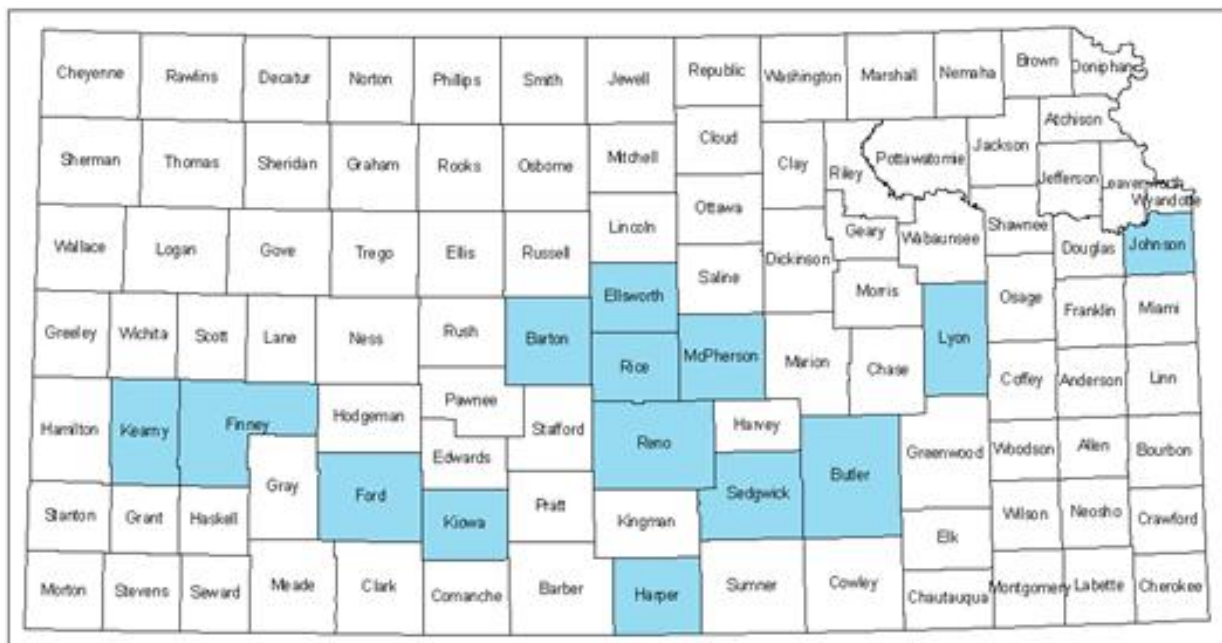


Testimony on Kansas Seismicity
to
House Energy and Environment Committee
Presented by Mike Tate, PE Director, Bureau of Water and
January 26, 2015

My name is Mike Tate. I am the director of the Bureau of Water at the Kansas Department of Health and Environment (KDHE). I appreciate the opportunity to appear before you today to discuss the role KDHE plays in addressing the issue of induced seismicity.

As Rex Buchanan with the Kansas Geological Survey (KGS) stated in his remarks, the Governor constituted the Induced Seismicity Taskforce last year. I was included on the Taskforce because of the role KDHE plays in permitting what are referred to as Class 1 underground injection wells. Class 1 wells are very similar to the Class 2 wells permitted by the Kansas Corporation Commission (KCC). While Class 2 wells are limited to the injection of fluids from oil and natural gas production, Class 1 wells receive fluids from other activities. Regardless, the goal of each program is the same, to protect fresh groundwater above the injection zones. In Kansas, we have 49 permitted Class 1 wells located in the counties identified on the following map.



While the Agency encourages underground disposal as a last resort, some waters have such high concentrations of undesirable materials, Class 1 wells are the only feasible means of disposal. Class 1 wells are used for

anything from disposing concentrated salt from the City of Hutchinson reverse osmosis drinking water plant to landfill leachate.

As Rex mentioned previously, there is some thought that underground injection of fluids could play a role in induced seismicity, however we are still trying to pin down the exact mechanisms and did not want to rule out Class 1 wells as a possible contributor. Thus, KDHE's role on the Taskforce.

The Taskforce developed and presented to the Governor a *Kansas Seismic Action Plan* (copies provided). The plan was developed by staff at KGS, KCC, and KDHE along with input from interested stakeholders. As with many group efforts, the Plan reflects the best judgement of the Taskforce although it does not embrace all comments received - several of which were contradictory.

The Plan addresses the need for additional seismic monitoring which you will hear about from KGS. The Plan also lays out a response mechanism for seismic activity. Briefly, the Plan calls for KGS to assess a seismic event against a *Seismic Action Score* or SAS. The SAS is based on a number of factors including the magnitude, proximity to structures, numbers of events in a contiguous time period, etc. The score is designed to identify potentially significant induced events for further study. If the SAS is not triggered, no other action is required. If it is triggered, KGS will notify KDHE and KCC. KDHE and KCC will identify injection wells in the area. Operators of any wells of interest are requested to provide injection data to the appropriate agency. Those data are compiled and KGS, KCC, and KDHE assess whether additional regulatory or non-regulatory actions are needed.

As stated in the original Plan, the SAS is a new concept developed by KGS, KCC, and KDHE that might need tweaking. After a trial run, the formula has been tweaked to address both under-triggering and over-triggering of action by the Agencies. The exact modifications are described in an endnote to the Plan. The copies of the Plan you each have before you reflect those tweaks to the SAS.

The three Agencies are implementing the Plan and collecting valuable data. KGS is doing some very creative, science-based work to utilize the data which will allow the State to make informed decisions on induced seismicity. The work is time consuming and tedious, but will provide the State with a better understanding of induced seismicity. With that more complete understanding, the desire is that KDHE and KCC can adjust their underground injection requirements if injection is conclusively linked to induced seismicity in Kansas.