

# Deep Water Regulation

With most of the surface water in New Mexico fully appropriated and with groundwater sources being drawn down and becoming less reliable, the search for new sources of water is reaching further and further afield of traditional sources and methods. Water wells deeper than 2,000 feet have been rare due to the expense of deep drilling and the uncertainty of finding potable water. Yet the combined circumstances of advances in hydrology and the escalating demand for new water have driven the search for water deeper than was previously considered practical.

## Deep Water Statutes

Prior to 2009, NMSA 1978, § 72-12-25 through § 72-12-28 addressed deep water, stating that non-potable water in an aquifer whose upper boundary is deeper than 2,500 feet is not subject to the State Engineer's groundwater regulations. Non-potable water is water containing more than 1,000 parts per million dissolved solids. No permit was required to pump water from that depth. However, notice to the State Engineer and the neighboring public was required. The State Engineer could require reporting on such pumping activities and neighboring water users could file suit in district court if the pumping impaired their water supply.

In 2009, NMSA 1978, § 72-12-25 was amended to give the State Engineer jurisdiction over *non-potable* water in an aquifer whose upper boundary is deeper than 2,500 feet, if the State Engineer declares an groundwater basin. Certain uses of such water, including oil and gas exploration and production, prospecting, mining, road construction, agriculture, generation of electricity, use in an industrial process or geothermal use remain unregulated by the State Engineer. All other uses within deep basins that have been declared by the State Engineer require a permit to appropriate under the same regulations as shallow fresh water. NMSA 1978, § 72-12-1 through NMSA § 72-12-24.

## Produced Water

Oil and gas operations routinely drill much deeper than water wells are usually constructed. This deep drilling typically brings more water to the surface than oil and gas, as "produced water"—83,000 acre-feet per year in New Mexico. Produced water

“64 Notices of Intent to Use 1,700,000 acre-feet per year of deep non-potable water were filed prior to passage of legislation regulating deep water in 2009.”

N.M. State Engineer  
John D'Antonio Jr., P.E.  
(2003–2011)

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usually is contaminated with high concentrations of minerals. NMSA 1978, § 70-2-12 gives the Oil Conservation Division (OCD) of the Energy, Minerals and Natural Resources Department regulatory authority over disposition of produced water. “Disposition” usually means either reinjection to the depth from which it was drawn, after treatment to OCD quality standards if necessary, or evaporation and disposal of the remaining solid waste.

Exempting produced water from the 2009 amendment to NMSA 1978, § 72-12-25 allowed for political support for passage of the bill. The final Senate vote on the bill was 30–0 in favor. However, this continued division of regulatory oversight raises questions: If produced water is treated and sold as potable, who has regulatory authority? Oil and gas royalties and leases of state lands for oil and gas production are major sources of state funding. There is concern that further regulation of deep water will increase oil and gas production costs, potentially reducing oil and gas activity and income to the state.

desalination projects. The cities of El Paso, Abilene, and Fort Stockton in Texas and Scottsdale, Arizona are all augmenting their water supply with desalination projects. The city of Alamogordo has been granted a permit to pump 3,000 afy of brackish groundwater in the Tularosa Basin, which it plans to purify and add to the City water system. None of these projects, however, uses deep water.

### Some of the Currently Proposed Projects in New Mexico

*Sandoval County:* In 2006, notice was filed with the State Engineer of intent to drill deep wells in Sandoval County. At that time deep non-potable wells were exempt from State Engineer oversight. These wells would divert up to 16,000 acre-feet of water per year to supply development planned for the west side of the city of Rio Rancho. Exploratory wells were drilled by Sandoval County in partnership with a private company. Non-potable brackish water was discovered between 3,700 and 3,800 feet below ground surface in both wells. These wells are within the Rio Puerco watershed but may not be connected to surface water. Due to the limited testing to date, the amounts available are unknown. In 2008 and 2009, notice was filed for additional wells in Sandoval County; filers included the State Land Office jointly with Sandoval County and the County jointly with one private land owner to divert up to an additional 43,200 afy; there were also several other filings from private entities in Sandoval County in 2009, totaling more than 200,000 afy.

*Atrisco Land Grant:* In July of 2008, Atrisco Oil and Gas announced that it was exploring the possibility of exploiting a large brackish aquifer it had discovered on Albuquerque’s west side (in the Rio Puerco basin between the volcanoes and the Rio Puerco, north of I-40) at a depth of 7,000 feet. It filed a notice of intent to appropriate 12,000 afy from 35 wells. Atrisco is exploring the feasibility of treating and marketing the water to a water provider. The Albuquerque Bernalillo County Water Utility Authority and the

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### Treatment of Brackish Water

Until recently, treating brackish water for drinking was not economical in most cases. Brackish water contains dissolved solids (salts) above 1,000 mg/L. Removing salts requires a lot of energy and disposing of the waste is also an issue. Efficiency of the process varies, depending on the levels of contaminants, but is generally in the range of 80percent. This means that 20 percent of the volume processed is left as highly contaminated waste. However, the increasing costs of replacing or augmenting dwindling water supplies have led some municipalities to undertake large-scale

Middle Rio Grande Conservancy District have expressed concerns that the aquifer tapped by Atrisco is not truly separate from those used by the Utility and that the flow of the Rio Grande may be affected.

*Pajarito Land Grant:* Commonwealth Utilities, out of Moriarty, has filed a notice of intent for 110,000 ac-ft from the southwest mesa of Albuquerque (in the Rio Puerco Basin on land along the Rio Puerco, within the Pajarito land grant) from one 5,000-foot deep well it has yet to drill. Commonwealth estimates the cost of drilling the well and treating the water to be \$500 million.

Water users adjacent to these projects are skeptical that the wells will not affect their water supply. However, the hydrogeology at that depth is not well known. It may be difficult to determine whether such deep water is connected to the Rio Puerco Basin or the Rio Grande aquifer. If it is connected, there may be legitimate concerns about impairment of other water rights. If it is not connected, then it is a finite supply and may not be reliable in the long term.

*Other Notices of Intent:* In addition to the Rio Puerco Basin, Notices of Intent to drill deep wells have been filed throughout the state. In 2007, Notices of Intent (NOIs) to appropriate 24,000 acre-feet under the deep well exemption were in effect and in 2008 an additional 9 notices were filed. Efforts were made to pass deep groundwater legislation in both of the 2007 and 2008 legislative sessions, but failed. During the 2009 Session, when renewed efforts to pass legislation appeared to be gaining momentum, 50 NOIs were filed prior to passage of the amended NMSA 1978, § 72-12-25, for a total of 64 NOI filings for 1,700,000 acre-feet per year of brackish water to be diverted from 607 wells. By comparison, the City of Albuquerque diverts about 100,000 acre-feet per year.

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### Future of Deep Groundwater

When considering plans for development of brackish water, the State Engineer is carefully considering scientific data with regard to whether the aquifer meets the requirements of NMSA 1978, § 72-12-25. This includes questions such as whether the top of the aquifer is below 2,500 feet; or whether there is connectivity to shallow groundwater; and whether the aquifer is entirely non-potable. Requirements for drilling, well construction, inspection and reporting are in effect for deep wells. The Office of the State Engineer (OSE) is now considering existing hydrogeologic information to carefully define deep basin boundaries and to determine where declaration of a groundwater basin is technically defensible. The OSE is also considering the legal implications of the NOIs filed before the 2009 amendment, the procedures for filing applications and for drilling and reporting for deep wells and is developing a well-defined process for deep groundwater development that protects existing rights and Compacts.

When local communities are making decisions regarding approval of new development to be supplied by deep non-potable groundwater, one important consideration is whether the use of deep groundwater is sustainable. Deep non-potable groundwater may not be receiving recharge from surface sources—in other words, it is a finite supply. Energy costs to pump from greater depths, to treat the brackish water and disposal of the concentrate are also important considerations.

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