

## Siting confinements on karst topography is dangerous

The Sierra Club has been alarmed by the livestock industry siting confinements on land with karst topography.

Karst “describes topography formed by the dissolving action of groundwater on underlying carbonate bedrock and characterized by sinkholes, caves, underground drainage, and springs”.<sup>1</sup> An area with karst can be riddled with fissures and crevices in the underlying rocks. The landscape where karst is found is somewhat like Swiss cheese. “There are three areas in Iowa where large numbers of sinkholes exist: (1) within the outcrop belt of the Ordovician Galena Group carbonates in Allamakee, Clayton, and Winneshiek counties; (2) in Devonian carbonates in Bremer, Butler, Chickasaw, and particularly Floyd and Mitchell counties; and (3) along the erosional edge of Silurian carbonates in Dubuque and Clayton counties.”<sup>2</sup>

The big problem is that the dissolving action can create sinkholes which are created when the overlying soil and rock collapses, creating a depression. As you can imagine, anything built on top of the sinkhole can also collapse. That means that manure storage structures can crack, be torn apart, or collapse which would release manure into the landscape. “Geologists spend much time explaining that groundwater isn’t contained in underground rivers. However, in karst aquifers the underground river analogy isn’t that far off; major conduits are like the main stem of a river, and the smaller voids and fractures are like a three-dimensional web of tributaries. This is in contrast to sand, gravel, and sandstone aquifers, where groundwater movement is more uniform throughout the aquifer. And much slower as it works its way between the individual sand and gravel particles.”<sup>3</sup>



A sinkhole on an Iowa farm. Photo by Jess Mazour.

The manure can travel over the surface and into rivers, streams, and lakes. Or it can move through the soil into the groundwater and then slip through the fissures and crevices. The manure can contaminate underground water sources and springs.

Obviously it is extremely risky to build a livestock operation over karst topography. Yet, two large projects are doing that – Supreme Beef in Clayton County and Johnson Brothers (JT Enterprises, LTD) in Carpenter, Iowa, in Mitchell County.

---

<sup>1</sup> Jean Cutler Prior, Janice L. Boekhoff, Mary R. Howes, Robert D. Libra, Paul E. VanDorpe, “Iowa’s Groundwater Basics”, Iowa Department of Natural Resources, 2003, Page 74

<sup>2</sup> Iowa Geological Survey, <https://iowageologicalsurvey.org/hazards/>

<sup>3</sup> Edited by Robert D. Libra, “Living in Karst”, Iowa Geological Survey Guidebook Series No. 25, Iowa Field Conference for Public Policy Makers, October 11-12, 2005, Iowa Department of Natural Resources, Page 13

## **Supreme Beef**

Supreme Beef is located near a trout stream in Clayton County and in an area with a shallow aquifer. The Sierra Club is continuing its battle to protect Bloody Run Creek by challenging the nutrient management plan.

## **Johnson Brothers (JT Enterprises, LTD)**

A second controversial project came before the Department of Natural Resources (DNR) because Tim and Joe Johnson, owners of a feeder calf operation called Johnson Brothers, built an underground manure storage tank in karst without a permit. The Johnsons claimed that they did not know they needed a permit. As Erin Jordan of the Cedar Rapids Gazette reported, Tim Johnson “thought installing the tank would fix a problem, which was not having a place to put manure during the winter months when Iowa law bans application on frozen ground.” The Johnsons were caught applying manure to frozen ground and not having a manure management plan, which resulted in a DNR complaint on February 2, 2016, and a consent decree in 2020. The DNR requested that the Johnsons hire a licensed engineer to investigate lowering the groundwater around the tank. The engineer’s report indicated that the concrete manure structure did not meet the regulations for karst terrain and an operation of more than 500 cattle, but that the tank was built above the groundwater table. Although the DNR considered that the Johnsons not be allowed to use the tank, DNR finally approved use of the tank if there are fewer than 500 cattle occupying the operation. When the Johnsons reduced the number of cattle to fewer than 500, that classified the operation as a small animal feeding operation which reduces the regulations put on them.<sup>4</sup>

However, the regulations for manure management plans are based on the capacity of animals that can be housed in the buildings, not how many animals are currently living in the building. The Johnsons should have been required to follow the rules or leave the business if they couldn’t afford to comply. The DNR’s duty is to protect the environment, not placate the producers.

## **Conclusion**

Unfortunately, it appears that the livestock industry believes that Iowa is the wild wild west. They don’t think they have to comply with Iowa laws and regulations, they think they can do what they want and nothing will happen, they plead ignorance in spite of outrage across the state about polluted water. And they don’t believe in protecting Iowa’s waters. The DNR needs to come down hard on livestock operations that are not complying with the rules.

---

<sup>4</sup> Erin Jordan, “Manure tank without permit could prove costly”, Cedar Rapids Gazette, November 13, 2021;

Erin Jordan, “DNR lets cattle producer use manure tank in karst terrain”, Cedar Rapids Gazette, December 24, 2021;

Iowa Department of Natural Resources Administrative Consent Order, Case 2020-AFO-32, In the Matter of JT Enterprises, LTD, AFO Facility ID 68747, signed December 10, 2020