

Senate Natural Resources Subcommittee Hearing Testimony

September 19, 2014

Studying Impacts of Mexico's Energy Reforms on Texas: Water Challenges

Thank you for inviting me here today to testify on water use challenges in South Texas that may arise from oil and gas expansion in Northern Mexico resulting from Mexico's recent energy reforms.

There is a lot that we don't know about this subject: we don't know how quickly unconventional oil and gas resources will be developed in Mexico, and we don't know how much water it will take to develop those resources.

But I'm here to testify today on what we do know, which is that natural resources do not stop at our border.

- We share a number of natural resources with Mexico, including the Eagle Ford Shale, the largest shale oil producer in the U.S. (BEG)
- We share several aquifers that cross the international boundary, and we know from recent studies that groundwater level declines in Mexico can affect groundwater levels in Texas; and
- We share the Rio Grande, a tremendous resource that supplies water for millions of residents in the U.S. and Mexico.

We also know that existing water use challenges in South Texas may likely be exacerbated by future expansion of oil and gas expansion in Northern Mexico, in particular, pressures on water and wastewater infrastructure from associated population growth.

First, I'd like to tell you about what we know about water use in the Eagle Ford Shale in Texas, and then I'll cover water supply needs in South Central Texas and the Lower Rio Grande Valley (Regions L and M), two of our state's regional water planning areas that could mostly likely feel the effects of this expansion near the border.

Water Use in the Eagle Ford Shale

For the purpose of regional and state water planning, water used in the development of oil and gas resources is accounted for within the "mining" water use category. This includes all water uses associated with the extraction of natural resources including water used to recover oil and gas through hydraulic fracturing.

In 2012, TWDB began developing our own annual estimates of hydraulic fracturing water use as part of the overall development of mining water use estimates for use in developing the state and regional water plans. These estimates rely on information provided through the FracFocus Registry

administered by the Ground Water Protection Council and the Interstate Oil and Gas Compact Commission. As you know, by state law (HB 3328, 82nd legislature) oil and gas operators must submit information on hydraulic fracturing activities to the FracFocus registry, including the volume of water used.

According to FracFocus data, counties in the Eagle Ford Shale near the U.S-Mexico border have some of the highest number of hydraulic fracturing wells in the state. In 2012, Dimmitt and LaSalle counties (Region L) both had over 400 active wells each (454 and 462 respectively), second only to several counties in the Permian basin; Webb County (Region M) had 341.

And of the major hydraulic fracturing plays in Texas, the Eagle Ford Shale has the highest estimated water use by county. Dimmitt County, at 8,000 acre-feet, had the highest estimated hydraulic fracturing water use of any Texas county in 2012, followed by 7,058 acre-feet in La Salle County and 5,157 acre-feet in Karnes County. Webb County had the fourth highest water use of 4,804 acre-feet.

According to the UT Bureau of Economic Geology (BEG), water use in the Eagle Ford Shale is around 5 million gallons per well (15.3 acre-feet), and operators in the Texas Eagle Ford Shale play rely mostly on groundwater—estimated at 90% of “new” water. There is also significant amount of brackish water being used, which is estimated at 20% but variable among operators. Several aquifers are brackish in the footprint of the play, including the Gulf Coast and the Wilcox aquifers as well as the downdip section of the Carrizo aquifer.

We know that the Eagle Ford Shale extends westward into Mexico, and Pemex test wells have confirmed that the Eagle Ford hydrocarbon-liquids rich trends continue into northern Mexico, as expected (BEG). Much of this formation lies within the Rio Grande basin; the Edwards-Trinity, Allende-Piedras Negras Valley, and the Carrizo-Wilcox are the principal transboundary aquifers in the area.

Water Supply Needs in South Central Texas and the Lower Rio Grande Valley (Regions L and M)

The South Central Texas regional water planning area (Region L) includes all or part of 21 counties and the cities of San Antonio, Victoria, San Marcos, and New Braunfels. As previously mentioned, the region includes several of the highest producing counties in the Eagle Ford Shale. South Central Texas is also one of the fastest growing areas of the state, with approximately 10 percent of the state’s total population. Between 2010 and 2060 its population is projected to increase by 75 percent. By 2070, the region is projected to have near 5.9 million residents. The region predominantly relies on the groundwater from the Edwards and Carrizo-Wilcox for its water supplies.

The Lower Rio Grande Valley (Region M) planning area includes eight counties along the Texas-Mexico border. It is the fastest growing planning region in the state, now home to over 1.6 million Texans. The regional population is projected to increase 142 percent—far more than doubling—between 2010 and 2060. By 2070, the region is projected to have over 4 million residents. Over 60

percent of the region lies within the Rio Grande Basin, with surface water from the Rio Grande providing over 90 percent of the region's water supply.

Opportunities for developing additional water supplies in the Lower Rio Grande Valley are limited, mostly because few opportunities exist to increase the water supply yield of the Rio Grande. A significant factor impacting the region's water supply is Mexico's compliance with the 1944 Treaty. Texas A&M University studies have shown that the Lower Rio Grande Valley lost nearly \$1 billion in decreased economic activity and 30,000 jobs as a direct result of Mexico's failure to comply with its treaty obligations over the period 1992 to 2002.

Since Mexico is currently behind in its water debt to the U.S., there is little assurance of future treaty compliance during severe droughts. Mexico's recent failure to deliver water in a fair manner has already caused undue hardship for agriculture and municipalities by endangering their ability to convey municipal water. A 2013 Texas A&M Agrilife study identified that a loss of irrigation water in the Lower Rio Grande Valley endangers around 4,800 jobs and reduces agricultural output by around \$395 million annually. Mexico has repeatedly refused to act on meaningful ways to resolve the current deficit.

Given the large amounts of water to develop the Eagle Ford Shale, and the extent of our shared water resources, it can be reasonably expected that challenges in South Texas may arise from oil and gas expansion in Northern Mexico. This is especially true since we are already experiencing these challenges without the additional pressure of this expansion. We hope that we can work cooperatively so that both of our countries can fairly share water resources and benefit economically from the development of our natural resources.