

Connecting Communities for Better Water

Metro Water Recovery
2021 Annual Report



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South Platte River at Iliff.

CHAIRMAN'S MESSAGE

Connecting Communities for Better Water



Leaders at Metro Water Recovery (Metro) have been connecting communities for better water in the Denver region for 60 years. Cities, towns, and special districts join our organization to improve water quality cost-effectively for the people they serve. Employees join or form communities of practice inside and outside the organization to tackle Colorado water issues and improve the environment. Even our advanced treatment relies on communities of microorganisms working together to produce clean water.

Metro rolled out a new brand in 2021 to pinpoint our place in the water cycle for people who use and send water to our facilities every day. Board Directors are as eager as employees to get the word out about Metro's significant improvements to public health, the environment, and the region.

Scott Twombly
Chairman of the Board

CHIEF EXECUTIVE OFFICER'S MESSAGE

Sharing Achievements and Goals



Metro's teams are proud to share highlighted achievements of 2021 in this report that reflect goals from our 2016 Strategic Plan (listed below). Employees make Metro an inspiring place to work; and I am impressed daily by the knowledge, ambition, and dedication people have here for cleaner water.

Employees launched a new website and two new social media pages alongside the new brand to explain that water recovery is critical to balance the needs of regional growth and the environment. These sites are connecting online communities of followers who also care about the South Platte River, a healthy environment, the work we do, and what they can do to help. It is critically important that those we serve understand the value and importance of our mission.

William J. "Mickey" Conway
Chief Executive Officer (CEO)

Strategic Plan Goals



Learn more @ MetroWaterRecovery.com/StrategicPlan

COLLABORATION

Connecting Communities

People in the Denver region came together in the 1960s to improve and protect the quality of area rivers, creeks, and lakes. In 2021, Metro’s facilities served about 2.2 million people in 60 Connector communities in parts of Adams, Arapahoe, Denver, Douglas, Jefferson, and Weld counties.

Director representation on the Board is appointed from 22 Member Municipalities based on population. Metro’s Board grew to 39 Directors in 2021, as Aurora added another Director to reflect its expanding population.

Board of Directors



Applewood	Steve Pott	East Lakewood	Deborah Crisp
Arvada	Craig Kocian Bill Ray	Fruitdale	Martin Majors
Aurora	Greg Baker Nadine Caldwell John Dingess Jo Ann Giddings Bob LeGare Dan Mikesell* Robert Roth	Lakewood	Laura Kroeger Greg Sekera
Bancroft-Clover	Del Smith	North Pecos	Dennis Towndrow
Berkeley	John Chavez	North Table Mountain	Kathy Jensen
Brighton	Jane Bais DiSessa* Marv Falconburg Kim Schoen*	North Washington Street	Amerigo Svaldi
Crestview	Kathy Laurienti Ronald Sanchez*	Northwest Lakewood	Clark Davenport
Denver	Peter Baertlein Robert Duncanson Andrew Johnston Janet Kieler Doug Lazure Christopher Pacheco* Barbara Puls* Michael Sapp Peter Spanberger Mary Beth Susman Jennifer Williams Ronald Younger	Pleasant View	David Councilman
		South Adams County	Sarah Niyork
		Thornton	Charlie Long Scott Twombly
		Westminster	Stephen Gay* Tammy Hitchens*
		Westridge	Joan Iler
		Wheat Ridge	Philip Burgi

*Served and resigned in 2021. Alameda and Westminster ended the year with vacancies.

Learn more @ MetroWaterRecovery.com/Connectors

Tracking COVID-19

SARS-CoV-2 Wastewater Monitoring Collaborative

Technology and Innovation employees continued to provide wastewater sampling data to the Colorado Department of Public Health and Environment (CDPHE) to track COVID-19 in our service area. Metro is a member of the statewide SARS-CoV-2 Wastewater Monitoring Collaborative, which collects samples to measure ribonucleic acid concentrations of the virus in raw wastewater. Employees gather samples from flows coming into the Robert W. Hite Treatment Facility (RWHTF) in Commerce City and the Northern Treatment Plant (NTP) in Brighton.

CDPHE and other regional health authorities compare data from the collaborative to clinical data at the county and census-tract level and use the comparison to make public health decisions. An online dashboard communicates these decisions and the data to the public.

In 2021, CDPHE extended the program to 2023 and began identifying and tracking specific virus mutations.

Learn more @ MetroWaterRecovery.com/cdphe



CUSTOMER SERVICE

Naming Our Place in the Water Cycle



Metro made historic strides forward in customer service by improving how we engage with people interested in our work. The Board of Directors approved a brand update in April. Employees launched the process in September to update our brand to Metro Water Recovery. The name and logo were the top choices for most employees, Connectors, Directors, and public participants who weighed in during the rebranding process.

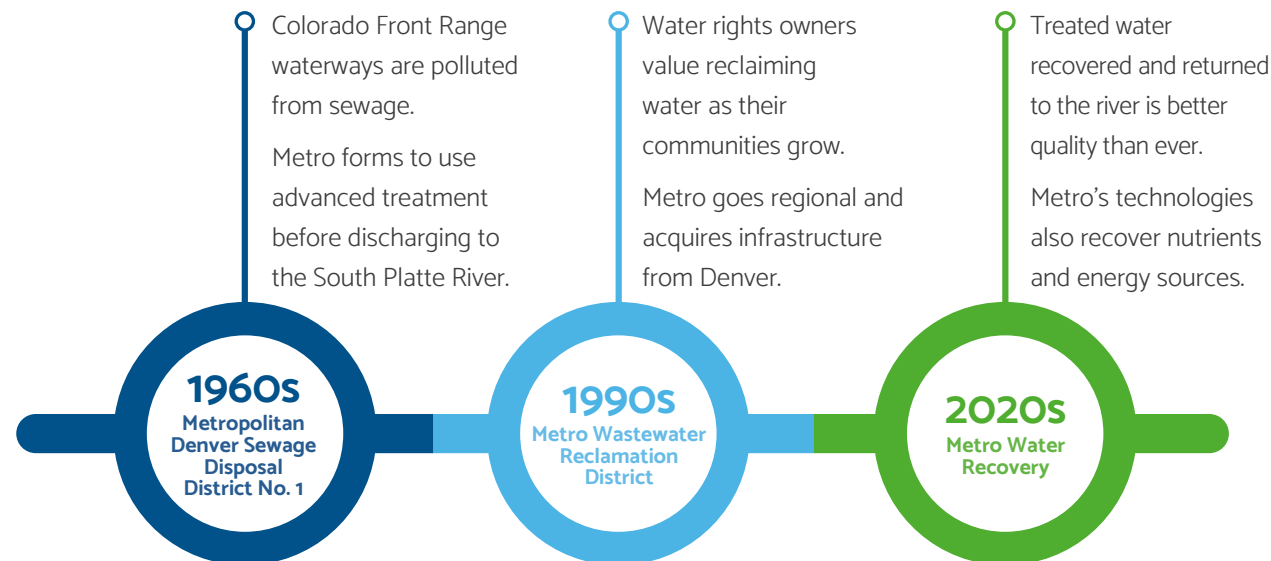
Rebranding Logic and Benefits

- **Why rebrand?** To enhance our visibility in the community and industry, build understanding of Metro's services and value, and continue to attract great talent.
- **Why this brand?** To clarify what our communities value the most about our work.
- **What's the logo?** A drop to reflect our focus on water quality and the environment.
- **What's the tagline?** "We get your water" means we receive, treat, and recover water and our employees understand it down to a microscopic level.



The RWHTF gets a new sign.

History of Better Water and Better Names



Welcoming People back for Tours

Employees from all departments welcomed back visitors to our treatment facilities in the second half of the year. Visitors touring both the RWHTF and NTP ranged from high school and college students to government officials, new Board Directors, and broadcast and trade media reporters. Providing a safe environment for our visitors is a top priority and groups are provided personal protective equipment for their tours.

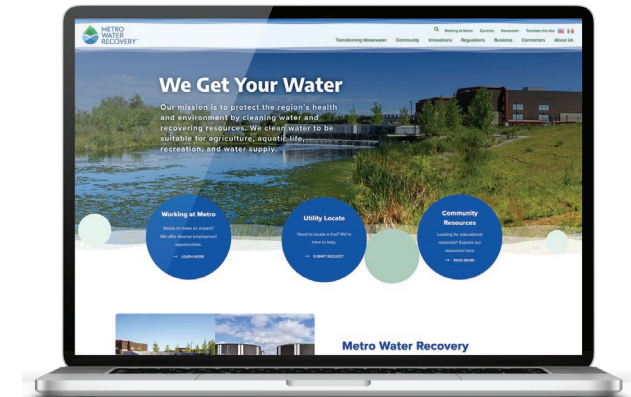


Director of Technology and Innovation, Blair Wisdom (far right), leads a tour at the RWHTF for visitors from the Water in the West Symposium in November.

Learn more @ MetroWaterRecovery.com/Tours

Reaching out Online

Metro also launched a new website and social media pages on Facebook and LinkedIn in September. Employees from across the organization provided stories and photos for these sites, including the Currents web blog. These new online spaces enable employees to share their work broadly so the people we serve understand the science and the value of what we do.



MetroWaterRecovery.com

Website saw **2,300 unique visitors** per month (average) or roughly double the traffic of our old website.

Nearly **15% of website visitors** came from our social media accounts.

Facebook page has gained **179 likes** and **200 followers**.

LinkedIn account has more than **800 followers** and gained 40 new followers per month, on average.

Learn more @ MetroWaterRecovery.com

Facebook.com/MetroWaterRecovery

Linkedin.com/company/metro-water-recovery

CUSTOMER SERVICE

Battling the March Blizzard







The Preppers and the Prep

Employees provide an essential service to customers of Metro's facilities 24/7/365. They amped up preparations the week before the mid-March blizzard, which ended up as the fourth biggest snowfall in Denver's history. Afterward, more than one employee described a tiring weekend that went smoothly because of lessons learned from past blizzards and bomb cyclones.



The Workers and the Work

Employees were ready at both the RWHTF and NTP when snow started piling up Saturday afternoon, March 13. That's when the mission-critical work began in shifts and went nonstop until Monday morning. Several employees stayed the entire weekend.

-  Resource Recovery and Resource (RR&R) operators were kept off unsafe roads and biosolids were stored in covered sheds at the RWHTF.
-  Transmissions and RR&R operators partnered to keep snow from blocking key plant areas, such as streets, sidewalks, sampling equipment, and biosolids storage facilities.
-  Maintenance experts and RR&R pit crews kept equipment and vehicles running well the entire time.
-  Operations and Maintenance crews took precautions and monitored equipment to prevent freezing.
-  Analytical Services scientists gathered permit-required water quality samples from sampling cabinets.
-  Security contractors stayed on-site with employees.

Blizzard scenes from RWHTF (middle and left three) and NTP (top and right three).



NTP tertiary facilities.

EMPLOYER OF CHOICE

Growing Employee Teams

To be an employer of choice is an organizational priority; and Metro filled 108 job positions in 2021 through new hires, promotions, and transfers. The hiring process became quick and paperless, with many forms completed online before employees' first day.

To remain competitive, Human Resources employees assess compensation packages at similar organizations annually. Metro sponsored a salary survey for 18 industry-specific roles that was sent in July to 28 of the largest U.S. water recovery facilities.

See open Metro jobs @ MetroWaterRecovery.com/jobs

Caring for Employees

Employees who worked from home during the pandemic returned on-site in August, as county COVID-19 restrictions eased. Human Resources team members invited all employees and their families to receive COVID-19 vaccinations on-site. New policies and technologies enabled employees to work remotely for part of their week.

With some employees on-site full time and some remote part time, Metro's Information Technology Service Delivery employees walked teams through a seven-month migration from Microsoft Windows 10 to Office 365. They provided training and tutorials that showed employees how to make the most of this new platform in Metro's new hybrid work environment.

O365 Migration Numbers



10 hours
of peer-to-peer
drop-in sessions



378 employee
accounts migrated



1076 hours
of consultant-led
training courses



450 attendees
in those courses

Employees at the RWHTF in August.



Aligning Teams

Metro completed a two-year journey in July to align employee teams and talent for greater collaboration and focus. The Technical Services group was formed in the summer to mirror the consolidation two years ago of Coordinated Operations. Metro's Executive Leadership Team and their groups form engines of excellence and are depicted below.



FINANCIAL STABILITY

Balancing the Operating Budget

Board Directors and employees worked together to maintain reasonable rates and spending thresholds in a year of economic challenges. Metro kept 2021 Annual Charges for Services to Connectors flat compared to 2020, to help them recover from economic impacts of the pandemic.

Rising costs across the nation were offset by Sewer Connection Charge revenue (tap fees), which exceeded \$59 million. Residential construction in 2021 outpaced the previous two years, resulting in tap fees that were twice the projections. New taps into Metro's Connectors' systems have trended upward for the last ten years, as shown in the timeline below.

The latest Annual Comprehensive Financial Report, available on the website, includes analysis and detail about 2021 and the prior two years.

Learn more @ [MetroWaterRecovery.com/ACFR](https://www.metrowaterrecovery.com/ACFR)



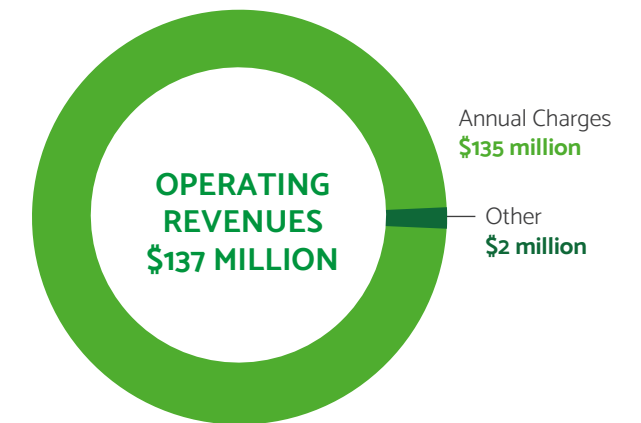
Sunrise over the RWHTF outfalls.



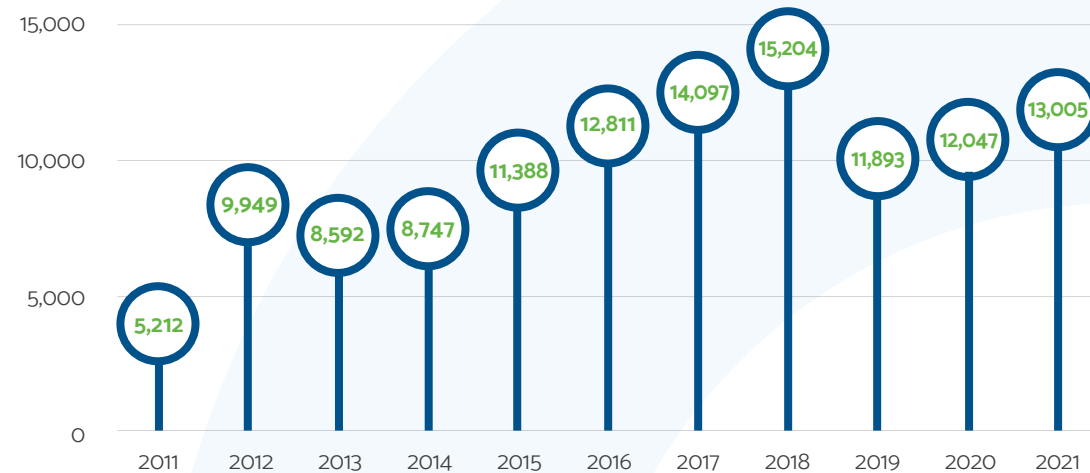
Pelicans skim the NTP outfalls in May.

2021 Financial Summary

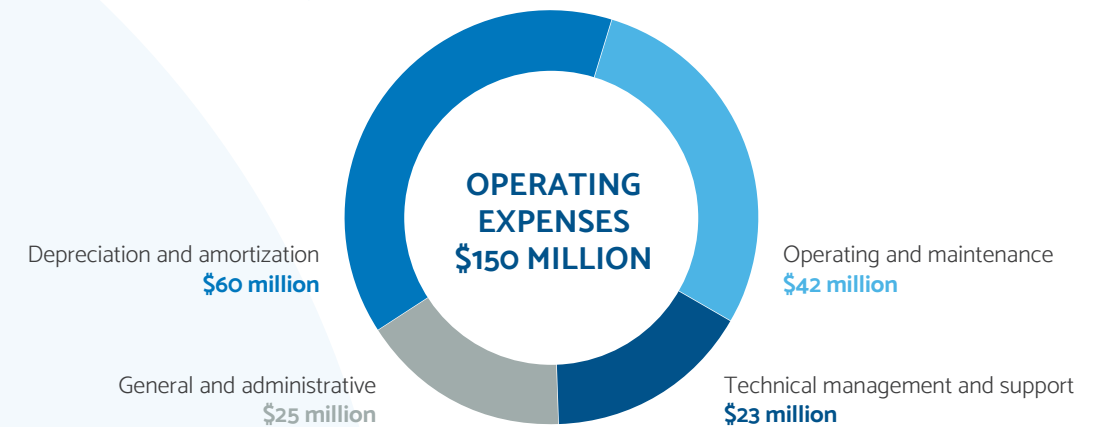
Where Metro Gets Operating Funds



New Taps over the Years



How Metro Spends Operating Dollars



INFRASTRUCTURE AND OPERATIONAL EXCELLENCE

Budgeting Capital Projects within Programs

Metro teams joined together throughout the year to plan, build, and manage capital assets for our Transmission System, treatment plants, and METROGRO Farm on the Eastern Plains. Capital projects and business process improvement efforts are slotted and sequenced into nine programs, listed below. Organizing projects and efforts into programs promotes teamwork among departments and supports a regular comprehensive look among programs.



*Budgeted in Human Resources operating budget.

Digging Our Transmission System

Second Creek Interceptor Groundbreaking

Metro leaders held a virtual groundbreaking ceremony on May 20 to celebrate the construction of the largest pipeline project in our history. The 17-mile Second Creek Interceptor will enable growing communities to connect to the NTP for water and resource recovery. This mostly buried pipeline will serve parts of Aurora, Brighton, Commerce City, Denver, Denver International Airport, and South Adams County Water and Sanitation District.

Learn more @ MetroWaterRecovery.com/SecondCreekNews



New Second Creek pipe segment being installed underground.

Protecting and Repairing Pipes

Metro owns and operates 236 miles of interceptors and protects these pipes through Tier One membership with the Utility Notification Center of Colorado (UNCC). This system routes 811 (Call Before You Dig) calls to Metro from people who want to dig near buried pipelines. Employees responded to 19,639 utility locate requests in 2021.

Transmission Division employees inspected 2,350 key manholes and diversion structures last year to keep them working well. During an inspection on January 5, they found a surcharged manhole at the intersection of 56th and Havana. After three days of cleaning and inspecting, they found a hole in the top of the pipe filled with large concrete debris. Emergency repairs restored Metro's infrastructure beneath this busy intersection.

Learn more @ MetroWaterRecovery.com/Locates



Mark Schantz, Collections System Operator, performing a utility locate.

Building and Preparing to Grow



Chairman Twombly poised to cut the ribbon.



CEO Conway after cutting the ribbon.



Contractors remove NTP's liquid oxygen tank as part of the post-aeration decommissioning process.

Operations Building Ribbon-Cutting

Employees and Board Directors held a socially distanced ribbon-cutting ceremony on February 4 to celebrate the grand opening of the new Operations Services and Control Building at the RWHTF.

Sitting at just under 20,000 square feet, this new building updates equipment and work spaces and consolidates the Comprehensive Planning, Environmental Health and Safety, Operations, Safety, Security, and Technology and Innovation teams. The new control room houses two control system operator stations and doubles operators' capacity to monitor the RWHTF.

NTP Readiness Review

To prepare for the Second Creek Interceptor flows coming in the near future, the NTP team joined with Engineering, Environmental Health and Safety, Technology and Innovation, and other teams for a Post-Startup Evaluation Update for the NTP.

These employees used five years of operating data to determine process, safety, and efficiency improvements to gain the "best bang for the buck" for present and future operations. This readiness review identified priority improvements such as decommissioning the effluent liquid oxygen/post-aeration process and improving fall hazard safety throughout the plant.

Learn more @ MetroWaterRecovery.com/Facilities

Growing Crops on Our Farm

Summer and Fall Harvests

Metro's employee farmers will tell you that dryland farming on the Eastern Plains of Colorado can be a hard job. They also will tell you that Class B biosolids make the job easier at the METROGRO Farm by adding nutrients and organic matter to the soil, which improves overall soil health and increases crop yields.

THE 2021 SUMMER WHEAT HARVEST ON THE METROGRO FARM YIELDED



293,000 bushels from 12,000 acres



Or a yield of about 24 bushels per acre

OF THIS YIELD



120,000 bushels were sold



175,000 bushels were stored

THE 2021 FALL SORGHUM HARVEST YIELDED



About 30,300 bushels of sorghum from just under 1,663 acres

Metro acquired the 52,000-acre farm in the late 1990s as a dedicated site to beneficially reuse the tons of biosolids produced every day. Application of this nitrogen-rich fertilizer product to dryland farming sites keeps the biosolids out of local landfills and is highly regulated and monitored.

Learn more @ MetroWaterRecovery.com/Biosolids



Summer wheat harvest; fall sorghum on the stalk; Jason Zimelman, METROGRO Farm Administrator, at the scales; harvested sorghum; and employees visiting an empty grain bin (top to bottom).

CULTURE OF INNOVATION

Replacing Old Pipe with New Technology

Employee teams promote a culture of innovation by seeking and finding new partners and new ways to recover resources and stretch the performance of facilities and equipment. Metro replaced some of the oldest pipe in our Transmission System in 2021 with new technology that will enable one of our valued partners to attain a renewable energy goal.

A 2,300-foot segment of the Delgany Interceptor system on the National Western Center site in Denver was replaced and relocated underground. This move ended decades of two parallel, 72-inch diameter, aboveground pipe segments acting as a barrier to the South Platte River. Construction was completed in May and first flows traveled through the new segment to the RWHTF.

This Delgany Interceptor segment is designed to recover heat from the water flowing inside the pipe. This renewable energy source will reduce the center's carbon footprint, offset the natural gas usage in buildings, and provide a key piece to reach net-zero energy goals.

Learn more @ [MetroWaterRecovery.com/HeatRecovery](https://www.metrowaterrecovery.com/HeatRecovery)

New segment under construction (top two). Old Delgany Interceptor aboveground segment (center) and old pipelines during demolition (bottom).



Stress-Testing Secondary Clarifiers

To save future upgrade costs, Technology and Innovation and Operations employees stress-tested secondary clarifiers at the RWHTF to evaluate adding hydrocyclones to improve sludge settling. From June 21 to 24, employees collected hourly field measurements around the secondary clarifiers operating under normal and stress conditions.

These teams confirmed that hydrocyclones allow the clarifiers to be loaded with more solids without piling up the sludge blanket, where water-cleaning microorganisms thrive. Testing results suggest that with hydrocyclones, these clarifiers could be operated safely at nearly double the solids loading rate (60 versus 35 pounds per day per square foot).



Nicole Masters, Engineering Intern, and Rudy Maltos, Engineer Associate, checking sludge blanket height.

Recovering Phosphorus with MagPrex™

Metro employees have long fostered a community of practice to meet water quality regulations for phosphorus, and we celebrated the first full year of phosphorus recovery in 2021. The MagPrex™ reactor at RWHTF creates a chemical environment that draws off struvite in powder form, after anaerobic solids digestion, before it can accumulate as rock-like coatings in downstream equipment.

This 74-foot tall facility enables Metro to recover phosphorus (a component of struvite) and recycle this nutrient. With a working volume of 377,600 gallons, MagPrex™ met performance targets throughout 2021.

Learn more @ [MetroWaterRecovery.com/Struvite](https://www.metrowaterrecovery.com/Struvite)



MagPrex™ reactor at the RWHTF.

REGULATORY ENGAGEMENT AND COMPLIANCE

Partnering with Businesses Upstream

Metro employees work within key communities upstream and downstream of our treatment facilities to make sure our technologies meet water quality regulations and are effective.

Environmental Services team members partner with approximately 12,000 businesses in our service area through a U.S. Environmental Protection Agency-approved Industrial Pretreatment Program. Water recovery facilities like the RWHTF and NTP are designed to treat residential, but not industrial and commercial, waste streams. To protect equipment and downstream water bodies, upstream businesses are required to pretreat the water they use before sending it to Metro's facilities.

Every spring, Metro recognizes our industrial partners who meet the program requirements and demonstrate a commitment to environmental excellence for prior years. Our employees, Directors, and Connectors are grateful for the 2021 Platinum and Gold Award winners listed with their Connectors below.



The Environmental Sampling Team works on-site at upstream businesses to confirm compliance.

2021 Industrial Pretreatment Program Award Winners

PLATINUM AWARDS 100% program compliance for five years in a row

Rocky Mountain Bottle Company, LLC Clear Creek Valley	CW Elaborations, Inc. Crestview	Packaging Corporation of America Denver	Pepsi Beverages Company Denver	United States Mint Denver	Fathom Manufacturing (formerly Majestic Metals, LLC) North Table Mountain
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GOLD AWARDS 100% program compliance for one year

Advanced Surface Technologies, Inc. Arvada	Industrialex Manufacturing Corp. Arvada	Wanco, Inc. Arvada	Advanced Circuits, Inc. Aurora	Lowry Landfill Superfund Site Aurora	Niagara Bottling, LLC Aurora	Acme Manufacturing Company, Inc. Denver
Swire Coca-Cola, USA Denver	Union Pacific Railroad Denver North Yard Denver	Upsher-Smith Laboratories, LLC Denver	Wright & McGill Co. Denver	Ball Metal Beverage Container Corp. North Pecos	Airvac Services, Inc. North Washington Street	

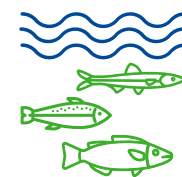
Learn more @ MetroWaterRecovery.com/Pretreatment

Monitoring Aquatic Life Downstream

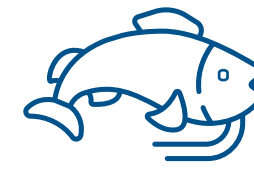
2021 Survey Results

Metro's scientists continually survey biological communities in the South Platte River to measure how effective our treatment technologies are downstream. These technologies include aquatic life habitat improvement sites installed in four locations in the South Platte River, which amplify treatment plant results.

Volunteers are invited and trained to assist with annual fish surveys in the river every fall. Our scientists also survey macroinvertebrates, to assess food sources like worms and bugs. Results from both 2021 surveys indicate healthy and diverse aquatic life communities.



20,858
individual fish counted



94%
of observed fish were native species



Water Quality Scientists Michelle Neilson, Jordan Parman, and Steve Lundt catching fish to survey (left to right).



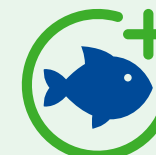
Regulatory Compliance Specialists Jori Nelson and Rebecca Sturgeon volunteering to survey (left to right).

19 Species Observed



NATIVE

Fathead Minnow	16,950
Sand Shiner	1,202
Longnose Dace	676
White Sucker	457
Iowa Darter	243
Green Sunfish	90
Johnny Darter	15
Brook Stickleback	14
Longnose Sucker	3
Channel Catfish	2
Creek Chub	1



INTRODUCED

Western Mosquitofish	768
Common Carp	273
Largemouth Bass	122
Smallmouth Bass	13
Yellow Perch	12
Black Crappie	11
Bluegill	3
White Crappie	3

Learn more @ MetroWaterRecovery.com/FishSurveys

AWARDS

Certificate of Excellence in Financial Reporting, 34th consecutive year
Government Finance Officers Association of the United States and Canada

Well-Being Award
Cigna

Denver's Healthiest Employers
Denver Business Journal

**Utility of the Future Award
Project Excellence Award for Nuisance Reductions and Materials Recovery**
Water Environment Federation

**2020 Peak Performance
Platinum Award for NTP**
National Association of Clean Water Agencies

Patricia Lopez, Employment Manager
Chairman's Award

Silver Level Workplace Health Achievement Index
American Heart Association

Certified Healthy Workplace Leader
Colorado Health Links

2020 Best Project in Plant/Pump Station (Wastewater) over \$6 million for Nuisance Struvite and Dewaterability Improvements Project
Colorado Contractors Association

Sustainability Award
Rocky Mountain Water Environment Association



Above: Patricia Lopez, Employment Manager; Colleen Dempsey, Director of Human Resources; and Scott Twombly, Board Chairman (left to right).

Left: NTP team members celebrate winning the NACWA 2020 Peak Performance Platinum Award.





METRO WATER RECOVERY

We get your water.

6450 York Street, Denver, CO 80229-7499

Phone: 303-286-3000

Fax: 303-286-3030

MetroWaterRecovery.com

