dc water is life®

1996-2016

CELEBRATING THE FIRST 20 YEARS OF
THE DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

REMAINS OF A WOODEN WATER MAIN AND PLUG FROM THE LATE 1800s

INSIDE

History of Innovation

For the last twenty years the community has known us as the District of Columbia Water and Sewer Authority. In those twenty years, the Authority has reinvented itself as a water utility that is responsive, responsible and innovative. From turning biosolids into energy to mapping lead service lines to generating new revenues, DC Water enjoys a national reputation for entrepreneurial innovation.

While we are very proud of our recent history and are well positioned for the future, the city also has a rich tradition of innovation in providing water services. From the earliest settlements along the banks of the Potomac and Anacostia rivers, Washingtonians have successfully navigated every challenge to meet the water needs of the community.

The Burning of Washington (1814)

Though Washington had been designated as the nation's new capital in 1800, the first water system in the city wasn't completed until two years later. In 1802, a modest system was installed to convey water to Woodward's Tavern and adjacent homes in the 600 block of Pennsylvania Avenue. Indoor and public plumbing was considered a luxury in the early years of the nineteenth century, but all of that changed during the War of 1812.

The White House set on fire by British troops

On August 24, 1814, the conflict with the British finally came to Washington. Though the occupation of the District was short-lived, British troops set much of the city ablaze including the White House, the Capitol and the Navy Yard. Without enough hydrants, it was impossible to control the fires. Fortunately, a very heavy thunderstorm passed through the city the next day and extinguished the fires. The British were turned back, but the burning of the city painfully underscored the need for strategic water conveyance to effectively combat fires.

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Early water mains carried spring water and pipes were primarily constructed using bored logs. While the expanded water infrastructure offered improved access for firefighters in the immediate vicinity of Capitol Hill, water pressure in the pipes was very low compared to modern standards and it would take another fire to spur further system improvements.

Fire at the Library of Congress (1851)

The original Library of Congress was housed in the Capitol building. On Christmas Eve in 1851, a spark from a stove ignited a massive fire which destroyed 35,000 books, nearly two-thirds of the Library's collection, including more than 4,000 titles originally owned by Thomas Jefferson.

The resulting damage forced the public conversation to again turn to the water system. A greater volume of water was needed along with a far more extensive delivery system. In 1852, Congress appropriated $5,000 for the Army Corps of Engineers to study possible means of improving the supply of water to the city. Captain Frederick A. Smith was assigned to lead the study but died soon after beginning work on the project. The task fell to Lieutenant Montgomery C. Meigs.

Meigs planned and led the construction of the Washington Aqueduct, including a dam and intake above Great Falls, as well as associated reservoirs and tunnels. Construction took several years but, by 1858, the city had a greater water supply and subsequent infrastructure improvements have helped the city avoid another catastrophic fire.

Population Growth Brings Sanitation Challenges (1860-1900)

Over the last half of the nineteenth century, Washington's population more than quadrupled from 51,000 in 1850 to 276,000 in 1900. This period of explosive growth strained the District's water infrastructure and created additional sanitation challenges. Up until this period, sewage was typically discharged into the nearest body of water. For example, Tiber Creek, once used as a source of drinking water, was now polluted and used to dispose of human waste.

Wooden water main from the late 1800s

With the water supply increasingly polluted, the city experienced several outbreaks of disease – most notably scarlet fever and cholera. While the District had numerous sewers for ground and storm water, they were not built to accommodate the growing population and were not linked together in a coordinated fashion. Shortly after the end of the Civil War, the District's Board of Public Works built roughly 80 miles of sewers. This sewage system greatly improved public health by sealing off waste channels and diverting wastewater to marshes along the Potomac and Anacostia. However, this approach would create new environmental problems over the next two decades.

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History of Innovation continued

In 1889, President Benjamin Harrison assembled a Board of Sanitation Engineers to study and recommend modifications to the sewer system. The engineers determined that rather than emptying sewage into the District's marshes, a discharge point was needed on the Potomac. The rationale was that by releasing sewage into a strong current, the waste would be carried to the Chesapeake and no longer pose a problem for residents. The site selected by the team placed the outfall at the southernmost tip of the city: Blue Plains.

Typhoid and Water Filtration (1875-1910)

Although tremendous progress had been made with the sewer system, poor sanitation practices and related illnesses were a persistent problem in Washington and other cities along the east coast. Typhoid fever, caused by several strains of bacteria, was particularly rampant. The bacteria, which can survive in water or dried sewage for weeks, entered the water system and quickly spread to the food supply.

After completion of the Washington Aqueduct, most of the city's drinking water was sourced from the Potomac River. As the population increased, the Potomac was increasingly polluted and, at that time, the water was generally not filtered. In fact, in 1875 it is estimated that only 30,000 Americans had access to filtered drinking water.

Water filtration was urgently needed. The McMillan Reservoir was built in 1883 near the intersection of North Capitol and Michigan Avenue. To filter the city's water, large underground chambers were built to provide space for slow sand filtration. Concurrent to the construction of McMillan Reservoir, the Army Corps of Engineers began designing the adjacent Bryant Street Pumping Station. The new pumping station would be capable of delivering 65 million gallons of filtered water every day.

This cartoon by Clifford Berryman, which appeared in the Washington Evening Star on May 29, 1907, depicts the poor sanitary conditions which contributed to many local outbreaks of typhoid between 1905 and 1909.

With the sand filtration and pumping station in place and operational by the fall of 1905, incidences of typhoid and other water borne illnesses dropped dramatically. Typhoid rates dropped from a high of 74 deaths per 100,000 residents in 1902 to 45 per 100,000 in 1906. As operational processes were refined at the site, rates would drop to 16 per 100,000 by 1913.

Washington faced new challenges throughout the 20th century. Population growth necessitated the addition of more pumps. Environmental declines led to new wastewater practices, including the construction of the Blue Plains Advanced Wastewater Treatment Plant in 1937.

Today, as you'll see in this Annual Report, DC Water is not only meeting the water needs of Washingtonians but striving to anticipate tomorrow's challenges and innovating to find new efficiencies.

1802
FOUNDING OF DISTRICT GOVERNMENT

1859-1872
DISTRICT OF COLUMBIA WATER BOARD

1872-1932
DISTRICT OF COLUMBIA BOARD OF PUBLIC WORKS

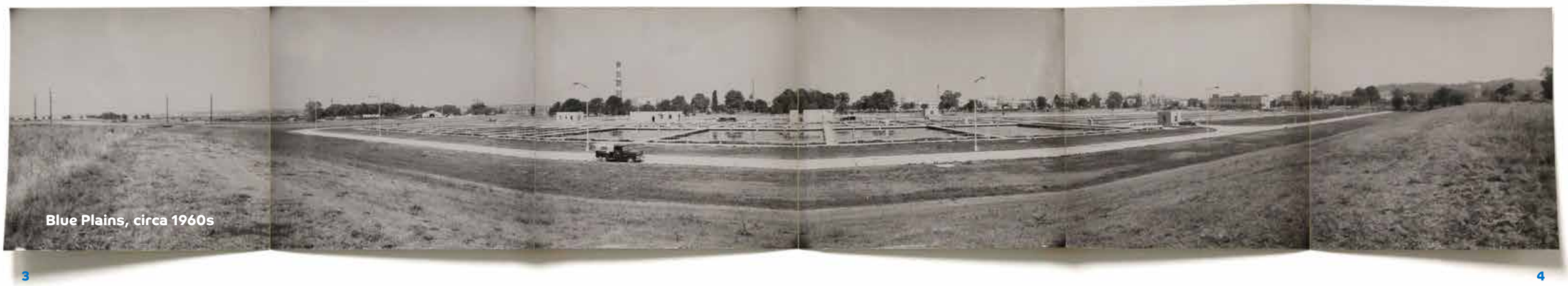
1932–1971
DISTRICT OF COLUMBIA DEPARTMENT OF SANITARY ENGINEERING

1971–1985
DISTRICT OF COLUMBIA DEPARTMENT OF ENVIRONMENTAL SERVICES

1985–1996
DISTRICT OF COLUMBIA DEPARTMENT OF PUBLIC WORKS – WATER AND SEWER UTILITY ADMINISTRATION (WASUA)

1996–2010
DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY (DC WASA)

2010–PRESENT
DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY (DC WATER)



Blue Plains, circa 1960s

George's Message

I am fascinated by history, and the history of Washington, D.C.'s water and sewer systems recounted in this report is remarkable. The evolution of our infrastructure was driven by necessity, for fire suppression and life safety, for public health and disease prevention and to serve the rapidly expanding population of the nation's capital. Whenever a challenge arose on any of these fronts, our forebearers met it with dedication and ingenuity.

Today, I see that same spirit of innovation thriving at DC Water. I have just completed my seventh year here and the pace of progress has been staggering. We have accelerated the replacement of old sewer and water pipes. We've made costly plant upgrades to sharply cut the harmful nutrients discharged to the Potomac and Anacostia Rivers and Rock Creek, and ultimately the Chesapeake Bay. We have embraced new technology on every front, embodied by our effort to generate electricity from the water reclamation process. We've proven our commitment to rid our waterways of untreated sewage and stormwater by mining vast tunnels. We've also pioneered new financial instruments to ensure our ratepayers get the maximum return on their investment.

So, we are proud of both our past and our present, and optimistic about the future. We pause a moment here to celebrate the 20th Anniversary in our current incarnation as the District of Columbia Water and Sewer Authority, DC Water, but then it's off again to carry on the legacy entrusted to us.

I am reminded that at the core of our work is an unwavering dedication to the people we serve, and who ultimately foot the bill. We strive to be innovative and to improve our service both to support every person and every job in the District, and to demonstrate the value of every dollar invested in us. In the days ahead, we will emphasize the service we deliver to our customers – including of course the improvement to the environment and public health, yet also to spur local business development and job creation for our residents, along with improvements to the quality of life in the neighborhoods where we do our work.

Congratulations to our tremendous work force – Team Blue – for their service, day or night, in fair weather or foul, on behalf of our customers. 20 years now, and counting.

George S. Hawkins | CEO & General Manager

Photo by David Kidd

Chairman Brown's Message

Some of our public institutions measure their history in centuries, so two decades barely registers on their timeline. Even here, at DC Water, 1996 was not the beginning of the story. The water and sewer infrastructure in the District of Columbia dates back to the early 1800's and has been managed over the years by a progression of different federal and local departments.

So, 20 years in, you could say the District of Columbia Water and Sewer Authority has barely reached adulthood as an independent enterprise.

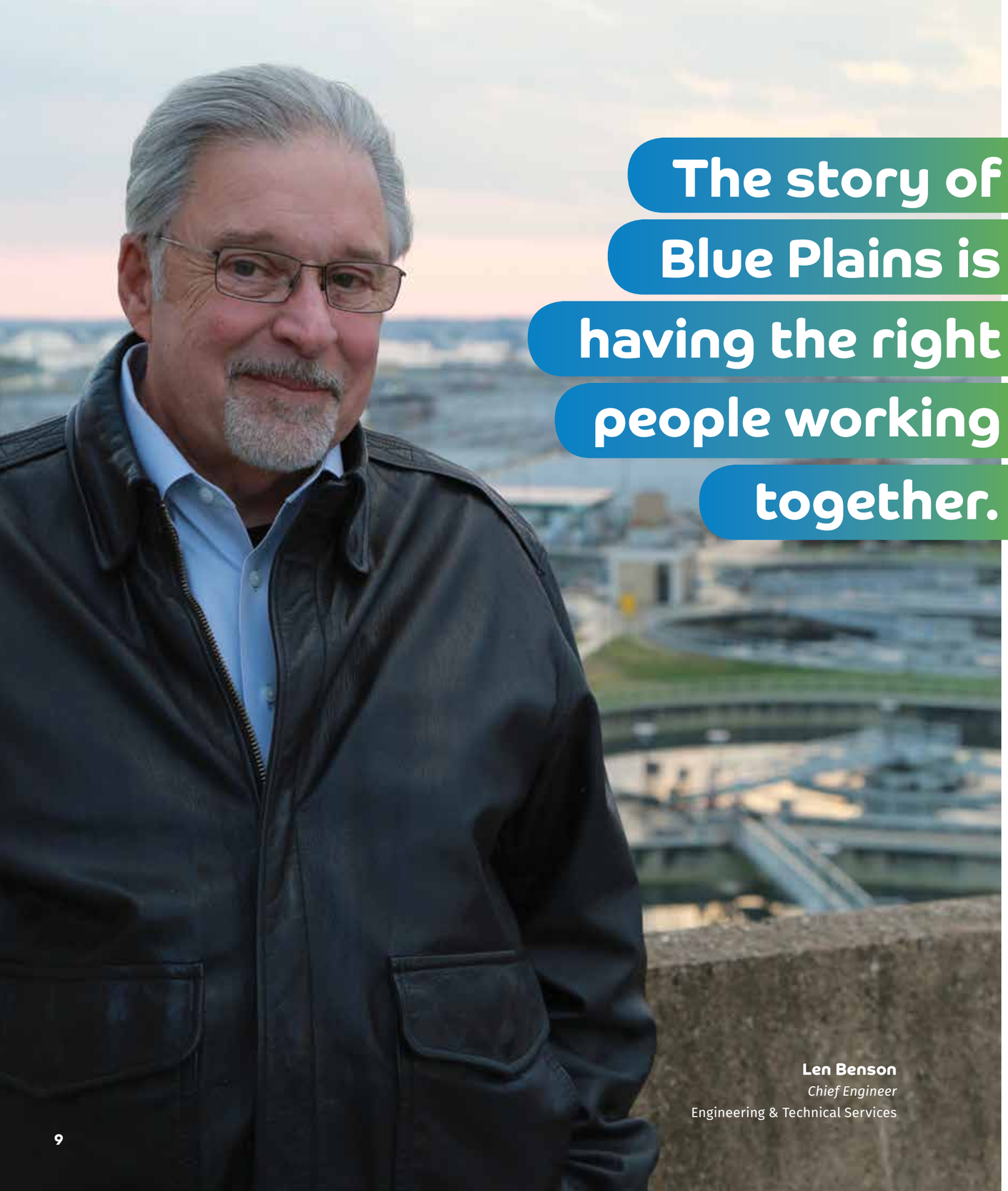
But, to me, that makes it even more remarkable what the Authority and its employees have accomplished already. DC Water's standing in the industry is almost unparalleled. Peer utilities study our financial practices, operations and customer engagement. DC Water is on the leading edge of innovation, patenting new technology and pioneering sustainable energy saving methods to improve the treatment process. Visitors from across the globe come to tour the Blue Plains Advanced Wastewater Treatment Plant. And DC Water is what it is today because of our employees who work every day to improve DC Water and the communities that it serves.

It is my honor to represent Mayor Muriel Bowser on the Board of Directors, which has played an important part in DC Water's maturation and growth. It is an immensely satisfying, rewarding and challenging responsibility. I am so impressed with the professionalism, commitment and expertise of my fellow trustees who truly care about improving the Authority while remaining mindful of the burden placed on ratepayers.

Congratulations to DC Water for the first 20 years. Its success to date is a tough act to follow, but I look forward to working with DC Water employees and Board members to ensure its success in the next decade and beyond.

DC Water's standing in the industry is almost unparalleled.

Matthew T. Brown | *Chairman*, DC Water Board of Directors



The story of Blue Plains is having the right people working together.

Len Benson
Chief Engineer
Engineering & Technical Services

Progress

Leonard "Len" Benson was just 21 years old when he began work at the agency now known as DC Water almost 50 years ago. He was a GS-4 Civil Tech, a summer worker, and his very first projects were inspecting water mains and sewer tunnels associated with the development of I-395. When he graduated from the University of Maryland in 1968 he was promoted to Civil Engineer and his work shifted to the Blue Plains plant in 1971.

When he arrived at the plant, only 50 acres of the 153-acre site contained treatment processes. Biosolids (the solids left over at the end of wastewater treatment) were laid out on the south end of the plant to air dry, and farmers drove from miles away to retrieve them for fertilizer. This was before the creation of the Clean Water Act and the EPA, a decade or so after President Lyndon Johnson called the Potomac River in its polluted state a national disgrace.

In the early 1970s, Benson says, you could expect the belts carrying the biosolids through the solids building to catch fire each year. DC Water proposed using incinerators to dispose of the biosolids, but by then the plant was regulated by a young EPA that wouldn't allow the practice due to the enormous amounts of fuel needed. In the ensuing years, Blue Plains was plagued with plant capacity and biosolids disposal problems that led to legal issues. During this time, the biosolids piled up on the plant and were for a time known as "Sludge Mountain." These issues were resolved by the successful negotiation of the Intermunicipal Agreement (IMA) that allocated capacity and disposal among the suburban jurisdictions and District of Columbia. The IMA was recently successfully renegotiated and is now a model for regional cooperation.

Eventually, DC Water harnessed innovative technology and in 2015, commissioned the Bailey Bioenergy Facility on Blue Plains to turn biosolids into electricity and steam. This project now produces close to one-third of the plant's energy needs and makes a clean "Class A" biosolids product that DC Water makes into a soil amendment. At the same, time, DC Water has invested more than $1 billion in upgrades to the plant to improve the quality of the effluent (the treated wastewater), removing more and more nitrogen and phosphorous to protect the local waterways and the Chesapeake Bay.

Upon reflection, Len Benson says, "I have had the opportunity to work with the best of teams in the industry and we have improved the wastewater treatment level from something that looked like concentrated sewage to something approaching water you can drink. The residuals left over used to be sludge and now it is a renewable resource."

Skip Tompkins inside the Technical Information Center

The people we have are the real value added resource here.

Perspectives

DC Water is built on a solid foundation of dedicated professionals who have made it their life's work to provide life-sustaining water and sewer services. Many of them started working here long before we became an independent authority, others are just beginning their careers. Each has a unique perspective. Here are a few, in their own words:

Lee "Skip" Tompkins
Supervisor, Document Management Department of Engineering and Technical Services | 44 years

"DC Water's been such a wonderful place to work. I started June 19, 1972; at that time, it was the District of Columbia Department of Environmental Services. I started here as a surveyor. Back in those days we had day labor crews and our design people designed water and sewer jobs. It was really kind of fun, we had some challenges and it was exciting—we learned new technology. It was a wonderful, active time where everybody had a chance to engage—we came together and worked well.

I was fortunate enough to be challenged by the guys in Engineering [to accept my current position]. It seems to me that these wise gentlemen realized that there was an awful lot of Blue Plains programs and projects that were coming to an end—the documents that would fall out of those completions were very, very important and we needed to have someone down here to help.

We have material here that extends back to the middle 1800s. Historic information can be tube drawings, photographs, microfilm, etc. We have movable storage for projects—there may be in many instances, 20 boxes that comprise one project. They represent all of the output of a project. They're all itemized and collected in a database. We have contract drawings (ink on Mylar) that have been finalized and are here for record. We have hundreds of thousands of tap cards, water and sewer counter maps (digitized around 2000), books of design computations, and more. There's just tons of records here.

There is a lot of work to manage the material and keep it clean and up to date. That's the critical thing—we create reliable records for people to use in the future to design and construct new water and sewer infrastructure.

I think we have astute managers that find ways to keep you engaged and give you opportunities to take on new challenges—and that's what I think I've been blessed with here. It's interesting to see the changes that we're going through.

The people we have are the real value added resource here. It wouldn't happen without them. We have access to people who have been engaged in the past—they help. They call, they will come here. It's just a matter of good resources, people who care."

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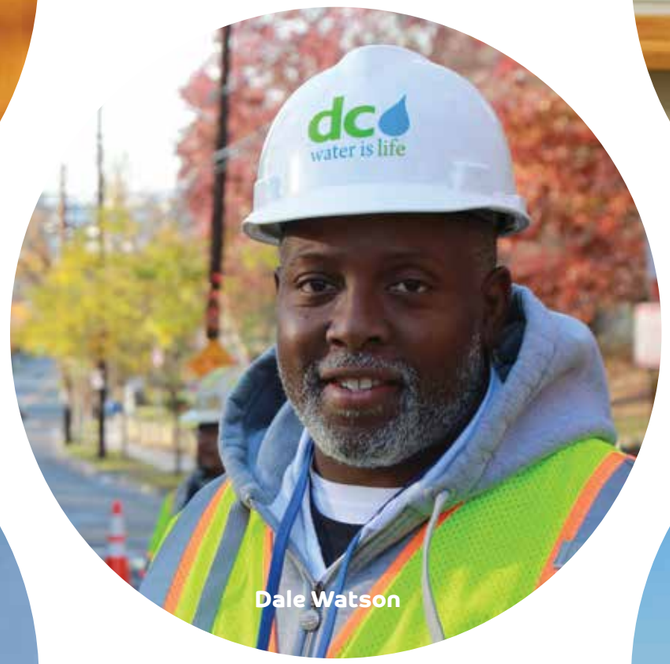
Perspectives continued


Donna Lewis


James Clarke



Dale Watson


Linwood White

Donna Lewis | Manager, Customer Services
Department of Customer Services | 18 years

"Following my retirement from a 30 year career at another utility, I wanted to share my experience with an organization that was growing. I was welcomed here with open arms. I felt and continue to feel appreciated by my team, and peers as well as senior and executive management. I so appreciate being here. I have learned more; I've been trusted to do more. Our leadership is phenomenal. I appreciate working for leaders that appreciate me and what I can bring to the organization. It's that trust factor and that I can be creative that keeps me here."

James Clarke | Program Manager
Department of Maintenance Services | 8 years

"I love my job—I love the niche I've created. My time here has been very rewarding. As a Program Manager, I'm also a patent attorney, so I help DC Water file for patents from time to time. I've done around two dozen filings with DC Water, our innovations group has come up with some pretty ingenious stuff. I've been able to work on projects from methanol to solar energy. I have been able to expand myself and put my skills from my Master's and law school to good use. I really could not ask for much more out of my experience here and I'm looking forward to the future."

Dale Watson | Technician III, Civil Construction
Department of Water Services | 29 years

"I love it. I wouldn't want to work any place else, to be honest. I love coming in contact with various people. I've been with DC Water 29 and a half years. In the beginning, I started out as a laborer in Service Repair and for the last 5 plus years, I've been an Inspector. We've come a long way in the last 20 plus years. For me, it's a learning thing. I know I can come here and learn something every day."

Linwood White | Supervisor Field Technician
Department of Engineering and Technical Services | 51 years

"I've been here 51 years and 5 months. I've enjoyed my work here—if I didn't, I wouldn't have been here this long. I started out in surveying—as a field truck driver. I was able to move up the ladder by observing and working with a variety of projects and jobs. I've gotten a well-rounded education here which helps me at home, too. I also work with a bunch of nice people."

20th Anniversary of the Board

The launch of the Authority in 1996 was also the birth of a new governing body. The inaugural Board of Directors officially started work in September of that year under the leadership of Chairman Michael Rogers and with 22 members representing the District of Columbia and Fairfax, Montgomery and Prince George's counties.

David Lake was appointed to the Board five years later, and continues to serve today, representing Montgomery County. He remembers, "In 2001 when I started on the Board, DC WASA had completed its first five years of existence that I refer to as its 'formative' years, when the Authority needed to develop its business practices, establish its bond market presence, adopt administrative and budget procedures, etc. By the time I was appointed to the Board these procedures had been developed and DC WASA was ready to begin to address complex regulatory issues related to its combined sewers, Chesapeake Bay initiatives of its U.S. EPA issued discharge permit, and additional Blue Plains treatment process improvements. It was a time of detailed planning for both technical and financial issues facing the Board."

Lake is now DC Water's longest serving trustee and speaks with pride about the progress he has witnessed over the years, and the role the Board of Directors has played in that evolution.

"In 20 years' time the Authority has achieved more than what was originally envisioned. Initially, the creation of DC WASA was intended to stabilize finances and ensure a reliable operation of Blue Plains. DC WASA is now referred to as DC Water and is known in the industry as a "World Class" Authority. I believe that the Authority is an enterprise that the region's water and sewer customers and stakeholders can be proud to support."

Linda Manley
Secretary to the Board

A Steady Hand

When the Board of Directors convened for the first time 20 years ago, Linda Manley was there, serving as the panel's first Secretary of the Board, on an interim basis. Today, when the Chairman calls a meeting to order, Ms. Manley is still there, sitting two seats to his left, quietly ensuring the proper protocol is followed and nothing is left to chance. In those two decades, she has never missed a Board meeting, a remarkable record. The names and faces change, members come and go, but her constant presence underpins the board with stable support so it can focus on the important work of governing DC Water.

Linda joined DC Water, then the Water and Sewer Utility Administration (WASUA), in 1985 as the Water and Sewer Program Coordinator. She was one of the handful of employees who worked to ensure the successful transition from WASUA to DCWASA in 1996. Appointed to serve as the Interim Secretary to the Board during the transition, Ms. Manley accepted this role while still performing the daily responsibilities of her full-time job.

"At that time, DC Water had a small staff and we were all faced with heavy responsibilities. DC Water had to figure out how to repair pipes, rebuild infrastructure, grow the organization, while also improving customer service on a very restricted budget," Linda remembers. "I was the Water and Sewer Program Coordinator for eleven years, so continuing to do that was not the challenge. The challenge was having only two weeks to prepare for twenty-two new founding Board members during a major organization transition."

Over this two-week span Linda planned, researched, and sought guidance from other organizations to strategize and prepare. "I didn't know how it was going to happen, but I knew that it was going to happen," says Manley.

And on September 26, 1996, Linda did make it happen! She commenced DC's Water's first Board of Directors meeting with success as the first Interim Secretary to The Board. A year later, she was appointed to official Secretary of the Board and has held that title ever since.

As we celebrate the 20th anniversary of both DC Water and our Board, we also celebrate and recognize Linda for her important role in getting the enterprise off the ground. "I don't know where we will be in the next 20 years," Manley says, "But I do know that our teamwork, company passion, and commitment to the community will continue to push us further!"

Board of Directors and Executive Team

Principal Board Members

Matthew T. Brown, Chairman
District of Columbia
Office of Budget and Finance,
Executive Office of the Mayor, Director

Ellen O. Boardman
District of Columbia
O'Donoghue & O'Donoghue LLP, Partner

Rachna Butani-Bhatt
District of Columbia
HRGM Corporation, Director

Elisabeth Feldt
Montgomery County, MD
Department of Environmental Protection, Director

Timothy L. Firestine
Montgomery County, MD
Chief Administrative Officer

Bradley Frome
Prince George's County, MD
Economic and Development and Public Infrastructure
Assistant Deputy Chief Administrative Officer

Nicholas Majett
Prince George's County, MD
Chief Administrative Officer

Obiora "Bo" Menkiti
District of Columbia
The Menkiti Group and Keller Williams Capital Properties
Chief Executive Officer and Founder

James Patteson
Fairfax County, VA
Department of Public Works and Environmental Services
Director

11 Principal and 11 Alternate Board Members Govern DC Water

The DC Water Board meets monthly at the Blue Plains Advanced Wastewater Treatment Plant. Board members are appointed by the Mayor of the District of Columbia. Currently, the Board has eight standing committees:

- **Audit**
  Nicholas Majett, Chair
- **DC Retail Water and Sewer Rates**
  Rachna Butani-Bhatt, Vice Chair
- **Environmental Quality and Sewerage Services**
  James Patteson, Chair
- **Finance & Budget**
  Timothy Firestine, Chair
- **Governance**
  Ellen O. Boardman, Chair
- **Human Resources and Labor Relations**
  Bradley Frome, Vice Chair
- **Strategic Planning**
  Obiora "Bo" Menkiti, Chair
- **Water Quality and Water Services**
  Rachna Butani, Chair

Alternate Board Members

Shirley Branch
Prince George's County, MD
Department of Environmental Resources, Project Manager / Water and Sewer Plan Coordinator

Reverend Dr. Kendrick Curry
District of Columbia
Pennsylvania Avenue Baptist Church, Pastor

Howard C. Gibbs
District of Columbia
Retired

Ana Harvey
District of Columbia
District of Columbia Department of Small and Local Business Development, Director

Bonnie Kirkland
Montgomery County, MD
Assistant Chief Administrative Officer

David W. Lake
Montgomery County, MD
Department of Environmental Protection, Special Assistant

Sarah Motsch
Fairfax County
Department of Public Works and Environmental Services, Engineering Support, Branch Chief

Adam Ortiz
Prince George's County, MD
Department of Environmental Programs, Director

Executive Team

George S. Hawkins
CEO and General Manager

Leonard R. Benson
Chief Engineer

Henderson Brown
General Counsel

Mustaafa Dozier
Chief of Staff

Biju George
Chief Operating Officer

Alan Heymann
Chief Marketing Officer

Rosalind Inge
Assistant General Manager
Support Services

Charles Kiely
Assistant General Manager,
Customer Care and Operations

Mark Kim
Chief Financial Officer

Thomas L. Kuczynski
Chief Information Officer

John Lisle
Chief, External Affairs

Aklile Tesfaye
Assistant General Manager,
Blue Plains

In the Community

Wendy the Water Drop
Spokesperson and Social Media Darling, DC Water

DC Water has an extensive community outreach program that touches customers in each of the District's eight wards. In 2016, we hosted and/or participated in more than 150 outreach events and meetings across the city, most of which included guest appearances by Wendy the Water Drop. In promoting our "Drink Tap" campaign at many events, we handed out more than 12,000 reusable water bottles while engaging with our customers on the environmental and economic benefits of drinking tap water.

Notable citywide events this year include DC Water's first Family Water Festival, the Metropolitan Police Department's "Beat The Street" series, Adams Morgan Day and the H Street Festival. Through our Environmental Education program, we partnered with 22 schools, engaging approximately 600 students with classroom-based lessons and hands-on activities to increase their awareness and understanding of our water resources and to promote environmental stewardship. There was also extensive outreach to customers impacted by DC Water's construction projects. One of our priorities is to encourage customers with lead service lines to participate in our lead service replacement program when we are replacing old water mains in their neighborhoods.

DC Water has placed special emphasis on some of the underserved communities in Wards 7 and 8. Educational opportunities have been expanded to include partnerships with the "Champions" after-school program at Democracy Prep Public Charter School and the water education workshop series at the DC Public Library's Bellevue/Lockridge Neighborhood Branch. We are participating for a second consecutive year in the Everybody Wins! DC reading program at Savoy Elementary School, providing 23 reading mentors for 16 of the 56 students enrolled in the school's Power Lunch Program.
In addition, as part of our construction outreach program, we met with community members across Ward 8 to prepare them for construction of the long-anticipated Saint Elizabeths Water Storage Tower and resultant water pressure increase to approximately 1,600 local homes and businesses.

Mapping Out Lead

Events across the country have generated renewed concerns about the safety of drinking water. At DC Water, we take these concerns very seriously and strive to be open and transparent about your water quality and the potential impacts of lead exposure. We remain strongly committed to working with the Army Corps of Engineers Washington Aqueduct – which treats the drinking water – to minimize lead release from pipes throughout the District by controlling corrosion, monitoring for lead at the tap, educating our customers on the health impacts of lead, and helping them identify and remove lead sources on their property.

This year, DC Water launched a new interactive map that helps property owners identify their water service line material. This information is especially important for customers that have service lines made of lead. Although water is essentially lead free when it leaves the treatment plant, lead can be released into drinking water when it comes into contact with lead service lines or interior plumbing containing lead. All customers need to do to see their service line material is go to **geo.dcwater.com/Lead** on any computer and enter their address. Although information is not available for every property, many residents can view their information with the click of a mouse. When service line materials are listed as unknown, residents can help us identify the material on their property and keep our records accurate.

Residents that have lead service lines can choose to have their service lines replaced. DC Water replaces lead service lines during many construction projects or if requested by a property owner. We will replace the portion of the service line in public space if the property owner agrees to pay for replacement of the private portion of the service line. This work can often be done at a significant cost savings to the property owner.

Making service line material information readily available is important for customers so they can take steps to minimize their exposure to lead when lead service lines remain in place. At DC Water, our service line map is just one more example of how we use technology to increase our transparency and strengthen our customers' confidence in their drinking water.

DC Water by the Numbers

681,000

We distribute drinking water to more than 681,000 District residents, businesses, the federal government, and 21 million visitors annually

9,000

We maintain and supply water to more than 9,000 public fire hydrants

1,100

We operate and maintin more than 1,100 miles of small-diamter distribution mains ranging from 4 to 12 inches in diameter

Nothing Wasted

20 years ago, if you said DC Water would someday be selling biosolids to the public, it's unlikely anyone would have believed you. This year, that's exactly what we started doing. In May of 2016, DC Water launched Bloom®, a soil amendment product made from the biosolids processed at our Blue Plains Advanced Wastewater Treatment Plant. During the wastewater treatment process, solid materials are separated from liquids and sent to our new state-of-the-art thermal hydrolysis process and anaerobic digesters. This equipment adds heat, pressure and helpful bacteria to the solids to destroy harmful pathogens and reduce odor. The final product is a nutrient-rich product similar to compost called biosolids.

The biosolids we produce, which we're calling Bloom®, are exceptional quality Class A biosolids and can be used in virtually any area, from large farms to backyard gardens and lawns. Just like farmers can use Bloom to increase crop growth, individuals can use it on their gardens to help plants and vegetables grow. Bloom is even ideal for use on playgrounds or the community ball field. Soil amendments work much like fertilizer, naturally adding much needed nutrients to the soil, improving plant growth. Bloom can also increase drought resistance and is now available for sale and delivery to farmers, soil blenders, landscapers, and home gardeners.

Applying biosolids to the land helps capture carbon and prevents it from being released to the atmosphere, reducing our impact on climate change. Biosolids application also recycles important nutrients like phosphorous and nitrogen back into the soil instead of releasing them into the Potomac River and Chesapeake Bay. The use of biosolids helps to reduce our carbon footprint and saves energy when compared to conventional chemical fertilizers, which require enormous amounts of petroleum-based energy for production.

Just as important, it is one more way we work to offset costs to our ratepayers. By finding new streams of revenue, we can begin to mitigate the impacts of rising rates to our customers. The benefits of Bloom® are numerous-from restoring the soil, to protecting our waterways, to keeping our rates lower for the future. As we like to say, there is no such thing as waste, only wasted resources.

Learn more at **bloomsoil.com**

GOOD SOIL,
BETTER EARTH.

Bloom Launch Event

First Street Tunnel Community Tour

Fixing a Historic Problem

Four years ago, DC faced a daunting challenge: heavy rains were causing serious street and basement flooding in the low-lying Bloomingdale and LeDroit Park neighborhoods. It was a problem that had existed for decades and was tied to the limited capacity of the sewer system, installed in the late 1800's.

Four intense storms in the summer of 2012 led to the Northeast Boundary Neighborhood Protection Project, a joint effort between the District and DC Water. One of the most significant aspects of the plan called for accelerating construction of a tunnel under First Street, NW. Construction of the First Street Tunnel (FST) is now complete. It is 2,700 linear feet in length and 20-feet in diameter, running under First Street, NW from Channing Street to Rhode Island Avenue, at a depth of 80 to 160 feet below ground.

For now, the tunnel will function as a 9.3 million gallon underground storage tank to hold stormwater and sewage during rainstorms. Following each storm, it will be emptied by a temporary pump station into the existing sewer system so that flows may be conveyed to the Blue Plains Advanced Wastewater Treatment Plant for treatment. After completion of the Northeast Boundary Tunnel (NEBT) Project in 2023, the pump station will be decommissioned and the FST will then be connected to the NEBT so it may convey flows directly to Blue Plains for treatment.

The project is one of the most challenging DC Water has ever undertaken, digging deep shafts in the tight confines of a historic neighborhood. It required innovative engineering and an unprecedented level of public outreach and communication with residents. Their patience and participation in regular tunnel forums helped ensure success. Their neighborhoods are now better protected than they've ever been against potentially damaging storms.

Making an Impact

Construction of much-needed capital projects requires a solid financing strategy. The Finance Team at DC Water is always mindful of the burden that rate increases place on customers and continually seeks creative and innovative financing tools to keep rates as low as possible.

In September, DC Water unveiled its latest creative financing instrument, offering an Environmental Impact Bond, the first such offering in the United States. It is based on the social impact model that pays for success. In this case, the proceeds from the bond sale will be used to construct green infrastructure practices in the Rock Creek sewershed designed to mimic natural processes that absorb stormwater during periods of heavy rainfall, reducing the number and volume of combined sewer overflows (CSOs) that pollute the District's waterways. Examples of these practices include building rain gardens, replacing pavement with gravel or porous pavers, installing rain barrels and building green roofs. This initial green infrastructure component will be conducted as part of the larger $2.6-billion Clean Rivers Project.

In essence, this model allows DC Water to attract investment in green infrastructure where the costs of installing the green infrastructure are paid for by DC Water, but the performance risk is shared amongst DC Water and the investors. As a result, payments on the EIB may vary based on the proven success of the environmental intervention as measured by a rigorous evaluation.

The $25 million, tax-exempt bond was sold in a private placement to the Goldman Sachs Urban Investment Group which deploys the firm's capital by making investments and loans that benefit urban communities, and Calvert Foundation, a global impact investing institution that offers investors an accessible way to invest for social and environmental good. The Harvard Kennedy School of Government Performance Lab was a technical advisor in developing the model for DC Water.

By developing the Environmental Impact Bond, DC Water seeks to create a model funding mechanism that other municipalities can leverage to advance the use of green infrastructure in addressing stormwater management in their communities.

East Side Pumping Station Green Roof

2016 Finance & Budget

Financial Performance

DC Water ended fiscal year 2016 with excellent financial performance. The results included strong liquidity, solid operating revenues with tight control over expenses and positive budget to actual results. The Authority met or exceeded all financial targets and complied with Board policies and bond covenants.

Highlights

- Operating revenues increased by $45.9 million to $595.8 million or 8.3%, primarily due to the retail rate increase of 6.5%, a 21.2% increase in Clean Rivers Impervious Area Charges and the introduction of the new Water System Replacement Fee which resulted in $39.6 million of new operating revenues in fiscal year 2016, offset by an 18.4% decrease in wholesale wastewater charges.

- Operating expenses increased by $9.7 million to $388.4 million or 2.6%, primarily due to increases in personnel, depreciation expense and contractual services expense offset by a decrease in chemicals and supplies, utilities and water purchases.

- Capital assets, net of depreciation and amortization, increased by $518.0 million to $6.0 billion, or 9.5%, as a result of capital additions of $607.5 million offset by depreciation and amortization of $89.5 million. Capital additions incurred in 2016 were in line with the Authority's approved 10-year capital improvement program.

- Current assets increased by $37.3 million to $549.5 million, or 7.3%, primarily due to an increase in cash and investments offset by a decrease in receivables from other jurisdictions.

- Net position increased by $173.3 million to $1.7 billion, or 11.3%, as a result of current year operations and capital contributions.

- The Authority's long-term debt, including current maturities, increased by $381.1 million to $2.9 billion, or 14.9%, primarily due to the $350.0 million and $25.0 million bond issuances described below:

  - Issued $100.0 million of 2015 Series A and $250.0 million of 2015 Series B subordinate lien revenue bonds with fixed interest rates ranging from 2.0% to 5.25%. The 2015 Series A green bonds mature in 2045 and are being used to fund the Clean Rivers Project. The 2015 series B bonds mature in 2044 and $62.0 million is being used to make principal and interest payments on all or a portion of the Authority's outstanding commercial paper notes and the balance is being used to fund the Authority's capital improvement program. Gross proceeds from the bond issuance totaled approximately $406.6 million, including $56.6 million original issue premium.

  - Issued the subordinate lien revenue refunding bonds, 2016 Series A in the amount of $389.1 million. The proceeds from the bonds were used to refund $401.9 million of the Authority's outstanding bonds. The interest on the bonds are at fixed rates ranging from 2.0% to 5.0%.

  - Issued $25.0 million of 2016 Series B (Environmental Impact Bonds) subordinate lien revenue bonds. The 2016 Series B Bonds are multimodal variable rate bonds, initially issued bearing a 3.43% fixed rate through the mandatory tender date, April 1, 2021. The net issuance proceeds (after payment of $0.5 million of issuance expenses) of $24.5 million will be used for construction of Green Infrastructure (GI) for the Rock Creek Project A.

- Long Term Credit ratings of Aa1/AAA/AA and Short Term Credit Ratings of P-1/ A-1+/ F1+ were reaffirmed by Moody's, S&P, and Fitch rating agencies.

- Government Finance Officers Association awarded DC Water with a Certificate of Achievement for Excellence in Financial Reporting and the Distinguished Budget Presentation Award.

- DC Water received its 20th consecutive unmodified audit opinion on its financial statements.

September 30, 2016 and 2015 (in thousands)

Condensed Statements of Net Position

	2016	2015
Current assets	$549,496	$512,226
Capital assets, net	5,995,347	5,477,327
Other non-current assets	121,912	93,945
Total assets	6,666,755	6,083,498
Deferred Outflows of resources	73,157	45,246
Current liabilities	440,888	471,766
Long-term debt outstanding	2,900,329	2,520,046
Long-term liabilities	1,695,406	1,606,990
Total liabilities	5,036,623	4,598,802
Net investments in capital assets	1,491,925	1,348,056
Restricted	33,135	27,054
Unrestricted	178,229	154,832
Total net position	**$1,703,289**	**$1,529,942**

Condensed Statements of Revenues, Expenses and Changes in Net Position

	2016	2015
Operating revenues	$595,789	$549,915
Operating expenses	388,384	378,660
Net non-operating revenues (expenses)	(66,489)	(60,093)
Change in net position before capital contributions	140,916	111,162
Capital contributions	32,431	67,965
Change in net position	173,347	179,127
Net position - beginning of year	1,529,942	1,350,815
Net position - end of year	**$1,703,289**	**$1,529,942**

Condensed Statements of Cash Flows

	2016	2015
Net cash provided by operating activities	$247,757	$217,425
Net cash used in capital and related financing activities	(151,285)	(510,694)
Net cash used in investing activities	(92,123)	264,240
Net (decrease) increase in cash and cash equivalents	4,349	(29,029)
Cash and cash equivalents - beginning of year	233,649	262,678
Cash and cash equivalents - end of year	**$237,998**	**$233,649**

Awards

US Water Prize
DC Water was one of three recipients nationwide to receive the 2016 US Water Prize. It was presented by the US Water Alliance, a national nonprofit organization driving a one water movement—an approach to water stewardship that is innovative, inclusive, and integrated. DC Water was honored for its innovative Bailey Bioenergy Facility which has captured attention around the globe by using a new technology called thermal hydrolysis to produce electricity from the wastewater treatment process. DC Water joins the ranks of Emory University and Dow in winning the award.

Recognition
DC Water staff, and the organization as a whole, won more than two dozen awards in FY 2016. A select few follow below.

WEF Public Official Award - DC Water's CEO and General Manager George S. Hawkins garnered the Water Environment Federation (WEF) Public Officials Award, one of its most prestigious honors. The award recognizes an individual who has made a documented, significant contribution in the areas of clean water legislation, public policy, government service, or another area of public prominence that resulted in improvements to the water environment.

WEF Fellow - Liliana Maldonado, Director of Engineering & Technical Services at DC Water, was named a prestigious 2016 WEF Fellow, which recognizes WEF members' achievements, stature, and contributions in the water profession.

Utility of the Future Award - DC Water was recognized for demonstrating a commitment to integrating *Utility of the Future* principles into the organization, specifically in its organizational culture and in the energy generation/recovery for the Bailey Bioenergy Facility. The recognition program is a joint effort by the National Association of Clean Water Agencies (NACWA), Water Environment Federation (WEF), Water Environment & Reuse Foundation (WE&RF), and WaterReuse.

Bloomberg Philanthropies: C40 Cities Awards 2016 - DC Water/Washington, DC was one of four finalists worldwide in the category for Clean Energy. The C40 Cities Awards recognizes highly replicable "best practices" across cities and highlights outstanding performances that have achieved a high level of environmental success in a challenging context.

AMWA Sustainable Water Utility Management Award - The AMWA Sustainable Water Utility Management Award recognizes water utilities that made a commitment to management that achieves a balance of innovative and successful efforts in areas of economic, social and environmental endeavors. All practices of the organization are judged, including strategic planning, sound financial management for long-term sustainability, environmental stewardship, resiliency, energy production, asset management and many other areas. DC Water was one of five utilities nationwide to receive the award.

American Academy of Environmental Engineers and Scientists: Grand Prize, Research
DC Water won the Grand Prize for the research entitled, "Closing in on Energy Neutrality at a Water Resource Recovery Facility: Modifying Contact Stabilization for 21st Century Drivers."

American Academy of Environmental Engineers and Scientists: 2016 Kappe Lecturer
Sudhir Murthy, Ph.D., P.E., BCEE was named the Kappe Lecturer for 2016. This is an annually recurring series of lectures presented on college campuses during the fall academic term.

The Chesapeake Water Environment Association (a local chapter of WEF and AWWA) Awards Program

- The Abel Wolman Award
  George Hawkins
- President's Circle Award
  Biju George
- Woman Engineer of the Year
  Liliana Maldonado
- Lifetime Achievement Award
  Hiram Tanner
- Super Manager Award
  William Elledge
- Tricon Leadership Award
  Gian Cossa
- Shining Star Award
  Shirley Penaloza
- Circle of Excellence Award
  DC Water

DC Water Fleet Management was honored with the Leading Fleet Top 50 Award - This award by *Government Fleet Magazine* recognizes the Authority's move towards environmentally friendly vehicles and fleet efficiency.

100 Best Fleet – National Association of Fleet Administrators (NAFA) - 100 Best Fleets identifies and encourages ever-increasing levels of performance improvement within the fleet industry in North America.

National Association of Clean Water Agencies (NACWA) National Environmental Achievement Awards - DC Water's Office of External Affairs won for its social media work communicating the rate implementation.

District Sustainability Awards
Director, Fleet Management Tim Fitzgerald received a nomination for the District's 2016 Sustainability Awards.

HSEMA Award - Awarded to Patti Lamb for service to the Fusion Center as the DC Water Liaison Officer and Liaison Officer Coordinator for the Washington Region Threat Analysis Center.

American Council of Engineering Companies of Metropolitan Washington (ACEC/MW) - CDM Smith and DC Water: Both the Tingey Street and Main Process Train projects were selected as Honor Award Winners for the 2015-2016 ACEC/MW Engineering Excellence Awards.

Government Finance Officers Association (GFOA) - DC Water's Office of the Chief Financial Officer won the Certificate of Achievement for Excellence in Financial Reporting Program.

Government Finance Officers Association (GFOA) - DC Water's Office of the Chief Financial Officer won the Distinguished Budget Presentation Award Program.

Government Fleet Magazine's Leading Fleets - DC Water Fleet Management received "Certificate of Achievement."

Md. Washington Minority Companies Association - DC Water was recognized as the Best Water Utility Company for Minority Business.

SmartCEO "Healthiest Employer Award" - DC Water was the only public agency to win this award for its health and wellness programs.

Dispute Resolution Board Foundation: DC Water and Traylor-Skanska-Jay Dee JV won the Excellence in Dispute Avoidance & Resolution Award for the Blue Plains Tunnel.

The Next Twenty Years

DC Water was recognized this year as a *Utility of the Future*, a nod to the culture of innovation that permeates the Authority and to its groundbreaking work turning waste into energy. We are already off to an excellent start and the next phase holds great promise for our enterprise, as well as significant challenges.

We will continue to invest in new technology and science that makes the water reclamation process more efficient and effective. We are certainly heading in the right direction. Over the past two decades, we have seen a sharp decrease in the amount of nutrients discharged from our Blue Plains Advanced Wastewater Treatment Plant – progress celebrated this year by EPA and the Chesapeake Bay Program. However, despite that progress, we don't know what new regulations or permit requirements could be imposed on us in the future, or the cost to our customers.

We must also contend with other new challenges including pharmaceuticals and emerging contaminants that threaten drinking water sources. We are also mindful that our physical infrastructure is aging and we are already developing a robust asset management system to maximize our investment in new pipes, pumps and other equipment. In addition, we anticipate resilience will be a critical competency for utilities from here on out, and we are preparing as best we can for the impacts climate change could have on our facilities and operations.

While the hurdles that lie ahead may keep us up at night, we are also excited for the opportunities. First and foremost, our new venture Blue Drop will have a singular purpose: to generate new revenue to alleviate the burden on our ratepayers. Blue Drop will market our intellectual property and expertise to peer utilities, and commercialize our Class A biosolids under the name Bloom®.

Change is typically gradual in our risk-averse industry, but we embrace our place at the tip of the spear. We will continue to push forward, exploring new ideas and innovations in pursuit of excellence. We are a world class utility and we plan to continually improve ourselves.

What we will need to do:

Science

Continue to invest in science for more efficency

Technology

Continue to invest in new technology for effectiveness

Sustainability

Protect our drinking water sources from contaminants

Infrastructure

Maximize our investment in new pipes, pumps, etc.

Blue Drop

Generate new revenue to lessen the burden on ratepayers

Innovation

Explore new ideas in pursuit of excellence

Preparedness

Some people like what they do. Some have a passion. For Jonathan Reeves, his career is a calling. As a youngster in Australia, he participated in Search and Rescue operations and cave rescues. He grew up to pursue a career in emergency management, starting with HAZMAT and gas transportation posts and eventually transitioning to mining operations.

He came to the U.S. in 2006 and worked in emergency management for a mining contractor. Eight years ago, Jonathan arrived at DC Water and transformed the way the enterprise approaches emergency management. With strong support from the top, Jonathan built a team that overhauled all of the emergency response and public notification plans and brought training to a wide range of staff on the Incident Command System, a universal response structure for emergencies. He established crucial relationships with emergency responders and agencies throughout the District, the region and at the Federal level as well.

In Fiscal Year 2016 alone, Jonathan's team initiated eight Incident Management Team activations and assisted with five additional after action reviews. They hosted 25 training or exercise events, from classroom instruction to table top and full-scale (in-the-field) exercises with National Capital Region response partners. Incident command system courses, Continuity of Operations (COOP) drills, an annual critical customer event and others. A cross-functional team including Emergency Management developed a Critical Customer Identification Program for emergencies, working across all departments for this important program. Jonathan's team also initiated an industry-standard vulnerability assessment to be completed in 2017, and designed and acquired a Tactical Command Vehicle for command communications.

In addition, the group secured multimillion dollar grants for at least six approved flood-mitigation projects, and projects to protect critical pump stations and to create an all-hazard mitigation plan. DC Water has developed three additional applications which may be submitted next fiscal year for the Pre-Disaster Mitigation (PDM) Program and the Hazard Mitigation Grant Program (HMGP) in the event of a Presidentially Declared Disaster Declaration.

Jonathan, now the Chief of Emergency Management, speaks to the relationships and regional collaboration as keys to success and adds, "To start a program, you really have to identify the most critical issues first, work hard for a level of success and create value for the organization. We are fortunate to have a leadership that values what we are doing and provides resources to build the program."

H_QO

Perhaps, nowhere will our past and our future intersect more closely than on the banks of the Anacostia River where construction has begun on a new administrative headquarters for DC Water. The new building will sit atop the existing O Street Pump Station, adjacent to the historic Main Pump Station, and above massive clay sewer lines that date back more than 100 years.

At the same time, the new headquarters will embrace the future in sustainable design and construction. Heat from the pumping station's wastewater treatment operations will help condition the new building; a 30,000-gallon cistern will capture rainwater for reuse onsite; and tinted glass sun shades will reduce energy use while maximizing daylighting and the panoramic river views.

The new headquarters will allow us to consolidate our administrative offices in a single location, where we can more easily interact with customers and educate the public about DC Water's mission in support of every living organism. It will also free up valuable space at the Blue Plains Advanced Wastewater Treatment Plant for future process improvements.

Rendering of DC Water's New Headquarters

At a Glance

est. 1996

HISTORY
The District of Columbia Water and Sewer Authority (DCWASA) was created by District law in 1996, with the approval of the United States Congress, as an independent authority of the District Government with a separate legal existence. In 2010 the Authority rebranded and became DC Water.

681,000 residents

SERVICE AREA
DC Water provides more than 681,000 residents and 21.3 million annual visitors in the District of Columbia with retail water and wastewater (sewer) service. With a total service area of approximately 725 square miles, DC Water also treats wastewater for approximately 1.6 million people in neighboring jurisdictions, including Montgomery and Prince George's counties in Maryland and Fairfax and Loudoun counties in Virginia.

> 99 million gallons

PUMPED AND TREATED WATER STORAGE
During Fiscal Year 2016, DC Water pumped an average of more than 99 million gallons of water per day. In addition, DC Water stores 61 million gallons of treated water at its eight facilities. The Washington Aqueduct stores an additional 49 million gallons.

1,350 miles

WATER DISTRIBUTION SYSTEM
DC Water delivers water through 1,350 miles of interconnected pipes, four pumping stations, five reservoirs, three water tanks, 43,860 valves, and 9,510 fire hydrants.

1,900 miles

SEWER SYSTEM
DC Water operates 1,900 miles of sanitary and combined sewers, 160 flow meters, nine wastewater pumping stations, 16 stormwater pumping stations, 12 inflatable dams and a swirl facility.

150 acres

BLUE PLAINS
Blue Plains Advanced Wastewater Treatment Plant is located at the southernmost tip of the District, covering more than 150 acres along the Potomac River. Blue Plains is the largest advanced wastewater treatment facility in the world.

290 million gallons

WASTEWATER TREATMENT CAPACITY
Blue Plains treats an annual average of 290 million gallons per day (MGD) and has a design capacity of 384 MGD, with a peak design capacity to treat more than one billion gallons per day.

dcwater.com

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