New Mexico:
A Brackish Water Data Assessment

Lewis Land and Stacy Timmons,
New Mexico Bureau of Geology and Mineral Resources
July 2016

With increasingly arid conditions and extended droughts, New Mexico is faced with the possibility of using desalinated brackish water (less than 10,000 mg/L total dissolved solids) as an option to diversify the public water supply. Many questions have been asked about where these brackish water resources. Where exactly is the brackish water? What data are available? What exactly is the water chemistry? And how feasible is it to use brackish water for public supply? With funding from the New Mexico Environment Department, Drinking Water Bureau (related to Source Water Protection), the New Mexico Bureau of Geology, Aquifer Mapping Program, has compiled a number of water quality resources and data. These data were derived from the Aquifer Mapping Program, digitized historical water reports, the U.S. Geological Survey, and the New Mexico Environment Department. All publicly available data are now on an interactive map found here: geoinfo.nmt.edu/maps - see Water Resources.

In an analysis and review of the compiled water quality data, we have attempted to assess the brackish water resources in New Mexico. Very large regions of the state lack sufficient data to assess brackish water resources. Most of the data compiled in this review are from existing water supply wells, and therefore are not representative of brackish water. These data also represent, in general, the shallowest parts of the aquifers where water wells are commonly completed.

The analysis and review is available in Open-file Report 583. There are several important findings:

- The compiled water quality data are useful for looking at regional trends in water quality and locating information applicable for source water protection and planning purposes.
- The water quality data available from existing water supply wells are insufficient to provide a thorough understanding of the distribution of groundwater salinity.
- Over most of New Mexico, existing records do not have a consistent trend of increasing salinity, or increasing total dissolved solids, with depth in the aquifer.
- A detailed and quantitative understanding of brackish water resources in most regions of New Mexico is lacking.

Funding for this project was provided by the New Mexico Environment Department, Drinking Water Bureau, for Source Water Protection.

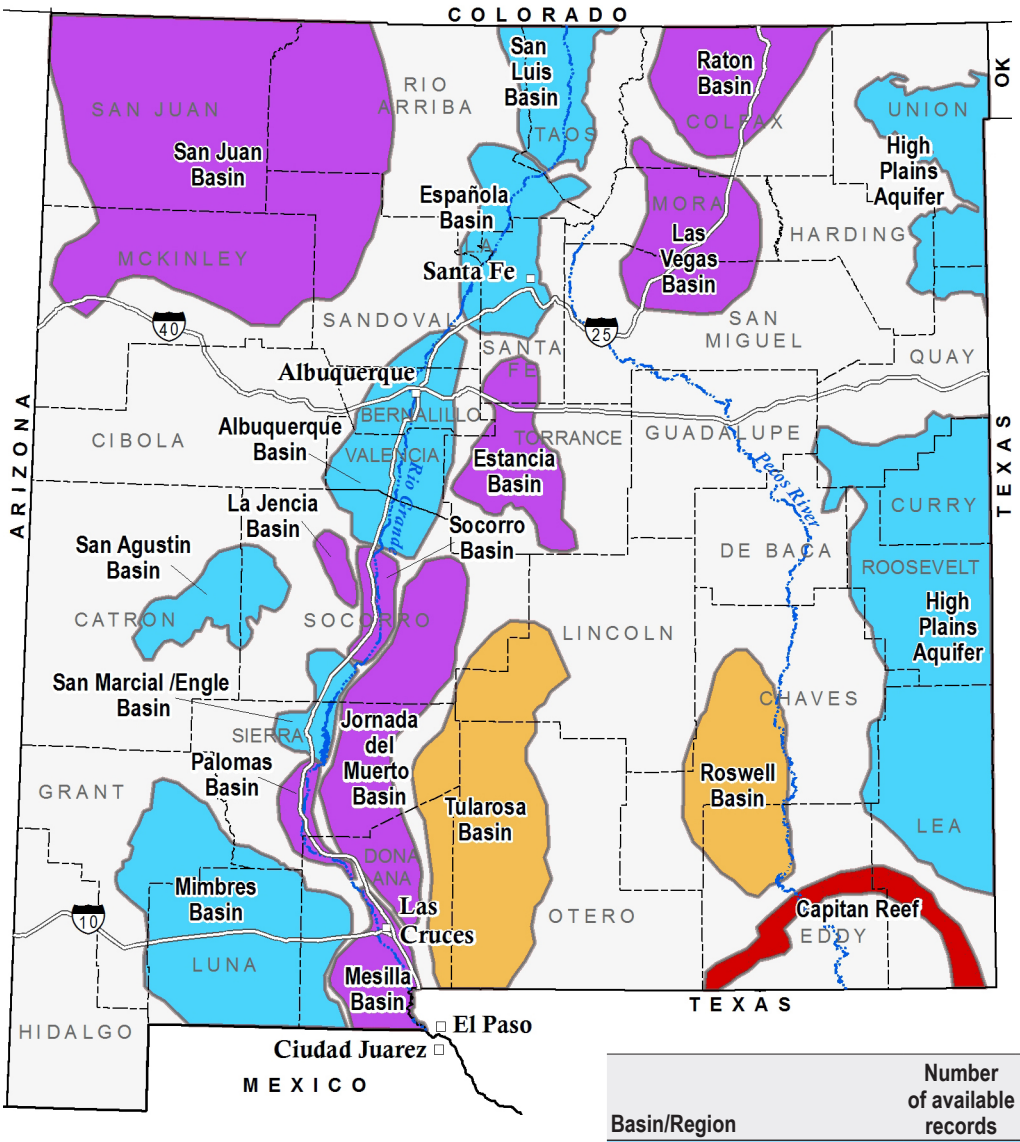

Figure: For this assessment of brackish water resources, a review of available data and previous work is summarized for each region identified on this map. Using the data compiled for this project from NMBGMR, historic records, and USGS data, which are limited to existing water wells, we colored regions based on our findings of average total dissolved solids (TDS). Regions with TDS below 1,000 mg/L are considered potable (blue on map), water between 1,000–3,000 mg/L TDS is slightly brackish (purple), 3,000–10,000 mg/L TDS is considered brackish (orange), and over 10,000 mg/L TDS is saline or brine (red). These are regional approximations and site specific studies must be performed to confirm these generalized results.

Basin/Region	Number of available records	Mean TDS (mg/L)
San Luis Basin	300	330
San Agustin Basin	185	341
Española Basin	612	390
Mimbres Basin	265	617
San Marcial and Engle Basins	32	704
Albuquerque Basin	987	881
High Plains Aquifer	560	996
Socorro and La Jencia Basins	379	1,002
Mesilla Basin	408	1,217
Estancia Basin	561	1,288
Palomas Basin	203	1,297
Jornada del Muerto Basin	173	1,354
Raton and Las Vegas Basins	80	2,336
San Juan Basin	1,011	2,373
Tularosa Basin	959	3,184
Roswell Artesian Basin	632	3,548
Capitan Reef Aquifer	13	54,046

Table: In the table, we list these basins in order of the least brackish water region to the most brackish water region, followed by the number of data points available in this compilation, and the average total dissolved solids. Large regions of New Mexico lack sufficient data to assess brackish water resources, as noted by the number of records available and the size of the region shown on the map. The colors match the ranges of total dissolved solids noted on the map.