

Sinkholes may be common, but the Louisville Zoo's crater is unusual

Billy Kobin, Louisville Courier Journal Published 5:45 p.m. ET March 8, 2019

The [huge sinkhole that unexpectedly appeared](/story/news/local/2019/03/06/louisville-zoo-sinkhole-found-no-damage-injuries-reported/3079776002/) at the Louisville Zoo this week was an isolated event, local officials said Friday.

But experts say the land around the zoo is actually conducive to small sinkholes because of its limestone bedrock.

This type of landscape is referred to as "karst," and it forms a big arc from Lexington to Bowling Green, said Thomas Brackman, who directs the Geophysics Laboratory at Western Kentucky University.

The karst landscape "is everywhere, but you just don't know about it until (a sinkhole) happens," he said. "We try to find sinkholes before they happen, and then it can be easily mitigated."

What caused the Louisville sinkhole?: [Here's everything you need to know](/story/news/local/2019/03/06/louisville-sinkhole-what-we-know-zoo-mega-cavern-cause/3082171002/)

The sinkhole — estimated to be 60 yards wide, 90 yards long and 50 feet deep — opened sometime between late Tuesday and early Wednesday in an undeveloped area of the zoo's property. No animals or people were injured.

It has since closed the zoo and the nearby Louisville Mega Cavern as crews investigate what caused the sinkhole. Officials have said the possible causes include rain runoff or "natural occurrences" underground.

Both parks will be closed through the weekend "out an abundance of caution," Louisville Metro Emergency Services spokesman Mitchell Burmeister said Friday.

He said preliminary findings from geotechnical and mining engineers suggest the zoo sinkhole is an "isolated, singular" event. He reiterated that engineers have determined [neighboring homes and businesses are safe](/story/news/local/2019/03/07/sinkhole-louisville-zoo-latest-hole-near-mega-cavern/3093415002/).

More: [How likely is an earthquake in Kentucky? The Big One could be coming](/story/news/local/2018/12/12/how-likely-earthquake-kentucky-new-madrid-seismic-zone/2287509002/)

While small to moderate-sized sinkholes can happen, Bill Haneberg, director of the Kentucky Geological Survey, said a sinkhole of this size is unusual.

"In general, the bedrock in Louisville is not conducive to the development of large caverns such as the one apparently associated with (Wednesday's) sinkhole, and our sinkhole experts do not know of any similar historical occurrences of that size," Haneberg said.

The Kentucky Geological Survey has mapped several smaller sinkholes in areas north of the Louisville Zoo, 1100 Trevilian Way.

The Mega Cavern, which backs up to the zoo's property, is a former limestone mine and stretches under parts of the Louisville Zoo and Watterson Expressway.

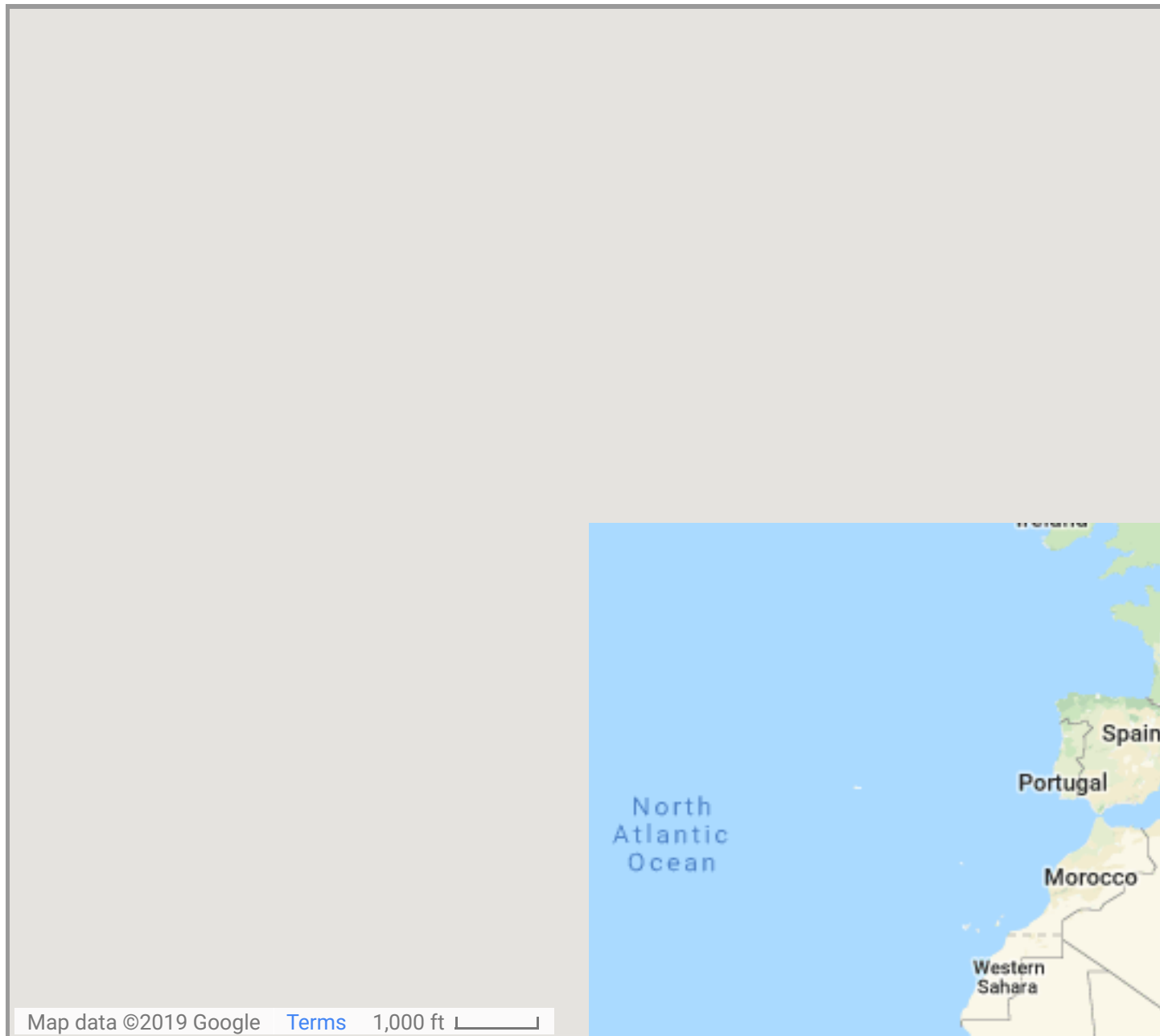
The Mega Cavern was already closed before the sinkhole was found due to [a 3.4 magnitude earthquake \(/story/news/2019/03/05/earthquake-near-maynardville/3070717002/\)](/story/news/2019/03/05/earthquake-near-maynardville/3070717002/) in East Tennessee on Tuesday. It's the cavern's standard procedure to close if seismic activity is detected, said Charles Park, the Mega Cavern's executive vice president.

Based on reports and available seismic data, Haneberg said "there is no evidence to suggest that the sinkhole occurred because of the earthquake."

Officials said they are working on a plan to fill or fix the sinkhole.

Brackman, with WKU, said crews normally would fill a sinkhole through an "inverted filter" process that involves boulders placed at the bottom of the sinkhole followed by finer gravel toward the top of it.

Next, a fabric material would be put near the surface that keeps the gravel separate from soil and dirt.



"Too much soil in (the sinkhole) traps water, and then the water moves sideways and starts cutting another sinkhole," said Brackman, who is also the vice president of Bowling Green-based geophysics firm Near Surface Geophysics Innovations. "You've got to allow the water to still be able to move through the soil, down and through."

With rain expected this weekend, officials said Friday that they've brought drainage pipes to the zoo to prevent water from flowing into the Mega Cavern.

Mentioning the sinkhole that [opened up at the National Corvette Museum in Bowling Green in 2014 \(/picture-gallery/news/local/2019/03/06/sinkholes-in-bowling-green-kentucky-corvette-pulled-from-museum-sinkhole-photos/3081416002/\)](/picture-gallery/news/local/2019/03/06/sinkholes-in-bowling-green-kentucky-corvette-pulled-from-museum-sinkhole-photos/3081416002/), Brackman said he would be "a little bit concerned" if he were living near the zoo's sinkhole.

"I've dealt with hazards for a long time. I know what this stuff will do to you, so yes, I am a little bit concerned," he said. "People like to downplay it, but is this a problem? Obviously."

See this: [A sinkhole in Kentucky opened up at the National Corvette Museum in 2014 \(/picture-gallery/news/local/2019/03/06/sinkholes-in-bowling-green-kentucky-corvette-pulled-from-museum-sinkhole-photos/3081416002/\)](/picture-gallery/news/local/2019/03/06/sinkholes-in-bowling-green-kentucky-corvette-pulled-from-museum-sinkhole-photos/3081416002/)

"It just happened to collapse in an area of the zoo that they didn't use," Brackman said. "I would rather err on the side of caution and would definitely make sure that critical infrastructure is checked."

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