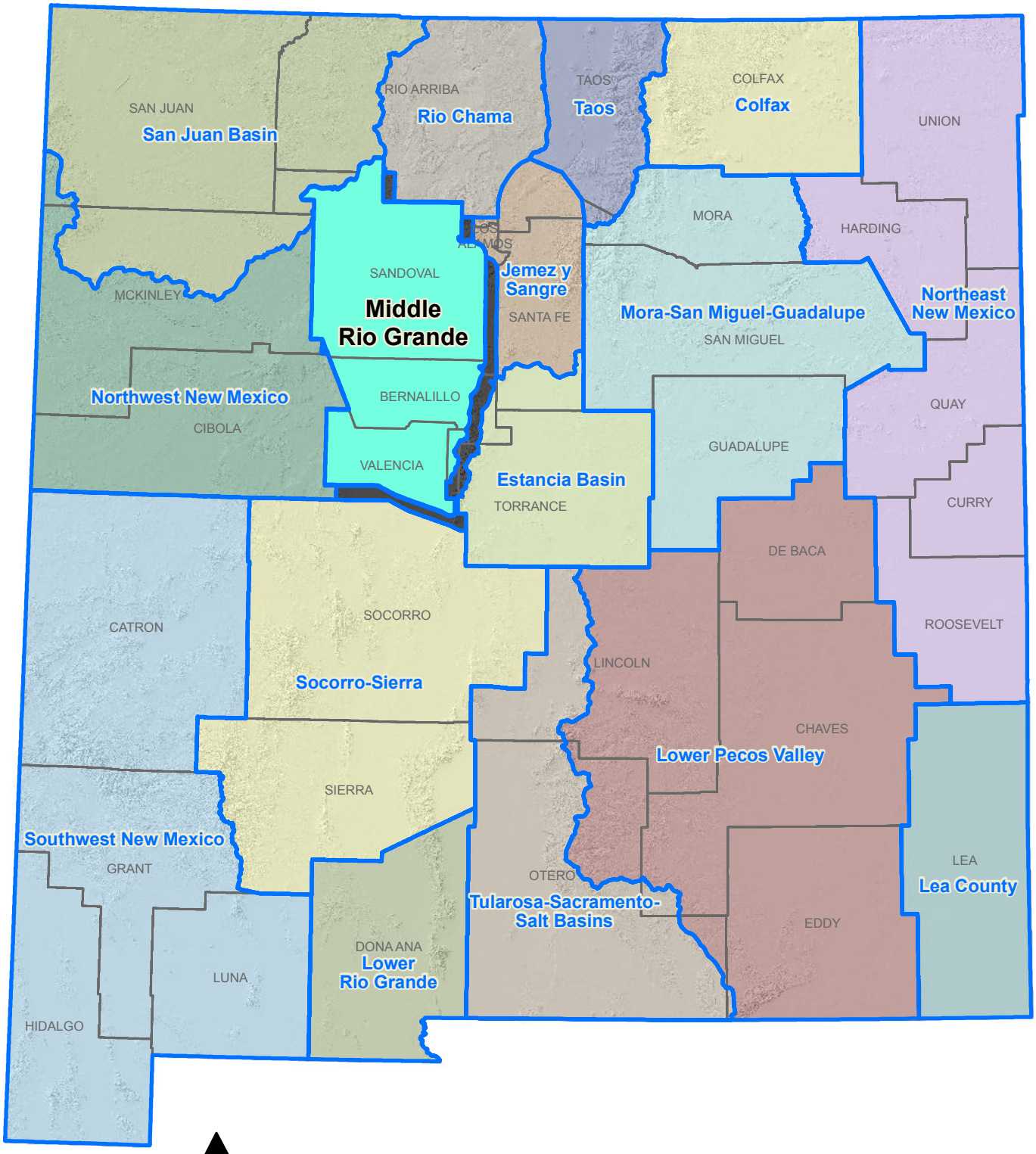
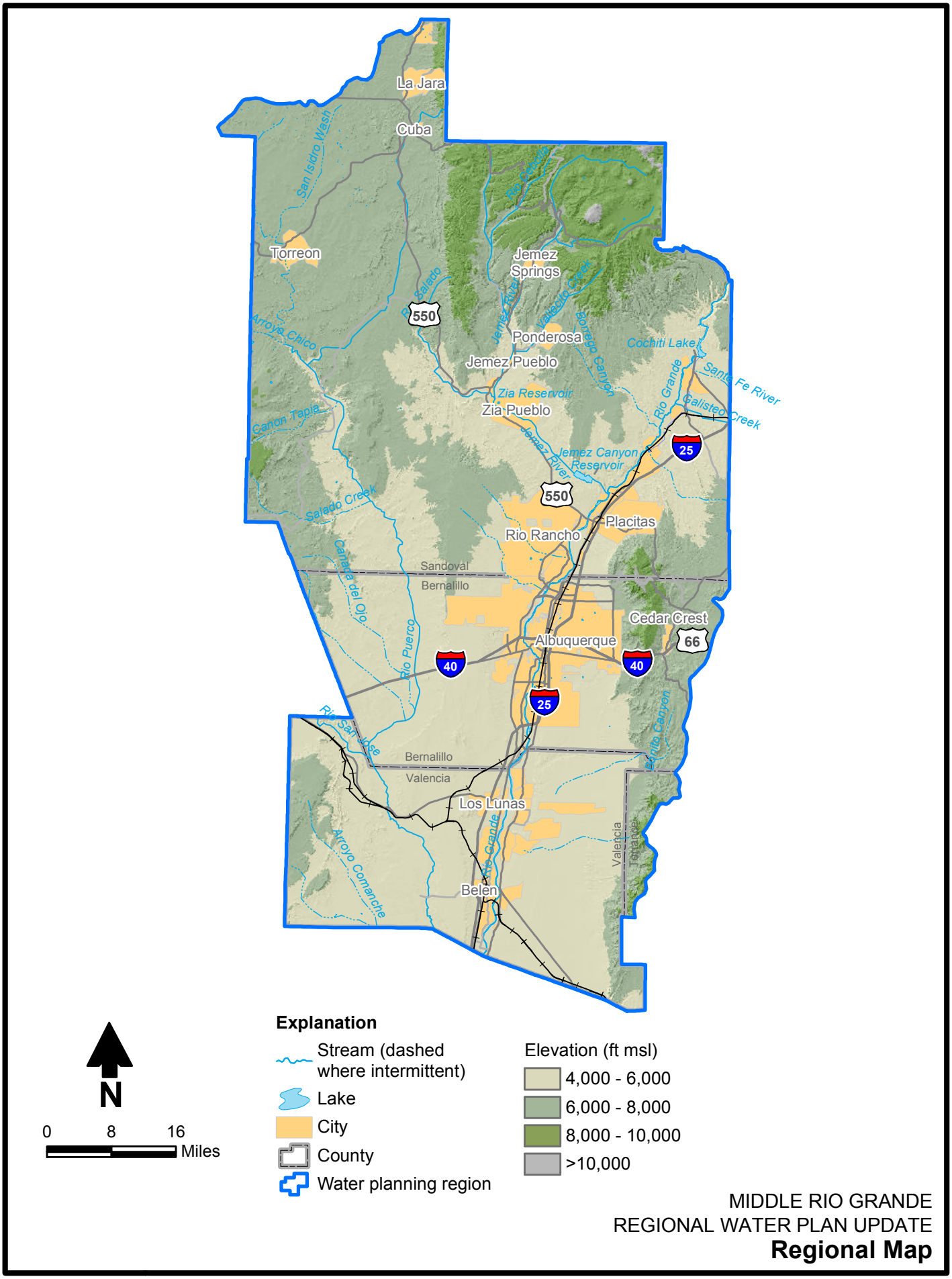


MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

Location of Middle Rio Grande Water Planning Region

Figure 1-1

S:\PROJECTS\WR12.0165_STATE_WATER_PLAN_2012\GIS\MXDS\FIGURES_NO_LOGO\MIDDLE_RIO_GRANDE\FIG1-1_LOCATION.MXD 12/1/2015

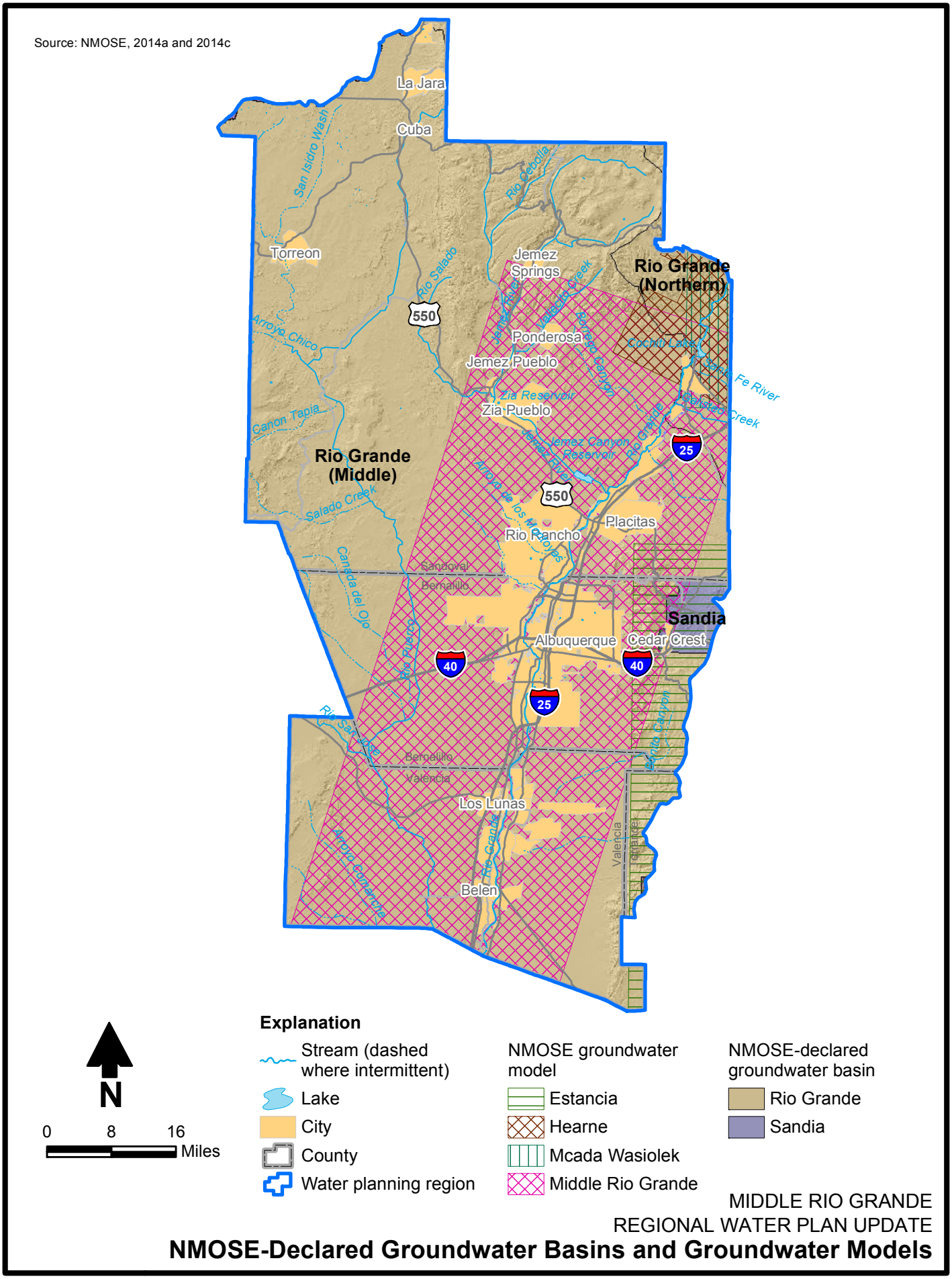


S:\PROJECTS\WR12.0165_STATE_WATER_PLAN_2012\GIS\MXDS\FIGURES_NO_LOGO\MIDDLE_RIO_GRANDE\FIG3-1_REGIONAL_MAP.MXD 12/1/2015

MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

Regional Map

Figure 3-1



S:\PROJECTS\WR12.0165_STATE_WATER_PLAN_2012\GIS\MXDS\FIGURES_NO_LOGO\MIDDLE_RIO_GRANDE\FIG4-1_GW_BASINS_MODELS.MXD 12/1/2015

MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

NMOSE-Declared Groundwater Basins and Groundwater Models

Figure 4-1

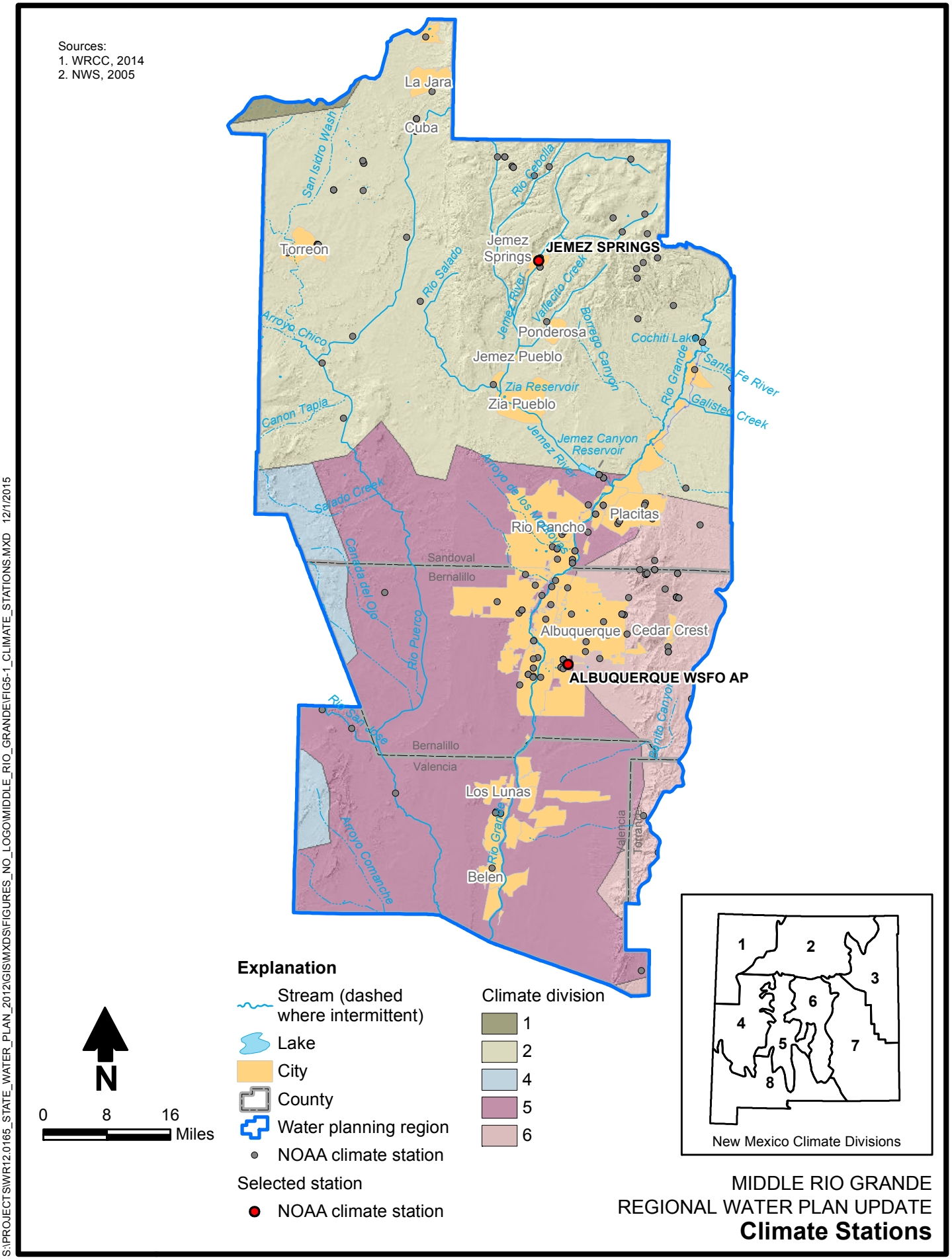
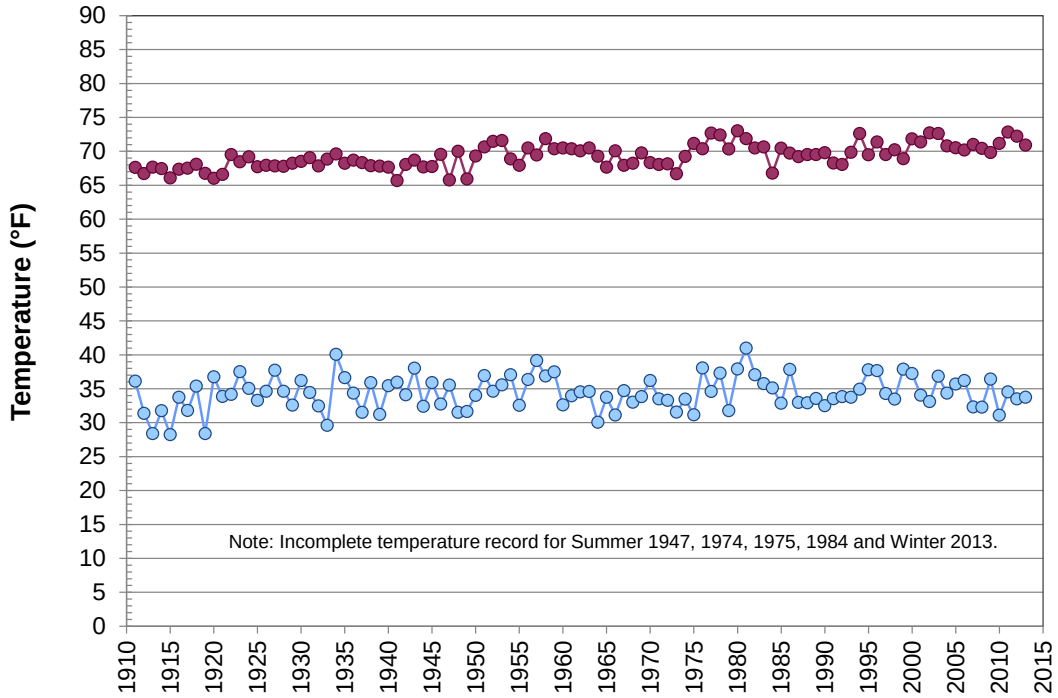
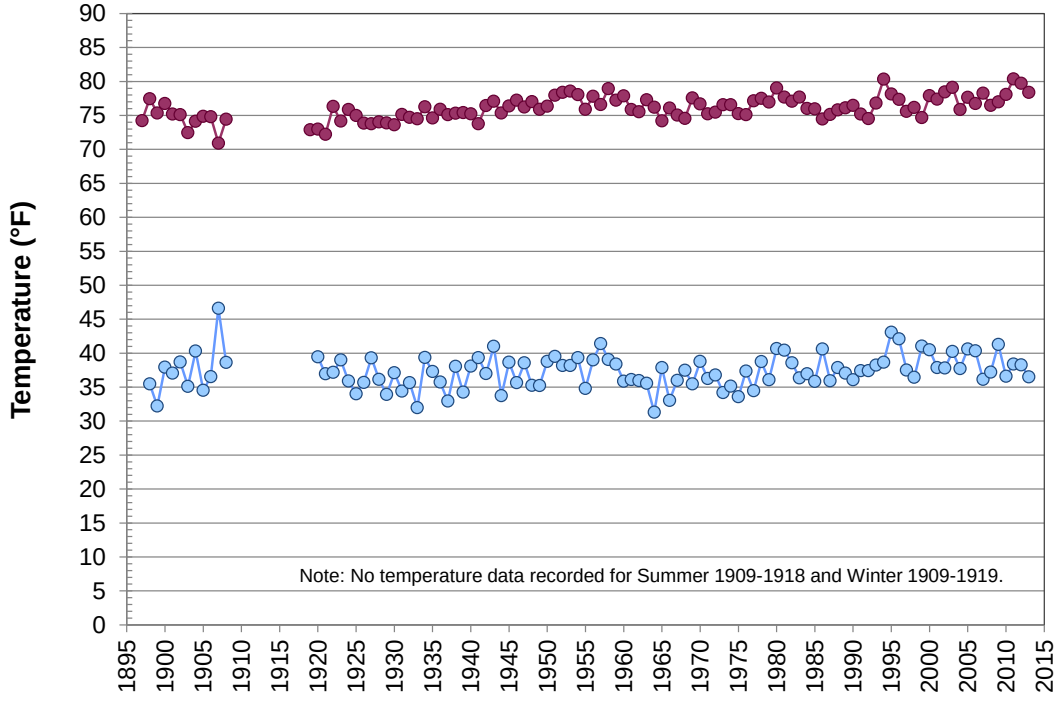

Sources:
1. WRCC, 2014
2. NWS, 2005
La Jara
Cuba
San Isidro Wash
Rio Cebolla
Torreon
Jemez Springs
JEMEZ SPRINGS
Rio Salado
Jemez River
Vallecito Creek
Arroyo Chico
Ponderosa
Borrego Canyon
Cochiti Lake
Jemez Pueblo
Rio Grande
Santa Fe River
Zia Reservoir
Zia Pueblo
Canon Tapia
Galisteo Creek
Jemez Canyon Reservoir
Jemez River
Arroyo de los Montoyas
Placitas
Salado Creek
Rio Rancho
Sandoval
Bernalillo
Canada del Ojo
Rio Puerco
Albuquerque
Cedar Crest
ALBUQUERQUE WSFO AP
Rio San Jose
Tijeras Canyon
Bernalillo
Valencia
Los Lunas
Valencia
Torrance
Rio Grande
Arroyo Comanche
Belen
N
0
8
16
Miles
Explanation
Stream (dashed where intermittent)
Lake
City
County
Water planning region
NOAA climate station
Selected station
NOAA climate station
Climate division
1
2
4
5
6
1
2
3
4
5
6
7
8
New Mexico Climate Divisions
MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE
Climate Stations
S:\PROJECTS\WR12.0165_STATE_WATER_PLAN_2012\GIS\MXDS\FIGURES_NO_LOGO\MIDDLE_RIO_GRANDE\FIG5-1_CLIMATE_STATIONS.MXD 12/1/2015

Figure 5-1

Jemez Springs



Albuquerque WSFO Airport

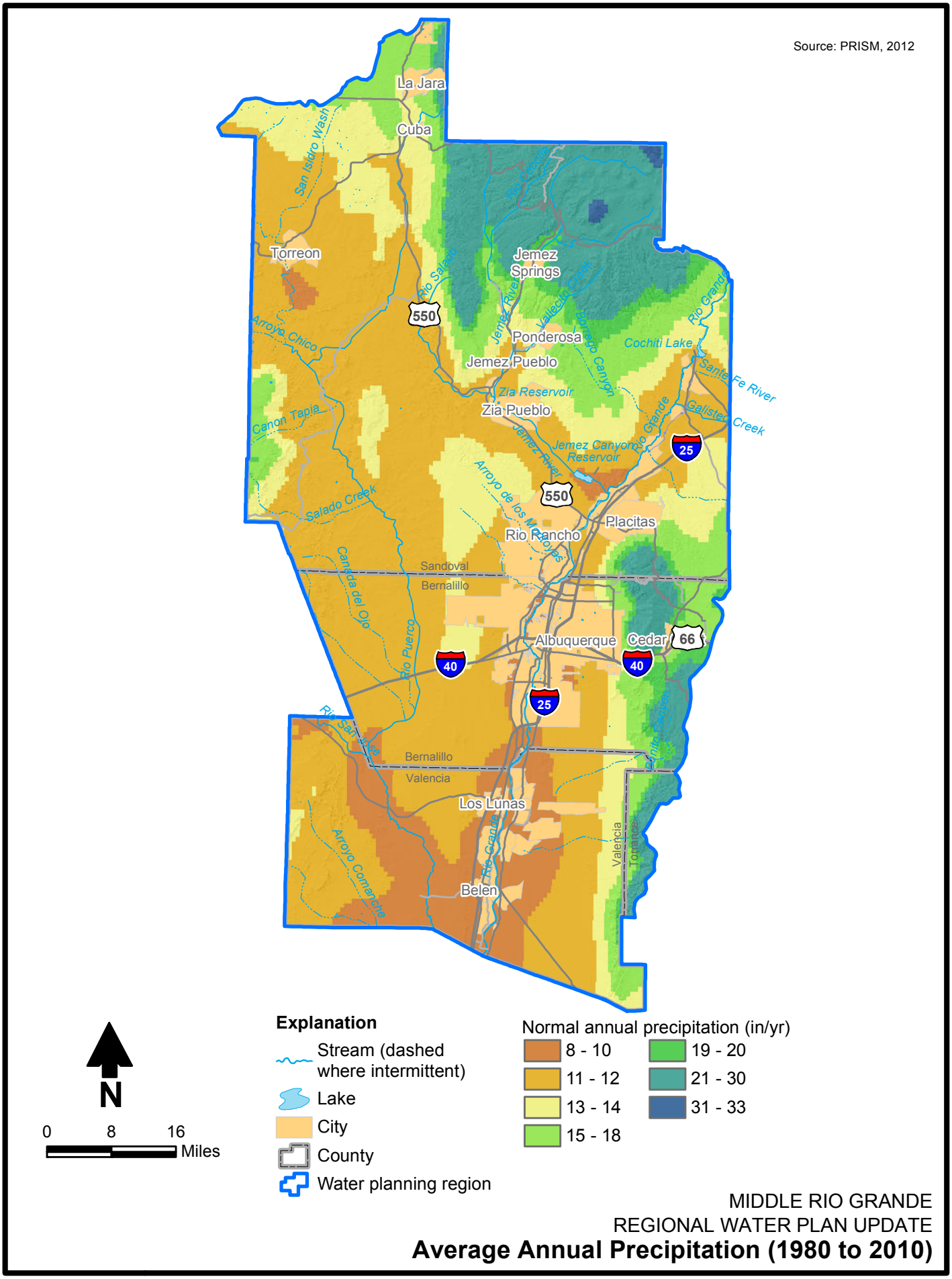


MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

Average Temperature, Jemez Springs and Albuquerque WSFO Airport Climate Stations

Figure 5-2

P:_WR12-165\RWPs_2015-2016\12_MRG\Figures\Fig5-02_Reg 12_Temp.docx 12/1/15



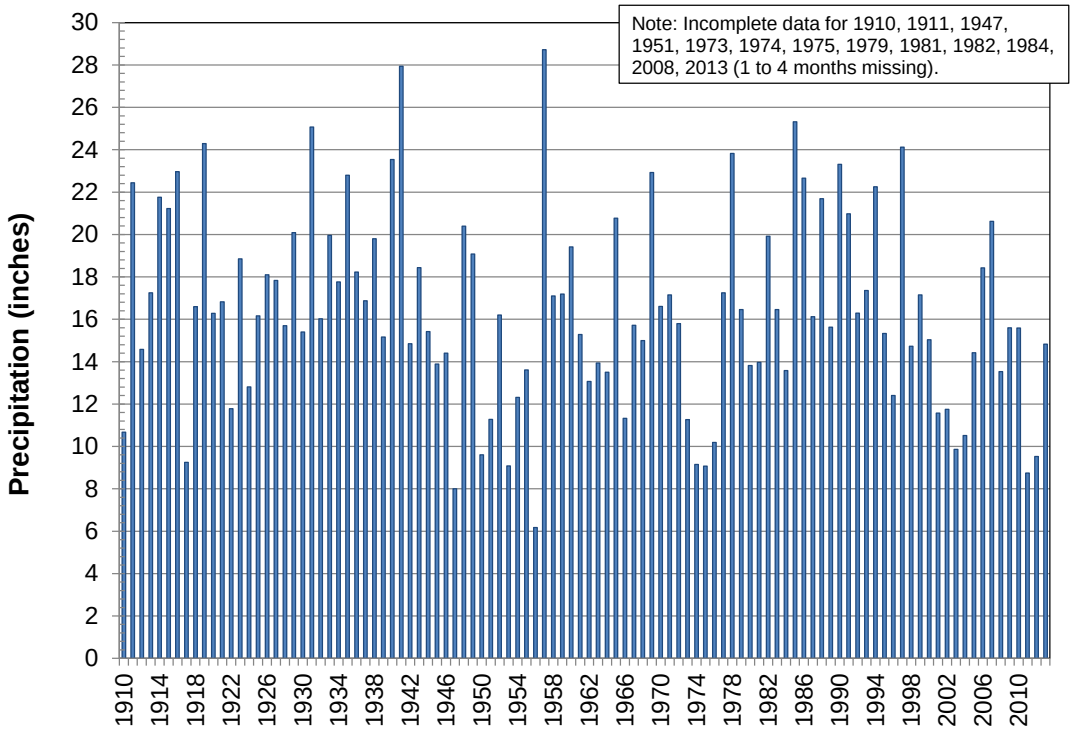
S:\PROJECTS\WR12.0165_STATE_WATER_PLAN_2012\GIS\MXDS\FIGURES_NO_LOGO\MIDDLE_RIO_GRANDE\FIG5-3_PRECIP.MXD 12/1/2015

MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

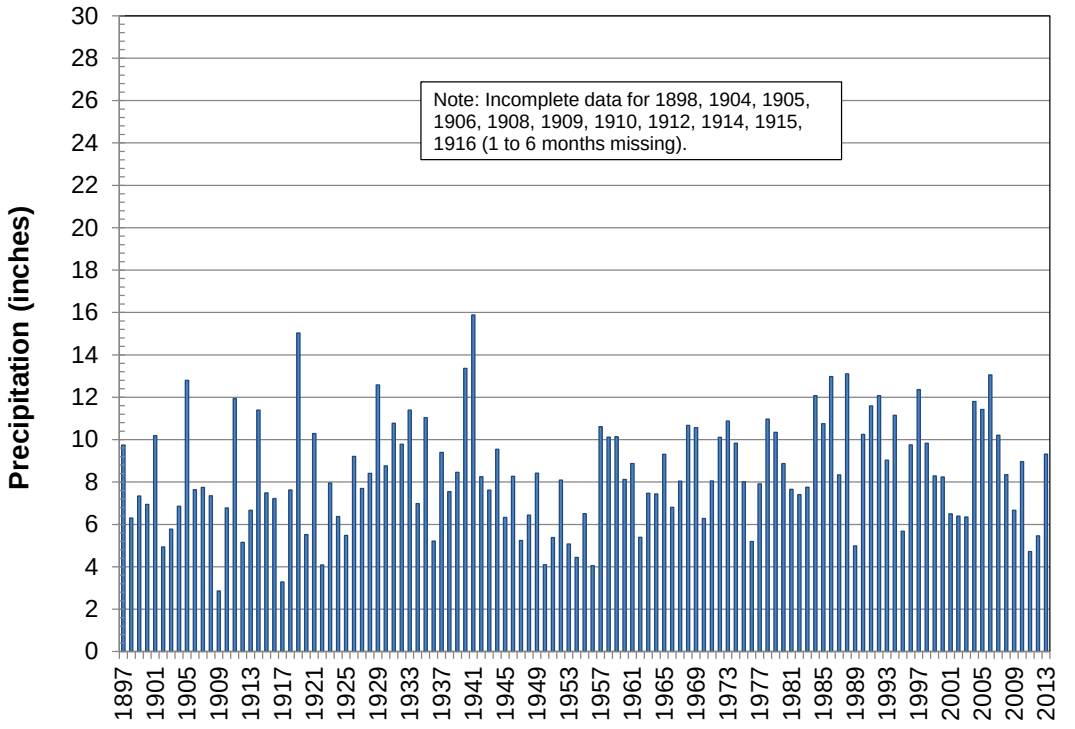
Average Annual Precipitation (1980 to 2010)

Figure 5-3

Jemez Springs



Albuquerque WSFO Airport



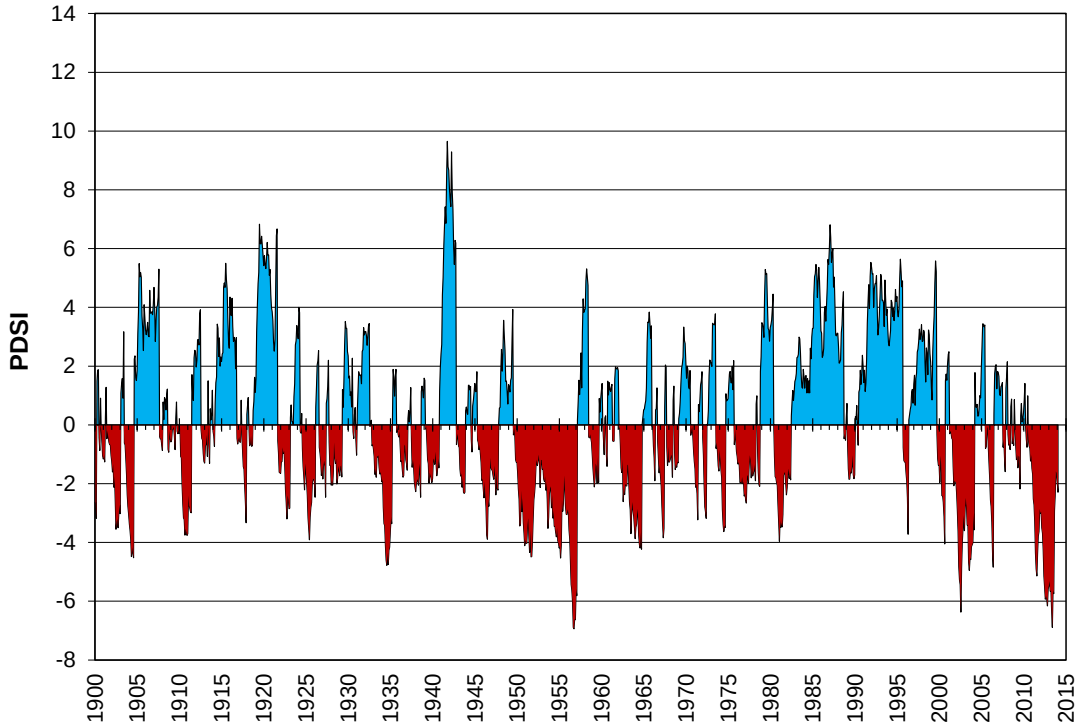
MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

Annual Precipitation, Jemez Springs and Albuquerque WSFO Airport Climate Stations

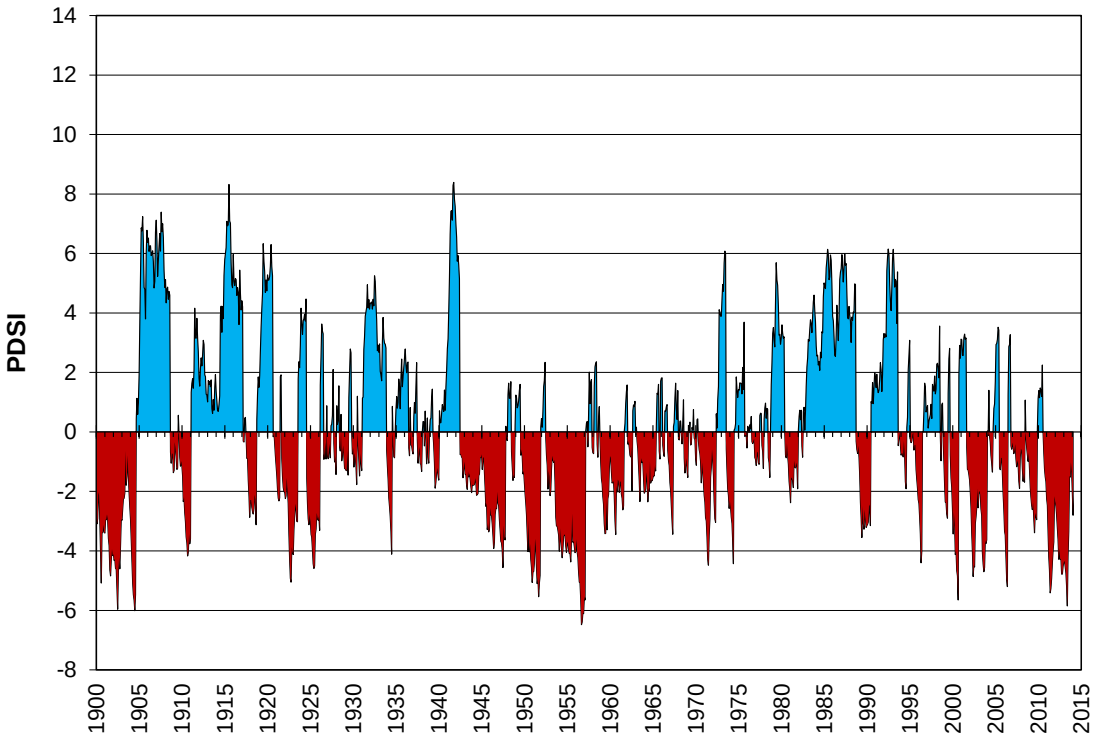
Figure 5-4

P:_WR12-165\RWPs_2015-2016\12_Middle Rio Grande\Figures\Fig5-04_Reg 12_Precip.docx 12/1/15

Climate Division 2



Climate Division 4



Note: Blue indicates wetter than average conditions and red indicates drier than average conditions, as described on Table 5-3.

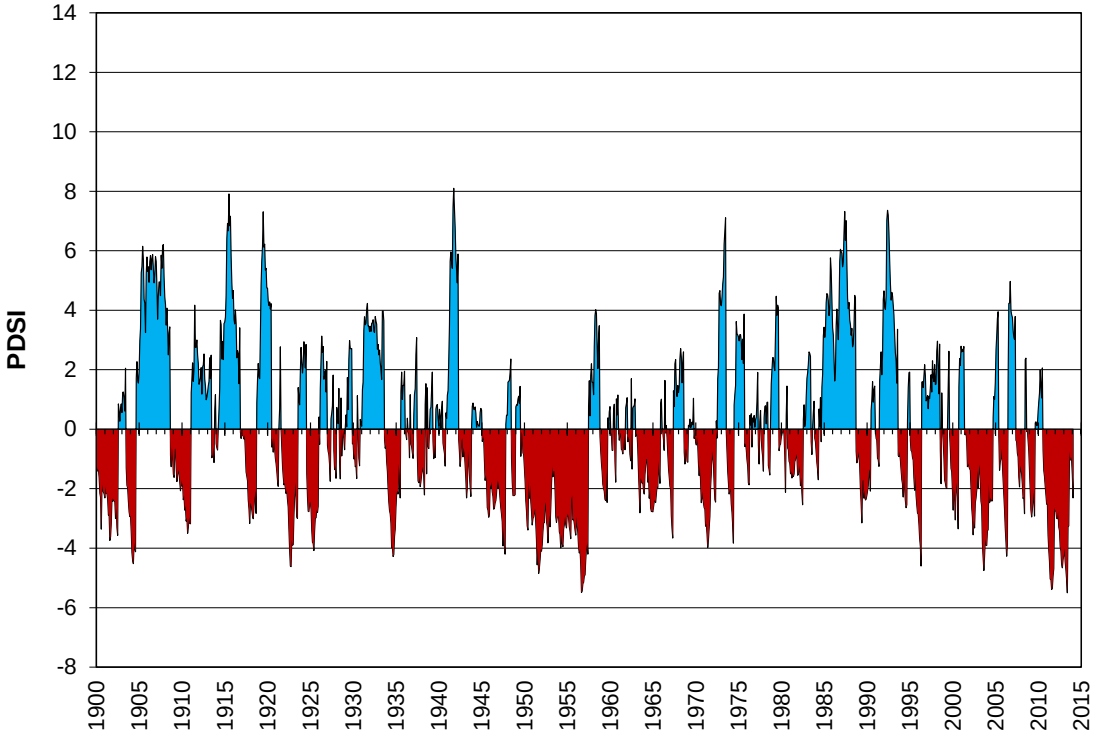
MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

Palmer Drought Severity Index
New Mexico Climate Divisions 2 and 4

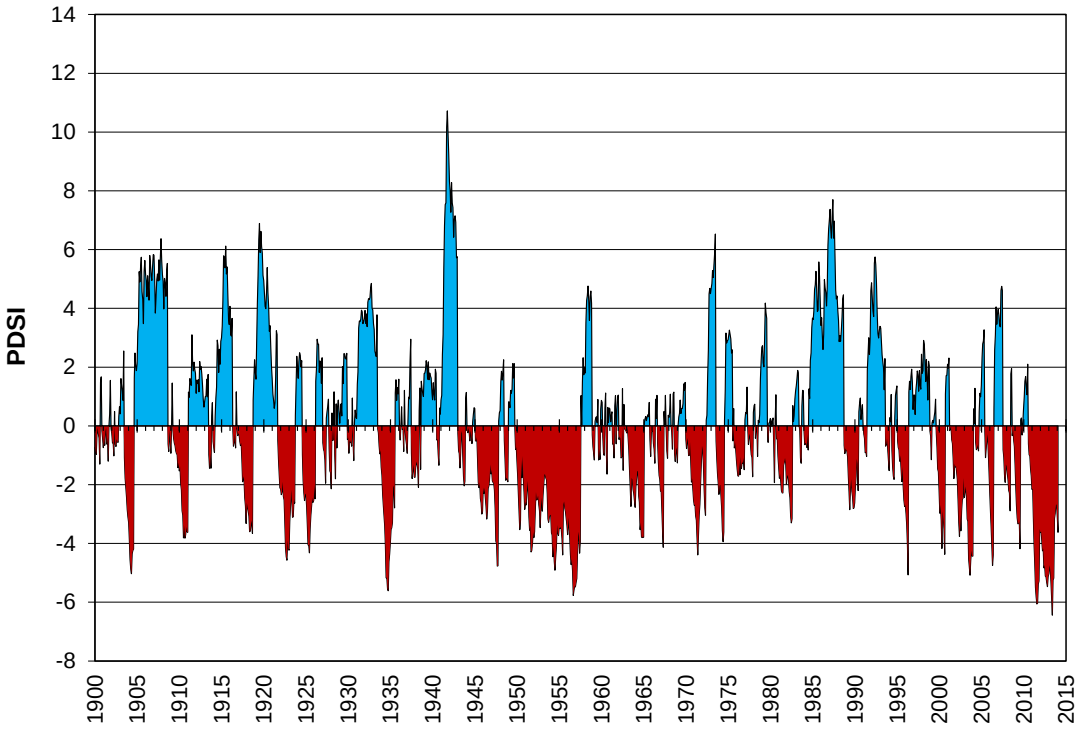
Figure 5-6a

P:_WR12-165\RWPs_2015-2016\12_MRG\Fig5-06a_Reg 12_PDSI Div 2&4.docx 12/1/15

Climate Division 5



Climate Division 6



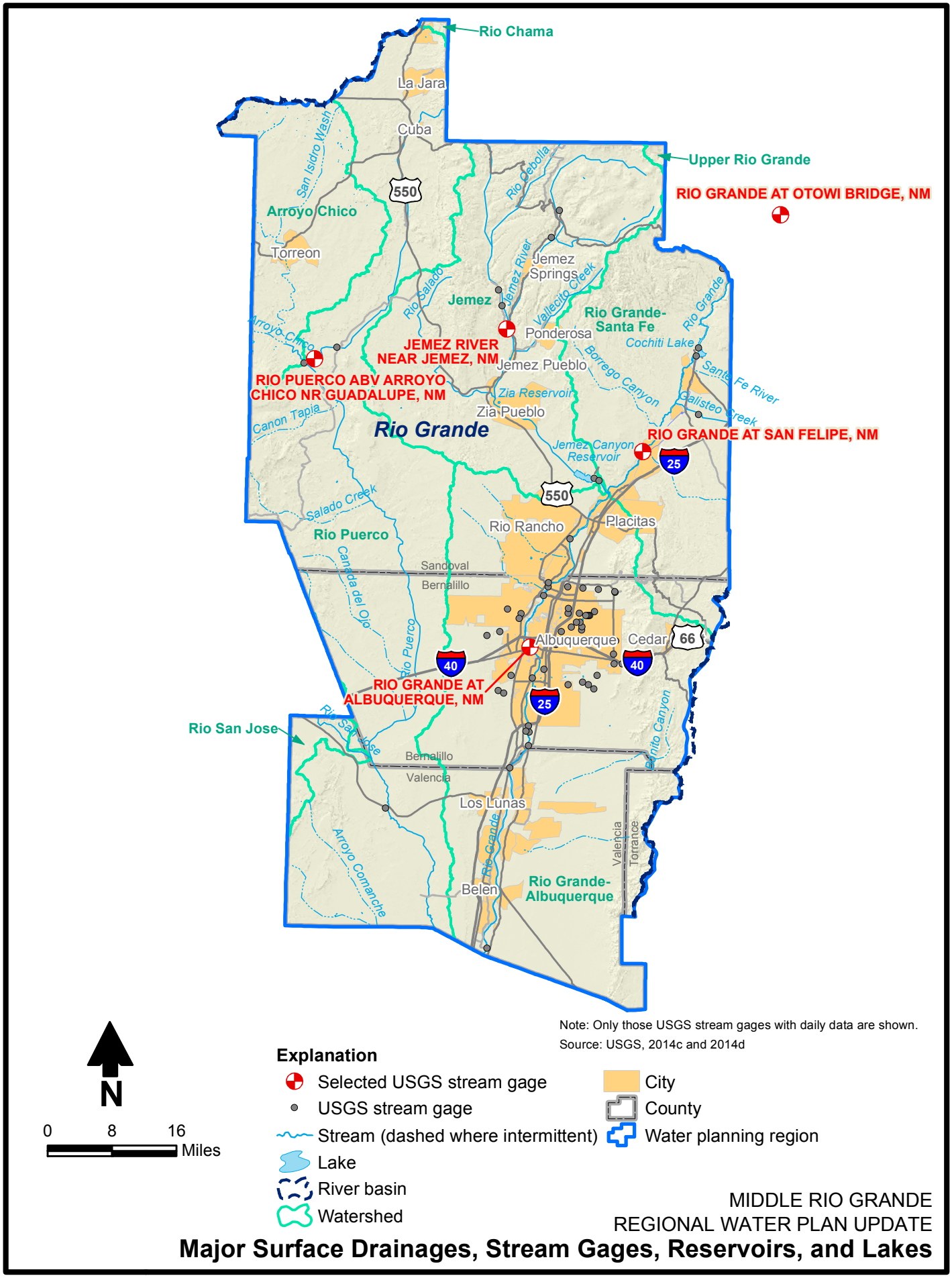
Note: Blue indicates wetter than average conditions and red indicates drier than average conditions, as described on Table 5-3.

MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

Palmer Drought Severity Index
New Mexico Climate Divisions 5 and 6

Figure 5-6b

P:_WR12-165\RWPs_2015-2016\12_MRG\Fig5-06b_Reg 12_PDSI Div 5&6.docx 12/1/15

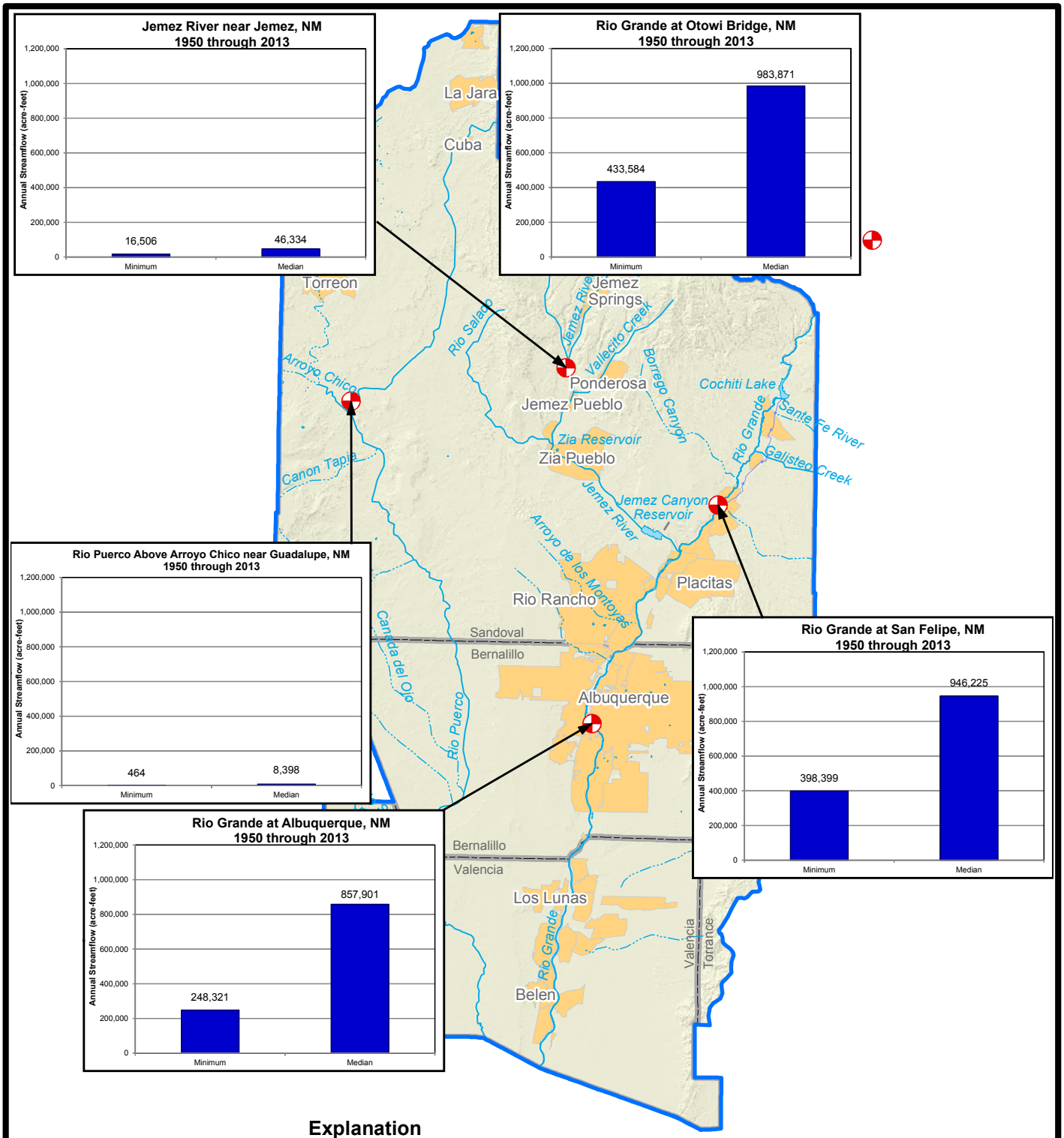


MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

Major Surface Drainages, Stream Gages, Reservoirs, and Lakes

Figure 5-7

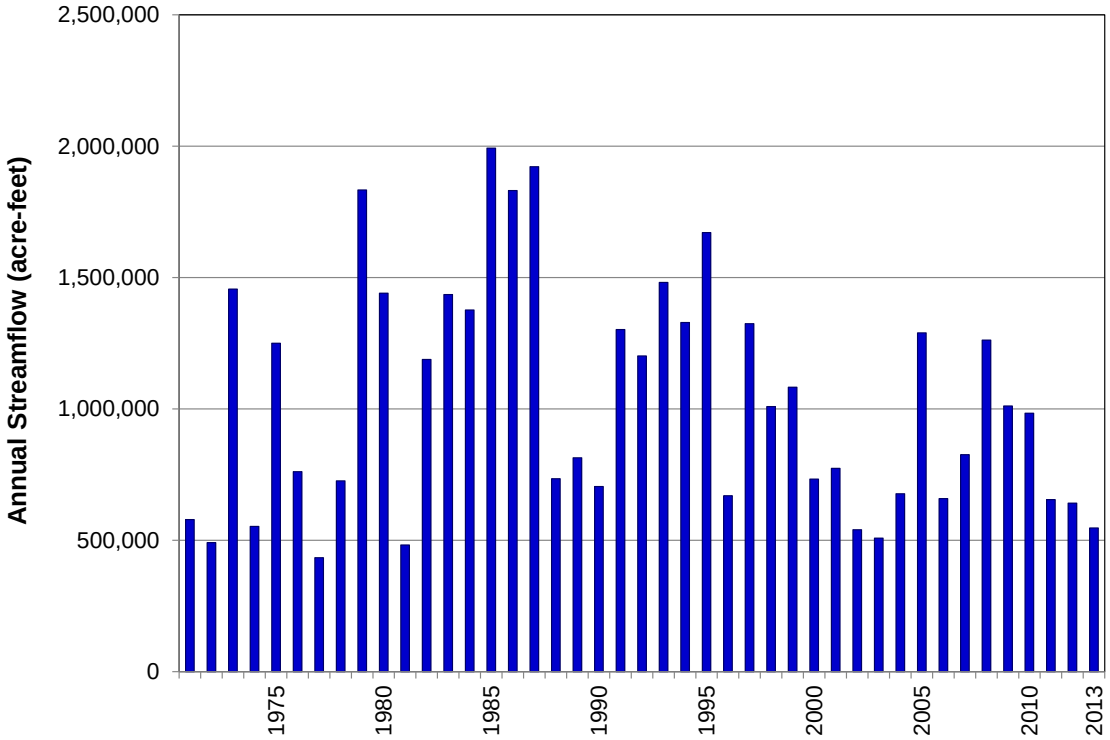
S:\PROJECTS\WR12.0165_STATE_WATER_PLAN_2012\GIS\MXDS\FIGURES_NO_LOGO\MIDDLE_RIO_GRANDE\FIG5-7_SURFACE_WATER.MXD 12/1/2015



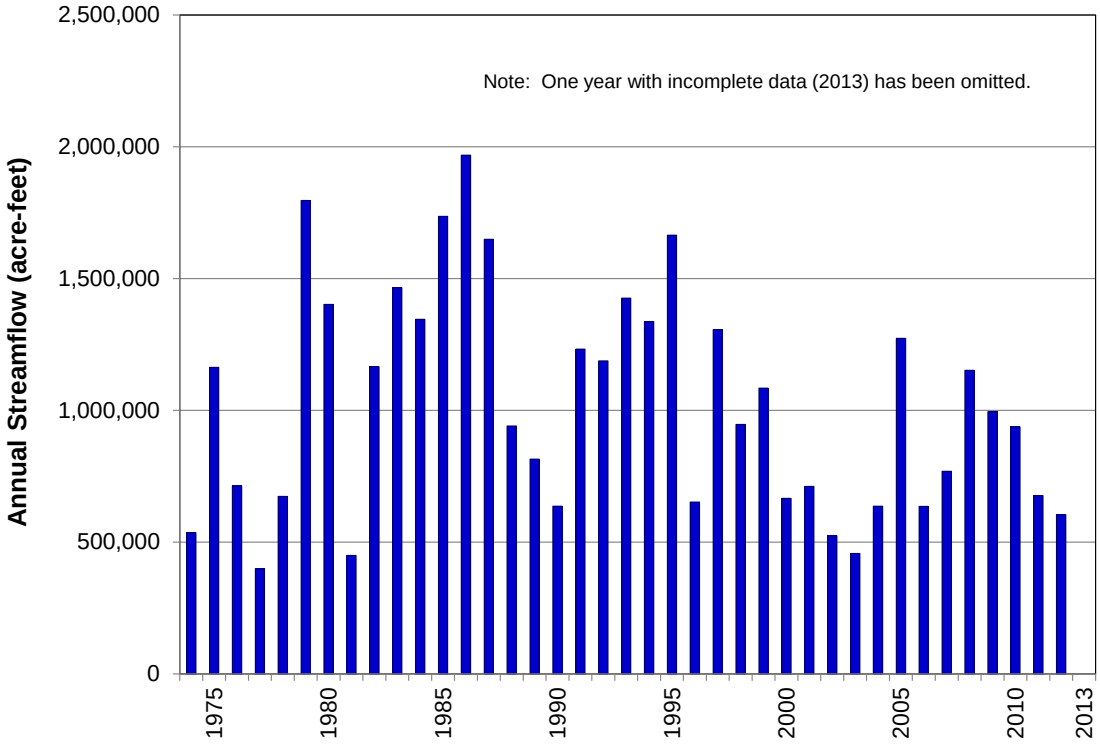
S:\PROJECTS\WR12.0165_STATE_WATER_PLAN_2012\GIS\MXDS\FIGURES_NO_LOGO\MIDDLE_RIO_GRANDE\FIG5-8_STREAMFLOW.MXD 12/1/2015

Figure 5-8

Rio Grande at Otowi Bridge, NM



Rio Grande at San Felipe, NM



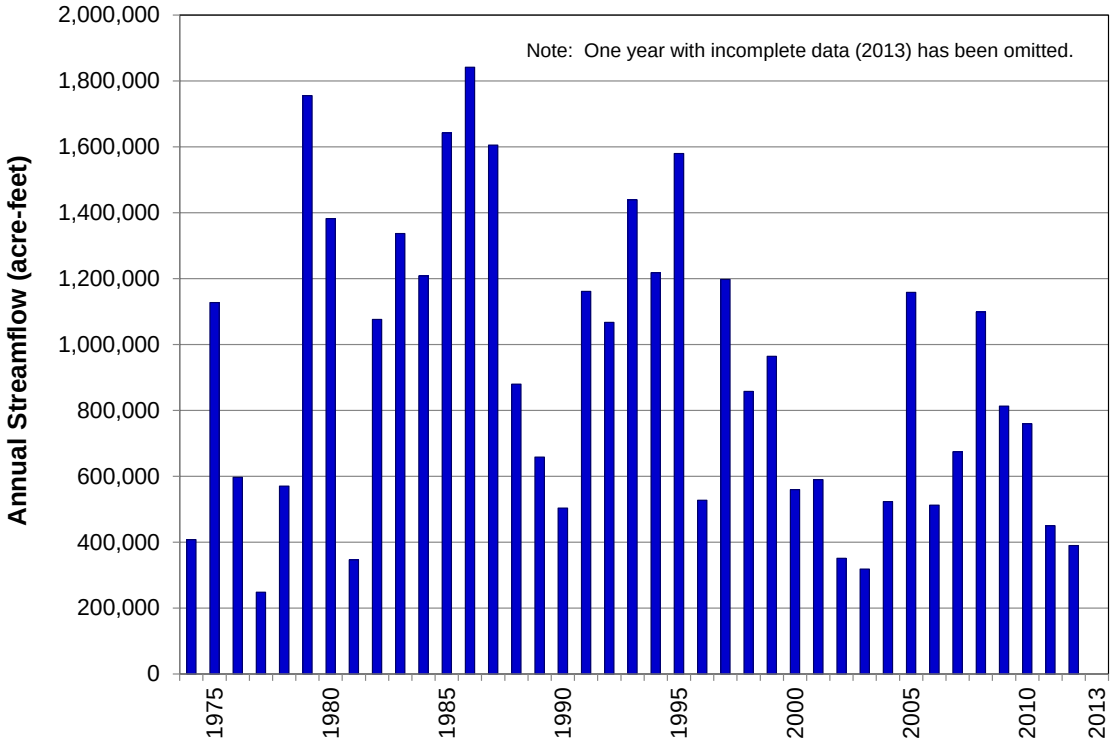
MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

Annual Streamflow for Selected Gaging Stations on the Rio Grande

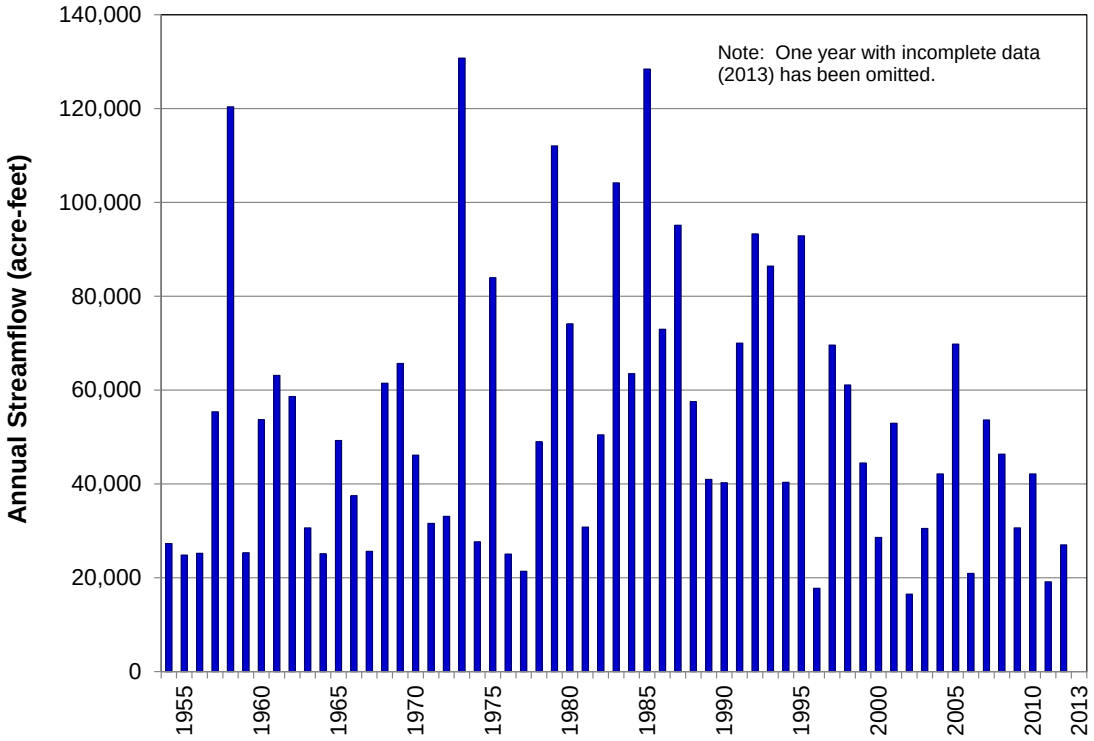
Figure 5-9a

P:_WR12-165\RWPs_2015-2016\12_MRG\Figures\Fig5-09a_Rio Grande.docx 12/1/15

Rio Grande at Albuquerque, NM



Jemez River near Jemez, NM



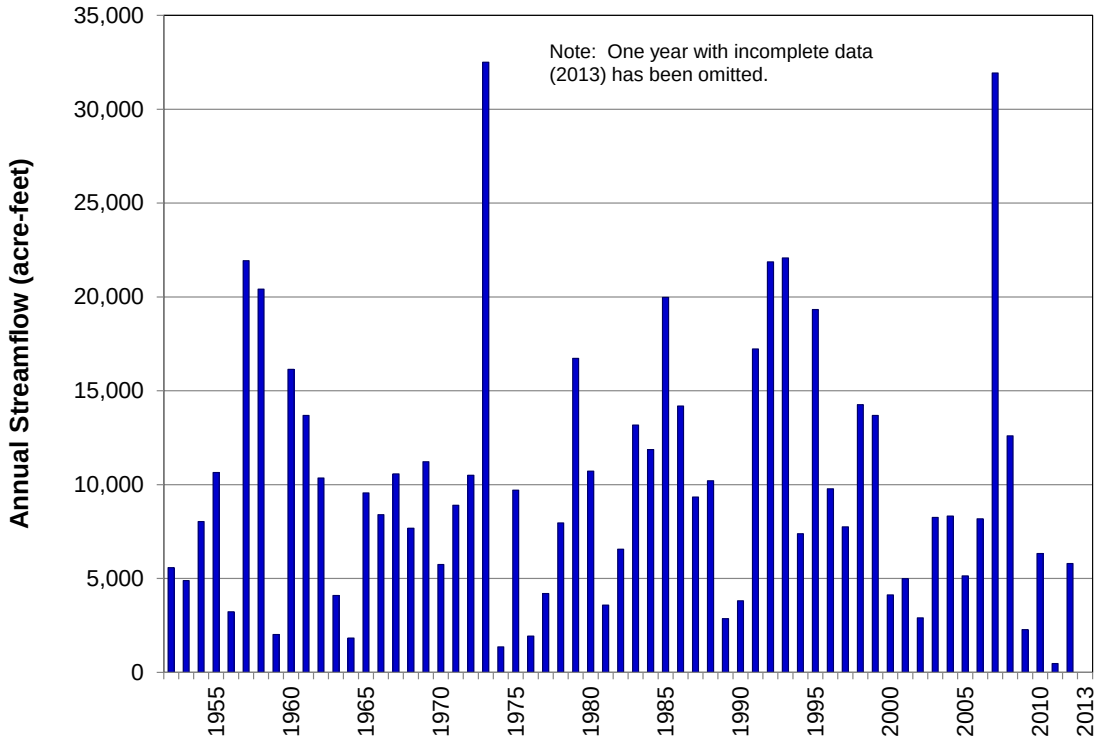
MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

Annual Streamflow for Selected Gaging Stations on the Rio Grande and Jemez River

Figure 5-9b

P:_WR12-165\RWPs_2015-2016\12_MRG\Figures\Fig5-09b_Rio Grande-Jemez.docx 12/1/15

Rio Puerco above Arroyo Chico near Guadalupe, NM

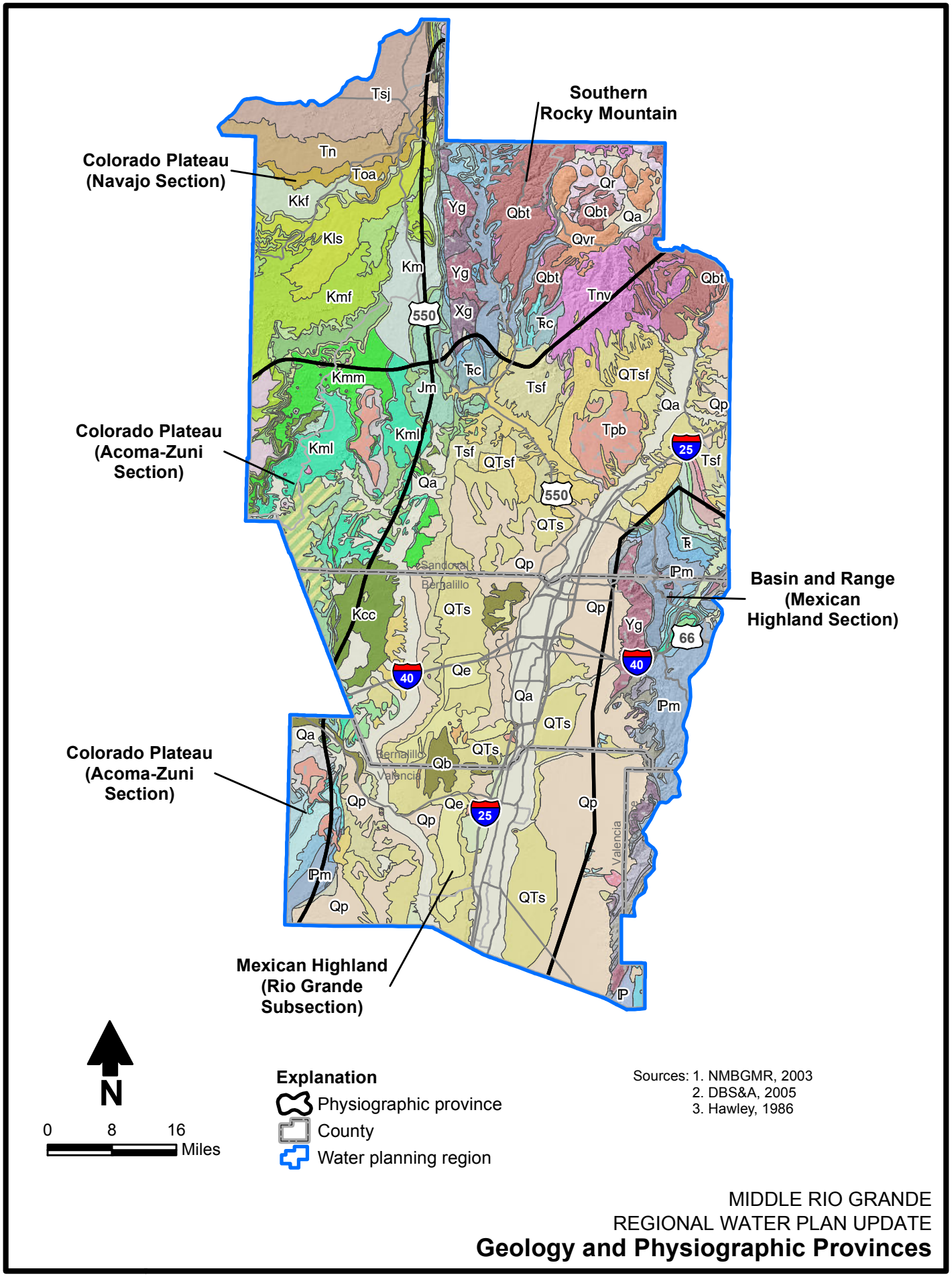


MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

Annual Streamflow for Selected Gaging Station on the Rio Puerco

Figure 5-9c

P:_WR12-165\RWPs_2015-2016\12_MRG\Figures\Fig5-09c_Rio Puerco.docx 12/1/15



S:\PROJECTS\WR12.0165_STATE_WATER_PLAN_2012\GIS\MXDS\FIGURES_NO_LOGO\MIDDLE_RIO_GRANDE\FIG5-10A_GEOLOGY.MXD 12/1/2015

MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

Geology and Physiographic Provinces

Figure 5-10a

S:\PROJECTS\WR12.0165_STATE_WATER_PLAN_2012\GIS\MXDS\FIGURES_NO_LOGO\MIDDLE_RIO_GRANDE\FIG5-10B_GEOLOGY_EXPLANATION.MXD 12/1/2015

Figure 5-10b

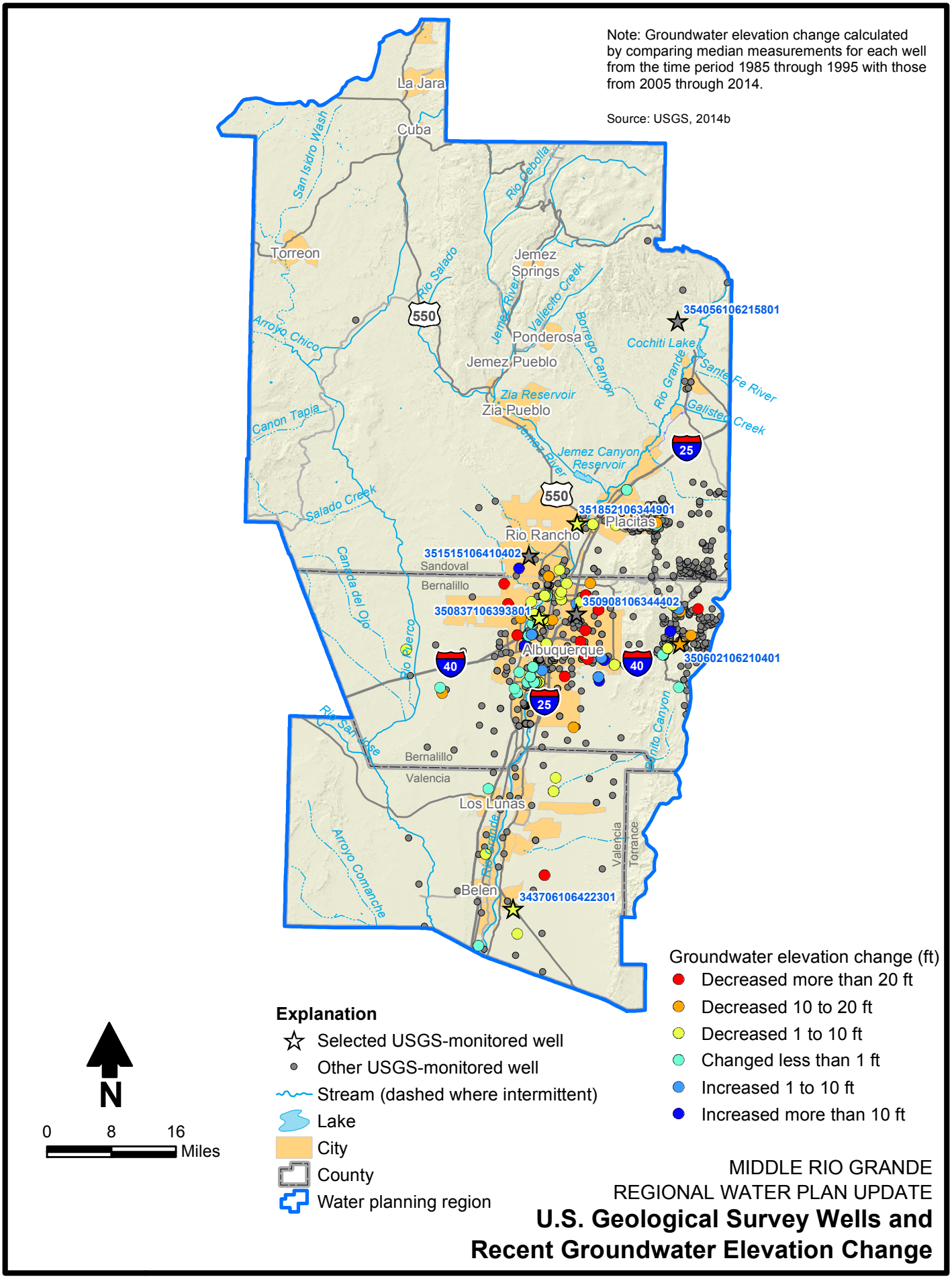
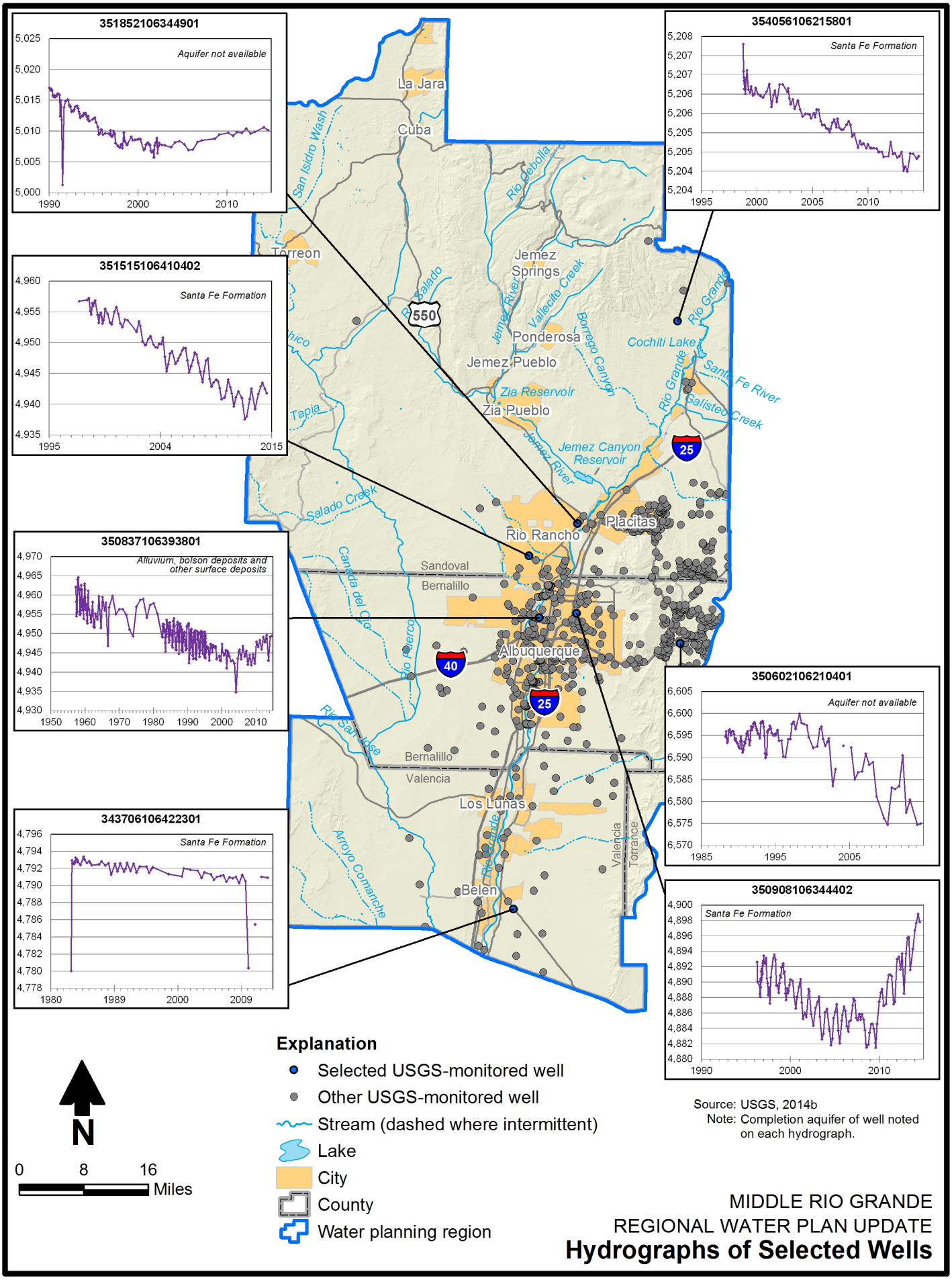

Note: Groundwater elevation change calculated by comparing median measurements for each well from the time period 1985 through 1995 with those from 2005 through 2014.
Source: USGS, 2014b
La Jara
Cuba
San Isidro Wash
Rio Cebolla
Torreon
Rio Salado
Jemez Springs
Jemez River
Vallecito Creek
Borrego Canyon
354056106215801
Cochiti Lake
Arroyo Chico
550
Ponderosa
Jemez Pueblo
Rio Grande
Santa Fe River
Galisteo Creek
Zia Reservoir
Zia Pueblo
Canon Tapia
Jemez River
Jemez Canyon Reservoir
25
550
351852106344901
Placitas
Salado Creek
Rio Rancho
351515106410402
Sandoval
Cañada del Ojo
Bernalillo
350908106344402
350837106393801
Rio Puerco
Albuquerque
40
40
350602106210401
25
Rio San Jose
Bernalillo
Valencia
Los Lunas
Arroyo Comanche
Rio Grande
Belen
343706106422301
Valencia
Torrance
Explanation
Selected USGS-monitored well
Other USGS-monitored well
Stream (dashed where intermittent)
Lake
City
County
Water planning region
Groundwater elevation change (ft)
Decreased more than 20 ft
Decreased 10 to 20 ft
Decreased 1 to 10 ft
Changed less than 1 ft
Increased 1 to 10 ft
Increased more than 10 ft
N
0
8
16
Miles
MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE
U.S. Geological Survey Wells and
Recent Groundwater Elevation Change
S:\PROJECTS\WR12.0165_STATE_WATER_PLAN_2012\GIS\MXDS\FIGURES_NO_LOGO\MIDDLE_RIO_GRANDE\FIG5-11_USGS_WELLS.MXD 12/1/2015

Figure 5-11



S:\PROJECTS\WR12.0165_STATE_WATER_PLAN_2012\GIS\MXDS\FIGURES_NO_LOGO\MIDDLE_RIO_GRANDE\FIG5-12_USGS_WELLS_HYDROGRAPHS.MXD 12/1/2015

Figure 5-12

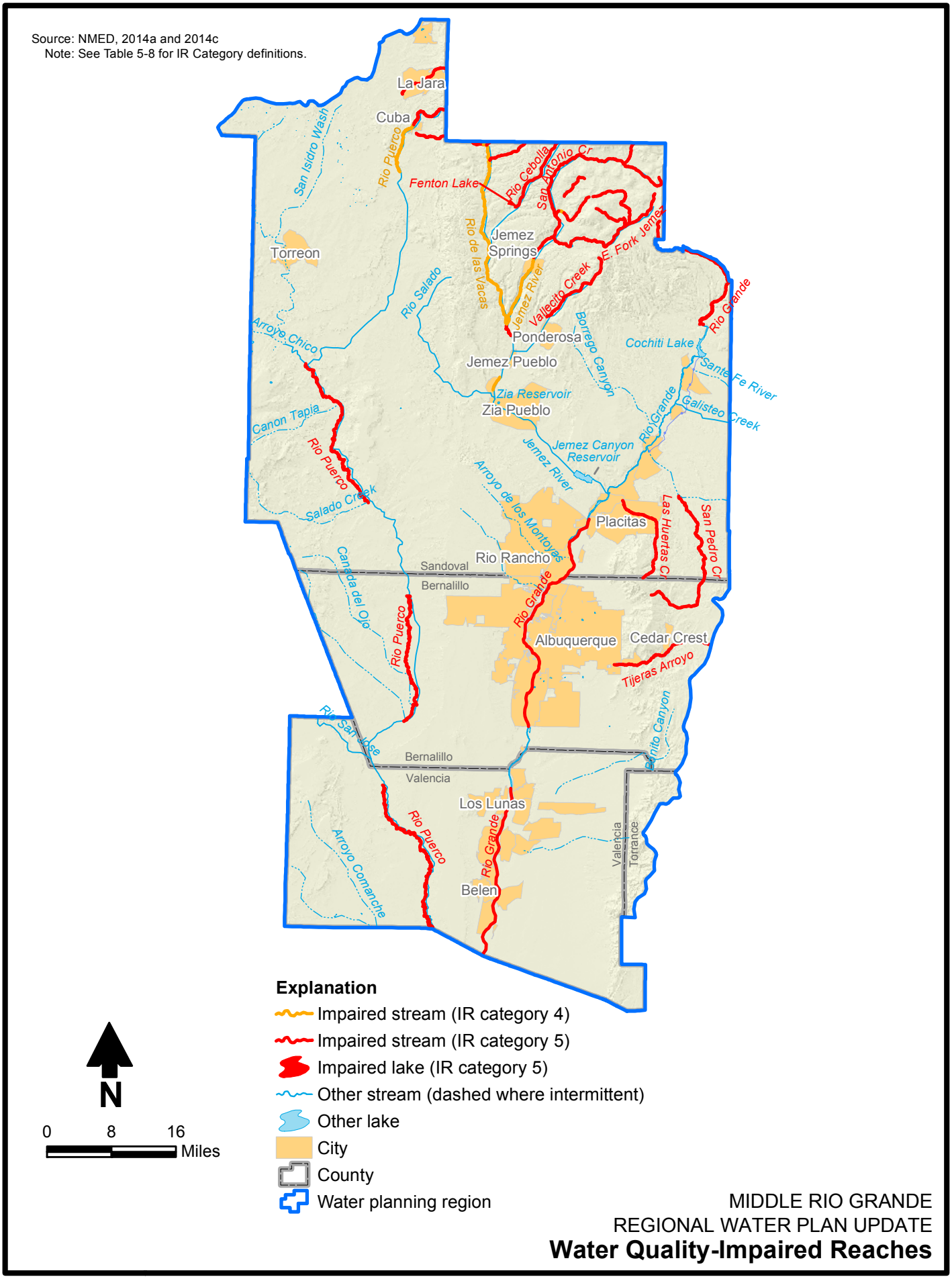

Source: NMED, 2014a and 2014c
Note: See Table 5-8 for IR Category definitions.
La Jara
Cuba
San Isidro Wash
Rio Puerco
Fenton Lake
Rio Cebolla
San Antonio Cr
E. Fork Jemez
Rio de las Vacas
Jemez Springs
Torreon
Rio Salado
Jemez River
Vallecito Creek
Rio Grande
Arroyo Chico
Ponderosa
Borrego Canyon
Cochiti Lake
Jemez Pueblo
Santa Fe River
Zia Reservoir
Zia Pueblo
Galisteo Creek
Canon Tapia
Rio Puerco
Jemez Canyon Reservoir
Jemez River
Salado Creek
Arroyo de los Montoyas
Placitas
Las Huertas Cr
San Pedro Cr
Sandoval
Rio Rancho
Bernalillo
Canada del Ojo
Rio Grande
Rio Puerco
Albuquerque
Cedar Crest
Tijeras Arroyo
Rio San Jose
Bernalillo
Valencia
Tijeras Canyon
Los Lunas
Rio Puerco
Rio Grande
Arroyo Comanche
Valencia
Torrance
Belen
Explanation
Impaired stream (IR category 4)
Impaired stream (IR category 5)
Impaired lake (IR category 5)
Other stream (dashed where intermittent)
Other lake
City
County
Water planning region
N
0
8
16
Miles
MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE
Water Quality-Impaired Reaches
S:\PROJECTS\WR12.0165_STATE_WATER_PLAN_2012\GIS\MXDS\FIGURES_NO_LOGO\MIDDLE_RIO_GRANDE\FIG5-13_WQ_IMPAIRED_REACHES.MXD 12/1/2015

Figure 5-13

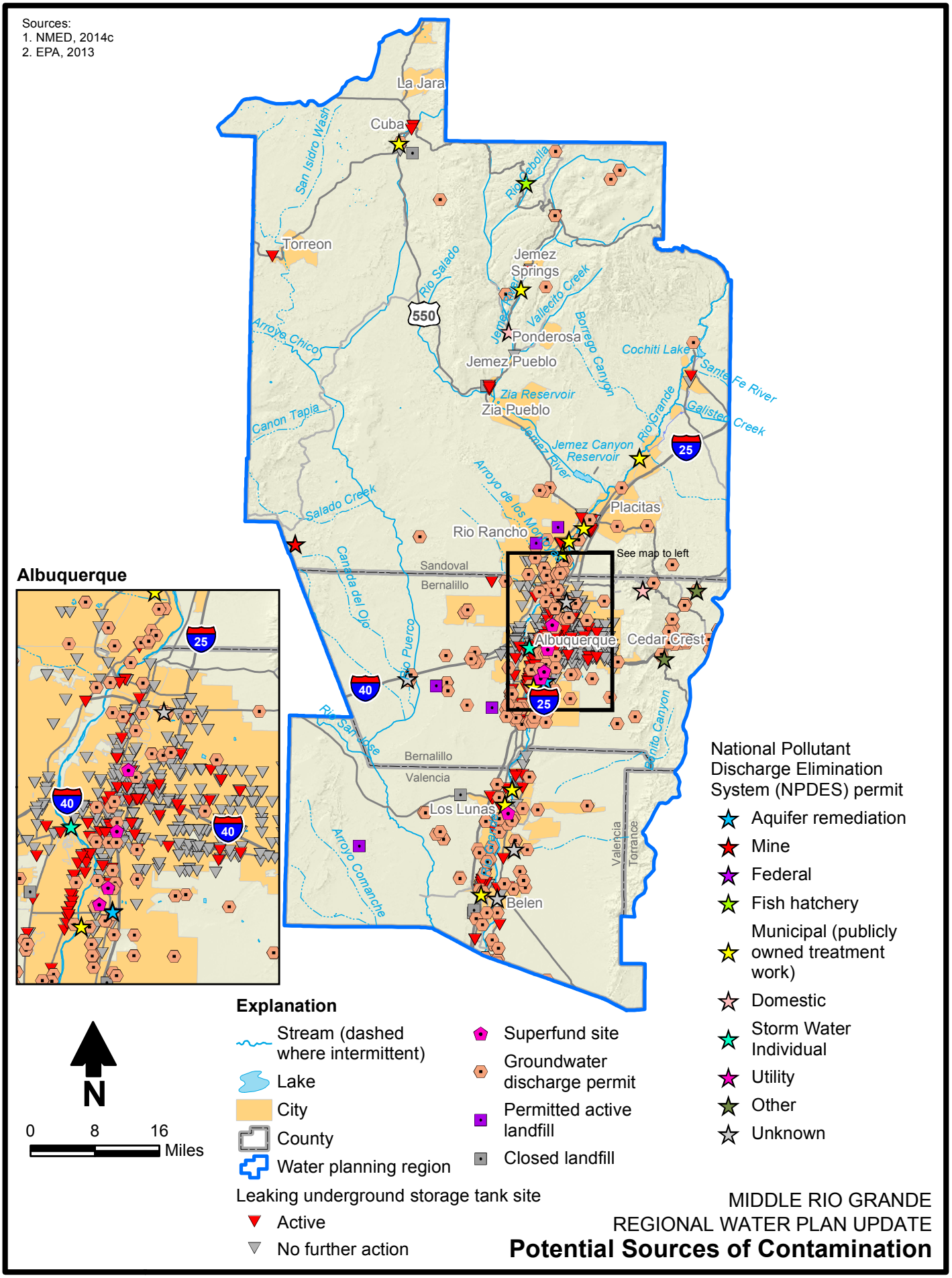
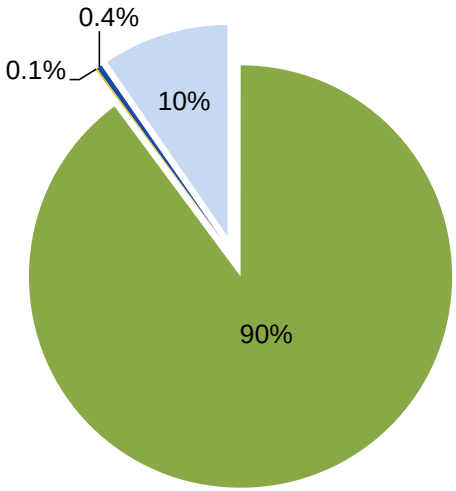

Sources:
1. NMED, 2014c
2. EPA, 2013
La Jara
Cuba
San Isidro Wash
Torreon
Rio Salado
Jemez Springs
Vallecito Creek
Jemez River
Arroyo Chico
550
Ponderosa
Jemez Pueblo
Borrego Canyon
Cochiti Lake
Santa Fe River
Galisteo Creek
Zia Reservoir
Zia Pueblo
Canon Tapia
Rio Grande
Jemez Canyon Reservoir
25
Placitas
Arroyo de los Montoyas
Salado Creek
Rio Rancho
See map to left
Sandoval
Bernalillo
Canada del Ojo
Albuquerque
Cedar Crest
40
Rio San Jose
Bernalillo
Valencia
Los Lunas
Arroyo Tome
Arroyo Comanche
Belen
Valencia
Torrance
Albuquerque
25
40
40
N
0
8
16
Miles
Explanation
Stream (dashed where intermittent)
Lake
City
County
Water planning region
Superfund site
Groundwater discharge permit
Permitted active landfill
Closed landfill
Leaking underground storage tank site
Active
No further action
National Pollutant Discharge Elimination System (NPDES) permit
Aquifer remediation
Mine
Federal
Fish hatchery
Municipal (publicly owned treatment work)
Domestic
Storm Water Individual
Utility
Other
Unknown
MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE
Potential Sources of Contamination
S:\PROJECTS\WR12.0165_STATE_WATER_PLAN_2012\GIS\MXDS\FIGURES_NO_LOGO\MIDDLE_RIO_GRANDE\FIG5-14_CONTAM_SOURCES.MXD 1/13/2016

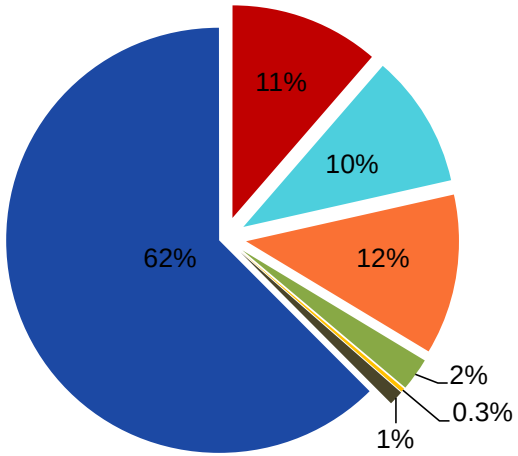
Figure 5-14

Surface Water



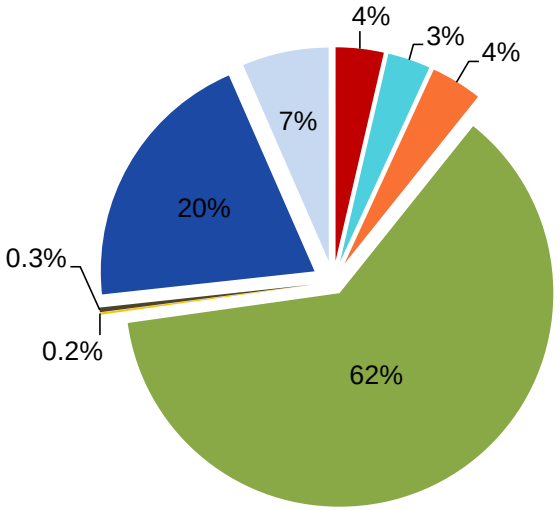
Total usage: 53,786 acre-feet

Groundwater



Total usage: 25,125 acre-feet

Total



Total usage: 78,910 acre-feet

Explanation

- Commercial (self-supplied)
- Domestic (self-supplied)
- Industrial (self-supplied)
- Irrigated agriculture
- Livestock (self-supplied)
- Mining (self-supplied)
- Power (self-supplied)
- Public water supply
- Reservoir evaporation

Source: NMOSE, 2013

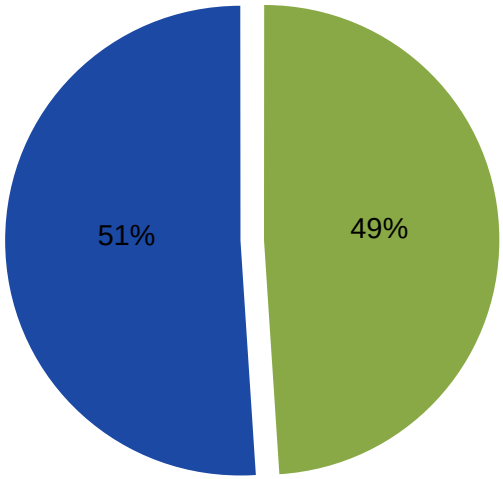
Note: Only categories with usage above 0.1% are shown.

Figure 6-1a

MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

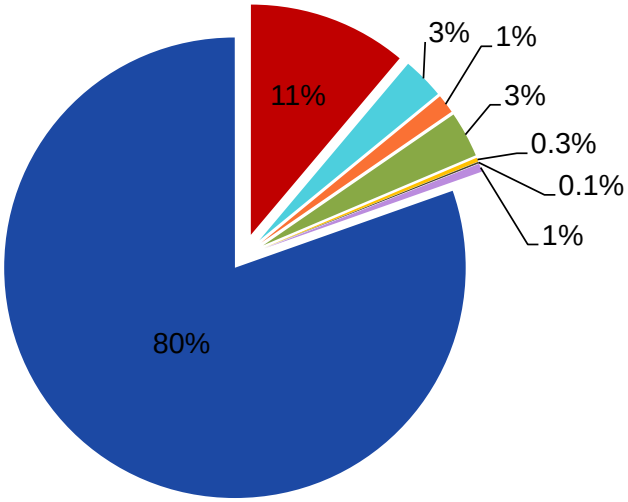
Sandoval County Water Demand, 2010

Surface Water



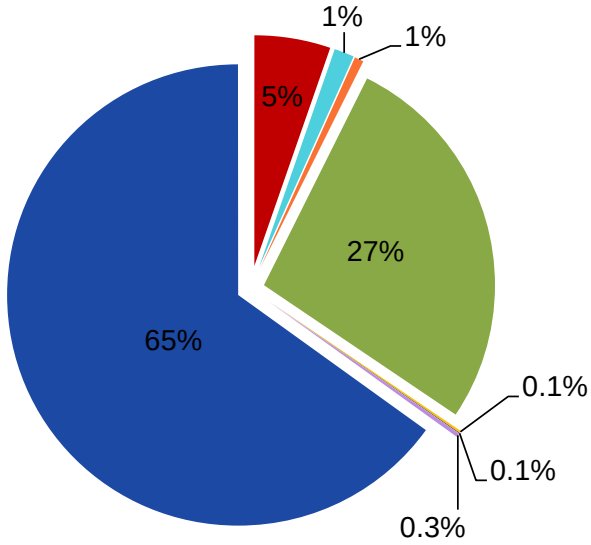
Total usage: 88,465 acre-feet

Groundwater



Total usage: 80,770 acre-feet

Total



Total usage: 169,235 acre-feet

Explanation

- Commercial (self-supplied)
- Domestic (self-supplied)
- Industrial (self-supplied)
- Irrigated agriculture
- Livestock (self-supplied)
- Mining (self-supplied)
- Power (self-supplied)
- Public water supply
- Reservoir evaporation

Source: NMOSE, 2013

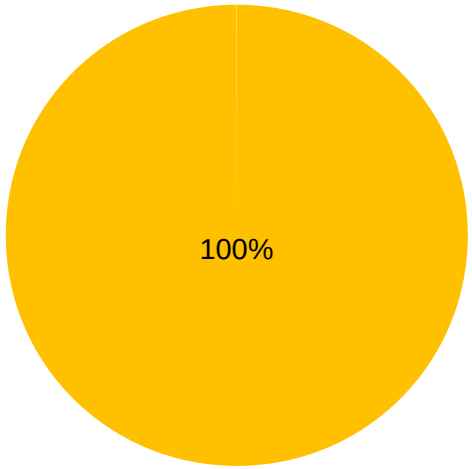
Note: Only categories with usage above 0.1% are shown.

Figure 6-1b

MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

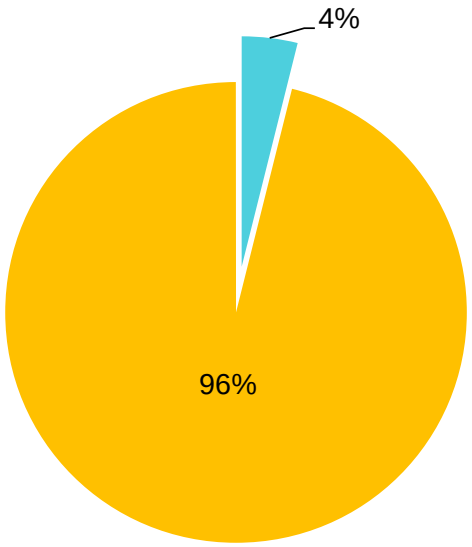
Bernalillo County Water Demand, 2010

Surface Water



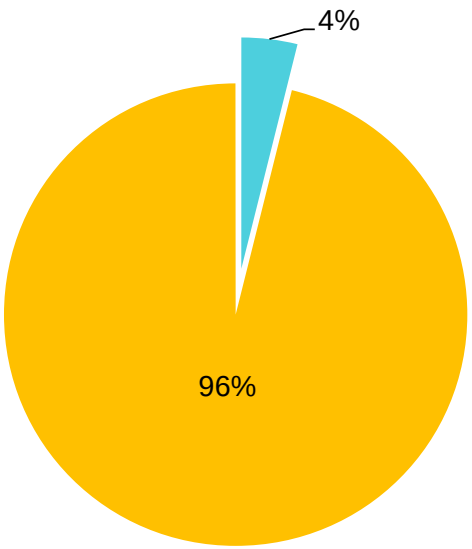
Total usage: 1 acre-foot

Groundwater



Total usage: 6 acre-feet

Total



Total usage: 7 acre-feet

Explanation

- Commercial (self-supplied)
- Domestic (self-supplied)
- Industrial (self-supplied)
- Irrigated agriculture
- Livestock (self-supplied)
- Mining (self-supplied)
- Power (self-supplied)
- Public water supply
- Reservoir evaporation

Source: NMOSE, 2013

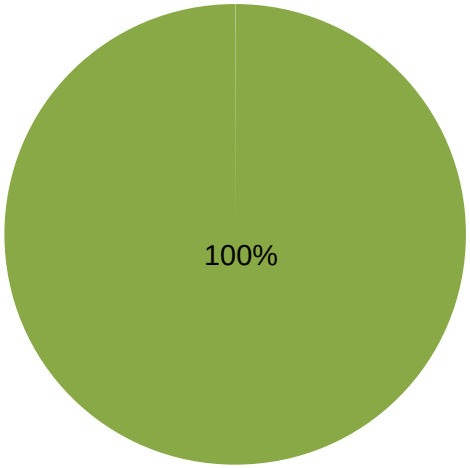
Note: Only categories with usage above 0.1% are shown.

MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

Torrance County Water Demand, 2010

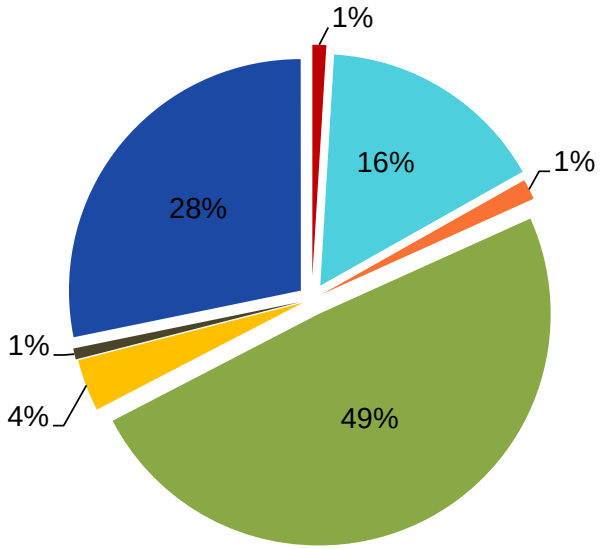
Figure 6-1c

Surface Water



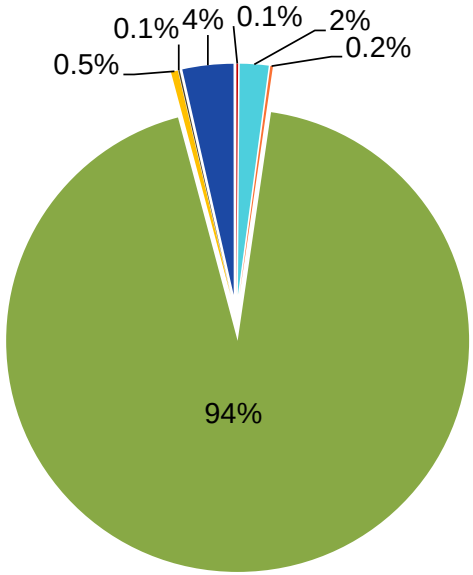
Total usage: 160,262 acre-feet

Groundwater



Total usage: 23,225 acre-feet

Total



Total usage: 183,488 acre-feet

Explanation

- Commercial (self-supplied)
- Domestic (self-supplied)
- Industrial (self-supplied)
- Irrigated agriculture
- Livestock (self-supplied)
- Mining (self-supplied)
- Power (self-supplied)
- Public water supply
- Reservoir evaporation

Source: NMOSE, 2013

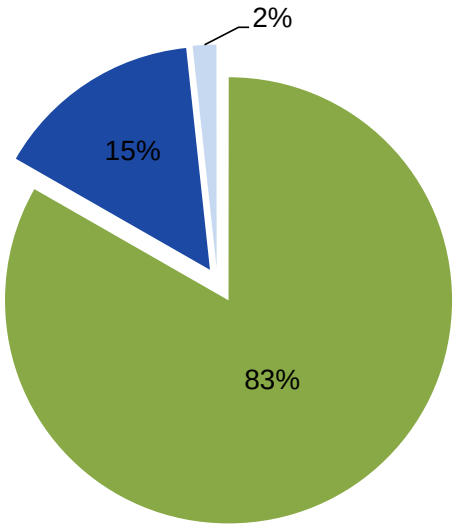
Note: Only categories with usage above 0.1% are shown.

Figure 6-1d

MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

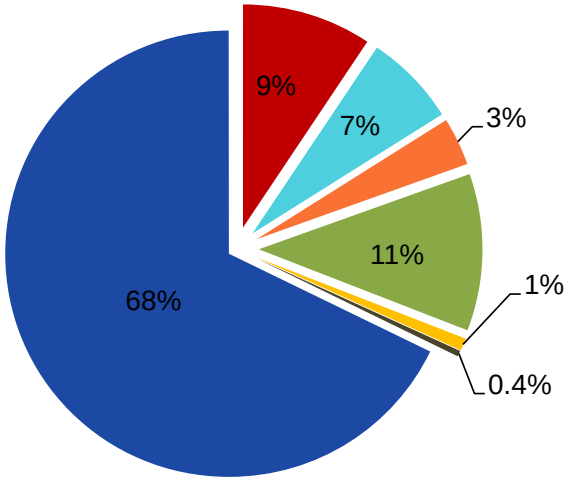
Valencia County Water Demand, 2010

Surface Water



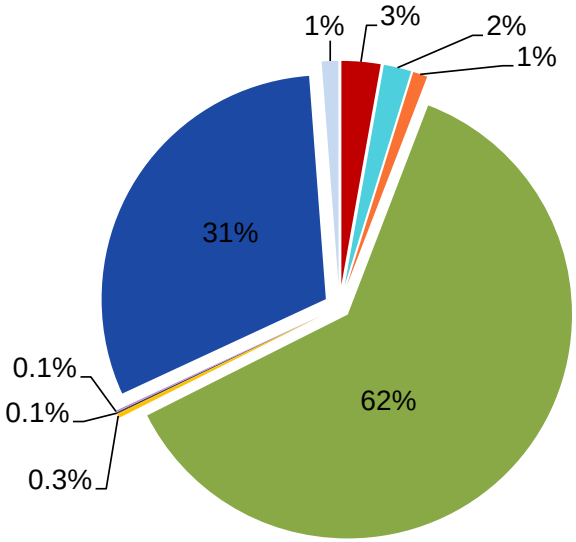
Total usage: 302,514 acre-feet

Groundwater



Total usage: 129,126 acre-feet

Total



Total usage: 431,640 acre-feet

Explanation

- Commercial (self-supplied)
- Domestic (self-supplied)
- Industrial (self-supplied)
- Irrigated agriculture
- Livestock (self-supplied)
- Mining (self-supplied)
- Power (self-supplied)
- Public water supply
- Reservoir evaporation

Source: NMOSE, 2013

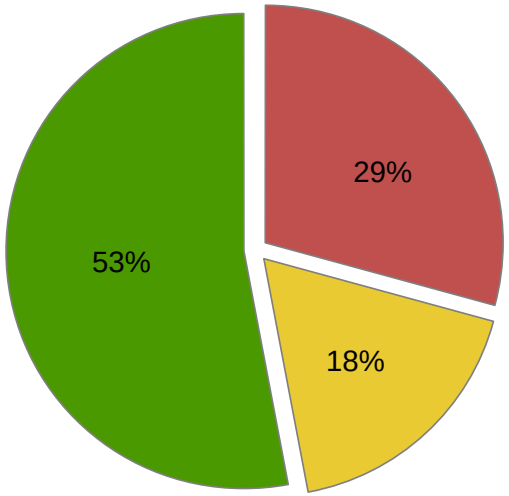
Note: Only categories with usage above 0.1% are shown.

Figure 6-1e

MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

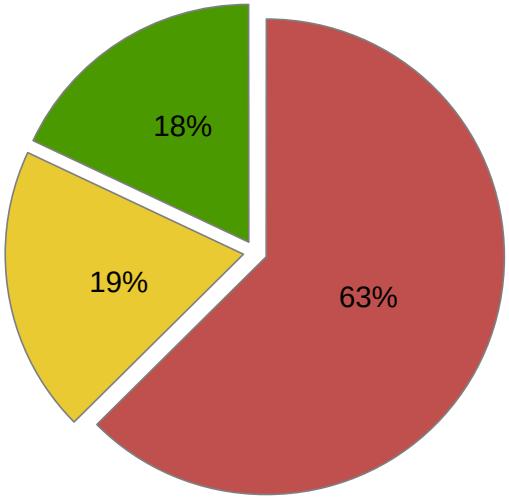
Total Regional Water Demand by Sector, 2010

Surface Water



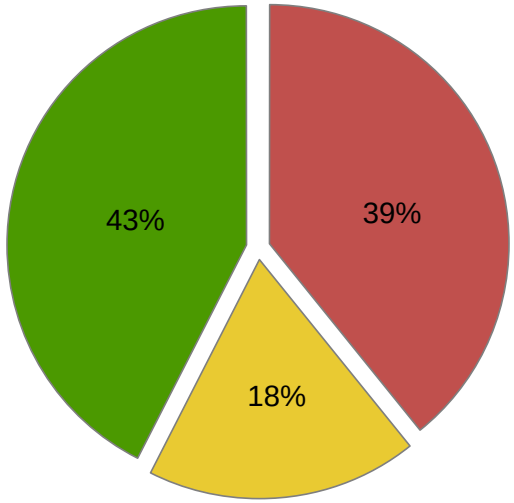
Total usage: 302,514 acre-feet

Groundwater



Total usage: 129,126 acre-feet

Total



Total usage: 431,640 acre-feet

Explanation

- Bernalillo
- Sandoval
- Valencia

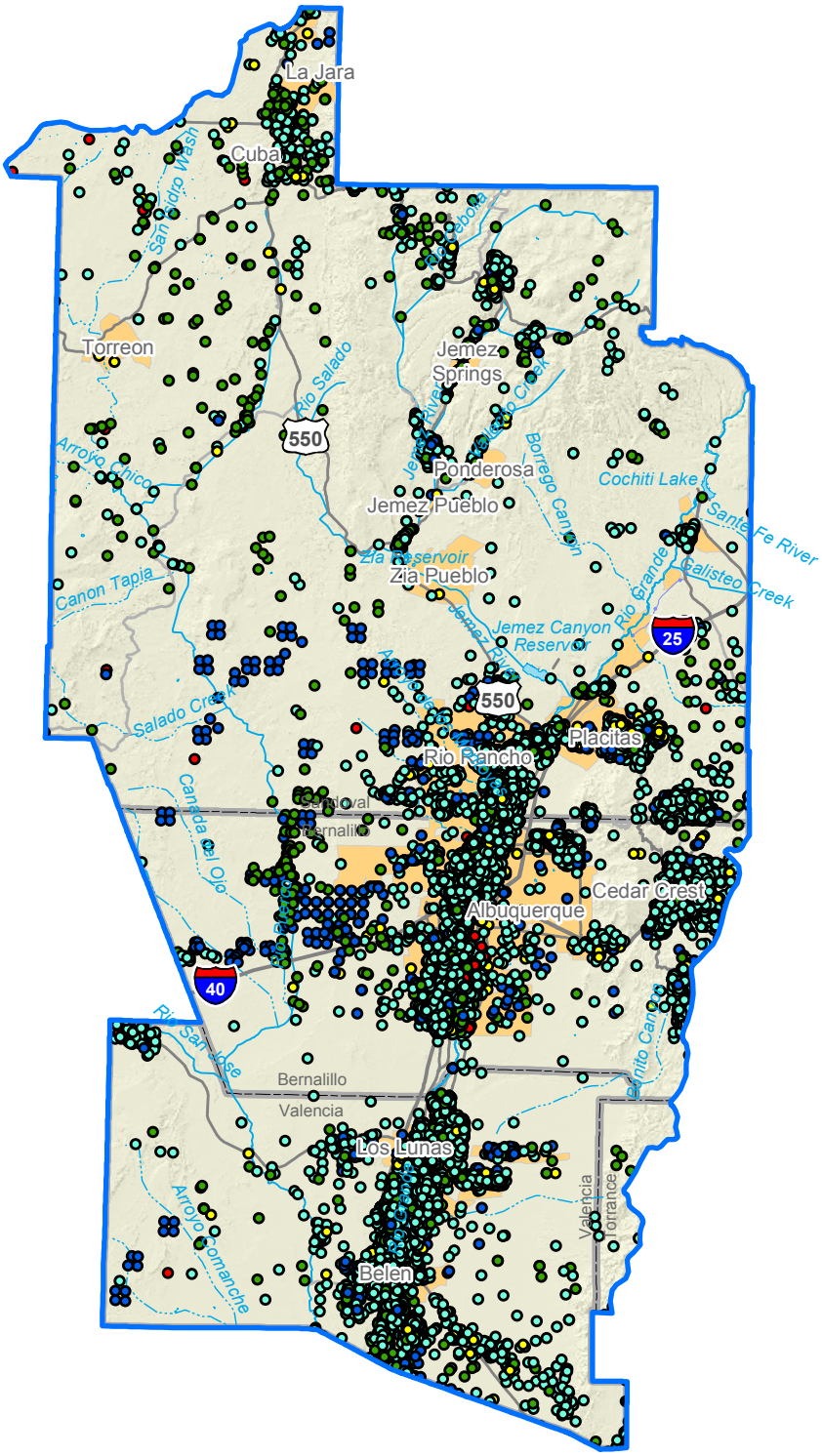
Source: NMOSE, 2013

Note: Due to rounding, the percentages may not add to 100%.

Figure 6-1f

MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

Total Regional Water Demand by County, 2010



N

0 8 16 Miles

Explanation

- Stream (dashed where intermittent)
- Lake
- City
- County
- Water planning region

Well (use)

- Agriculture/irrigation
- Commercial/industrial/recreation
- Domestic
- Mining/oil/gas
- Public water supply

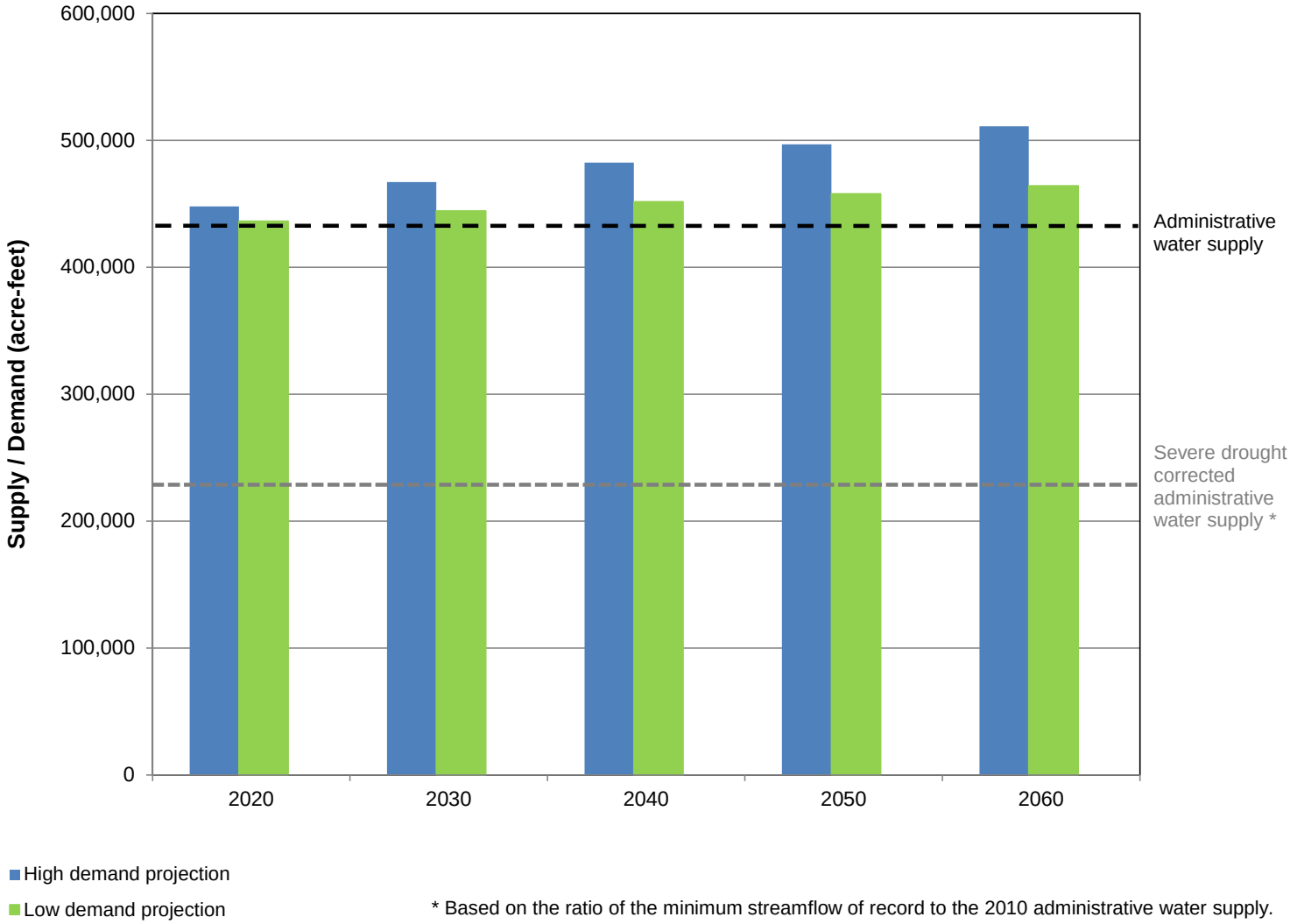
Source: NMOSE, 2014d

MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

Groundwater Points of Diversion

Figure 6-2

S:\PROJECTS\WR12.0165_STATE_WATER_PLAN_2012\GIS\MXDS\FIGURES_NO_LOGO\MIDDLE_RIO_GRANDE\FIG6-2_POINTS_OF_DIVERSION.MXD 12/1/2015



* Based on the ratio of the minimum streamflow of record to the 2010 administrative water supply.

Figure 7-1

MIDDLE RIO GRANDE
REGIONAL WATER PLAN UPDATE

Available Supply and Projected Demand