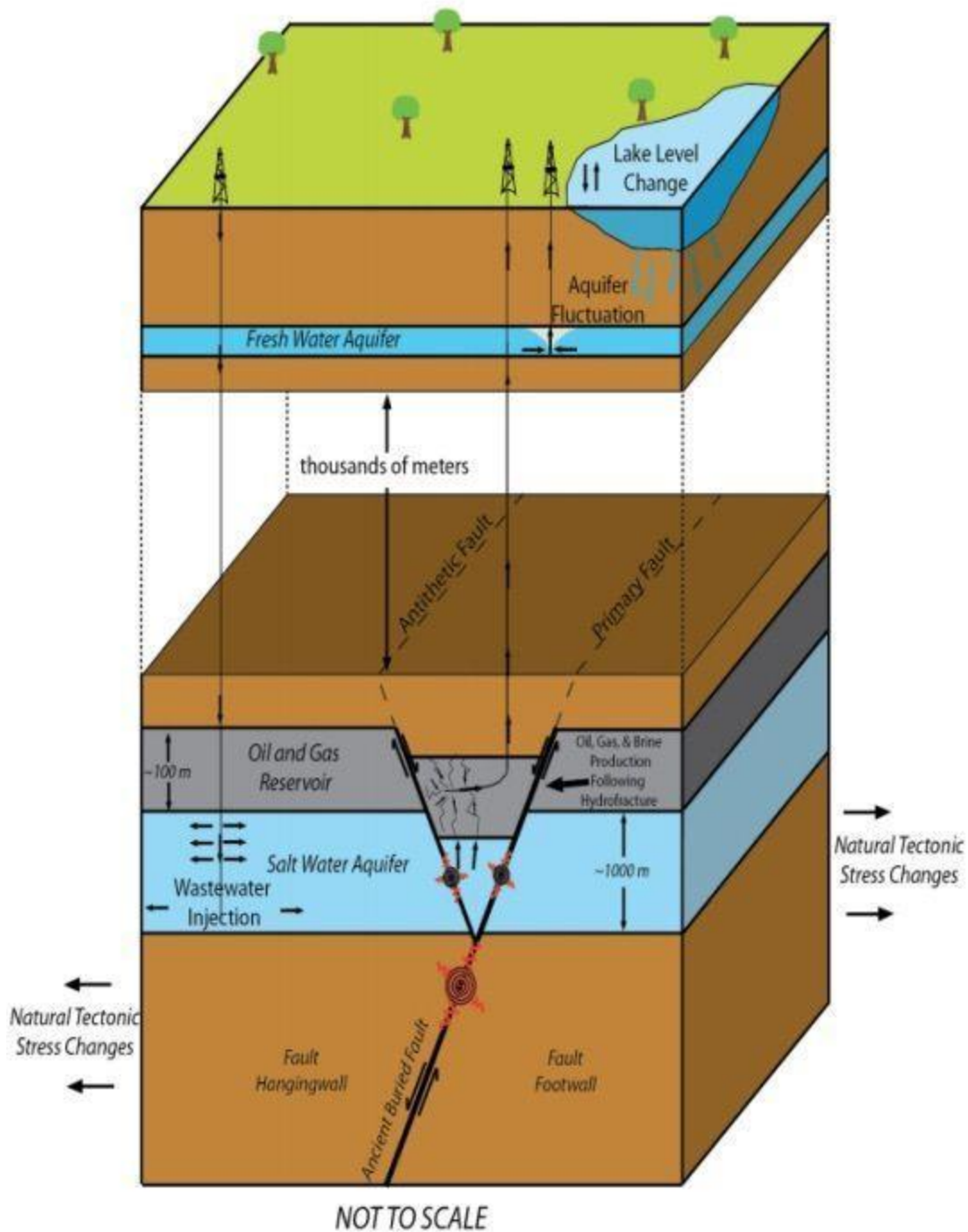


RRC notes well activity could cause earthquakes in JC

- By Todd Glasscock reporter3@trcle.com
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Natural and Human-Made Stress Changes that Cause Earthquakes



- Bill Ellsworth | U.S. Geological Survey

This graphic shows natural and man-made stress changes that can cause earthquakes. (Courtesy of Bill Ellsworth | U.S. Geological Survey)

In a statement released this week, Texas Railroad Commissioner Ryan Sitton specifically named Johnson County as an area potentially at risk for non-natural earthquakes caused by injection well activity.

The Railroad Commission plans to collaborate with three research groups, the Bureau of Economic Geology and the Center for Integrated Seismicity Research and the Texas Seismometer Network, according to the release, "to better understand both naturally occurring and potentially induced seismicity and the associated risks."

The release specifies Johnson County as an area these groups want to look into more closely as potentially affected by oil and gas injection activities.

"The science is clear that it is physically possible for injection wells that dispose of fluids deep underground to cause earthquakes in certain rare cases, given the right set of conditions," Sitton said in the statement. "I have been working diligently on this issue since I joined the Commission in 2014, and after thorough study and visiting with researchers and operators across Texas, I have determined that we need to begin to look more closely at oil and gas injection activities in specific areas. One such area is Johnson County. I have seen credible data and science from operators that lead me to believe that area has elevated risks of seismicity related to disposal activities, and therefore warrants additional investigation."

A study in the journal *Science* recently confirmed five quakes, one of which was a 4.8 magnitude temblor, in East Texas in 2012 and 2013 were directly related to injection wells, the sites used to store waste water from oil and gas drilling.

Stanford geophysicist William Ellsworth, who co-authored the study, told the *Dallas Morning News* that researchers developed a technique using radar and satellites that can determine which quakes are natural and which are man-made. It also showed high-volume deep water wells are kinds of wells responsible for the quakes.

While Johnson County sits within the Balcones-Ouchita fault zone, recent data from the U.S. Geological Survey suggests the county is at a less than 1 percent chance of experiencing a significant earthquake, whether natural or induced, although the data also suggested Texas as a whole and the DFW area in particular are at a higher risk of damaging quakes like those seen in California and Oklahoma.

Though rare, quakes have occurred within the county. Just last year a 4.0 magnitude quake struck near Venus, causing some minor damage to mobile homes in the area. That quake prompted the Railroad Commission to investigate the pressure on five wells in the area, but the investigation revealed no conclusive evidence the wells had induced the quake.

The previous year a 3.4 quake also struck near Venus, and smaller quakes have been felt throughout the county since 2009, when Barnett Shale exploration began to heighten, though there was nothing conclusive as to the cause of these quakes.

In the statement, Sitton said concerns over injection wells differs from that over hydraulic fracturing, or fracking, which a study at SMU linked to a series of quakes last year in Azle.

Fracking frees oil and gas from rock formations through injecting water, sand and chemicals into those formation and the practice is often confused with the use of injection wells, Sitton said.

Fracking, Sitton acknowledged in his statement, "can cause micro earthquakes that are almost never felt."

Earthquakes that damaged property this month in Oklahoma have spurred at least one legislator in that state to call for the Oklahoma Corporation Commission to stop the use of injection wells.

