

## Enviros warn fracking-related earthquakes could threaten proposed NISP dams

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Imagine this hypothetical scenario: Numerous oil and gas wells are one day drilled near the dam sites for the proposed Glade and Galeton reservoirs.

Drilling causes earthquakes and other problems threatening the stability of the dams. And then, the dams break, jeopardizing the lives and livelihoods of all who live near them.

Such a catastrophe may never happen in Colorado, but environmentalists are using the mounting questions about how fracking affects both seismic activity and the structural integrity of dams as more reasons to oppose the Northern Integrated Supply Project, including the proposed Glade and Galeton reservoirs.

Save the Poudre sent a letter to the U.S. Army Corps of Engineers in November urging it to include in its environmental review of NISP the possibility that oil and gas wells being drilled at and around the proposed Galeton Reservoir site east of Ault may lead to dam failure.

Save the Poudre's concerns may not be exaggerated. In 2011, the Army Corps issued a moratorium on oil and gas drilling within 3,000 feet of existing Army Corps dams in Texas, citing questions about how drilling and fracking could compromise the dams' structural integrity.

The Army Corps is now doing a yearlong study of how fracking could impact aging dams. Results are expected early next year.

"There are some concerns, because if those dams do fail, there are some significant impacts," said Randy Cephus, spokesman for the Army Corps' Fort Worth, Texas, district. "We want to know what is a safe distance (for drilling) from there because the potential is so great."

He said there are fissures and faults near dams in Texas, and vibrations from drilling and fracking could harm old dams that may be destabilizing with age.

Save the Poudre is also urging the Army Corps to study how oil and gas drilling-induced earthquakes could affect NISP dams.

"Our concern is that the National Environmental Policy Act, which requires a full scientific reckoning of all environmental impacts, be adhered to," said Save the Poudre Executive Director Gary Wockner. "In other areas of the country, concern has been raised about fracking causing earthquakes causing potential dam failures."

Though geologists disagree about the level of the threat, scientists suggest there is a direct link between earthquakes and underground water injection, regardless of whether it's related to oil and gas drilling and fracking, which often involves injecting up to 5 million gallons of water and chemicals deep into the ground.

"I think that's something we have to look at and always be alert to," said Vince Matthews, director of the Colorado Geological Survey.

But officials at Northern Water, which is responsible for building NISP, say linking fracking-induced quakes to possible dam failure is going to far.

“The participants in the NISP project have no objection to investigating any possible linkage between fracking and oil drilling and potential safety of the dams,” said Northern Water General Manager Eric Wilkinson. “It needs to be studied, but to conclude that it will cause the failure of dams is premature, and right now without basis.”

The U.S. Geological Survey has long attributed earthquakes occurring in the Denver area to a waste fluid injection well drilled at Rocky Mountain Arsenal in 1961.

Despite decades of drilling and fracking in Weld and Larimer counties, no earthquake has occurred in either county east of the foothills since 1969, when the only earthquake ever recorded in Weld County occurred east of Greeley — a magnitude 4.2, according to CGS data.

Matthews said earthquakes have been caused not only by water injection, but also by coal mining, reservoir filling and other human activity.

The USGS has studied earthquakes in southern Colorado since 2001 and attributes them directly to drilling. The biggest of those quakes was a magnitude 5.3, which rocked the Trinidad area in August 2011.

The research, to be presented Wednesday at an American Geophysical Union meeting in San Francisco, concludes that the magnitude of earthquakes near Trinidad has increased along with the volume of fluid injection from nearby coalbed methane drilling in Las Animas County.

“The deep injection of wastewater associated with this gas production has induced a sequence of earthquakes starting in August 2001, shortly after the beginning of major injection activities,” concludes Arthur McGarr, a seismologist at the USGS Earthquake Science Center in Menlo Park, Calif., in his research abstract.

Matthews called McGarr’s conclusions “premature” because the USGS may not have had access to CGS data from a new seismic monitoring network installed near Trinidad. That data suggests that a geothermal anomaly might be responsible for those quakes instead of drilling, Matthews said.