

“The human right to sanitation entitles everyone, without discrimination, to have physical and affordable access to sanitation, in all spheres of life, that is safe, hygienic, secure, socially and culturally acceptable and that provides privacy and ensures dignity.”

— UN General Assembly Resolution 70/169, 2015

**Debra Shore, Commissioner
Metropolitan Water Reclamation District**



2020 ANNUAL REPORT

I don't have to tell you that 2020 was a chaotic year, but it wasn't all chaos. Many of us sought solace in nature and found common cause in seeking a more just and equitable future. At the Metropolitan Water Reclamation District, our work never stops. The Board of Commissioners affirmed its role to set policy—in part because our present time requires it—launching a strategic planning initiative, ethics reforms, and pandemic oversight. We have so much worthy work to do. Won't you join me?

Strategic Planning, All Together Now

The way I see it, the Metropolitan Water Reclamation District (MWRD) has two essential tasks. One is to fulfill its core mission of protecting water quality and public health by keeping sewage out of Lake Michigan and treating it dependably and safely. That's the job of the professional staff. The other is to be looking down the track, crafting a vision for the future, and figuring out how to get there. That's the role of the Board.

In 2020, for the first time in my 14 years as a commissioner, the staff and the Board began jointly to develop a five-year strategic plan for the District. We wanted an inclusive process involving external and internal stakeholders that would result in a bold vision and a sound plan against which we can measure our performance.

The Civic Consulting Alliance led the process and the international planning firm, Arup, facilitated a workshop for 50 external stakeholders representing engineering firms, conservation and environmental justice organizations, and planning and community groups. We posted a survey on the District website inviting public response, and 225 people completed it. We sent a survey to the entire MWRD workforce, and 542 District employees responded.

Working groups composed of several members of the Board and a range of staff met to refine the goals, propose individual initiatives over the next five years, and set measures for success based on the feedback received.

GUIDING PRINCIPLES

Engagement	Including internal and external stakeholders in the creation and implementation of key initiatives.
Collaboration	Working with other entities to ensure "One Water" management of the water ecosystem.
Innovation	Exploring fresh approaches to key challenges, including through partnerships with universities and other entities.
Equity	Ensuring the fair treatment, access, opportunity, and advancement of all people, including identifying and eliminating barriers that have prevented the full participation of some groups.
Resilience	Anticipating disruptions to the environment, economy, and equity, and addressing them proactively.

STRATEGIC GOALS



Together, we have worked through questions like the following: How can MWRD foster a culture that rewards innovation? How can the District have a robust “think tank” to plan ahead for future events (such as a flu pandemic or civil unrest) or to anticipate climate refugee migration into the Great Lakes basin or out-migration due to natural or human-caused disasters? How can the District be a better neighbor to people living near wastewater treatment plants? How can it attract and retain a more diverse workforce? How can the District enlist colleges, universities, and research labs to find answers to gnarly social and scientific questions? How can it move to address climate change and look at all these issues through a filter of equity and inclusion?

These working groups have proposed a wide range of initiatives designed to achieve the broad strategic goals. I’ll wager this may be the first time this many District staff have been involved in such a planning process and that a number of more junior staff have been involved (by design). Thank you to a terrific team devoting considerable time and effort to this project. Sometime in late spring 2021, look for a new strategic plan to be posted on the District’s website. In the meantime, I’d welcome your thoughts, suggestions, and responses. Onward!

STEERING COMMITTEE

- Commissioner Debra Shore
- Commissioner Marcelino Garcia
- Executive Director Brian Perkovich
- Mary Ann Boyle, Treasurer
- Susan Morakalis, General Counsel
- John Murray, Director of Maintenance & Operations
- Catherine O’Connor, Director of Engineering

PARTICIPATING CONSULTANTS

- Civic Consulting Alliance
 - Kirsten Carroll
 - Alec Noggle
- Arup
 - Janine Witko
 - Vincent Lee
- Kearney
 - Evan Oesterle

Pandemic Stories

In a world turned upside down and inside out, let us reflect for a moment on those things that still work, those services we depend on without even thinking about them. I nominate “sewage treatment.” Throughout 2020, the District kept working, protecting public health and water quality, treating more than a billion gallons of sewage a day without skipping a beat—even during the unsettling early pandemic months of April and May, when MWRD had more than half its staff working from home and a minimal crew of essential employees reporting to the treatment plants. Please join me in expressing boundless gratitude to the 1,980 employees who adjusted, rallied, and soldiered on. Thank you!

Wipes Clog Pipes

As many people across the country stayed home in an attempt to control the spread of the coronavirus, we began hearing of toilet paper shortages and pipes clogged due to the use of wipes, rags, and torn-up T-shirts. It turns out that “flushable” wipes—baby wipes, cleaning wipes, personal

2020 AT MWRD, BY THE NUMBERS

March 31

date of the first positive test for an MWRD employee

171

MWRD employees who have tested positive through February 24, 2021

\$8.7 million

total cost of expenses due to pandemic (including PPE, cleaning supplies, IT support for telework, premium pay increases for March and April, reconfiguring workspace, improving ventilation, and installing touchless faucets in bathrooms, etc.)

\$16.2 million

pandemic savings (including cost reductions in electricity, office supplies, healthcare and training costs, and delays of some projects)

wipes—do not dissolve after being flushed as toilet paper is designed to do. These wipes, along with dental floss and paper towels, cause blockages in pipes resulting in sewer backups and costly pump failures. A study of 101 single-use wipes by Barry Orr at Ryerson University in Toronto found that none of them dissolved or fell apart after being flushed.

Though District staff assured me that such wipes have not posed a problem for MWRD treatment plants, a number of municipalities in Cook County reported local problems. The District leapt into action and produced a public service video titled “No Wipes Down the Pipes!”—with President Kari Steele demonstrating that wipes don’t dissolve—and a campaign urging people to flush only the three “P’s”: pee, poo, and toilet paper!

California introduced a bill requiring labeling on packages of wipes indicating they should not be flushed, and a similar bill was introduced in Illinois in February 2021. Rally round, people! Toilets are not trashcans!

0 COVID-19 deaths among MWRD employees through February 24, 2021

99 MWRD employees who retired in 2020 (compared to an average of 90)

\$212,000 reimbursement so far from Cook County for COVID-related expenses under the CARES Act

\$967,077 total value of reimbursements sought from FEMA for COVID-related expenses

Pandemic Stories

Lessons Learned

While the MWRD did have a flu pandemic preparedness plan (see my 2019 Annual Report), the particulars of a novel coronavirus like SARS-CoV-2 were different than we had anticipated. In the District's pandemic plan, we had assumed that absenteeism rates would probably rise gradually—as employees fell ill or stayed home to care for sick family members—and consequently we had planned for a phased response as absenteeism rates hit certain critical benchmarks. We hadn't anticipated that *nearly everyone* would be directed to shelter in place, all at once, to prevent the spread of the virus. We had also assumed that the key challenge would be finding ways to keep essential work sections staffed, not finding ways to allow workers to perform essential tasks from home.

As a result, there were unanticipated challenges the District had to overcome: not everyone had the necessary equipment to work from home, or sufficient Wi-Fi bandwidth for Zoom and Microsoft Teams meetings. Parents had to figure out how to help children with school.

2020 AT MWRD, BY THE NUMBERS (CONTINUED)

5 fact sheets issued by MWRD on pandemic issues

0 skirts or fancy shoes worn by Debra Shore since March 11, 2020

1 number of garage doors damaged during looting of downtown Chicago

3 number of walls of Main Office Building (MOB) sprayed with graffiti

1 number of bullet holes discovered in the grille and radiator of a District-owned vehicle, presumably inflicted while it was parked in the MOB garage

3 number of temporary relocations of Waterways Control Section from MOB to Lockport Powerhouse as precautionary measure during civil unrest

The Board canceled its March 21 and April 4 meetings until we could figure out how to convene virtually (permitted by the governor's emergency declaration)—though not without some technical difficulties.

(Is there anyone among us who will miss hearing, in our post-pandemic lives, the admonition "You're on mute!?!") Remote Board meetings turned out to be a poor substitute for in-person meetings—in part because it's so much harder to have spontaneous informal conversations when people can't see each other on Board meeting day. In short, the pandemic we got was different from the pandemic we had planned for.

Was the District's planning in vain? Not at all—disaster-response planning is valuable, not just because a good plan gives us a hefty recipe book of problems and solutions, but because crafting a good plan strengthens our problem-solving muscles. Either way, the results speak for themselves: the District successfully pivoted to telework and has been able to meet permit requirements and continue operations fairly well. MWRD has a vital role to play in protecting public health. We will keep it up.

3.435 billion gallons of stormwater overflow captured in McCook Reservoir during record May rainfall

2.630 billion gallons of floodwater released to Lake Michigan during reversals

1 May's ranking as wettest on record (9.51 inches), outstripping May 2019 (8.25 inches) and May 2018 (8.21 inches)

[See more historical data at debrashore.org/may-rain](http://debrashore.org/may-rain)

2 number of reversals to the lake in May

Sewage Surveillance

You've doubtless read a bit in the popular press during the pandemic about studies of sewage to provide early detection of the presence of the virus that causes COVID-19. This is an exciting frontier for scientific research, and the MWRD has been part of its exploration. When we excrete urine, feces, or saliva, our germs—trillions of viruses and bacteria—accompany them. Similarly, when a doctor requests a urine or stool sample to be tested for evidence of disease, that same material is present in our sewage.

Rather than giving us information about the health of a single person, however, testing sewage can provide a snapshot of the inhabitants of a building, a neighborhood, or even an entire region. We built sewers in Cook County to protect public health by separating these germs from our drinking water (Lake Michigan), but what if we actually use the information those germs contain in their genes? It's a concept called wastewater-based epidemiology, and its potential benefits are encouraging.

It turns out people start shedding the virus that causes COVID-19 through their feces very early in the infection, often before symptoms emerge.

The US Department of Health and Human Services (USDHHS) estimates the concentration of this virus in sewage can anticipate new COVID-19 cases in a community five to 11 days in advance. Detecting the concentration of the virus as it increases in sewage tells us more people are becoming infected in

a community, and we can expect the number of cases appearing in hospitals to increase five to 11 days later. Unlike nasal swab tests, sewage captures information about infected people who can't or won't get tested for COVID, or who don't know they need to get tested because they aren't experiencing symptoms. Scientists around the country are asking: What if we could use this information to tell us about the spread of the virus that causes COVID-19?



Since March of 2020, MWRD has been collecting samples from the wastewater entering the Stickney Water Reclamation Plant, called influent,

and sending them to Dr. Ali Boehm at Stanford University. These samples contain information about the 2.3 million people whose sewage flows to the Stickney plant. Dr. Boehm and her team are using samples from Stickney and 49 other treatment plants across the country to build a model so these data can be easily compared from place to place.

In addition, MWRD partnered with a group of local researchers, including Dr. Rachel Portesky and Dr. Abhilasha Shrestha from the University of Illinois at Chicago. One of their goals is to collect samples upstream from the treatment plants (and closer to people's homes) to see if this sampling can be used to identify infection trends more locally. Measuring the virus upstream in the sewer system provides information about a smaller group of people, and this kind of sewershed sampling could be used to monitor for outbreaks in vulnerable populations, like nursing homes and prisons.

More recently, MWRD was accepted into a national sewage surveillance project run by USDHHS, which has a goal of monitoring 30 percent of the nation's population. MWRD now sends influent samples from all seven treatment plants in Cook County to a biotech company called Aquavitas in Arizona, which can compare the results with those from other cities.

Beyond monitoring the number of cases in the community, MWRD is also partnering with scientists using new technologies to answer other questions related to the pandemic. Dr. Julius Lucks from Northwestern and his partners at Argonne National Laboratory have developed an RNA-based technology to quickly sample sewage for the presence of the virus. Others gather the genetic sequence of the coronaviruses in sewage to look for new variants, like B.1.1.7, B.1.351, or P.1, that were first discovered in late 2020. Together, these tools can quickly tell us more about what version of the virus is spreading where.

The information embedded in sewage can also tell us about other health emergencies, like the heroin and prescription opioid epidemic, or about other silent infections like hepatitis. It's a good reminder to us all: even the darkest places can shed some much-needed light.

For more information on these efforts:

- ▶ [Read my newsletter titled "Flushing Out the Virus" from June 19, 2020:
debrashore.org/flushing-out-virus-using-our-sewage-monitor-covid-19](https://debrashore.org/flushing-out-virus-using-our-sewage-monitor-covid-19)
- ▶ [Visit MWRD's web page dedicated to the COVID-19 pandemic:
mwrdr.org/mwrdr-coronavirus-covid-19-updates](https://mwrdr.org/mwrdr-coronavirus-covid-19-updates)

Art & Science

Imagine a day without water. It's not easy. Most of us start our day by getting out of bed and immediately using water—to drink, to flush, to brush our teeth, to shower, to make our morning coffee. We use water so often, and in so many different ways, it's easy to take it for granted.

What if we used art to help us imagine a day without water? The aim of art—or one aim of art, anyway—is to shake us out of our habitual ways of experiencing the world, allowing us to see something new.

Since 2015, the Value of Water Campaign and the US Water Alliance have sponsored Imagine a Day Without Water—an annual nationwide day of awareness about the importance of water infrastructure. Leading up to the observance on October 21, the Sweet Water Foundation hosted *well·ness at The Commonwealth*, an art exhibit exploring “the many facets and dimensions of water as the source of all life.”

The Foundation's urban farm at 57th Place and Perry Avenue in Chicago—just east of the Dan Ryan Expressway and west of Washington Park—is always worth the trip. Four city blocks in size, it is a bustling hub of agricultural, architectural, and intellectual activity, led by architect (and 2019 MacArthur Fellow) Emmanuel Pratt.



THE COMMONWEALTH URBAN FARM
PHOTO: SWEETWATERFOUNDATION.COM



For *well·ness at The Commonwealth*, Sweet Water Foundation partnered with the Smart Museum of Art, the Water Lab, and artist Inigo Manglano-Ovalle to create “a catalytic assemblage of art, artifacts, and history” centered around Manglano-Ovalle’s *Well 41°47’25”N – 87°37’38”W*. The exhibit gave me a new way to think about water, and, months later, I am still thinking about it. Good art changes how we see the world—and sometimes it changes the way that we see ourselves.

As a participant in a (socially distanced) panel discussion, I got to see the exhibit in person, but you can still see it—including Manglano-Ovalle’s thought-provoking well—through a virtual tour, by visiting:

▶ sweetwaterfoundation.com/wellness-at-the-commonwealth

More art to provoke thinking and doing burst onto the scene with *Third Coast Disrupted*, a year-long conversation between scientists and artists centered on Chicago-area climate change impacts and solutions. Organized by Christine Esposito with a gallery showing at Columbia College and a series of videos, it’s a showcase for inspiration:

▶ thirdcoastdisrupted.org

Check out Professor Katharine Hayhoe’s talk connecting global climate change to local events:

▶ debrashore.org/katharine-hayhoe

MWRD Good Governance Updates

ETHICS The *MWRD Ethics Ordinance*, adopted in 2004, has long needed an update—and in 2020 it finally got one. In January, the Board of Commissioners approved a package of amendments that included:

- lobbyist registration and activity reporting;
- an affirmative Code of Conduct for employees, officers, and elected officials;
- restrictions on revolving-door employment for new and retiring employees; and
- a “duty to report” provision.

These amendments represent a major step forward in terms of transparency and accountability for the District. The road to implementation, however, has been rocky. A lack of easily digestible information about the new requirements, coupled with some stiff-sounding penalties for noncompliance, led to confusion and concern. By midsummer, volunteers and staff at many not-for-profit organizations—and even some private citizens—were seriously worried about whether the new lobbyist registration requirements might impose an undue financial burden and possibly expose them and their organizations to fines and penalties.

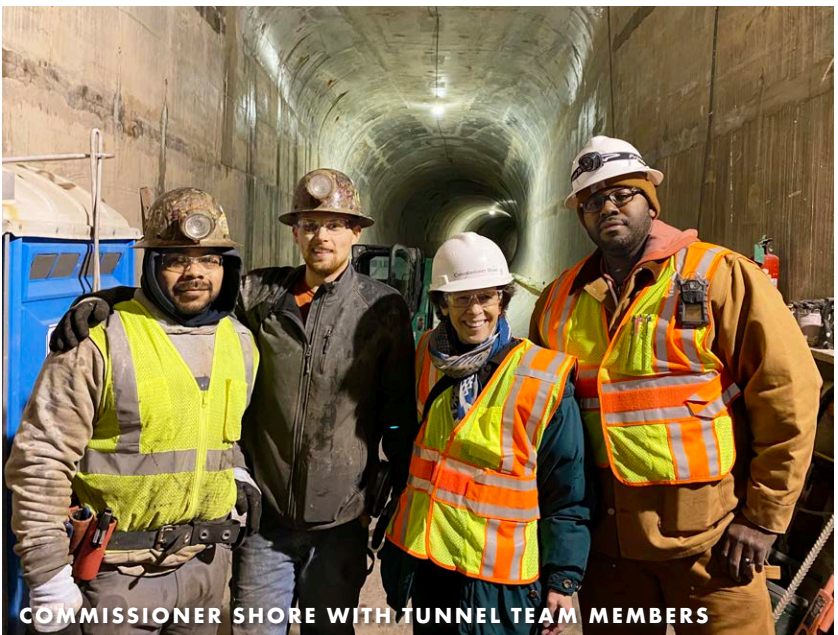
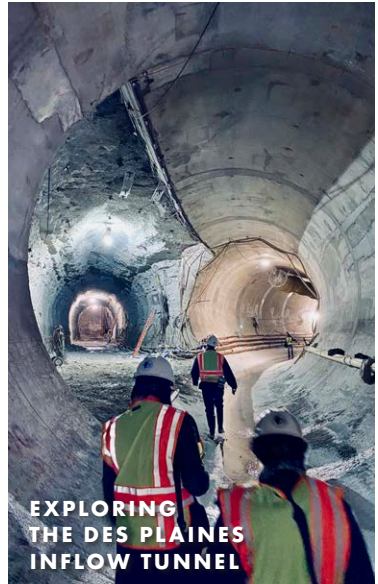
The Board of Commissioners held a study session in October to discuss how to improve MWRD’s website and to explore another set of amendments to the Ethics Ordinance. Since then, a number of improvements and clarifications have been made, and in January 2021 the Board lowered the registration fee from \$300 to \$150. Additional amendments to the ordinance remain under active consideration. I have always thought that transparent, accountable government is worth the effort—but we still have a lot of work to do.

INSPECTOR GENERAL The Cook County Office of the Independent Inspector General (OIIG) has provided independent oversight at MWRD since May 2019. In 2020, the OIIG received a total of 36 new complaints, ultimately initiating 12 investigations and 30 case inquiries on a variety of topics, including investigations examining the District’s plans for continuity of operations during a flu pandemic, MWRD compensation policies during the early phases of the COVID-19 pandemic, and adherence to coronavirus mask-wearing protocols.

▶ To see quarterly public reports for MWRD from the Cook County Office of the Independent Inspector General, visit cookcountyil.gov/service/metropolitan-water-reclamation-district-greater-chicago

Tunnel Tour

The Des Plaines Inflow Tunnel connects the 25.6-mile Des Plaines section of MWRD's Deep Tunnel with the McCook Reservoir to provide additional stormwater overflow relief for a major portion of Cook County. When my staff and I descended 270 feet below ground in early January 2020 to tour the nearly completed 20-foot-diameter tunnel, we figured we had reached the lowest point of the year. Little did we know! The Inflow Tunnel will be connected to the Reservoir in August 2021, making this the final underground piece of the original Tunnel plan.

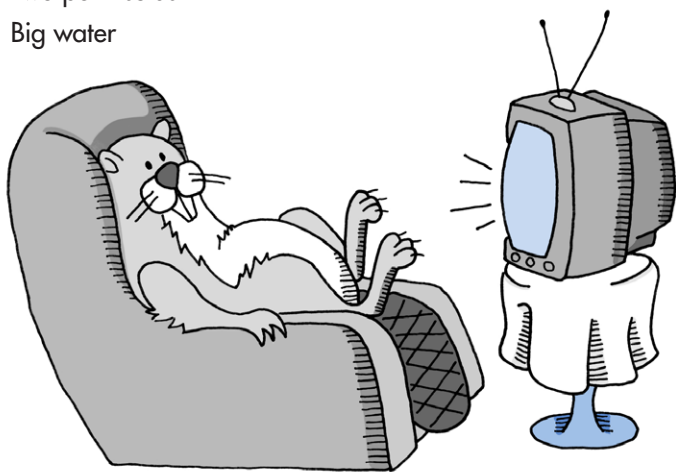


A Water-Based Quiz

I sent out a watery quiz for Earth Day entertainment in 2020, and it proved to be so popular, I figured I'd do an encore here. (Any mistakes are mine but credit for help with the questions goes to Paul Michael Thomson, Justin Hart, Alfred Saucedo, Greg Busch, and Geoffrey Baer.)

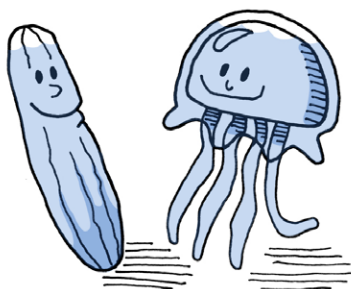
▶ For more water quiz questions, visit debrashore.org/quiz

1. Which of the following has not been rescued at an MWRD facility?
 - A. Alligator
 - B. Deer
 - C. Eagle
 - D. Driver's license
2. The name "Michigan" derives from an Ojibwe word meaning what?
 - A. Many lakes
 - B. Beach house
 - C. Two peninsulas
 - D. Big water



3. What is the home of a beaver called?
 - A. Man cave
 - B. Den
 - C. Floating motel
 - D. Lodge
4. Which of the following awards did the District win in 2020?
 - A. Algae Biomass Organization's Innovation Collaboration of the Year Award
 - B. Water Environment Federation's "Utility of the Future" Award
 - C. National Institute of Government Purchasing's Outstanding Agency Accreditation Achievement Award
 - D. All of the above

5. Which of the following can dissolve more substances than any other liquid?
- Hyaluronic Acid
 - Sulfuric Acid
 - Water
 - Vinegar
6. A jellyfish and a cucumber are each 95% water. True or false?
7. The Chicago Sanitary District was desperate to start water flowing into the new Chicago Sanitary and Ship Canal on January 2, 1900. Why?
- The city was in the midst of another outbreak of cholera
 - The commissioners' terms were expiring and they wanted the glory
 - The state of Missouri was threatening a lawsuit to prevent the canal from opening
 - They wanted to start the century off right
8. The term "headwaters" refers to:
- Weak drinks distributed by headwaiters
 - A fluid that may need to be drained by people too full of themselves
 - The source of a stream
 - The start of a long trip
9. The atmosphere contains more water than all the rivers in the world. True or false?
10. The MWRD Incident Reporting iPhone app can help with many tasks, except:
- Dropping a pin on a map where you smell an unpleasant odor near MWRD facilities or sewers
 - Unclogging your toilet by using the phone's vibrations
 - Reporting debris or other blockages of Cook County streams and other waterways
 - Dialing a hotline to speak to someone at MWRD directly about an incident



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2020 Annual Report

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