



3. Background

This section provides a general overview of the characteristics of the Northeast Region. Additional detail on the climate, water resources, and demographics of the region is provided in Sections 5 and 6. Maps illustrating the land use and general features of the region were prepared by WRRI and are provided in Appendix A.

3.1 General Description of the Planning Region

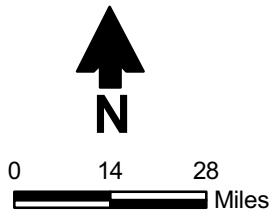
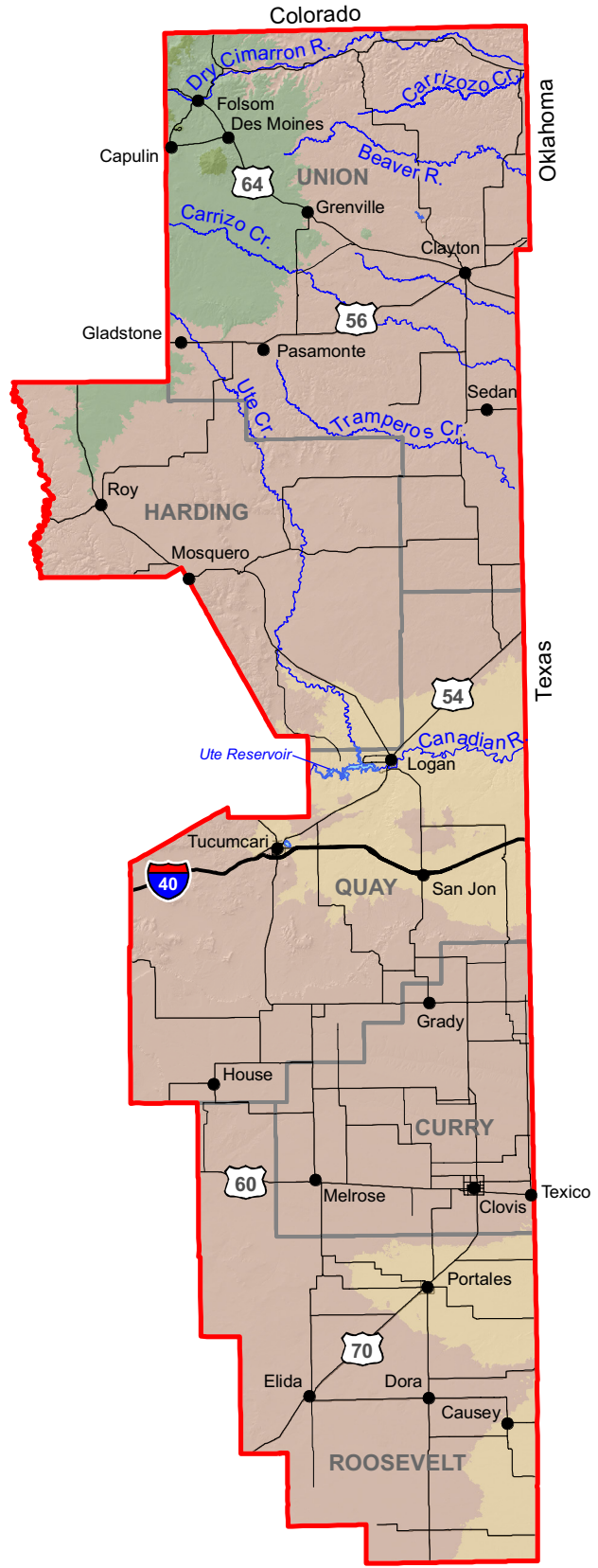
The Northeast New Mexico Water Planning Region includes Union, Harding, Quay, Curry, and Roosevelt Counties, which are bounded by Colorado to the north, Colfax, Mora, San Miguel, Guadalupe, De Baca, and Chaves Counties to the west, Lea County to the south, and Oklahoma and Texas to the east (Figure 3-1). The total area of the Northeast Region is 12,699 square miles (NM ISC/OSE, 1975a, 1975b, 1975c, 1975d, and 1975e) or 10 percent of the entire area of the state. The planning region is located within an area of eastern New Mexico and west Texas referred to as the High Plains section of the Great Plains physiographic province (Section 5.3.1.1).

Elevations in the Northeast Region range from 8,826 feet above mean sea level (ft msl) at Laughlin Peak in northwestern Union County to 3,600 ft msl in Quay County where the Canadian River flows into Texas. Common geomorphic features in the planning region include flat-topped mesas, gently rolling to lowland plains, exposed caprock, playa lakes, basaltic lava flows (Union and Harding Counties), and sand hills (Roosevelt County). Grassland is the dominant vegetation in the planning region, and piñon-juniper woodland areas and ponderosa pine are present at higher elevations. Dry and irrigated farmland is prevalent.

3.2 Climate

The Northeast Region covers an extremely large area, and temperatures range from an average minimum of 35°F in Pasamonte, in western Union County, to an average maximum of 74°F in Portales. Average annual temperatures in the region range from 51°F at Pasamonte to almost 59°F in San Jon, east of Tucumcari. Average annual precipitation in the region ranges between 15.3 inches in Elida, in western Roosevelt County, and 17.9 inches in Clovis (WRCC, 2006a).

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Explanation

- Town
- Highway
- ~ Stream
- ☪ Lake
- ⊕ County
- ⊕ Study area

NORTHEAST NEW MEXICO REGIONAL WATER PLAN
Regional Map



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 03/22/2007 WR04.0147

Figure 3-1



Droughts have occurred on the High Plains during 1887-1897, 1910-1913, 1932-1938, and 1952-1957 (Dennehy, Litke, and McMahon, 2002). Conversely, New Mexico experienced a wet period during the 1980s into the 1990s (Gutzler, 2003). Water planning in New Mexico must take into account the variability of climate. The NRCS declared a moderate drought for the Northeast Region in Oct 2002 and severe drought by July 2003 (Liles, 2003). As of March 2006, the New Mexico State Drought Monitoring Committee shows a large portion of the planning region to be in a moderate drought based on the hydrologic supply (NRCS, 2006).

3.3 Major Surface Water and Groundwater Sources

Surface flows originate primarily in the higher elevations, as snowmelt during the spring and as monsoonal rainfall during the late summer. Though no drinking water is currently supplied by surface water, plans are in place to add renewable surface water to supply future municipal needs in the southern part of the Northeast Region. The dominant waterways flowing in the region are the Canadian and Dry Cimarron Rivers (Figure 3-1), and flows vary greatly from year to year. The region's rivers and the variability in their supply are discussed in Section 5.2.2; Section 5.2.3 presents information on the lakes and reservoirs within the planning region.

Groundwater supplies all of the communities in the region, and numerous stock and domestic wells are also located throughout the region. Groundwater is found primarily in sedimentary rocks and alluvial valleys within the region. The yield and quality of this water is highly variable. The Ogallala aquifer in the eastern part of the region is a key resource, and rapid water level declines in some portions of this aquifer are a key planning issue. Additional information on groundwater resources of the region is included in Section 5.3.

3.4 Overview of Historical Water Use in the Region

Development of significant amounts of groundwater in the High Plains did not occur until the technology to drill deep wells using rotary drill and to pump water using gasoline, diesel engines, and turbine pumps became available (Dugan et al., 1994). Development of groundwater for irrigation began in the 1940s and expanded throughout the 1950s, and irrigation of large areas continues today (DBS&A, 2003). In earlier water planning efforts, the



Eastern Plains Council of Governments and other water stakeholders identified declining water levels in the High Plains aquifer as a threat to sustainable use of water resources in northeastern New Mexico (EPCOG, 2000). The availability of water has been noted as critical to the economy of the region (DBS&A, 2003).

Approximately 84 percent of the water currently used in the planning region is supplied by groundwater, 94 percent of which is diverted for irrigated agriculture, the other 6 percent being used primarily for municipal and livestock purposes. The remaining 16 percent of the water currently used in the planning region is supplied by surface water, 53 percent of which is used for irrigated agriculture, the other 47 percent being used primarily for reservoir evaporation.

3.5 Demographics, Economics, and Land Use

The Northeast Region as a whole is sparsely populated. Populations of cities and towns in the planning region range from fewer than 100 people to more than 30,000. Populations in 2000 for each of the counties were:

- Union: 4,174
- Harding: 810
- Quay: 10,155
- Curry: 45,044
- Roosevelt: 18,018

The largest towns in the region and their populations are Clovis (32,667), Portales (11,131), Tucumcari (5,989), and Clayton (2,524). All the other communities in the Northeast Region have fewer than 2,000 people (U.S. Census Bureau, 2006).

The land use in the region is predominantly agricultural. Given its prevalence, the agricultural sector is the driver for a large part of the economy in the Northeast Region. The major categories of employment, however, are retail and wholesale trade, services, and government (Table 3-1).



Table 3-1. Summary of Demographic and Economic Statistics for the Northeast New Mexico Water Planning Region

County	Population in 2000	Farms and Ranches ^a					No. Employed in Occupational Category in 2000					
		Average Per Capita Income (\$/yr) in 2003	No.	Acreage		Largest Agricultural Commodities	Management / Professional	Service Occupations	Sales and Office	Farming, Fishing, Forestry	Construction, Extraction, Maintenance	Production, Transportation, Material Moving
				Total	Average							
Union	4,174	26,372	419	2,243,404	5,354	Cattle and calves, grain	612	308	395	189	182	208
Harding	810	18,632	129	991,940	7,689	Cattle and calves	144	53	57	48	43	19
Quay	10,155	19,812	594	1,651,616	2,780	Cattle and calves, hay, grains, cotton	1,202	755	1,066	121	540	360
Curry	45,044	24,721	677	916,320	1,354	Cattle and calves, milk, grains, vegetables, hay, horses, fruits	4,661	3,099	4,636	394	1,954	2,239
Roosevelt	18,018	23,484	804	1,500,821	1,867	Cattle and calves, milk, hay, vegetables, fruits	2,575	1,068	1,761	405	681	960

Source: NMEDD, 2006, unless otherwise noted.

^a New Mexico 2002 Census of Agriculture (USDA, 2004)



Some employers, such as local governments, medical services, and other location-specific businesses, have a primarily local economic impact. Conversely, economic sectors such as agriculture and recreation have an impact region-wide, as activities in one county create opportunities for similar or related businesses in nearby counties. The dairy industry, for example, spans county boundaries, and related milk processing industries (e.g., cheese) are located in Quay, Curry, and Roosevelt Counties. In addition to the dairies themselves, agriculture includes the raising of livestock feed, both for the dairies and for ranching, which predominates in the northern part of the region.

Recreation plays a role in the economy of several of the counties, with local residents and tourists boating and fishing at Ute, Santa Rosa, Sumner, and Clayton Reservoirs. Counties are seeking to increase tourism through Scenic Byways enhancements and promotion of the region for tourism.

Additional detail on regional demographics, economics, and land use is provided in Section 6.