

SUMMARY OF PRESENTATIONS, LEGISLATIVE SUBCOMMITTEE ON WATER POLICY

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DR JOHN ANFINSON, NATIONAL PARK SERVICE, RETIRED (ST ANTHONY FALLS)

Key Takeaways: Determine ownership: The owner is responsible for inspecting and maintaining the cutoff wall. No identified owner means we have gone 145 years without an inspection. It means no federal or state agency is enforcing the laws and regulations that would normally apply. If no single entity owns the cutoff wall, the State of Minnesota would own the wall under the river - the largest portion.

The presentation by Julia Steenberg, reinforced how fragile the geologic structure is at St. Anthony Falls Brian Herridge, 3D- Geophysics, demonstrated that it is possible to study the cutoff wall and surrounding geology safely and in detail. Met Council recommendations for Water Supply Planning in the Metro Area reinforced need for studying the wall and determining ownership. Under Focus Area Goals, Water Supply Infrastructure, one focus area is: Communities can act quickly, thoughtfully, and equitably to address aging infrastructure... I know of no other piece of “aging infrastructure” that is so neglected. Under Vision, Regional water supply sustainability, the plan states: “Recognize uncertainty and minimize risk.” In its dam safety inspections for the Upper & Lower St. Anthony Falls locks and dams, the Corps calls out numerous uncertainties, and yet, with no evidence, says the risk of a cutoff wall failure is low. And, under the Framework for Action, System Assessment, Point 2 is Assess hazards, and 3 is Characterize risk. This points to the need for a thorough study. All of the above reinforce that the Met Council should include the cutoff wall in their planning.

Actionable Considerations: Press for a determination of ownership. At this time, I believe the Corps owns it. They built it as a navigation structure, and they have no evidence they turned it over to another entity. By his question to Lanya Ross, Senator Weber suggested that the Met Council should include the cutoff wall in its review of metro region water supply concerns. I agree. I plan to contact Lanya and offer to give a presentation Have the state work with the Corps and City of Minneapolis to conduct a thorough study. Rep. Omar’s office would be important for federal level actions. Follow up with Brian Herridge on studying the wall, including a cost estimate. Katie Smith, DNR, let us know that Xcel and the Corps believe the cutoff wall is not an immediate threat. However, I have seen no scientific evidence to support this conclusion, and Corps and Xcel reports suggest the opposite. As Brian said in a follow up email, he believes water is actively moving through the geology in cutoff wall area. Request scientific documentation from Xcel and the Corps for why the cutoff wall is not an urgent risk. And, seek a critical scientific review of what they supply. Happy to answer any questions you or subcommittee members may have.

JULIA STEENBERG <JSTEENB@UMN.EDU> (MINNESOTA GEOLOGICAL SURVEY):

Julia's presentation covered the geology of the falls and the surrounding Twin Cities area. General properties of the Platteville limestone, Glenwood shale and St. Peter Sandstone were described. The Falls have existed for 10,000 years beginning near downtown St. Paul. They retreated upstream creating a gorge-like valley over time now occupied by the Mississippi River. Maps and cross sections from Minnesota Geological Survey (MGS) recent mapping in Hennepin County show how little Platteville remains upstream of the current position of the Falls, and how it is inclined and thinning toward Nicollet Island. Groundwater flows through the fractured Platteville limestone and emanates at the bluff edges near the falls and all along the river gorge. **Continued groundwater fracture flow overtime will lead to erosion, weathering and dissolution of rock enhancing the size of fractures and possibly creating voids that would affect its stability.** If it is decided that site analysis, geophysics or drilling should be conducted the MGS role would be to provide input on how that might be best conducted from our geologic perspective, including what we have learned about the fractures and flow through them. We're happy to answer any additional questions.

BRIAN HERRIDGE, 3-D GEOPHYSICS:

I suggest we map the fracture grid just up-stream from the St Anthony cut-off wall. I recommend we pressure grout the large vertical fractured "chimneys" at the intersection of the large NE-NW fractures. We could monitor the grouting program... Certainly, research into the wells and completion logs around our site would be helpful. Given the advances in imaging and grouting I can't imagine another remedy.

KATIE SMITH, MDNR, DIRECTOR, DIVISION OF ECOLOGY AND WATER RESOURCES (ST ANTHONY FALLS):

DNR has met with Dr. Anfinson, USACE, Rep. Robbins, and Xcel Energy on this matter. We are aware of the concerns that some have expressed, and we appreciate that concern and interest. As we have all learned, there is a complex property history, as well as technical and regulatory questions that need analysis. Historically, DNR has not regulated the cutoff wall. We have some additional questions for USACE, and those conversations should help inform our assessment from both a structural and regulatory perspective. At this time we haven't drawn any final conclusions. We can say that at this point, that we have no evidence we've received or heard from USACE or Xcel that there's an immediate threat, so we don't see it as an urgent matter. However, we will continue to gather information and look into this situation.

ROSS, LANYA <LANYA.ROSS@METC.STATE.MN.US> (METROPOLITAN COUNCIL): HIGHLIGHTS OF METROPOLITAN COUNCIL PRESENTATION OF THE 2022 METRO AREA WATER SUPPLY ADVISORY COMMITTEE REPORT ON WATER SUPPLY PLANNING RECOMMENDATIONS:

The report sets framework for addressing a wide range of water supply issues facing the region. While the report does not focus in detail on specific issues, the report provides a

guide for decision makers on how to approach priority water supply challenges in the coming years. Leaders have an opportunity to set in place a critical strategy to ensure the long-term sustainability of the region's water resources. The committee supports a number of activities to support better risk management across the region's full water supply system and advance the committee's goals: collaboration and capacity building, system assessment, mitigation measure evaluation, and planning and implementation (highlighting subregional collaboration).

Legislators and state agency leaders should consider the following when proposing legislation, program development, and funding for the work made possible by the new Infrastructure Investment and Jobs Act of 2021 and other water-supply-related funding:

Funding is needed for public water suppliers' and partners' emergency responses. Communities across the region need and are seeking funding for proactive infrastructure upgrades and expansion. Coordination across political boundaries is critical, because water moves freely between communities and one community's water supply decisions will impact others. Proposals have the most impact when they can advance multiple goals at once, recognizing the nexus between water quality, land use, groundwater-surface water interaction, and water supply infrastructure. Look for opportunities to remove regulatory barriers to help advance our goals for the region. Request information from water utilities and resource managers to craft the most effective legislation.

The Metropolitan Council adds value by supporting water supply work identified by communities working together. Current available funds are making an important contribution but fall short of what is needed. Some examples:

Interconnects between communities and/or redundant source are necessary for regional resilience. Met Council can help with this if there is funding to incentivize. (We were directly asked to respond re Mpls risk). Sustainability, growth, economic development and safe drinking water require conservation and efficiency. Met Council has success in this area and much more can be accomplished by expanding water efficiency grant funding and stormwater reuse grant funding. Long term sustainability depends on communities working together with Minnesota water agencies (particularly DNR) within a long-term planning horizon. The Met Council's planning role could be much more effective if there were funds to support community investment or even incentivize communities to build shared systems. The report is available as a [short summary](#) and as the [full report](#) on the Metropolitan Area Water Supply Advisory Committee [\(MAWSAC\) website](#).

BONNIE KEELER, UM: Here is an article by Dr. Keeler about the value of water, reposted from *Open Rivers* and the author, Bonnie Keeler, *IonE Natural Capital Project lead scientist*.

Minnesotans are fortunate to live in a land rich in water resources. Clean water is part of our sense of place and cultural identity. Abundant water underpins our agriculture, manufacturing, and tourism industries. In theory, clean water should be incredibly valuable — water is essential to our lives and livelihoods. In practice, clean water is cheap. Our water

bills are a minor household expense, and the public can access the majority of our lakes and rivers for free. *If clean water is so valuable, then why is it cheap?*

It turns out that understanding the true value of water is not an easy task. We don't purchase units of clear lakes or safe swimming beaches at the store. Even when consumers have to pay for water, scarcity does not always drive-up prices. Some of the cheapest water rates in the U.S. are in drought-stricken California. Instead, economists in search of the true value of clean water need to look beyond markets for clues about how people respond to changes in water quality and what we might be willing to pay to protect it.

Value does not equal price

Value is just a representation of how much people are willing to trade to get a little bit more of something else. We express our values in everyday decisions about how to spend our money and time. For example, I might pay \$3 for a latte or spend 20 minutes in my car to drive my son to soccer practice. These actions signal the value I place on these goods and activities. However, the prices we pay are not a perfect representation of our true values. I actually value my son's participation in soccer so much that I would willingly spend 60 minutes in the car to get him to practice, even though I only have to "pay" for 20 minutes. This discrepancy between price and value is one reason why what we are billed by our water utility or the fees we pay to access parks or beaches aren't accurate representations of the true value of clean water. *So how else can we figure out what clean water is really worth?*

How much do you love lakes and rivers?

Now think about your behavior with respect to water bodies, particularly the lakes, rivers and streams near your home. What would you be willing to give up in higher taxes for cleaner rivers? How much farther would you drive to swim in a clear lake over a dirty one? The answers to these questions provide some of our only clues to how the public values freshwater resources.

To estimate the public value of clean water, most economists rely on surveys that ask people directly how much they would be willing to pay for cleaner water or healthy rivers. Or they query respondents on their recreational behavior, asking what waters they visited last year and how far they traveled to get there. These pieces of information are critical to understanding how much people are willing to give up in terms of their time and resources to access higher quality lakes or rivers.

The problem with this traditional approach is that surveys are expensive. They also take a lot of time to design, distribute and analyze. The most recent survey data we have on lake users in Minnesota dates back to 1998. Today researchers interested in informing water management decisions want to quickly and cheaply investigate user preferences for clean water over time and space in a way that could deliver value-of-water information to policy makers on demand.

Last year, my colleague Spencer Wood of the University of Washington had a brilliant idea to use photos uploaded to the photo-sharing site Flickr as a way to measure where and how frequently people visit different natural or cultural attractions. The solution satisfies the need for a large sample size with thousands of photos available on the site, which also provides information about where the photo was taken as well as the home base of the photographer.

In a recent study we applied Spencer's approach to investigate visitation to Minnesota lakes. It worked like this: if a Flickr user uploaded a photo taken within the boundary of a lake and tagged it with the geolocator (the tool that lets users mark the location on a map), we recorded a visit to that particular lake. We combined data on these "photo-visits" with information on users' home locations to estimate how far they traveled to visit lakes of varying water clarity. We also controlled for other factors such as lake size, amenities, access and proximity to population centers. We found that all else being equal, lakes with greater water quality received more visits than dirtier lakes, and lake users were willing to travel farther (up to an hour more round trip) to visit cleaner, clearer lakes.

Faster, cheaper, but ... biased

In our study, social media proved to be a unique, free and quick way of assessing the preferences of lake visitors. These data provided interesting clues to how recreationists value clean water — evidence that was previously unavailable in Minnesota. Of course, social media doesn't provide all of the information we would like to have and we don't understand how the behavior of social media users differs from the rest of the public. To address these issues, we started a new project aimed at better understanding how to account for issues of bias and representation in social media that will expand our study to look at tens of thousands of lakes across 17 U.S. states. Our work involves leading economists, social media experts and limnologists exploring how we can adapt standard econometric approaches that rely on specially designed surveys that account for user demographics and location to the comparably uncontrolled and uncertain data generated from social media posts.

Why is it useful to understand the value of clean water?

Despite passage of the Clean Water Act mandating that all waters are "boatable, swimmable and fishable," an estimated 40 percent of lakes and rivers in Minnesota are classified as "impaired" and unfit for these basic human uses. Efforts to restore watersheds are expensive and public dollars to support those investments are limited. Quantifying the value of clean lakes and rivers is critical in making the case that the potential benefits of clean water protection or restoration exceed monetary costs.

The value of clean water is more than what we pay in the store and more than the cost of bottled water or infrastructure required to clean up degraded waters. Clean water is also worth more than what we reveal through our recreational behavior. To understand the true value of clean water we need additional research on the health effects of drinking polluted water, the loss in property value as lake clarity declines, and the ways changing water quality affects the health and productivity of aquatic ecosystems and waterfowl. Only then will we truly understand what our waters are really worth.