

“BEFORE THE STATE CORPORATION COMMISSION OF THE STATE OF KANSAS”

In the matter of the application of Quail Oil & Gas, LC to authorize injection of saltwater into the Arbuckle formation at the Sly 2-6 SWD well, located in the NE SE of Section 6, Township 17S, Range 6E in License No. 33185. Morris County, Kansas, Complainant Scott Yeargain of Ottawa, KS on behalf of Kansas Water hereby files an *amicus brief* in the matter of abrogation for Respondant, Kansas Corporation Commission's 21 September 2017 ruling on Docket No: 17- CONS-3484-CUIC, pursuant to 2015 Kansas Statute 55-606. Rehearing; judicial review., part (b), with intent to utilize K.J.R.A. Statute 77-622.

Assigned to docket 17-CONS-3484-CUIC.

Request for Rehearing is due to:

1. Known data conflicts with Rene Stucky's testimony, document number TR1701715 in 2017-COND-3484-CUIC, "there are many places in Kansas and other states where Arbuckle disposal wells are prominent on ancient faulted rifts and uplifts, without any evidence of induced seismicity." Specifically, the Oklahoma Corporation Commission states that "Researchers largely agree that wastewater injection in to the Arbuckle formation, the state's deepest formation, poses the largest potential risk for induced earthquakes in Oklahoma." (OCC website, October 7, 2017). And, the Oklahoma Corporation Commission Oil and Gas Conservation Division "took its first action on Arbuckle disposal wells regarding earthquakes concerns in September 2013, resulting in one well shutdown and the prevention of the startup of another." (OCC website, October 7, 2017) Further, on August 9, 2017 the OCC mandated disposal well volume reductions in the Edmond area. On November 8, 2016 the OCC mandated modification of operations of 54 Arbuckle disposal wells. On November 3, 2016 the OCC issued a directive affecting 38 Arbuckle disposal wells under OCC jurisdiction and 26 Arbuckle disposal wells under sole EPA jurisdiction.

Further, application of the standard of "imminent harm" pursuant to KSA 65-170 reveals that such standard has limited applicability in appraising seismic risk. Data reveals (McGarr and Barbour, Geophysical Research Letters, Sept., 2017) that the earthquake sequences in Fairview, Pawnee, and Cushing, Oklahoma were not determined to be imminent prior to their occurring February, September, and November, 2016 respectively. Part of the reason for this is that faults in the relevant areas were unknown to geologists and geophysics. Hence, the concept of "imminent harm" was not demonstrated by virtue of uncertainties due to unknown and therefore unmapped faults. Conclusion: the concept of "imminent harm" has limited application in areas where there is tectonic strain accumulation like the area in TWP 17S, Range 6E, Section 6 of Morris County Kansas.

2. The Kansas Corporation Commission's order of March 2015 and August 2016 covering Harper and Sumner and "Areas of Concern" limits daily volumes of injections into disposal wells. Study of the data from the Fairview, Pawnee, and Cushing, Oklahoma M5 or greater events reveals that these events are closely related to the total volumes of injected water within a 10 km radius of these events. Consequently, limiting daily injected volumes may be less relevant than the cumulative volumes of such injections. In the Fairview, Pawnee, and Cushing events the daily volumes of injections were much below their peak daily injection rates in the months prior to their M5 or greater events,

and in the case of the Fairview event, the peak daily injection rate occurred 8 years prior to that M5.1 event. (McGarr and Barbour, 2017) In conclusion, this evidence points to the consideration that the sum of injection volumes is the trigger of seismic events rather than the daily or annual volumes. This conclusion has relevance to present application by virtue of applicant's proposal to inject up to 5,000 bbls/day as part of a larger pattern of injection in the Humboldt region and thus adding to the cumulative volume.

3. The standard of "imminent harm" applied in the permitting of Quail Oil and Gas is arbitrarily restrictive. One may conceive of alternative standards, for instance, "magnitude of harm," or "irreversible harm," or "equity of harm." To wit, a harm may be large in magnitude (e.g., a thermonuclear event) and yet not imminent; or irreversible, as, perhaps, is the case with CO2 atmospheric concentrations rising above 500 ppm, yet not imminent, or, in the case of "equity of harm" one might conceive of a small and largely inconsequential benefit accruing to an individual or party at the cost of a hard-to-calculate but nevertheless real harm to a large group---think of the small benefit to a small company by injecting waste water into a well in Morris county, Kansas with the potential for a seismic event of M3 or greater within 30 miles of Council Grove, Kansas and the effects of such on infrastructure. In the case of the M5.0 Cushing earthquake the city of Cushing suffered much structural damage but the large oil pipeline and storage facility escaped damage. But no one prior to this M5.0 event knew that this strategic oil storage facility would be spared. Conclusion: a metric to balance benefits and yet non-imminent but nevertheless real harm is needed and necessary but not present in the permitting of the Quail Oil & Gas application.

Prayer: WE the People of Kansas Water file our docket in regards to a request for rehearing in Kansas Corporation Commission's 21 September 2017 ruling on Docket No. 2017-CONS-3484-CUIC, with a moratorium on this docket until the provisions set forth within our numbered Testimony above are adequately addressed by the Kansas Corporation Commission and Quail Oil, as relevant to their role in the decisions or actions. It is so written.

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