

Concerns about earthquakes could challenge water disposal needs

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Water in Energy Conference Feb. 22, 2018, at Horseshoe Pavillion. James Durbin/Reporter-Telegram

The rise in the amount of water being produced alongside crude and natural gas and the need to dispose of that water may be on a collision course with concerns about the rise in induced earthquakes.

Addressing the final morning of the Permian Basin Water in Energy Conference, Railroad Commission seismologist Aaron Velasco said that many cases of induced seismicity from hydraulic fracturing have been deemed negligible compared to wastewater injection.

Studies dating to the 1970s have shown that injecting water into disposal wells can

trigger seismic events, he said. In response, the agency in 2014 altered its disposal well regulations. These regulations require operators seeking permits to do a search on historic earthquakes in a 100-square-mile area around the proposed site; allow the commission staff to require more information from the applicant; and modify, suspend or cancel a disposal well permit if that well is likely to contribute, or is found to contribute, to seismic events.

The new rules have been effective, but more needs to be known about seismicity, he said.

Velasco said seismic activity has been occurring in areas without known active faults because officials are struggling to gain a better understanding of the state's subsurface geology.

"Updated fault maps are critical for assessment," he said.

That is something the Bureau of Economic Geology at the University of Texas is addressing, he said. The BEG oversees TexNet, the system of seismometers placed around the state to detect even low-level seismic events that can't be felt by humans. For example, the TexNet sensors detected a 2.9 magnitude quake near Pecos on Feb. 11 and a 3.4 magnitude quake near Snyder on Thursday.

The seismic network around the state has been inconsistent, Velasco said. The challenges to improving knowledge of the state's seismicity include understanding seismicity, realizing an area of current seismicity may have been active for years, and the difficulty of assessing changes without a historic context.

Among the needs to be considered in evaluating an application for a disposal well are historic and current seismicity around the proposed site, its proximity to mapped faults and fault slip potential around the proposed well, he said.

But any changes to disposal well rules "must be based on the most up-to-date research data," Velasco said.

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