

# Sinking Missouri threatens bridges

**Erosion** | As the river's bottom washes away, levees are weakened and navigation is unsafe

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KANSAS CITY, Mo. — The Missouri River is sinking.

As engineers try to figure out why, the phenomenon threatens to damage billions of dollars in property, weaken levees and bridges, and expose navigation hazards such as sunken piers and underwater pipelines.

The problem is this: Parts of the nation's longest river are losing elevation. The so-called "degradation" process is not affecting the amount of water in the channel, but the water is physically lower on Earth because the river bottom is washing away.

The water depth is not changing, and the situation is nearly imperceptible from shore. But for engineers, it's a costly headache.

"Part of the whole problem is it's not visible," said John Grothaus, chief of planning for the Army Corps of Engineers in Kansas City, where the riverbed has dropped by about 12 feet over the past 50 years.

"It's not in the public eye. You can't see it on the river."

Degradation has been observed in waterways across the country, but many scientists are focused on the Missouri River, which is used for shipping many



Mike Klender, Kansas City water supply division assistant manager for operations, stands by one of the city's auxiliary water intakes along the Missouri River in Kansas City, Mo., on Thursday. The Missouri is slowing sinking, as the river bottom erodes, which puts bridges at risk.

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agricultural products and provides drinking water to many cities.

Researchers do not know exactly why the channel is sinking in places from southeast Nebraska to St. Louis, but possible causes include natural erosion and the effects of man-made structures such as dams.

Researchers are unsure whether the process can be reversed or how much it would cost to fix it.

As the river drops, it also erodes the banks and bottoms of tributaries that flow into the main channel, causing similar problems there.

But the greatest risk is to infrastructure such as bridges. When the riverbed erodes, it exposes more of the pylons that hold up bridges. That reduces the support the foundation gets from being buried in the ground.

For instance, a bridge designed to have its pylons buried 10 feet in the riverbed might now be buried only 8 feet deep. If not corrected, the erosion can increase the risk for collapse.

"You have to look if that were allowed to continue, what could be the problem that could occur," said Christina Ostrander, the corps' project manager.

Also at risk are levees such as those separating the Missouri River from an estimated \$20 billion in developments, including Kansas City's downtown airport, a General Motors plant and the entire suburb of North Kansas City.

The Missouri begins near Three Forks, Mont., and flows south into the Mississippi north of St. Louis. Since at least the 1920s, its elevation has gradually declined, but the drop has been precipitous over the past decade. The start of the most rapid decline seems to be the 1993 flood, which took several feet out of the river.