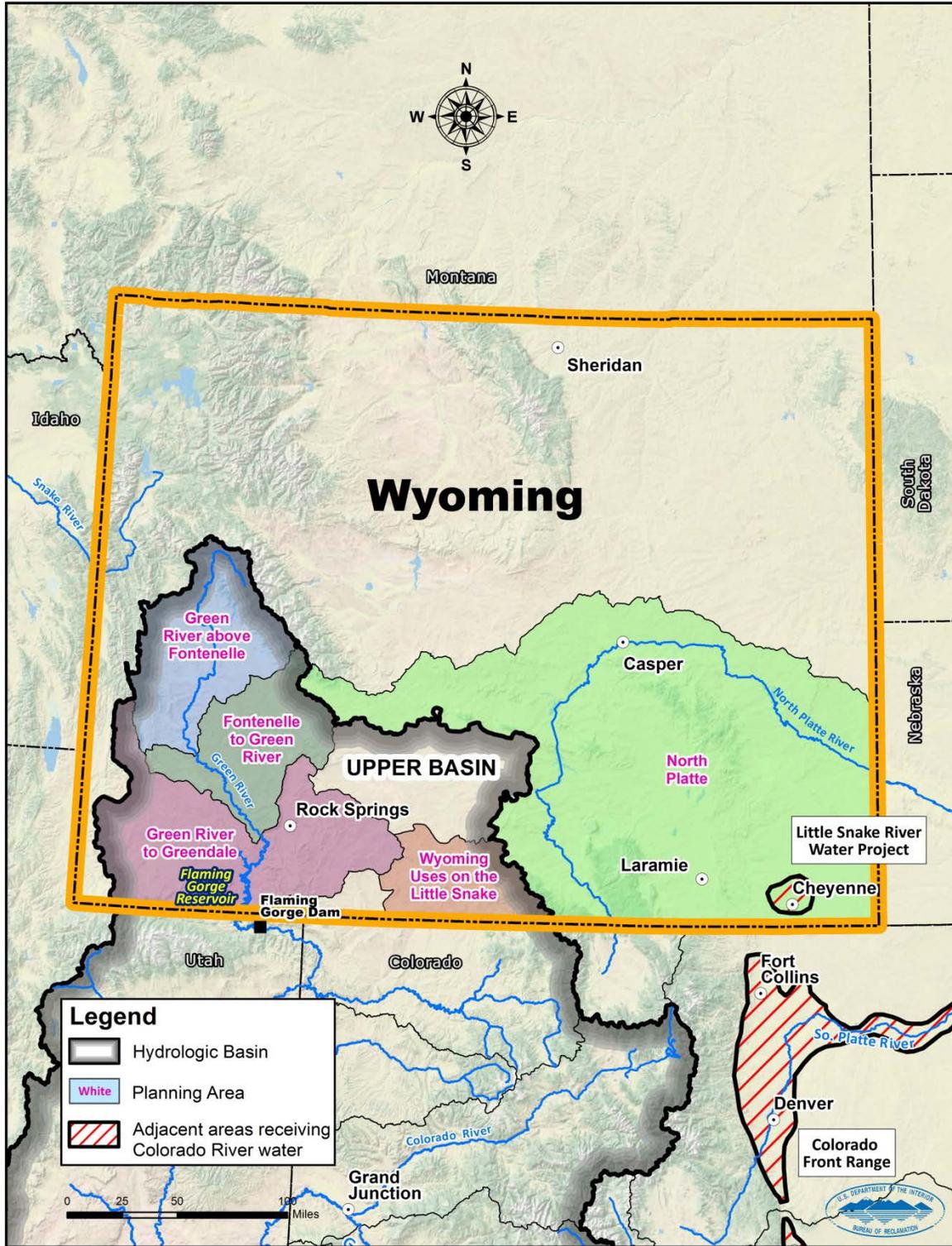
2.0 Background

The Wyoming State Engineer's Office has primary responsibility for water resource planning in the state of Wyoming. Additionally, in 1979 the Wyoming legislature created the Wyoming Water Development Commission, which functions to develop the state's water resources (including production of studies and water development projects that are funded during each legislative session). As directed by the legislature, the Commission has led numerous water resource planning studies. Information presented in this summary was largely obtained from Wyoming's planning studies.

The State Engineer's Office coordinated Wyoming's 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. Information presented in this summary was obtained through consultation with the Wyoming State Engineer's Office personnel.

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

FIGURE C5-1
Colorado River Hydrologic Basin and Export Service Areas in Wyoming



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.

- **Agricultural Demand:** Irrigated acreage and agricultural demands were derived from the *Green River Basin Water Planning Process* (States West Water Resources Corporation, 2001) and *Wyoming Framework Plan* (WWC Engineering, 2007). Agricultural applied water use and consumptive factors were calculated.
- **Municipal and Industrial (M&I):** Population estimates were derived from table 2 of the *Green River Basin Plan* (WWC Engineering, 2010) and from data obtained from the Wyoming Department of Administration and Information.
- For the hydrologic basin, total consumptive demands were derived from the *Green River Basin Water Planning Process* (States West Water Resources Corporation, 2001). Per capita usage was calculated based on demand, population, and a consumptive use factor of 50 percent (Wyoming State Engineer’s Office, 2011).
- For the North Platte, M&I per capita use was derived from Cheyenne population and demand in 2010. M&I per capita use was applied to population to get diversion demands, and a consumptive use factor of 50 percent (Wyoming State Engineer’s Office, 2011) was used to derive consumptive demands.
- **Energy:** Energy demands were derived from the *Green River Basin Water Planning Process* (States West Water Resources Corporation, 2001).
- **Minerals:** Minerals demands were derived from the *Green River Basin Water Planning Process* (States West Water Resources Corporation, 2001).
- **Fish, Wildlife, and Recreation:** Fish, wildlife, and recreation demands were derived from the *Green River Basin Water Planning Process* (States West Water Resources Corporation, 2001).
- **Tribal:** In Wyoming, there are no federally recognized tribes with rights to Colorado River water.

3.0 Results of Water Demand Scenario Quantification

This section summarizes Wyoming’s Colorado River water demand trends by category across the initial 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 amongst 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. The communities within the Colorado River Basin 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.

The following sections summarize the results of demand scenario quantification, presenting Study Area demand and Colorado River water demand, Colorado River Demand for the state and individual planning areas across the six scenarios, and 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 included.

3.1 Summary Results of Scenario Quantification

Values were developed for parameters to quantify Study Area demand for each of the scenarios. Colorado River demand was calculated as Study Area demand minus other supplies. Table C5-1 presents summary results for the demand scenarios considered in this 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.

TABLE C5-1
Summary Results of Wyoming 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)	0.31	0.41	0.37	0.44	0.44	0.41	0.44
Change in per capita water usage (%), from 2015	–	+3%	+1%	+4%	+3%	-22%	+3%
Irrigated acreage (millions of acres)	0.95	0.94	0.94	0.97	0.97	0.94	0.94
Change in per acre water delivery (%), from 2015	–	+1%	+3%	-0%	-2%	+1%	+1%
Study Area Demand (thousand acre-feet [kaf])							
	2015 ¹	2060 Scenario Demands					
		A	B	C1	C2	D1	D2
Ag demand	1,951	1,959	1,976	1,976	1,959	1,959	1,959
M&I demand	74	95	89	100	100	73	100
Energy demand	42–52	65	65	171	50	50	50
Minerals demand	20–34	59	59	91	33	33	33
FWR demand	2.0	10.0	10.0	10.0	25.0	25.0	25.0
Tribal demand	0	0	0	0	0	0	0
Total Study Area Demand²	2,109	2,188	2,198	2,348	2,167	2,141	2,167
Colorado River Demand (kaf)							
	2015 ¹	2060 Scenario Demands					
		A	B	C1	C2	D1	D2
Ag demand	398	406	423	423	406	406	406
M&I demand	30	67	36	74	73	61	73
Energy demand	42–52	65	65	171	50	50	50
Minerals demand	20–34	59	59	91	33	33	33
FWR demand	2.0	10.0	10.0	10.0	25.0	25.0	25.0
Tribal demand	0	0	0	0	0	0	0
Total Colorado River Demand²	511	606	592	769	588	576	588

¹ If range across scenarios is less than 10 percent, 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

Wyoming estimates that about 310,000 people will be in Wyoming's Study Area by 2015. This number is expected to increase to 370,000 to 440,000 by 2060. The greatest population growth is associated with the Rapid Growth (C1 and C2) scenarios. The Slow Growth (B) scenario has the lowest population of the scenarios in 2060 (370,000 people), but still represents a growth of about 20 percent over 2015 estimates.

The growing municipal population is forecast to be slightly less efficient in its per capita water use than today in all scenarios except Enhanced Environment (D1) scenario, in which per capita water use is expected to be 22 percent less in 2060 than in 2015. Per capita water use for the other Current Projected (A), Slow Growth (B), Rapid Growth (C1 and C2), and Enhanced Environment (D2) scenarios is expected to be 1 to 4 percent more in 2060 than in 2015. While usage rates vary across Wyoming's planning areas, per capita changes are assumed to be consistent across the hydrologic basin planning areas.

Irrigated acreage is projected to remain relatively constant (less than 1 percent decrease to 3 percent increase) through 2060 under all scenarios. Water delivery per acre also remains relatively constant through 2060, with a 2 percent decrease in the Rapid Growth (C2) scenario and a range of no change to 3 percent increase in the other scenarios.

Study Area demand for energy is projected to increase under all scenarios due to the growing need for electricity generation (coal and solar). The greatest increases in Study Area demand for energy are anticipated in the Fontenelle to Green River and Green River to Greendale areas, with combined increase of about 8,000 acre-feet per year (afy) (Rapid Growth [C2] and Enhanced Environment [D1 and D2] scenarios) to 105,000 afy (Rapid Growth [C1] scenario).

Study Area demand for minerals is also projected to increase under all scenarios. Growth in minerals demand is entirely in the Fontenelle to Green River planning area, with a range of growth between 14,000 afy (Rapid Growth [C2] and Enhanced Environment [D1 and D2] scenarios) to 57,000 afy (Rapid Growth [C1] scenario). Growth primarily reflects increases in soda ash production.

There are no projected Study Area demands for tribal use in any of the scenarios examined.

Figure C5-2 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 2.11 million acre-feet (maf) in 2015 to between 2.14 and 2.35 maf in 2060. The range in Study Area demand growth across scenarios in 2060; however, is projected to be as low as 52 kaf or as high as 233 kaf. About 70 to 75 percent 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 511 kaf in 2015 to between 576 and 769 kaf in 2060 (or 15 to 50 percent), depending on the scenario. This difference results in a Colorado River demand range of 193 kaf across the scenarios in 2060 or about 34 percent.

Panel three shows how specific categories affect the projected change in Colorado River demand by scenario. Growth in Colorado River demand is influenced relatively proportionally by all categories of demand. The greatest growth, under the Rapid Growth (C1) scenario, is influenced strongly by growth in Energy and Minerals demand.

FIGURE C5-2
Study Area, Colorado River, and Change in Colorado River Demand

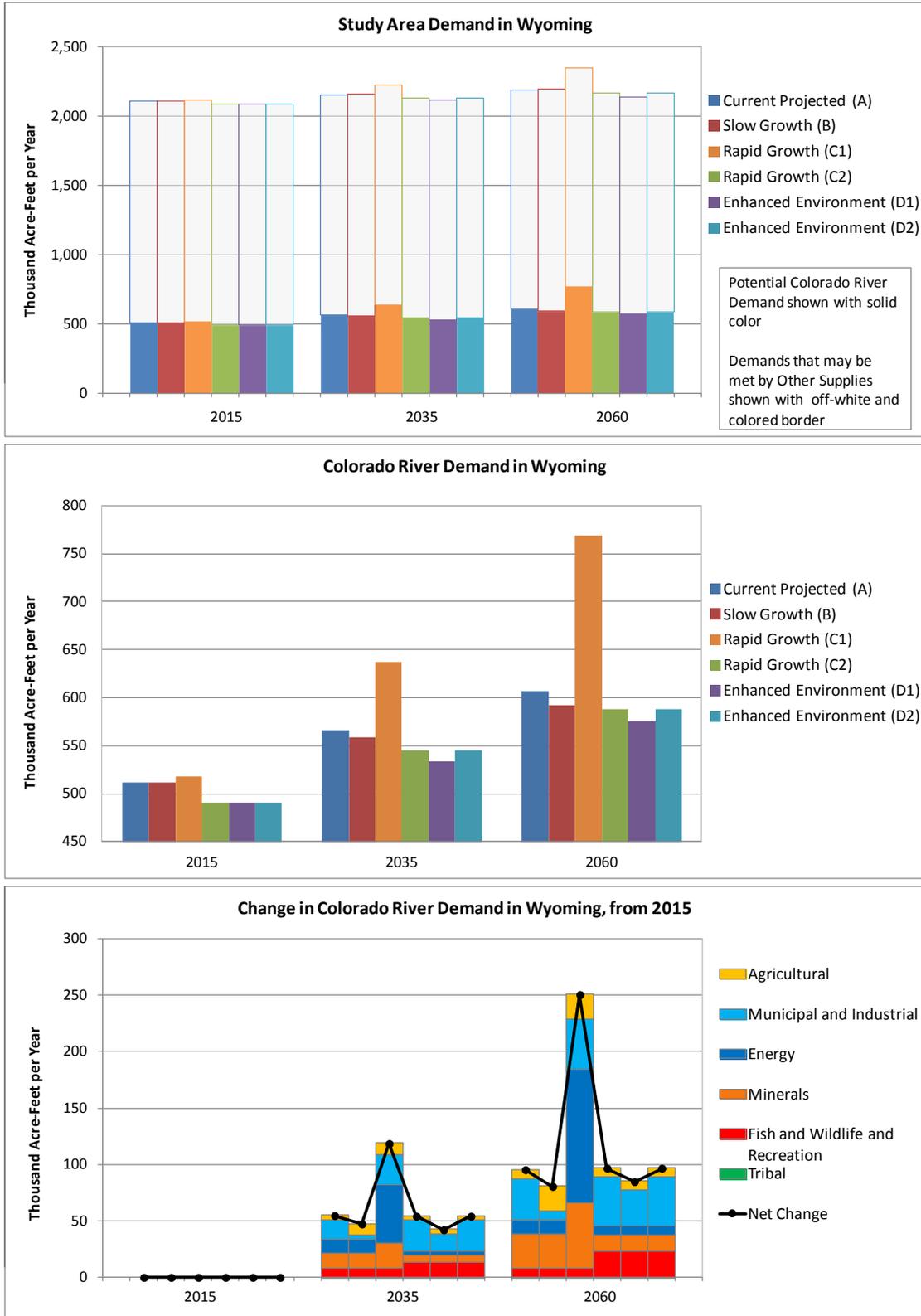
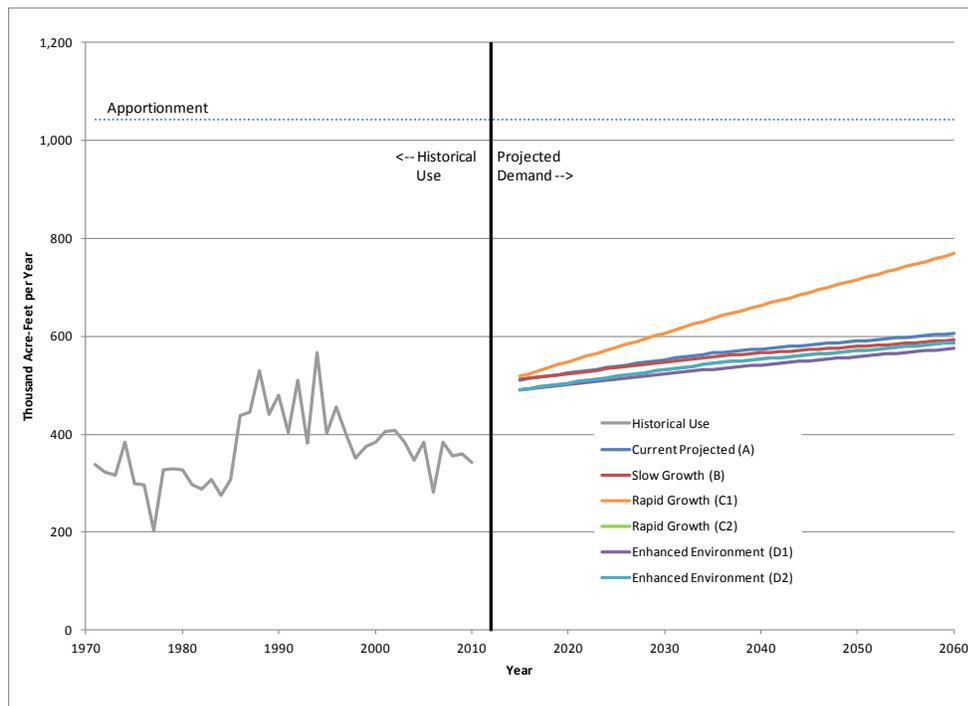


Figure C5-3 ties historical water use to the range of Colorado River demand in the quantified scenarios. The 193 kaf range across scenarios in 2060 is easily discernible, with the greatest demand under Rapid Growth (C1) scenario and a narrower range of demand across the other scenarios. In addition, 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 C5-3
Historical Use and Future Projected Demand Excluding Reservoir Evaporation¹



¹Reservoir evaporation on the order of 115 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 C5-4 and C5-5. These figures show two geographic levels: Study Area in Wyoming, 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.

When demands by category are examined in figure C5-5, the mix of demand categories in the hydrologic basin and adjacent areas are different, with agricultural demand dominating the hydrologic basin and M&I demand dominating the adjacent areas.

Figure C5-6 shows the change in Colorado River demand by category from 2015 across the scenarios. The change in both magnitude and percentage change of Colorado River demand² in Utah varies considerably across the planning area. The Fontenelle to Green River planning area shows relatively large changes, primarily due to growth in minerals and energy demands. The North Platte also shows relatively significant changes, primarily due to growth in M&I demands.

² 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 C5-4
Colorado River Demand in Wyoming

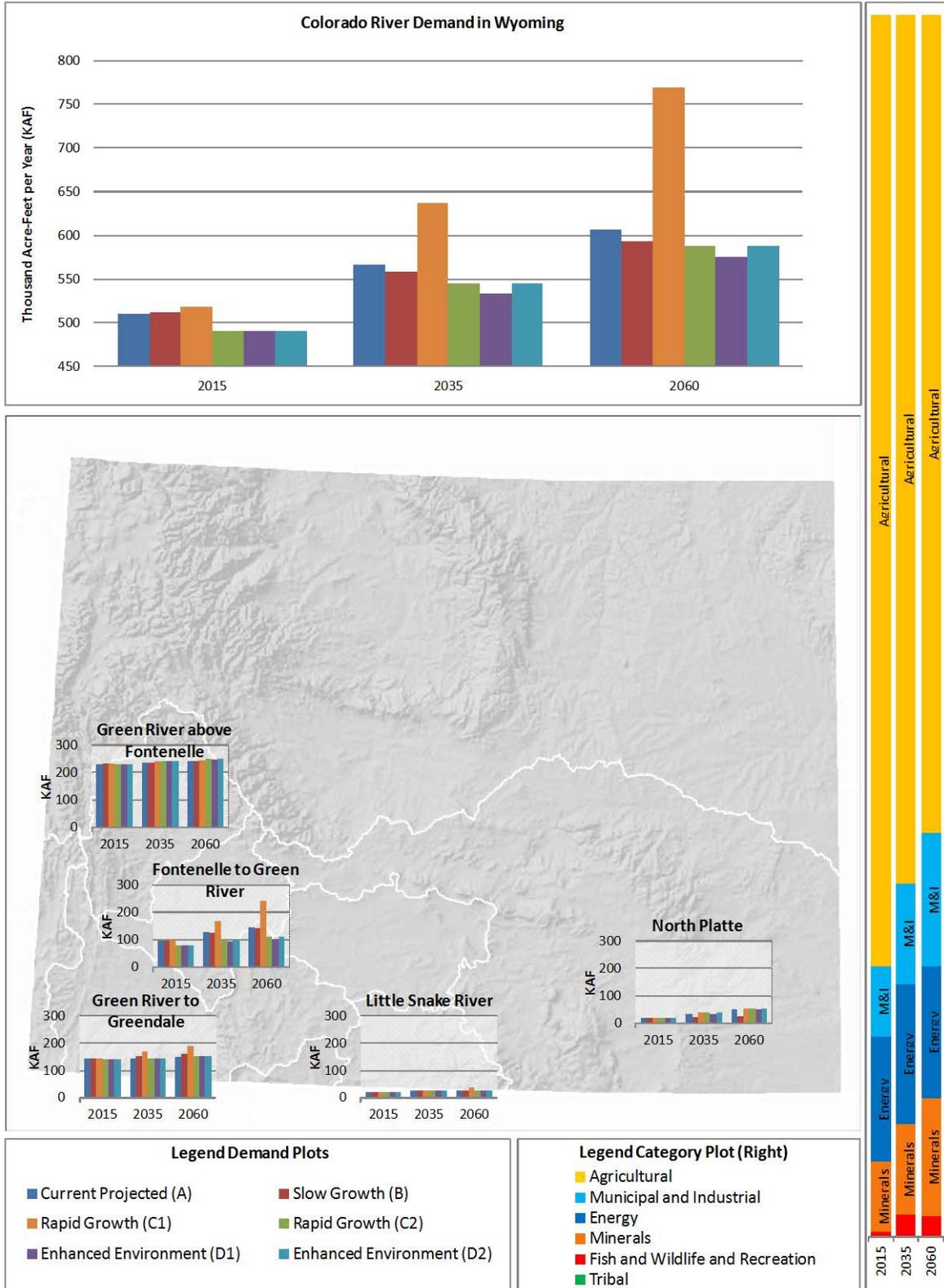


FIGURE C5-5
Colorado River Demand by Category

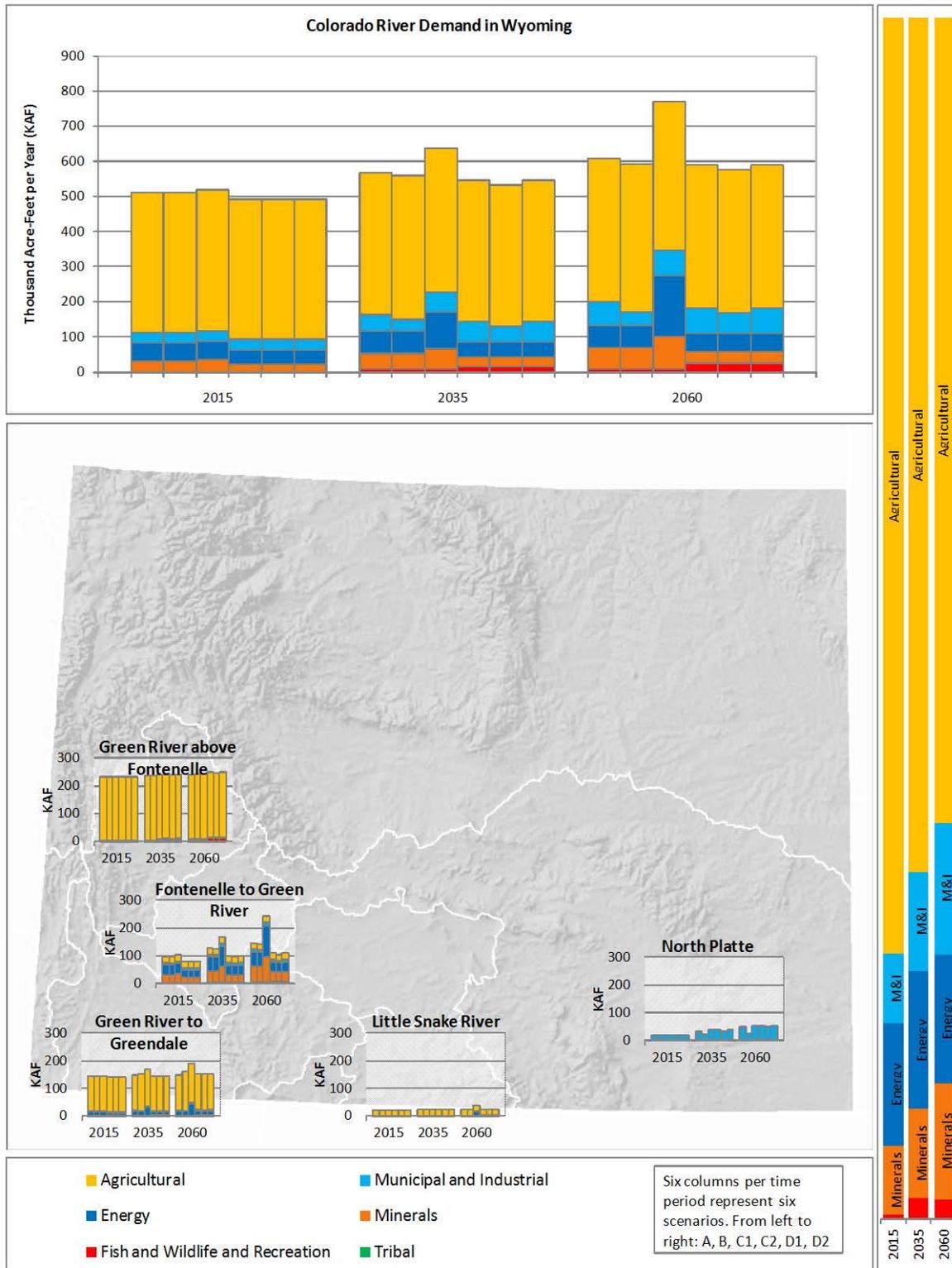
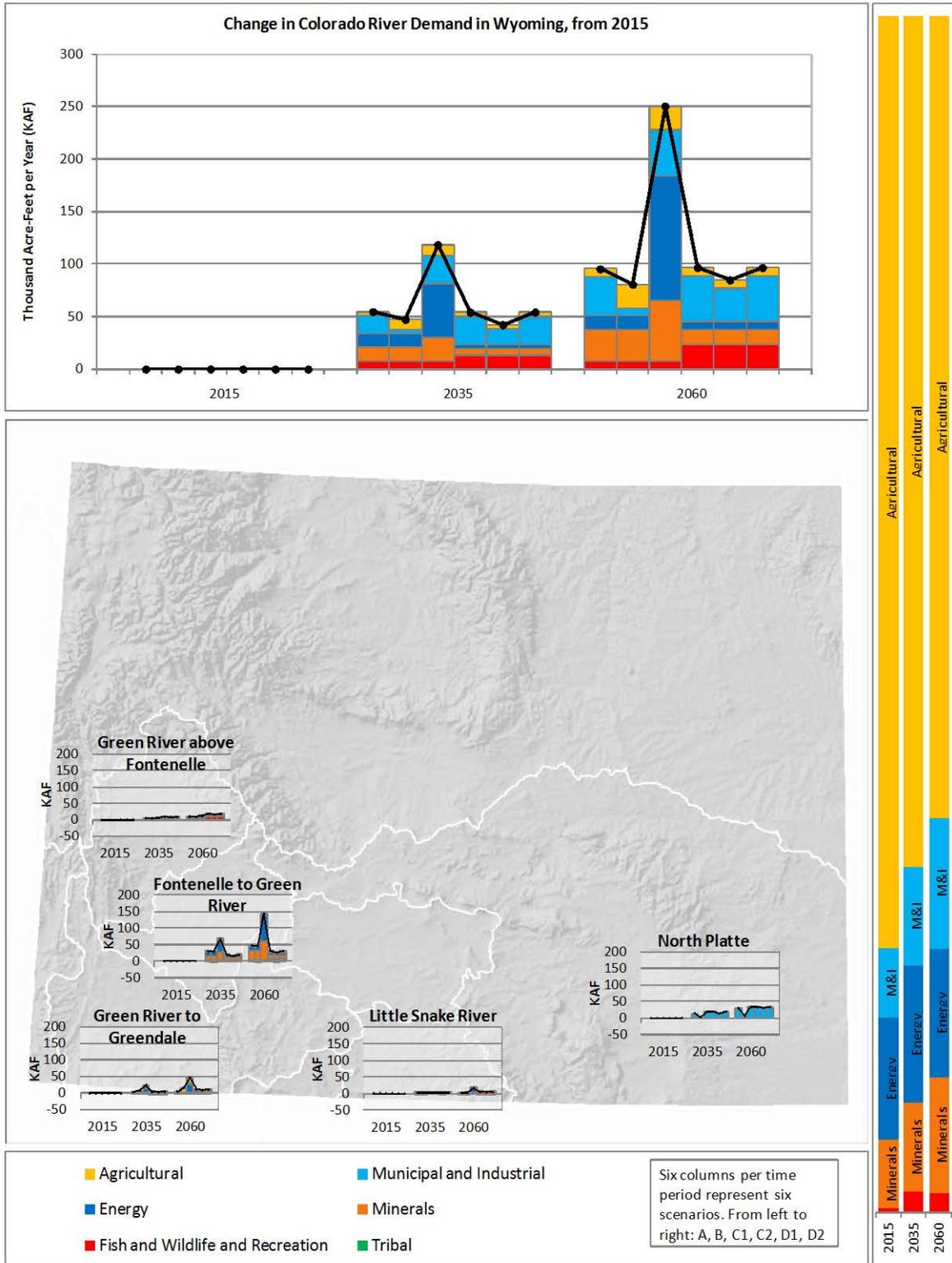


FIGURE C5-6
Change in Colorado River Demand in Wyoming from 2015 by Category



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 requirement, and tail water (return). Each of these factors will vary by location (precipitation, growing season, etc.), irrigation method, and crop type.

Figure C5-7 presents the following by scenario in 2015, 2035, and 2060:

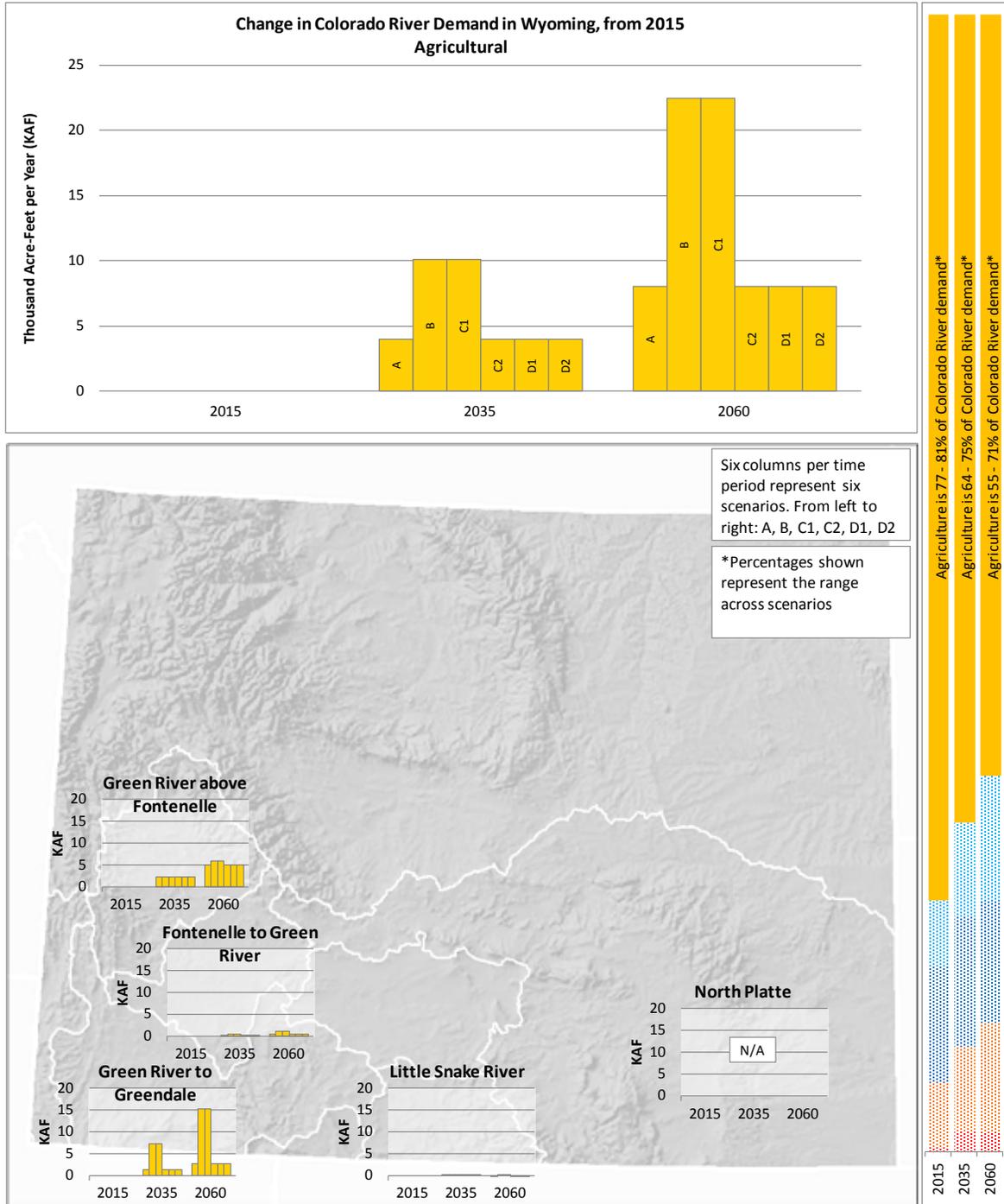
- Change in agricultural demand for Colorado River water
- Change in agricultural demand for Colorado River water by planning area
- Agricultural demand as a portion of Colorado River water demand (right hand side of graph)

As can be seen from figure C5-7, agricultural water demand is the largest component of Colorado River demand in Wyoming, dropping from about 80 percent in 2015 to between 55 and 71 percent of Colorado River demand in 2060, depending on which scenario is considered. This drop results from other categories of demand increasing at a faster rate than agriculture; agricultural demand increases across all scenarios.

Agricultural demand consistently increases through time across all scenarios. The increase in agricultural demand is driven by both a change in irrigated acres and change in water delivery per acre. For Current Projected (A), Slow Growth (B), and Enhanced Environment (D1 and D2) scenarios, irrigated acreage decreases slightly (less than 1 percent), but that slight decrease is offset by an increase in applied water use. For the Rapid Growth (C1 and C2) scenarios, irrigated acreage is forecast to increase at a faster rate than a decrease in water delivery per acre.

In examining the planning areas, the increase in agricultural demand is focused primarily in the Green River above Fontenelle and Green River to Greendale planning areas.

FIGURE C5-7
Change in Colorado River Demand in Wyoming 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. 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.

Figure C5-8 presents the following by scenario in 2015, 2035, and 2060:

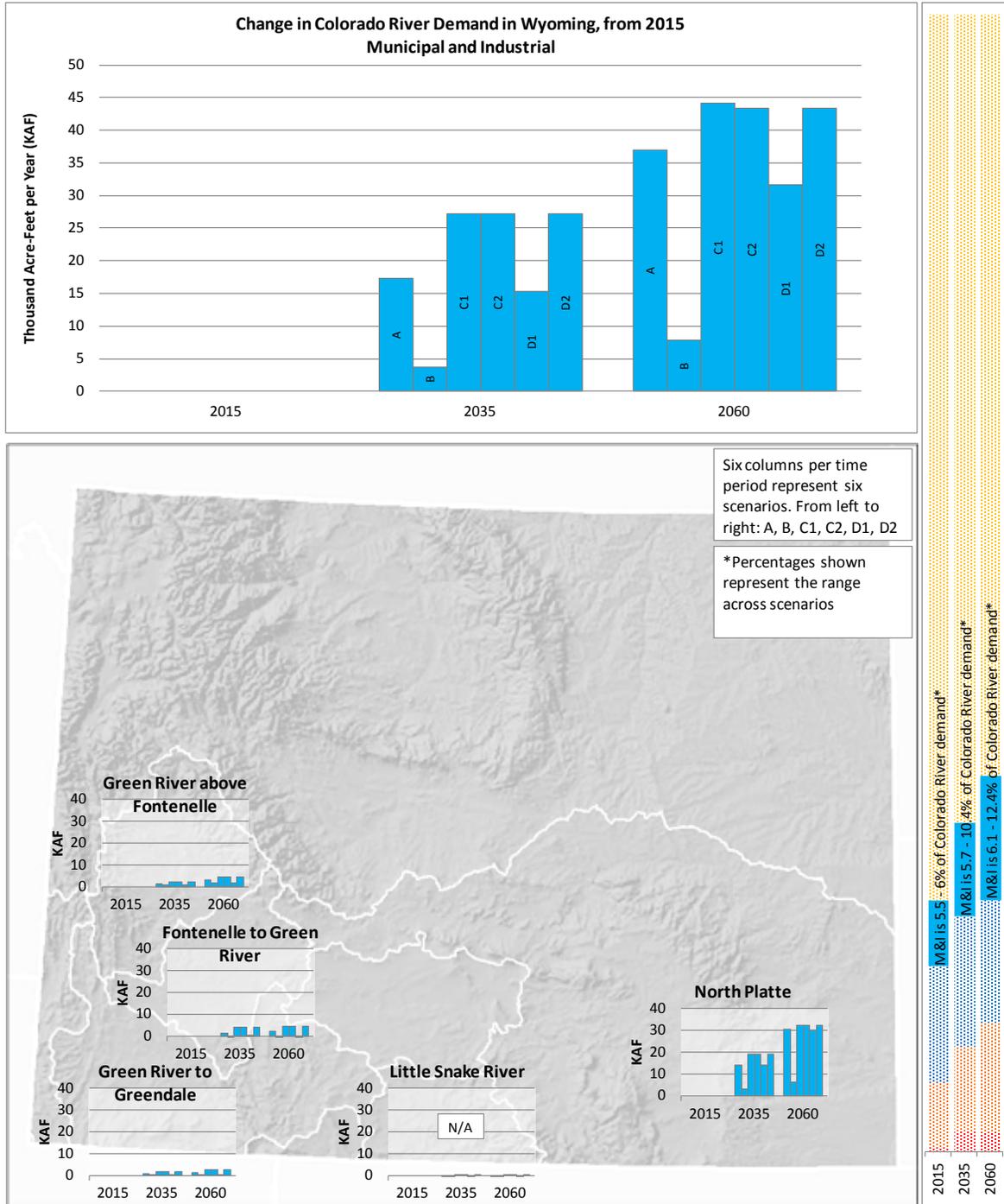
- Change in M&I demand for Colorado River water in the Study Area
- Change in M&I demand for Colorado River water in individual planning areas
- M&I demand as a portion of Colorado River water demand (right hand side of graph)

As can be seen from figure C5-8, M&I water demand increases from 6 percent in 2015 to between 6 and 12 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 across all scenarios. The increase is primarily due to population increase (20 to 38 percent increase depending on the scenario), with a slight additional influence of changing per capita M&I water use (1 to 4 percent increase, depending on the Current Projected [A], Slow Growth [B], Rapid Growth [C1 and C2], and Enhanced Environment [D2] scenarios; 22 percent decrease in the Enhanced Environment [D1] scenario).

In examining the planning areas, the majority of the increase in M&I demand for Colorado River water from 2015 to 2060 over time is due to population increase in the North Platte planning area. The three planning areas along the Green River also show increases in M&I demand.

FIGURE C5-8
Change in Colorado River Demand in Wyoming 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 C5-9 presents the following by scenario in 2015, 2035, and 2060:

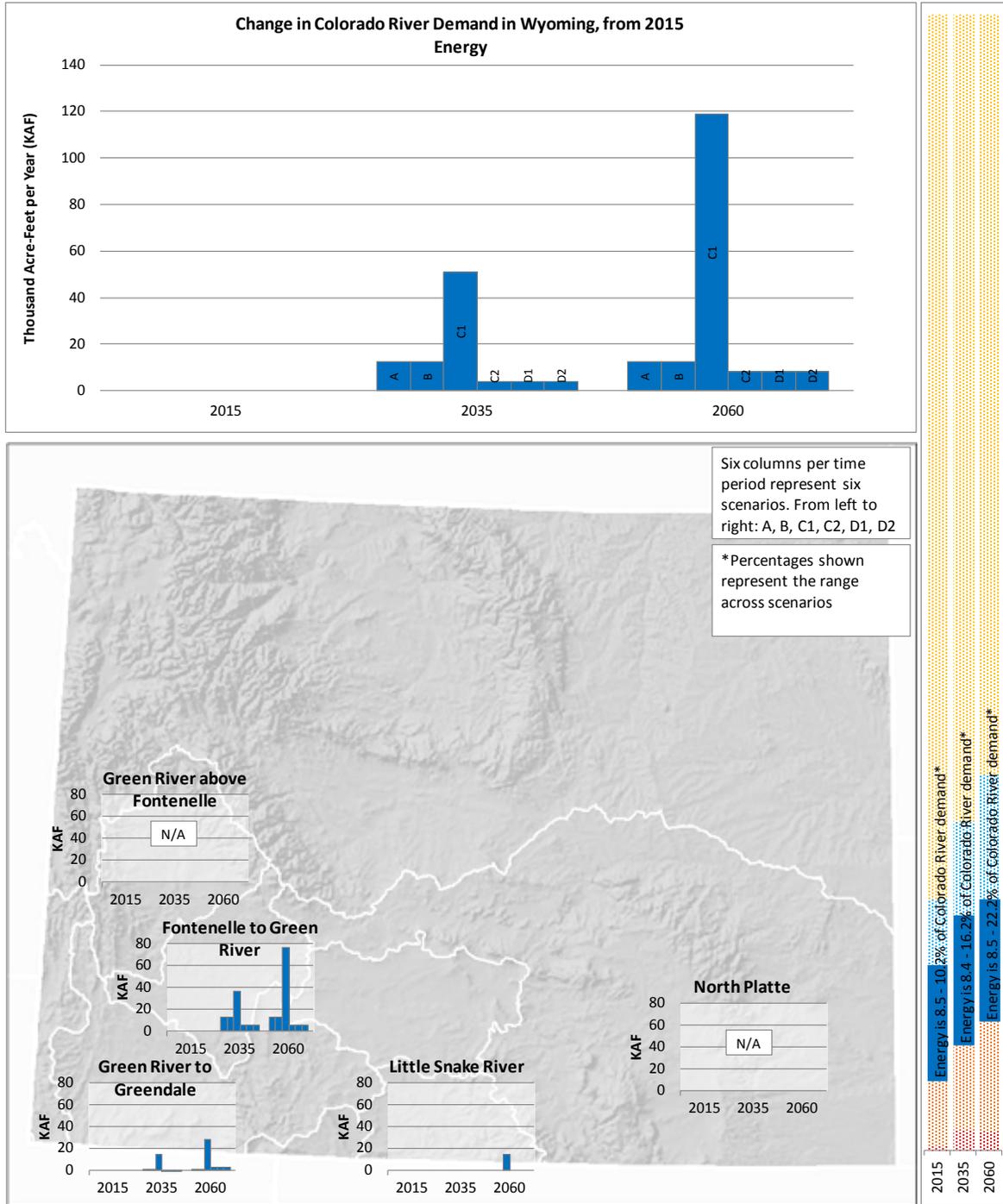
- Change in energy demand for Colorado River water
- Change in energy demand for Colorado River water in individual planning areas
- Energy demand as a portion of Colorado River water demand (right hand side of graph)

As can be seen from figure C5-9, energy water demand increases from 9 percent of Colorado River demand in 2015 to between 9 and 22 percent of Colorado River demand in 2060, depending on which scenario is considered.

Energy demand for Colorado River water increases over time from 2015 to 2060 across all scenarios. The most notable increase occurs in the Rapid Growth (C1) scenario, where energy demand is projected to increase by nearly 120 kaf due to an increase in electricity production. The other scenarios show an increase in energy demand of about 8 to 13 kaf.

Increase in energy demand is focused primarily in the Fontenelle to Green River planning area, in which it increases across all scenarios. Some additional increase is forecast in some scenarios in the Green River to Greendale and Little Snake River planning areas.

FIGURE C5-9
Change in Colorado River Demand in Wyoming from 2015 for Energy



3.3.4 Minerals Extraction

Water demand for mineral production can be estimated through existing uses and known plans for extraction in the Study Area. Water demand for mineral production can vary significantly based on market prices for a given product.

Figure C5-10 presents the following by scenario in 2015, 2035, and 2060:

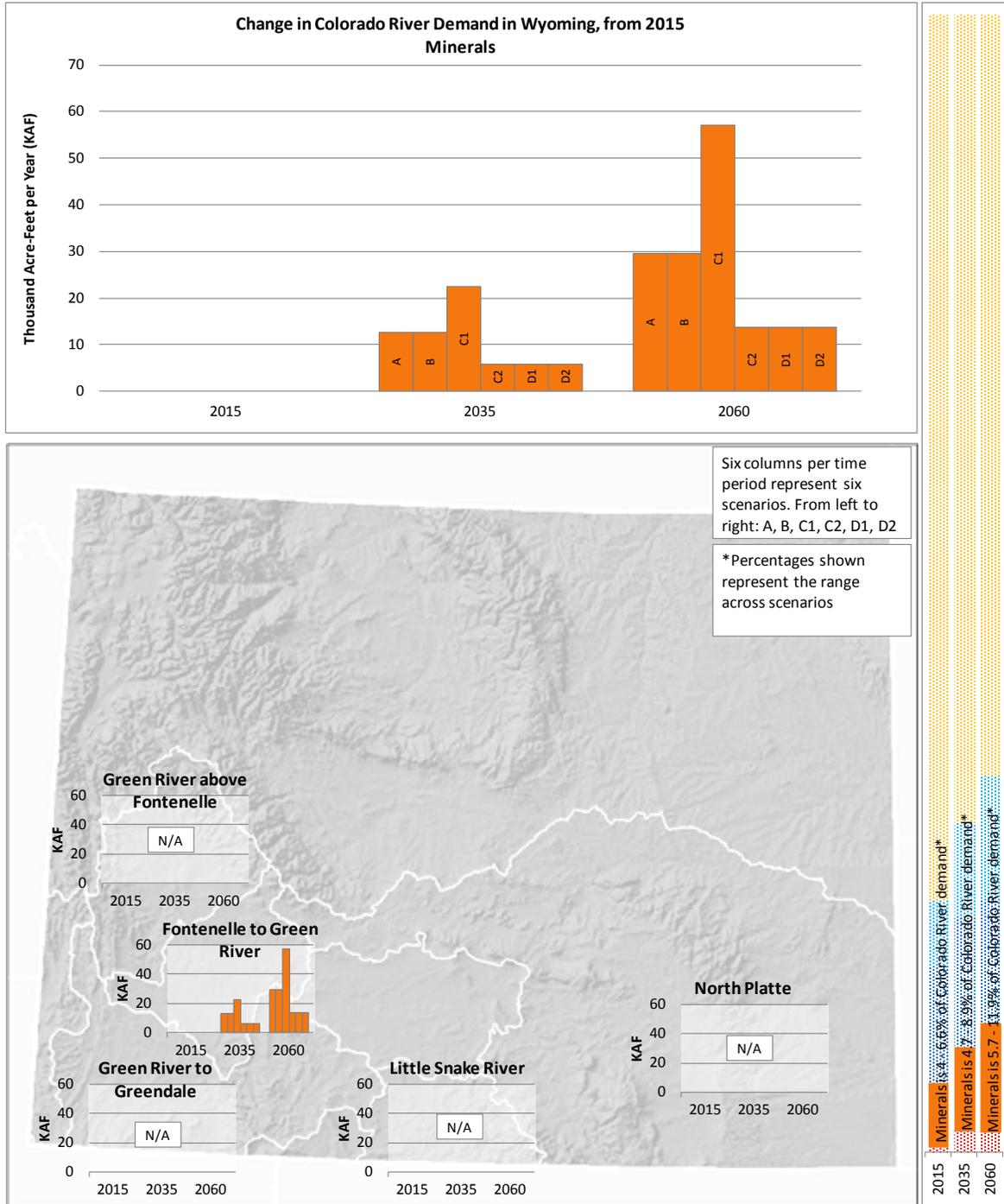
- Change in mineral production demand for Colorado River water
- Change in individual planning area mineral production demand for Colorado River water
- Minerals demand as a portion of Colorado River demand (right hand side of graph)

As can be seen from figure C5-10, minerals water demand is a relatively small fraction of Colorado River demand, increasing from 4 to 7 percent in 2015, to between 6 and 12 percent of Colorado River demand in 2060, depending on which scenario is considered.

Minerals demand for Colorado River water increases over time from 2015 to 2060 across all scenarios.

Demand for Colorado River water for minerals production is only found in the Fontenelle to Green River Planning Area. Increase in minerals demand ranges from about 14 kaf (Rapid Growth [C2] and Enhanced Environment [D1 and D2] scenarios) to about 57 kaf (Rapid Growth [C1] scenario), with Current Projected (A) and Slow Growth (B) scenarios showing an increase of about 30 kaf.

FIGURE C5-10
Change in Colorado River Demand in Wyoming from 2015 for Minerals



3.3.5 Fish, Wildlife, and Recreation

Water demand for fish, wildlife, and recreation is estimated from existing agreements or known consumptive use associated with this demand category. Non-consumptive demands associated with fish, wildlife and recreation, including in-stream flow requirements, are represented through the metrics portion of the Study presented in *Technical Report D – System Reliability Metrics*.

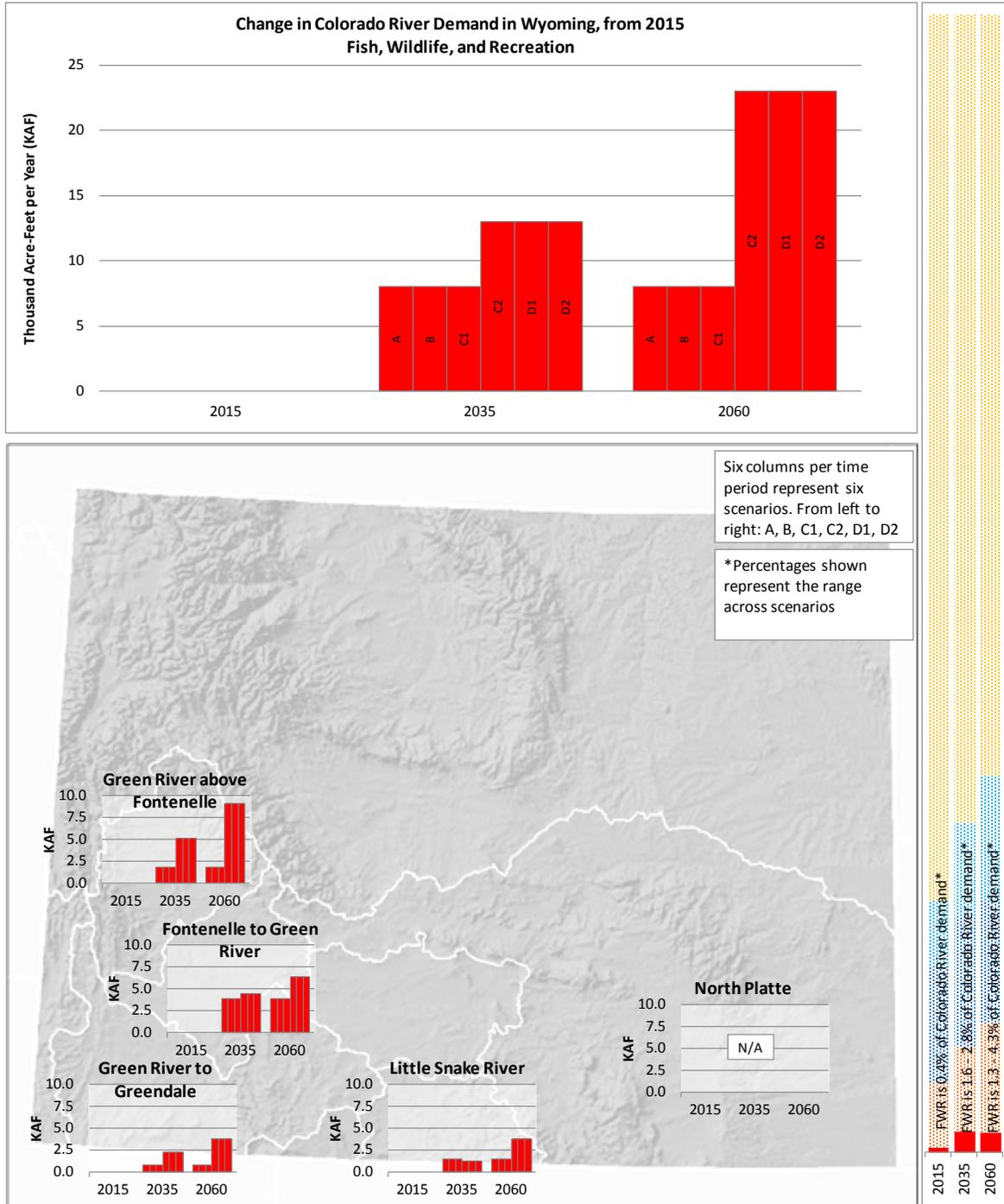
Figure C5-11 presents the following by scenario in 2015, 2035, and 2060:

- Change in fish, wildlife, and recreation demand for Colorado River water
- Change in fish, wildlife, and recreation demand for Colorado River water in individual planning areas
- Fish, wildlife, and recreation demand as a portion of Colorado River demand (right hand side of graph)

As can be seen from figure C5-11, fish, wildlife, and recreation water demand is a small fraction of Colorado River demand, increasing from less than 1 percent in 2015 to between 1 and 4 percent of Colorado River demand in 2060 across all scenarios.

Total increase in fish, wildlife, and recreation demand ranges from about 8 kaf (Current Projected [A], Slow Growth [B], and Rapid Growth [C1] scenarios) to about 23 kaf (Rapid Growth [C2] and Enhanced Environment [D1 and D2] scenarios). These increases are relatively evenly split between the four hydrologic basin planning areas, with the upper two Green River planning areas exhibiting slightly greater increases.

FIGURE C5-11
Change in Colorado River Demand in Wyoming from 2015 for Fish, Wildlife, and Recreation



3.3.6 Tribal

In Wyoming, there are no federally recognized tribes with rights to Colorado River water.

3.4 Summary Tables of Parameters and Demands by Category

Tables C5-2 to C5-7 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.

TABLE C5-2
Total Demand within Study Area under Current Projected (A) Scenario

WYOMING		LEGEND: 999 From States 999 From State Plans 999 Calculated 999 From Study Team																		
Units are thousand acre-feet per year, unless otherwise noted		Green River above Fontenelle			Fontenelle to Green River			Green River to Greendale			Little Snake River			North Platte			STATE TOTAL			Notes
Hydrologic Basin	Planning Area Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	
Agriculture	Irrigated Acreage [thousands]	193	195	191	19	19	18	106	107	105	18	18	17				336	339	332	1
	Per-Acre Water Delivery (Diversion) [af/ac/yr]	4.22	4.22	4.36	4.22	4.22	4.36	4.22	4.22	4.36	4.22	4.22	4.36				4.22	4.22	4.36	2
	Consumptive Factor [%]	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%				28%	28%	28%	3
	Demand (Consumptive)	229	231	234	22	22	23	126	127	128	21	22	21				398	402	406	
Municipal and Industrial (M&I)	Population [thousands]	10	18	28	43	48	52	17	20	24	1	1	0.8				71	87	105	4
	M&I Per Capita Use (Diversion) [gpcd]	287	297	306	287	297	306	287	297	306	287	296	306				287	297	306	5
	Consumptive factor [%]	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%				50%	50%	50%	6
	M&I Demand (Consumptive)	2	3	5	7	8	9	3	3	4	0.2	0.2	0.1				11	14	18	7
	Self Served Industrial Demand (Consumptive)	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	8
	Demand (Consumptive)	2	3	5	7	8	9	3	3	4	0.2	0.2	0.1				11	14	18	
Energy	Demand (Consumptive)	0	0	0	38	50	50	15	15	15	0	0	0				52	65	65	9
Minerals	Demand (Consumptive)	0	0	0	29	42	59	0	0	0	0	0	0				29	42	59	10
Fish, Wildlife, and Recreation	Demand (Consumptive)	0.9	3	3	0.6	5	5	0.3	1.0	1.0	0.3	2	2				2	10	10	11
Tribal	Demand (Consumptive)	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	12
Total Hydrologic Basin Demand (Consumptive)		232	237	241	96	127	145	143	146	148	22	24	23	0	0	0	493	534	558	
Adjacent Areas																				
Agriculture	Irrigated Acreage [thousands]										612	612	612	612	612	612	612	612	612	13
	Per-Acre Water Delivery (Diversion) [af/ac/yr]										2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	
	Consumptive factor [%]										43%	43%	43%	43%	43%	43%	43%	43%	43%	
	Demand (Diversion)										1,553	1,553	1,553	1,553	1,553	1,553	1,553	1,553	1,553	14
	Demand (Consumptive)										663	661	661	663	661	661	663	661	661	14
Municipal and Industrial (M&I)	Population [thousands]										244	270	301	244	270	301	244	270	301	15
	M&I Per Capita Use (Diversion)[gpcd]										229	229	229	229	229	229	229	229	229	16
	Consumptive factor [%]										50%	50%	50%	50%	50%	50%	50%	50%	50%	17
	M&I Demand (Diversion)										63	69	77	63	69	77	63	69	77	18
	Self Served Industrial Demand (Diversion)										0	0	0	0	0	0	0	0	0	
	Demand (Diversion)										63	69	77	63	69	77	63	69	77	
	Demand (Consumptive)										31	35	39	31	35	39	31	35	39	
Energy	Demand (Diversion)										0	0	0	0	0	0	0	0	0	
Minerals	Demand (Diversion)										0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Demand (Diversion)										0	0	0	0	0	0	0	0	0	
Tribal	Demand (Diversion)										0	0	0	0	0	0	0	0	0	
Total Adjacent Areas Demand (Diversion)		0	0	0	0	0	0	0	0	0	1,616	1,622	1,630	1,616	1,622	1,630	1,616	1,622	1,630	
Total Demand in the Study Area		232	237	241	96	127	145	143	146	148	22	24	23	1,616	1,622	1,630	2,109	2,156	2,188	19
Demand that may be met by Other Supplies		0	0	0	0	0	0	0	0	0	1,598	1,590	1,582	1,598	1,590	1,582	1,598	1,590	1,582	20
Potential Colorado River Demand		232	237	241	96	127	145	143	146	148	22	24	23	18	32	49	511	566	606	21
Agricultural	Colorado River Demand	229	231	234	22	22	23	126	127	128	21	22	21	0	0	0	398	402	406	22
Municipal and Industrial	Colorado River Demand	2	3	5	7	8	9	3	3	4	0.2	0.2	0.1	18	32	49	30	47	67	
Energy	Colorado River Demand	0	0	0	38	50	50	15	15	15	0	0	0	0	0	0	52	65	65	
Minerals	Colorado River Demand	0	0	0	29	42	59	0	0	0	0	0	0	0	0	0	29	42	59	
Fish, Wildlife, and Recreation	Colorado River Demand	0.9	3	3	0.6	5	5	0.3	1.0	1.0	0.3	2	2	0	0	0	2	10	10	
Tribal	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Notes:

- 1) *Green River Basin Water Planning Process*, 2001, Linear interpolation was used to project acreage in 2015.
- 2) Calculated - represents average unit water supply-limited diversion required per acre.
- 3) Calculated based on statewide diverted water use in 2011 of 4.22 acre-feet (af)/acre documented on pg. 5–7 of *Wyoming Framework Plan*, Volume 1.
- 4) Hydrologic Basin: *Green River Basin Plan*, table 2.
- 5) Calculated from total demand, consumptive use factor, and population.
- 6) Wyoming State Engineer’s Office, personal communication 2011.
- 7) *Green River Basin Water Planning Process*, 2001, Wyoming State Engineer’s Office, personal communication 2011, Linear interpolation used project demand for 2015.
- 8) *Green River Basin Water Planning Process*, 2001, Wyoming State Engineer’s Office, personal communication 2011, Linear interpolation used project demand for 2015.
- 9) *Green River Basin Water Planning Process*, 2001, Linear interpolation was used to project demand for 2015.
- 10) *Green River Basin Water Planning Process*, 2001, Linear interpolation was used to project demand for 2015.
- 11) *Green River Basin Water Planning Process*, 2001, Wyoming State Engineer’s Office, personal communication 2011, Linear interpolation used project demand for 2015.
- 12) *Green River Basin Water Planning Process*, 2001, Linear interpolation was used to project demand for 2015.
- 13) *Wyoming Framework Water Plan*, Volume I, October 2007.
- 14) *Wyoming Framework Water Plan*, Volume I, October 2007 for 2015 and 2035, 2036 demands assumed steady through 2060.
- 15) Wyoming Department of Administration and Information, Economic Analysis Division – WYOMING AND COUNTY POPULATION PROJECTIONS BY AGE: 2008 TO 2030, July, 2008, forecasts from 2009 of 2010 and 2030 data were used with 2010 census data to develop population. 2010 and 2030 population were linearly interpolated to find population projections for 2035 and 2060.
- 16) M&I water use efficiency was calculated from Cheyenne population and demand in 2010. This value was then used for demand calculations from population estimates in future years.
- 17) Wyoming State Engineer’s Office, personal communication 2011.
- 18) Calculated from M&I efficiency, consumptive use factor, and population.
- 19) Calculated from the sum of Hydrologic Basin (Consumptive) Demand and Adjacent Areas (Diversion) Demand.
- 20) Calculated as the difference in Study Area demand and potential Colorado River demand.
- 21) *Green River Basin Water Planning Process*, 2001, Wyoming State Engineer’s Office, personal communication 2011, Linear interpolation used project demand for 2015. In 2011, 15,281 af represent represents Cheyenne’s current contract and 2,920 af represents current agricultural contracts. In 2035 and 2060, 22,700 afy represents Cheyenne’s current contract and 2,920 af represents current agricultural contracts. The remaining projected growth is 9,390 af in 2035 and 25,000 af in 2060.
- 22) For North Platte, all potential Colorado River demand is M&I.

TABLE C5-3
Total Demand within Study Area under Slow Growth (B) Scenario

WYOMING		LEGEND: 999 From Current Projected Data Sheet 999 Computed 999 Input Parameter												STATE TOTAL			Notes			
Hydrologic Basin	Planning Area	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060				
Units are thousand acre-feet per year, unless otherwise noted																				
Agriculture	Irrigated Acreage [thousands]	193	195	191	19	19	18	106	107	105	18	18	17				336	339	332	1
	Per-Acre Water Delivery (Diversion) [af/ac/yr]	4.24	4.24	4.40	4.24	4.29	4.50	4.24	4.45	4.81	4.24	4.21	4.44				4.24	4.31	4.53	
	Consumptive Factor [%]	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%				28%	28%	28%	
	Demand (Consumptive)	230	233	236	22	23	23	126	134	142	21	22	22				400	410	423	2
Municipal and Industrial (M&I)	Population [thousands]	9	13	17	38	35	33	15	15	15	1.0	0.8	0.5				63	64	66	3
	M&I Per Capita Use (Diversion) [gpcd]	287	297	306	287	297	306	287	297	306	287	296	306				287	297	306	4
	Consumptive factor [%]	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%				50%	50%	50%	
	M&I Demand (Consumptive)	1	2	3	6	6	6	2	2	3	0.2	0.1	0.09				10	11	11	
	Self Served Industrial Demand (Consumptive)	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	5
	Demand (Consumptive)	1	2	3	6	6	6	2	2	3	0.2	0.1	0.09				10	11	11	
Energy	Demand (Consumptive)	0	0	0	38	50	50	15	15	15	0	0	0				52	65	65	6
Minerals	Demand (Consumptive)	0	0	0	29	42	59	0	0	0	0	0	0				29	42	59	7
Fish, Wildlife, and Recreation	Demand (Consumptive)	0.9	3	3	0.6	5	5	0.3	1.0	1.0	0.3	2	2				2	10	10	8
Tribal	Demand (Consumptive)	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	9
Total Hydrologic Basin	Demand (Consumptive)	233	237	242	96	125	142	143	152	160	22	23	24	0	0	0	494	538	568	
Adjacent Areas																				
Agriculture	Irrigated Acreage [thousands]													612	612	612	612	612	612	10
	Per-Acre Water Delivery (Diversion) [af/ac/yr]													2.54	2.54	2.54	2.54	2.54	2.54	
	Consumptive factor [%]													43%	43%	43%	43%	43%	43%	
	Demand (Diversion)													1,553	1,553	1,553	1,553	1,553	1,553	11
	Demand (Consumptive)													663	661	661	663	661	661	
Municipal and Industrial (M&I)	Population [thousands]													244	270	301	244	270	301	12
	M&I Per Capita Use (Diversion)[gpcd]													229	229	229	229	229	229	13
	Consumptive factor [%]													50%	50%	50%	50%	50%	50%	
	M&I Demand (Diversion)													63	69	77	63	69	77	
	Self Served Industrial Demand (Diversion)													0	0	0	0	0	0	14
	Demand (Diversion)													63	69	77	63	69	77	
	Demand (Consumptive)													31	35	39	31	35	39	
Energy	Demand (Diversion)													0	0	0	0	0	0	15
Minerals	Demand (Diversion)													0	0	0	0	0	0	16
Fish, Wildlife, and Recreation	Demand (Diversion)													0	0	0	0	0	0	17
Tribal	Demand (Diversion)													0	0	0	0	0	0	18
Total Adjacent Areas	Demand (Diversion)	0	0	0	0	0	0	0	0	0	0	0	0	1,616	1,622	1,630	1,616	1,622	1,630	
Total Demand in the Study Area		233	237	242	96	125	142	143	152	160	22	23	24	1,616	1,622	1,630	2,109	2,160	2,198	
Demand that may be met by Other Supplies		0	0	0	0	0	0	0	0	0	0	0	0	1,598	1,601	1,606	1,598	1,601	1,606	19
Potential Colorado River Demand		233	237	242	96	125	142	143	152	160	22	23	24	18	21	25	512	559	592	20
Agricultural	Colorado River Demand	230	233	236	22	23	23	126	134	142	21	22	22	0	0	0	400	410	423	21
Municipal and Industrial	Colorado River Demand	1	2	3	6	6	6	2	2	3	0.2	0.1	0.09	18	21	25	28	32	36	
Energy	Colorado River Demand	0	0	0	38	50	50	15	15	15	0	0	0	0	0	0	52	65	65	
Minerals	Colorado River Demand	0	0	0	29	42	59	0	0	0	0	0	0	0	0	0	29	42	59	
Fish, Wildlife, and Recreation	Colorado River Demand	0.9	3	3	0.6	5	5	0.3	1.0	1.0	0.3	2	2	0	0	0	2	10	10	
Tribal	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Notes

- 1) No changes from Current Projected.
- 2) High Growth scenario from *Green River Basin Plan, 2010*.
- 3) Population estimates from Low Growth scenario of the *Green River Basin Plan, 2010*.
- 4) Moderate Growth scenario from *Green River Basin Plan, 2010*; gallons per capita per day (gpcd) computed with Moderate Growth population and M&I demand.
- 5) No changes from Current Projected.
- 6) No changes from Current Projected.
- 7) Moderate Growth scenario from *Green River Basin Plan, 2010*; gpcd computed with Moderate Growth population and M&I demand.
- 8) Moderate Growth scenario from *Green River Basin Plan, 2010*; gpcd computed with Moderate Growth population and M&I demand.
- 9) No changes from Current Projected.
- 10) No changes from Current Projected.
- 11) No changes from Current Projected.
- 12) Population estimates from Low Growth scenario of the *Green River Basin Plan, 2010*.
- 13) Moderate Growth scenario from *Green River Basin Plan, 2010*; gpcd computed with Moderate Growth population and M&I demand.
- 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) Low Growth scenario from *Green River Basin Plan, 2010*.
- 20) Low Growth scenario exports to North Platte from *Green River Basin Plan, 2010*.
- 21) For North Platte, all potential Colorado River demand is M&I.

TABLE C5-4
Total Demand within Study Area under Rapid Growth (C1) Scenario

WYOMING		LEGEND: 999 From Current Projected Data Sheet 999 Computed 999 Input Parameter												STATE TOTAL			Notes			
Hydrologic Basin	Planning Area	Green River above Fontenelle			Fontenelle to Green River			Green River to Greendale			Little Snake River			North Platte				2015	2035	2060
	Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	
Agriculture	Irrigated Acreage [thousands]	193	198	203	19	19	20	106	114	121	18	18	19				336	349	363	1
	Per-Acre Water Delivery (Diversion) [af/ac/yr]	4.24	4.18	4.15	4.24	4.18	4.15	4.24	4.18	4.15	4.24	4.18	4.15				4.24	4.18	4.15	
	Consumptive Factor [%]	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%				28%	28%	28%	
	Demand (Consumptive)	230	233	236	22	23	23	126	134	142	21	22	22				400	410	423	2
Municipal and Industrial (M&I)	Population [thousands]	10	24	35	43	65	67	17	27	31	1	1	1				71	117	134	3
	M&I Per Capita Use (Diversion) [gpcd]	287	297	306	287	297	306	287	297	306	287	296	306				287	297	306	4
	Consumptive factor [%]	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%				50%	50%	50%	
	M&I Demand (Consumptive)	2	4	6	7	11	12	3	5	5	0.2	0.2	0.2				11	19	23	
	Self Served Industrial Demand (Consumptive)	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	5
	Demand (Consumptive)	2	4	6	7	11	12	3	5	5	0.2	0.2	0.2				11	19	23	
Energy	Demand (Consumptive)	0	0	0	38	74	115	15	29	43	0	0	14				52	103	171	6
Minerals	Demand (Consumptive)	0	0	0	34	57	91	0	0	0	0	0	0				34	57	91	7
Fish, Wildlife, and Recreation	Demand (Consumptive)	0.9	3	3	0.6	5	5	0.3	1.0	1.0	0.3	2	2				2	10	10	8
Tribal	Demand (Consumptive)	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	9
Total Hydrologic Basin	Demand (Consumptive)	233	239	245	102	169	245	144	168	190	22	24	38	0	0	0	500	599	718	
Adjacent Areas																				
Agriculture	Irrigated Acreage [thousands]													612	612	612	612	612	612	10
	Per-Acre Water Delivery (Diversion) [af/ac/yr]													2.54	2.54	2.54	2.54	2.54	2.54	
	Consumptive factor [%]													43%	43%	43%	43%	43%	43%	
	Demand (Diversion)													1,553	1,553	1,553	1,553	1,553	1,553	11
	Demand (Consumptive)													663	661	661	663	661	661	
Municipal and Industrial (M&I)	Population [thousands]													244	270	301	244	270	301	12
	M&I Per Capita Use (Diversion)[gpcd]													229	229	229	229	229	229	13
	Consumptive factor [%]													50%	50%	50%	50%	50%	50%	
	M&I Demand (Diversion)													63	69	77	63	69	77	
	Self Served Industrial Demand (Diversion)													0	0	0	0	0	0	14
	Demand (Diversion)													63	69	77	63	69	77	
	Demand (Consumptive)													31	35	39	31	35	39	
Energy	Demand (Diversion)													0	0	0	0	0	0	15
Minerals	Demand (Diversion)													0	0	0	0	0	0	16
Fish, Wildlife, and Recreation	Demand (Diversion)													0	0	0	0	0	0	17
Tribal	Demand (Diversion)													0	0	0	0	0	0	18
Total Adjacent Areas	Demand (Diversion)	0	0	0	0	0	0	0	0	0	0	0	0	1,616	1,622	1,630	1,616	1,622	1,630	
Total Demand in the Study Area		233	239	245	102	169	245	144	168	190	22	24	38	1,616	1,622	1,630	2,116	2,222	2,348	
Demand that may be met by Other Supplies		0	0	0	0	0	0	0	0	0	0	0	0	1,598	1,585	1,580	1,598	1,585	1,580	19
Potential Colorado River Demand		233	239	245	102	169	245	144	168	190	22	24	38	18	37	51	518	637	769	20
Agricultural	Colorado River Demand	230	233	236	22	23	23	126	134	142	21	22	22	0	0	0	400	410	423	21
Municipal and Industrial	Colorado River Demand	2	4	6	7	11	12	3	5	5	0.2	0.2	0.2	18	37	51	30	57	74	
Energy	Colorado River Demand	0	0	0	38	74	115	15	29	43	0	0	14	0	0	0	52	103	171	
Minerals	Colorado River Demand	0	0	0	34	57	91	0	0	0	0	0	0	0	0	0	34	57	91	
Fish, Wildlife, and Recreation	Colorado River Demand	0.9	3	3	0.6	5	5	0.3	1.0	1.0	0.3	2	2	0	0	0	2	10	10	
Tribal	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Notes

- 1) High Growth scenario from *Green River Basin Plan, 2010*.
- 2) High Growth scenario from *Green River Basin Plan, 2010*.
- 3) Population estimates from High Growth scenario of the *Green River Basin Plan, 2010*.
- 4) Moderate Growth scenario from *Green River Basin Plan, 2010*; gpcd computed with Moderate Growth population and M&I demand.
- 5) No changes from Current Projected.
- 6) High Growth scenario from *Green River Basin Plan, 2010*.
- 7) High Growth scenario from *Green River Basin Plan, 2010*.
- 8) Moderate Growth scenario from *Green River Basin Plan, 2010*.
- 9) No changes from Current Projected.
- 10) No changes from Current Projected.
- 11) No changes from Current Projected.
- 12) Population estimates from High Growth scenario of the *Green River Basin Plan, 2010*.
- 13) Moderate Growth scenario from *Green River Basin Plan, 2010*; gpcd computed with Moderate Growth population and M&I demand.
- 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) High Growth scenario from *Green River Basin Plan, 2010*.
- 20) High Growth scenario exports to North Platte from *Green River Basin Plan, 2010*.
- 21) For North Platte, all potential Colorado River demand is M&I.

TABLE C5-5
Total Demand within Study Area under Rapid Growth (C2) Scenario

WYOMING		LEGEND: 999 From Current Projected Data Sheet 999 Computed 999 Input Parameter																		
<i>Units are thousand acre-feet per year, unless otherwise noted</i>		Green River above Fontenelle			Fontenelle to Green River			Green River to Greendale			Little Snake River			North Platte			STATE TOTAL			
Hydrologic Basin	Planning Area Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	Notes
Agriculture	Irrigated Acreage [thousands]	193	198	203	19	19	20	106	114	121	18	18	19				336	349	363	1
	Per-Acre Water Delivery (Diversion) [af/ac/yr]	4.22	4.16	4.11	4.22	4.12	4.02	4.22	3.97	3.76	4.22	4.20	4.07				4.22	4.10	3.99	
	Consumptive Factor [%]	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%				28%	28%	28%	
	Demand (Consumptive)	229	231	234	22	22	23	126	127	128	21	22	21				398	402	406	2
Municipal and Industrial (M&I)	Population [thousands]	10	24	35	43	65	67	17	27	31	1	1	1				71	117	134	3
	M&I Per Capita Use (Diversion) [gpcd]	287	296	297	287	296	297	287	296	297	287	296	297				287	297	297	4
	Consumptive factor [%]	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%				50%	50%	50%	
	M&I Demand (Consumptive)	2	4	6	7	11	11	3	5	5	0.2	0.2	0.2				11	19	22	
	Self Served Industrial Demand (Consumptive)	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	5
	Demand (Consumptive)	2	4	6	7	11	11	3	5	5	0.2	0.2	0.2				11	19	22	
Energy	Demand (Consumptive)	0	0	0	30	35	36	12	11	15	0	0	0				42	46	50	6
Minerals	Demand (Consumptive)	0	0	0	20	25	33	0	0	0	0	0	0				20	25	33	7
Fish, Wildlife, and Recreation	Demand (Consumptive)	0.9	6	10	0.6	5	7	0.3	3	4	0.3	2	4				2	15	25	8
Tribal	Demand (Consumptive)	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	9
Total Hydrologic Basin Demand (Consumptive)		232	241	250	79	98	110	140	145	152	22	23	25	0	0	0	473	508	537	
Adjacent Areas																				
Agriculture	Irrigated Acreage [thousands]													612	612	612	612	612	612	10
	Per-Acre Water Delivery (Diversion) [af/ac/yr]													2.54	2.54	2.54	2.54	2.54	2.54	
	Consumptive factor [%]													43%	43%	43%	43%	43%	43%	
	Demand (Diversion)													1,553	1,553	1,553	1,553	1,553	1,553	11
	Demand (Consumptive)													663	661	661	663	661	661	
Municipal and Industrial (M&I)	Population [thousands]													244	270	301	244	270	301	12
	M&I Per Capita Use (Diversion)[gpcd]													229	229	229	229	229	229	13
	Consumptive factor [%]													50%	50%	50%	50%	50%	50%	
	M&I Demand (Diversion)													63	69	77	63	69	77	
	Self Served Industrial Demand (Diversion)													0	0	0	0	0	0	14
	Demand (Diversion)													63	69	77	63	69	77	
	Demand (Consumptive)													31	35	39	31	35	39	
Energy	Demand (Diversion)													0	0	0	0	0	0	15
Minerals	Demand (Diversion)													0	0	0	0	0	0	16
Fish, Wildlife, and Recreation	Demand (Diversion)													0	0	0	0	0	0	17
Tribal	Demand (Diversion)													0	0	0	0	0	0	18
Total Adjacent Areas Demand (Diversion)		0	0	0	0	0	0	0	0	0	0	0	0	1,616	1,622	1,630	1,616	1,622	1,630	
Total Demand in the Study Area		79	98	110	140	145	152	22	23	25	1,616	1,622	1,630	2,088	2,130	2,167	2,088	2,130	2,167	
Demand that may be met by Other Supplies		0	0	0	0	0	0	0	0	0	0	0	0	1,598	1,585	1,580	1,598	1,585	1,580	19
Potential Colorado River Demand		232	241	250	79	98	110	140	145	152	22	23	25	18	37	51	491	545	588	20
Agricultural	Colorado River Demand	229	231	234	22	22	23	126	127	128	21	22	21	0	0	0	398	402	406	21
Municipal and Industrial	Colorado River Demand	2	4	6	7	11	11	3	5	5	0.2	0.2	0.2	18	37	51	30	57	73	
Energy	Colorado River Demand	0	0	0	30	35	36	12	11	15	0	0	0	0	0	0	42	46	50	
Minerals	Colorado River Demand	0	0	0	20	25	33	0	0	0	0	0	0	0	0	0	20	25	33	
Fish, Wildlife, and Recreation	Colorado River Demand	0.9	6	10	0.6	5	7	0.3	3	4	0.3	2	4	0	0	0	2	15	25	
Tribal	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Notes

- 1) High Growth scenario from *Green River Basin Plan, 2010*.
- 2) Moderate Growth scenario from *Green River Basin Plan, 2010*.
- 3) Population estimates from High Growth scenario of the *Green River Basin Plan, 2010*.
- 4) High Growth scenario from *Green River Basin Plan, 2010*; gpcd computed with High Growth population and M&I demand.
- 5) No changes from Current Projected.
- 6) Low Growth scenario from *Green River Basin Plan, 2010*.
- 7) Low Growth scenario from *Green River Basin Plan, 2010*.
- 8) High Growth scenario from *Green River Basin Plan, 2010*.
- 9) No changes from Current Projected.
- 10) No changes from Current Projected.
- 11) No changes from Current Projected.
- 12) Population estimates from High Growth scenario of the *Green River Basin Plan, 2010*.
- 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) No changes from Current Projected.
- 19) High Growth scenario from *Green River Basin Plan, 2010*.
- 20) High Growth scenario exports to North Platte from *Green River Basin Plan, 2010*.
- 21) For North Platte, all potential Colorado River demand is M&I.

TABLE C5-6
Total Demand within Study Area under Enhanced Environment (D1) Scenario

WYOMING		LEGEND: 999 From Current Projected Data Sheet 999 Computed 999 Input Parameter												STATE TOTAL			Notes			
Hydrologic Basin	Planning Area Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060				
Agriculture	Irrigated Acreage [thousands]	193	195	191	19	19	18	106	107	105	18	18	17				336	339	332	1
	Per-Acre Water Delivery (Diversion) [af/ac/yr]	4.22	4.22	4.36	4.22	4.22	4.36	4.22	4.22	4.36	4.22	4.22	4.36				4.22	4.22	4.36	
	Consumptive Factor [%]	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%				28%	28%	28%	
	Demand (Consumptive)	229	231	234	22	22	23	126	127	128	21	22	21				398	402	406	2
Municipal and Industrial (M&I)	Population [thousands]	10	18	28	43	48	52	17	20	24	1	1	0.8				71	87	105	3
	M&I Per Capita Use (Diversion) [gpcd]	287	258	222	287	258	222	287	258	222	287	258	222				287	258	222	4
	Consumptive factor [%]	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%				50%	50%	50%	
	M&I Demand (Consumptive)	2	3	3	7	7	6	3	3	3	0.2	0.2	0.1				11	13	13	
Self Served Industrial Demand (Consumptive)		0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	5
	Demand (Consumptive)	2	3	3	7	7	6	3	3	3	0.2	0.2	0.1				11	13	13	
Energy	Demand (Consumptive)	0	0	0	30	35	36	12	11	15	0	0	0				42	46	50	6
Minerals	Demand (Consumptive)	0	0	0	20	25	33	0	0	0	0	0	0				20	25	33	7
Fish, Wildlife, and Recreation	Demand (Consumptive)	0.9	6	10	0.6	5	7	0.3	3	4	0.3	2	4				2	15	25	8
Tribal	Demand (Consumptive)	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	9
Total Hydrologic Basin	Demand (Consumptive)	232	240	247	79	95	105	140	143	150	22	23	25	0	0	0	473	501	528	
Adjacent Areas																				
Agriculture	Irrigated Acreage [thousands]										612	612	612	612	612	612	612	612	612	10
	Per-Acre Water Delivery (Diversion) [af/ac/yr]										2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	
	Consumptive factor [%]										43%	43%	43%	43%	43%	43%	43%	43%	43%	
	Demand (Diversion)										1,553	1,553	1,553	1,553	1,553	1,553	1,553	1,553	1,553	11
Demand (Consumptive)											663	661	661				663	661	661	
Municipal and Industrial (M&I)	Population [thousands]										244	270	301	244	270	301	244	270	301	12
	M&I Per Capita Use (Diversion)[gpcd]										229	206	178	229	206	178	229	206	178	13
	Consumptive factor [%]										50%	50%	50%	50%	50%	50%	50%	50%	50%	
	M&I Demand (Diversion)										63	62	60	63	62	60	63	62	60	14
Self Served Industrial Demand (Diversion)											0	0	0	0	0	0	0	0	0	
	Demand (Diversion)										63	62	60	63	62	60	63	62	60	
Demand (Consumptive)											31	31	30	31	31	30	31	31	30	
Energy	Demand (Diversion)										0	15								
Minerals	Demand (Diversion)										0	16								
Fish, Wildlife, and Recreation	Demand (Diversion)										0	17								
Tribal	Demand (Diversion)										0	18								
Total Adjacent Areas	Demand (Diversion)	0	0	0	0	0	0	0	0	0	1,616	1,615	1,613	1,616	1,615	1,613	1,616	1,615	1,613	
Total Demand in the Study Area		232	240	247	79	95	105	140	143	150	22	23	25	1,616	1,615	1,613	2,088	2,116	2,141	
Demand that may be met by Other Supplies		0	0	0	0	0	0	0	0	0	1,598	1,583	1,565	1,598	1,583	1,565	1,598	1,583	1,565	19
Potential Colorado River Demand		232	240	247	79	95	105	140	143	150	22	23	25	18	32	48	491	533	576	20
Agricultural	Colorado River Demand	229	231	234	22	22	23	126	127	128	21	22	21	0	0	0	398	402	406	21
Municipal and Industrial	Colorado River Demand	2	3	3	7	7	6	3	3	3	0.2	0.2	0.1	18	32	48	30	45	61	
Energy	Colorado River Demand	0	0	0	30	35	36	12	11	15	0	0	0	0	0	0	42	46	50	
Minerals	Colorado River Demand	0	0	0	20	25	33	0	0	0	0	0	0	0	0	0	20	25	33	
Fish, Wildlife, and Recreation	Colorado River Demand	0.9	6	10	0.6	5	7	0.3	3	4	0.3	2	4	0	0	0	2	15	25	
Tribal	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Notes

- 1) No changes from Current Projected.
- 2) Moderate Growth scenario from *Green River Basin Plan, 2010*.
- 3) Population estimates from Moderate Growth scenario of the *Green River Basin Plan, 2010*.
- 4) High Growth scenario from *Green River Basin Plan, 2010*; gpcd computed with High Growth population and M&I demand.
- 5) No changes from Current Projected.
- 6) Low Growth scenario from *Green River Basin Plan, 2010*.
- 7) Low Growth scenario from *Green River Basin Plan, 2010*.
- 8) High Growth scenario from *Green River Basin Plan, 2010*.
- 9) No changes from Current Projected.
- 10) No changes from Current Projected.
- 11) No changes from Current Projected.
- 12) Population estimates from Moderate Growth scenario of the *Green River Basin Plan, 2010*.
- 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) No changes from Current Projected.
- 19) Moderate Growth scenario from *Green River Basin Plan, 2010*.
- 20) Moderate Growth scenario exports to North Platte from *Green River Basin Plan, 2010*.
- 21) For North Platte, all potential Colorado River Demand is M&I.

TABLE C5-7
Total Demand within Study Area under Enhanced Environment (D2) Scenario

WYOMING		LEGEND:																		
<i>Units are thousand acre-feet per year, unless otherwise noted</i>		999 From Current Projected Data Sheet						999 Computed						999 Input Parameter						
Hydrologic Basin	Planning Area Year	Green River above Fontenelle			Fontenelle to Green River			Green River to Greendale			Little Snake River			North Platte			STATE TOTAL			Notes
		2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	
Agriculture	Irrigated Acreage [thousands]	193	195	191	19	19	18	106	107	105	18	18	17				336	339	332	1
	Per-Acre Water Delivery (Diversion) [af/ac/yr]	4.22	4.22	4.36	4.22	4.22	4.36	4.22	4.22	4.36	4.22	4.22	4.36				4.22	4.22	4.36	
	Consumptive Factor [%]	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%				28%	28%	28%	
	Demand (Consumptive)	229	231	234	22	22	23	126	127	128	21	22	21				398	402	406	2
Municipal and Industrial (M&I)	Population [thousands]	10	24	35	43	65	67	17	27	31	1	1	1				71	117	134	3
	M&I Per Capita Use (Diversion) [gpcd]	287	296	297	287	296	297	287	296	297	287	296	297				287	297	297	4
	Consumptive factor [%]	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%				50%	50%	50%	
	M&I Demand (Consumptive)	2	4	6	7	11	11	3	5	5	0.2	0.2	0.2				11	19	22	
	Self Served Industrial Demand (Consumptive)	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	5
	Demand (Consumptive)	2	4	6	7	11	11	3	5	5	0.2	0.2	0.2				11	19	22	
Energy	Demand (Consumptive)	0	0	0	30	35	36	12	11	15	0	0	0				42	46	50	6
Minerals	Demand (Consumptive)	0	0	0	20	25	33	0	0	0	0	0	0				20	25	33	7
Fish, Wildlife, and Recreation	Demand (Consumptive)	0.9	6	10	0.6	5	7	0.3	3	4	0.3	2	4				2	15	25	8
Tribal	Demand (Consumptive)	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	9
Total Hydrologic Basin	Demand (Consumptive)	232	241	250	79	98	110	140	145	152	22	23	25	0	0	0	473	508	537	
Adjacent Areas																				
Agriculture	Irrigated Acreage [thousands]													612	612	612	612	612	612	10
	Per-Acre Water Delivery (Diversion) [af/ac/yr]													2.54	2.54	2.54	2.54	2.54	2.54	
	Consumptive factor [%]													43%	43%	43%	43%	43%	43%	
	Demand (Diversion)													1,553	1,553	1,553	1,553	1,553	1,553	11
	Demand (Consumptive)													663	661	661	663	661	661	
Municipal and Industrial (M&I)	Population [thousands]													244	270	301	244	270	301	12
	M&I Per Capita Use (Diversion)[gpcd]													229	229	229	229	229	229	13
	Consumptive factor [%]													50%	50%	50%	50%	50%	50%	
	M&I Demand (Diversion)													63	69	77	63	69	77	14
	Self Served Industrial Demand (Diversion)													0	0	0	0	0	0	
	Demand (Diversion)													63	69	77	63	69	77	
	Demand (Consumptive)													31	35	39	31	35	39	
Energy	Demand (Diversion)													0	0	0	0	0	0	15
Minerals	Demand (Diversion)													0	0	0	0	0	0	16
Fish, Wildlife, and Recreation	Demand (Diversion)													0	0	0	0	0	0	17
Tribal	Demand (Diversion)													0	0	0	0	0	0	18
Total Adjacent Areas	Demand (Diversion)	0	0	0	0	0	0	0	0	0	0	0	0	1,616	1,622	1,630	1,616	1,622	1,630	
Total Demand in the Study Area		232	241	250	79	98	110	140	145	152	22	23	25	1,616	1,622	1,630	2,088	2,130	2,167	
Demand that may be met by Other Supplies		0	0	0	0	0	0	0	0	0	0	0	0	1,598	1,585	1,580	1,598	1,585	1,580	19
Potential Colorado River Demand		232	241	250	79	98	110	140	145	152	22	23	25	18	37	51	491	545	588	20
Agricultural	Colorado River Demand	229	231	234	22	22	23	126	127	128	21	22	21	0	0	0	398	402	406	21
Municipal and Industrial	Colorado River Demand	2	4	6	7	11	11	3	5	5	0.2	0.2	0.2	18	37	51	30	57	73	
Energy	Colorado River Demand	0	0	0	30	35	36	12	11	15	0	0	0	0	0	0	42	46	50	
Minerals	Colorado River Demand	0	0	0	20	25	33	0	0	0	0	0	0	0	0	0	20	25	33	
Fish, Wildlife, and Recreation	Colorado River Demand	0.9	6	10	0.6	5	7	0.3	3	4	0.3	2	4	0	0	0	2	15	25	
Tribal	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Notes

- 1) No changes from Current Projected.
- 2) Moderate Growth scenario from *Green River Basin Plan, 2010*.
- 3) Population estimates from High Growth scenario of the *Green River Basin Plan, 2010*.
- 4) High Growth scenario from *Green River Basin Plan, 2010*; gpcd computed with High Growth population and M&I demand.
- 5) No changes from Current Projected.
- 6) Low Growth scenario from *Green River Basin Plan, 2010*.
- 7) Low Growth scenario from *Green River Basin Plan, 2010*.
- 8) High Growth scenario from *Green River Basin Plan, 2010*.
- 9) No changes from Current Projected.
- 10) No changes from Current Projected.
- 11) No changes from Current Projected.
- 12) Population estimates from High Growth scenario of the *Green River Basin Plan, 2010*.
- 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) No changes from Current Projected.
- 19) High Growth scenario from *Green River Basin Plan, 2010*.
- 20) High Growth scenario exports to North Platte from *Green River Basin Plan, 2010*.
- 21) For North Platte, all potential Colorado River Demand is M&I.

4.0 References

States West Water Resources Corporation. 2001. *Green River Basin Water Planning Process*.

WWC Engineering. 2007. *Wyoming Framework Plan*.

WWC Engineering. 2010. *Green River Basin Plan*.

Wyoming State Engineer's Office. 2011. Personal communication with Reclamation.