

HENNEPIN COUNTY

MINNESOTA

Chair Ginny Klevorn
House State and Local Government Finance and Policy Committee

HF 2408

Friday, March 16, 2023
1:00 pm, State Office Building, Room 10

Chair Klevorn and committee members, I am grateful for the opportunity to speak to you today about HF 2408, a proposal to study the physical integrity of St. Anthony Falls and to determine the consequences if the falls were to succumb to erosion or structural failure. My name is Eric Waage. I am the Director of Emergency Management for Hennepin County.

An important responsibility of emergency management is to identify and assess hazards that have the potential to harm our residents and our communities. Risk is calculated in terms of likelihood and consequences. We identify hazards which have a likelihood to occur and could cause major impacts on the community. Sometimes we inform property owners on how to reduce their risk through mitigation. When feasible we monitor the hazard to provide as much warning to the public as possible.

A potential hazard in Hennepin County that we do not fully understand yet is St Anthony Falls. The natural falls before human development was in its final stages of its life. It only had a few thousand feet of hard limestone cap left before it would have cut into an ancient river channel filled with soil, sand and gravel and disappeared. As the City of Minneapolis developed, its industry needed the falls for power. Extensive tunneling by industry to distribute this power nearly caused the falls to be destroyed. A dramatic intervention in the 1870s by the US Army Corps of Engineers saved the falls by excavating and installing an underground dam, called the Cutoff Wall, deep within the soft sandstone layer covered by the limestone cap.

A 2021 report by the US Army Corps of Engineers stated: *"The falls would disintegrate into rapids if the dam were abandoned or removed without extensive stabilization. A head cutting erosion would extend far upstream, affecting roads, bridges, homes, and other infrastructure. Additionally, it would have profound impacts on water turbidity and sediment load that would continue for many decades. The sediment influx would end up in dredge shoals in Pool 2 and would likely result*

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in increased dredging. It is conceivable that degradation could extend 30 miles upstream (somewhere between Elk River and Monticello), with resulting sediment influx approaching 1 million cubic yards/year. The 19th century architects of the falls recognized that loss of the falls would be catastrophic. With the upstream and downstream development along the river, the same conclusion applies today.

USACE (2021). Upper St Anthony Falls Lock and Dam, Section 216 Disposition Study, p. 18

Clearly, this creates many questions that must be answered for emergency managers in cities and counties along this stretch of river to be able to define and understand this potential hazard. Which roads, bridges, pipelines, water intakes and other infrastructure would be impacted by cutting erosion upstream. How would the infrastructure downstream be impacted by the large volume of sediments deposited on them? What would happen to the water table in the cities and towns when river levels change so dramatically? How fast could the erosion move in the sands and gravels upstream of the falls? To answer these questions requires a detailed model of the failure of the falls.

Much of this hazard is very difficult to assess. It is deeply buried. It requires special expertise and tools to see. We need a detailed map of what is left of the limestone caprock and what kinds of damage it has sustained since the industrial era. We need to see what effect the continual natural flow of underground water has had in the area, enlarging joints and seams in the sandstone. Has the underground water begun to excavate around the Cutoff Wall? We also need to understand how well that the Cutoff Wall structure itself has held up over the past 150 years. To answer these questions requires a geophysical study to look inside the rock.

With this information, emergency managers can develop an understanding of the stakes of a potential failure of St Anthony Falls. We could quantify the consequences and will have a much better grasp of the potential, or likelihood, of a failure at the falls. We could accurately assess the overall risk of this event. This assessment would improve preparedness and mitigation efforts of at-risk communities all along the river. It would also help those agencies responsible for the falls and dam to make informed protective action decisions and investments.

Respectfully,



Eric Waage
Director