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April 30, 2023

To: State and Local Government and Elections Conference Committee
Re: St. Anthony Falls cutoff wall study appropriation

Dear Chairs Murphy and Klevorn and committee members:

Thank you for your consideration of the funding request for a study of the St. Anthony Falls cutoff wall. We appreciate the House's inclusion of $1 million for this study in its omnibus bill and we urge the conference committee to adopt this full funding recommendation.

This project would fund the University of Minnesota's St. Anthony Falls Lab to study the condition of the cutoff wall and surrounding geology, examine potential failure risks, and collaborate with Hennepin County to complete a hazard assessment to protect the area's vital public infrastructure and public safety.

The cutoff wall is one of the Twin Cities' most neglected but crucial pieces of infrastructure. Because it's been largely ignored since its construction in 1876, and no entity accepts ownership or responsibility for this orphan hazard, no one knows whether this wall presents a risk to our water supply and riverfront bridges and structures.

The cutoff wall was built by the Army Corps of Engineers in 1876 after a series of mill tunnel collapses undermined the falls area's very fragile geology, creating whirling vortexes of water and endangering surrounding infrastructure. The wall spans the entire river just upstream of St. Anthony Falls; it starts under the river bottom and runs down 40 feet underground.

If the cutoff wall or the surrounding geology were to fail again in any way, the falls' chaotic and dangerous past could be our future, as well. But because no one knows who owns the cutoff wall today, it hasn't been inspected or maintained in decades (most similar dam-like structures are inspected every 1-2 years by law). Many geologists have told us that it's very reasonable to worry that the river is flowing over, under, or even through this nearly 150-year old wall in ways that will eventually undermine its structural integrity.

We have reason to be deeply concerned about the condition of this wall, and we have reason to worry about the serious consequences should it fail. The cutoff wall helps maintain the

upstream water levels at Minneapolis' water supply intake. If the wall failed, river levels could drop too low for the water supply intake to work. St. Paul's water supply intake is only a few more miles upstream and could also be at risk. Together, Minneapolis and St. Paul provide water to one million Minnesotans in 15 cities. Imagine our schools, hospitals, fire hydrants, homes, and international airport all losing their water supply within a matter of days.

A cutoff wall failure could also cause the river to begin cutting down its bed upstream to level out the nearly 50-foot difference from above the falls to below it. This geologic activity could very quickly compromise MnDOT's Third Avenue Bridge just feet upstream from the wall. Additional bridges, roads, parks, utilities, homes, and riverfront structures could be compromised as far as 30 miles upstream. The consequences could be disastrous and costly.

How likely is this failure risk? No one knows.

The state is an appropriate party to bring attention to this issue by funding this research project. We need to act before there is a crisis that will leave everyone wondering who was warned about this problem but failed to take action. Long-term, we will likely need federal and state involvement to answer the question of the wall's ownership. But right now, we need to act to protect Minnesotans and all of our public infrastructure that depends on the Mississippi River.

Attached to this letter are a recent Star Tribune commentary about this issue as well as prior written testimony from Hennepin County and the City of Minneapolis. We appreciate your interest in this issue and ask you to support the full funding appropriation for this study. Thank you.

With gratitude,

Whitney L. Clark
Executive Director

Colleen O'Connor Toberman
Land Use & Planning Director

StarTribune

OPINION EXCHANGE

The most critical infrastructure you've never seen

The dam under the Mississippi River at St. Anthony Falls could fail tomorrow, or in 146 years. We don't know for sure — and that's a problem.

By John O. Anfinson
APRIL 25, 2023

On Nov. 24, 1876, the U.S. Army Corps of Engineers saved St. Anthony Falls. On that day, they finished a cutoff wall, or dam, under the Mississippi River and below the thick but fractured limestone riverbed. The cutoff wall runs three stories deep and spans the river. It is an essential piece of Twin Cities infrastructure that no one can see and few know exists.

It has been 146 years since the Corps completed that wall, and we have no idea of its condition, or that of the surrounding geology. That's because no one accepts ownership, meaning no inspections, no maintenance and no emergency action plan.

If the wall failed and we couldn't get control, the river would begin cutting down its bed to level out the nearly 50-foot difference from above the falls to below it. Anything resting on the limestone — including the 3rd Avenue Bridge and the horseshoe dam — could collapse as the river ate away the soft sandstone foundation.

If the reservoir above the horseshoe dam drained, Minneapolis, the suburbs it supplies and the International Airport could lose their water. Minneapolis only has a three-day reserve.

The river would become a rapids for miles upstream, threatening more infrastructure. Billions in riverfront development depend on the St. Anthony Falls.

The Corps constructed the wall in response to a series of catastrophic events that occurred between 1867 and 1875, some natural and some caused by timber and flour millers. By 1874, the Corps recognized that only a cutoff wall could preserve the falls.

Why should we worry? In a 2020 article, National Geographic wrote, "Many U.S. dams were built with now-outdated standards and methods, as well as for different climate trends. What's more, dams need continual maintenance to keep operating safely over the decades. Valves break. Metal rusts." And, the author noted, "By 2025, 70 percent of them will be more than a half century old ... ."

While we should worry about dams that are half a century old and built with "outdated standards and methods," we should consider that the cutoff wall is nearly three times that age, and we know little about what might have cracked, crumbled or rusted. Standards and methods have certainly changed since 1876.

When the Corps completed the wall, Ulysses S. Grant was president, and Colorado was admitted to the union that year as the 38th state.

I don't know whether the cutoff wall will fail this year, next year or anytime in the next 146 years. No one does. And that should worry us. No one has thoroughly studied the wall or the adjacent geology since 1876.

After every disaster, the public, press and politicians ask three questions: who knew what, when, and what did they do about it? I have been working with Friends of the Mississippi River and the National Parks Conservation Association to answer the first two questions. We need the Minnesota Legislature to address the third.

We are simply asking for a study to inspect the cutoff wall and surrounding geology. Doing so at least once every 146 years seems reasonable.

The House government finance omnibus bill included $1 million for a study, but the Senate bill did not. We hope the conference committee will accept the House recommendation and move this long overdue inspection forward.

John O. Anfinson is a longtime Mississippi River historian and retired superintendent of the Mississippi National River and Recreation Area, a unit of the National Park Service.

HENNEPIN COUNTY
MINNESOTA

Chair Erin Murphy
Senate State and Local Government and Veterans Affairs Committee

SF 2568

Thursday, March 15, 2023
12:30 Senate Room 1200

Chair Murphy and committee members, I am grateful for the opportunity to speak to you today about SF 2568, 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 help inform property owners on reducing their risk through mitigation. When feasible, we also 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*

Hennepin County Emergency Management
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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.

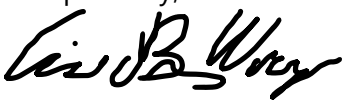
USACE (2021). Upper St Anthony Falls Lock and Dam, Section 216 Disposition Study, p. 18

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

Minneapolis
City of Lakes

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March 15, 2023

Chair Erin Murphy
Senate State and Local Government and Veterans Committee

Re: SF 2568 - University of Minnesota; St. Anthony Falls geophysical study funding provided, report required, and money appropriated

Chair Murphy and Committee Members,

The City of Minneapolis is pleased to write in support of Senator Champion's bill, SF 2568.

SF 2568 provides funding for a geophysical study and hazard assessment of the St. Anthony Falls area and St. Anthony Falls cutoff wall. Community members have brought forth concerns about the cutoff wall structure that the U.S. Army Corps of Engineers (USACE) constructed over a century ago to stabilize the falls. On behalf of the City, Mayor Frey formally requested that USACE inspect the infrastructure of the cutoff wall to ensure that it is in sound and safe condition. To date, they have not committed to that inspection.

As we await inspection by USACE, it would be informative to undertake the study funded in SF 2568. Thank you for your consideration.

Sincerely,

Katie Topinka
Director, Intergovernmental Relations