

The Delaware River

330 MILES TO MANAGE,
PROTECT AND CELEBRATE

DELAWARE RIVER BASIN COMMISSION
2023 ANNUAL REPORT





The Delaware River Basin Commission is a federal, interstate government agency formed by a compact in 1961 by the federal government, Delaware, New Jersey, New York and Pennsylvania. It is responsible for managing the water resources within the Delaware River Basin without regard to political boundaries. The five commission members are the governors of the four Basin states and the commander of the U.S. Army Corps of Engineers' North Atlantic Division, who represents the federal government.

The DRBC has been managing, protecting and improving the water resources of the Delaware River Basin for 60 years and counting. In support of its mission, DRBC convenes and collaborates with its signatory parties—the four Basin states and the federal government—to protect and improve water quality; manage river flows; mitigate droughts and flood loss; provide for the reasonable and sustainable development and use of surface and ground water; and promote water conservation and efficiency.

The commission shall make and publish an annual report to the legislative bodies of the signatory parties and to the public reporting on its programs, operations and finances.

Delaware River Basin Compact, Section 14.12

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Executive Director's Message

For the past ten years, I have had the pleasure of leading the Delaware River Basin Commission as its fourth Executive Director. My tenure will end with my announced retirement in December 2024, and as I reflect on the last decade, I am drawn to two statements about our Delaware River Basin that ring as true today as ever.

First, Justice Oliver Wendell Holmes Jr. spotlighted the challenges of interstate water management as early as 1931. Justice Holmes famously stated in a case contesting water diversions from the Delaware River Basin:

"A river is more than an amenity, it is a treasure. It offers a necessity of life that must be rationed among those who have power over it."

These two sentences, tucked into a detailed opinion, began a journey of water management in the Delaware River Basin transitioning from conflict to over 60 years of collaboration, led by the DRBC.

Justice Holmes challenged us to value our water resources as a "treasure" and a "necessity of life." When we do, we find better ways to care for our water resources sustainably. He also recognized that to exercise "power" over our shared waters—to dam or divert it, discharge waste into it, or use it to support human and aquatic needs—those activities came with a "rationed" or shared responsibility to address the complex needs of all.

And, when President John F. Kennedy joined with the Governors of Delaware, New Jersey, New York and Pennsylvania to sign the Delaware River Basin Compact in 1961, it marked the beginning of what President Kennedy called a "bold venture" and mused:

"The task set for the Commission will not be easy to achieve, but we are confident that the cooperation that has brought forth this Compact will endure, and that working together real progress can be made for the people of the Basin."

I am proud to say that real and lasting progress has been made in our Basin, thanks to cooperation and shared policies and plans developed by the DRBC.

The Basin's waters are significantly cleaner and more well-protected than before the DRBC was formed. Clean water has drawn communities back to the river to live, work and play. Water is sustainably allocated and efficiently used to meet our life-sustaining needs. Projects and plans have been developed to address extreme conditions. And numerous partnerships have been formed throughout the watershed to support our shared water goals.



Steve Tambini, P.E.
Executive Director



Roebling's Delaware Aqueduct, Lackawaxen, Pa.

In just the last ten years, our progress has been remarkable. From developing a scientific foundation for upgrading aquatic life use standards in the Delaware Estuary to include propagation, to creating a computer model to evaluate how sea level rise will affect the Delaware Estuary and performing water demand and supply studies to evaluate water sustainability throughout the Basin, our scientific expertise has continued to provide reliable answers to complex water management questions to decision-makers in our region and beyond. And, by securing support for the Commission's work through increased grant and federal signatory funding, and deepening engagement with communities and stakeholders throughout the Basin, the DRBC's work is covering more river miles and touching more communities than ever.

This year's annual report once again highlights the mission of the DRBC to manage, protect and improve the water resources of the Delaware River Basin for the benefit of over 14 million people in four states. The report will take

you on a journey from the headwaters to the ocean and highlight the diversity of the basin along the main stem Delaware River; the critical work being performed throughout the basin; and some of the continuing water resources management challenges.

I am exceptionally grateful for the privilege to have been part of this "bold venture," caring for our "treasure" by executing the DRBC mission. Thank you to our Commissioners for entrusting me with this work, and to our many partners, advisors, staff, and friends. Working together, we are achieving "real progress for the people of the Basin."

Steve Tambini, P.E.
Executive Director



DRBC Commissioners, staff and invited guests meet in Camden, N.J. Pictured Back Row L-R: Alternate Commissioners Stephen Williams (Del.), Jeff Hoffman (N.J.), Susan Weaver (Pa.), LTC Ramon Brigantti (U.S.), Ken Kosinski (N.Y.). Front Row L-R: Elizabeth Dragon, NJDEP Assistant Commissioner for Community Investment and Economic Revitalization, Steve Tambini (DRBC), Camden Mayor Vic Carstarphen, Camden County Commissioner Jeffrey L. Nash, and Olivia Glenn, Senior Advisor for Equity, U.S. Environmental Protection Agency Region 2.

Delaware River Basin Commission

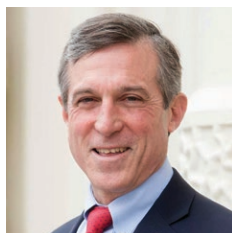
Commissioners



Chair
Pennsylvania Governor
Josh Shapiro



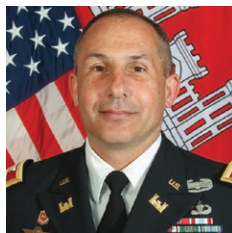
Vice Chair
New Jersey Governor
Philip D. Murphy



Delaware Governor
John Carney



New York Governor
Kathy Hochul



Federal Representative
Brig. Gen. John P. Lloyd

The *ex officio* members of the Delaware River Basin Commission are the four Basin state governors and the Commander and Division Engineer of the U.S. Army Corps of Engineers (Army Corps), North Atlantic Division, who serves as the federal representative. The five members appoint alternate commissioners, with the governors typically selecting high-ranking officials from their state environmental agencies.

Each commissioner has one vote of equal power, with a majority vote needed to decide most issues. Exceptions are votes on the commission's annual budget and drought declarations, which require unanimity.

Notable commission changes in 2023: On January 17, Josh Shapiro was sworn in as the 48th Governor of Pennsylvania, succeeding Tom Wolf. Federal Representative Colonel John P. Lloyd was promoted to the rank of Brigadier General, North Atlantic Division Commander and Division Engineer of the Army Corps. The Philadelphia District changed command, with Lieutenant Colonel Jeffrey M. Beeman, P.E., now serving as the federal Alternate Commissioner, replacing Lieutenant Colonel Ramon Brigantti, P.E. Pennsylvania Department of Environmental Protection (PADEP) Secretary Rich Negrin stepped down from his role in December and Alternate Commissioners Lisa Daniels (Pa.) and Jeff Hoffman (N.J.) retired from their respective state agencies. We thank all those who have moved on for their service to the Commission.

Commission Alternates and Advisors for 2023

New Jersey

1st Alternate: Shawn LaTourette, Commissioner, New Jersey Department of Environmental Protection (NJDEP)

2nd Alternate: Pat Gardner, Director of Water Supply and Geoscience, NJDEP

3rd Alternate: Jeffrey L. Hoffman, State Geologist (through November); Steve Domber, Section Chief, Water Resource Management Program, NJDEP

New York

1st Alternate: Basil Seggos, Commissioner, New York State Department of Environmental Conservation (NYSDEC)

2nd Alternate: Carol Lamb-Lafay, P.E., Asst. Director, NYSDEC Division of Water

3rd Alternate: Kenneth Kosinski, Chief, NYSDEC Watershed Implementation Section

Delaware

1st Alternate: Shawn M. Garvin, Secretary, Delaware Department of Natural Resources and Environmental Control (DNREC)

2nd Alternate: Steve Smailer, Director, DNREC Division of Water Management Section

3rd Alternate: Stephen Williams, Director, DNREC Division of Watershed Stewardship

Federal Government

1st Alternate: Lieutenant Colonel Jeffrey M. Beeman, P.E, Commander, Army Corps Philadelphia District

2nd Alternate: Megan Jadrosich, Planning & Policy Division, Army Corps North Atlantic Division

3rd Alternate: Henry Gruber, Chief of Basin Planning, Army Corps Philadelphia District

Pennsylvania

1st Alternate: Rich Negrin, Secretary, PADEP (through Dec. 8)

2nd Alternate: Bevin Buchheister, Deputy Secretary, Office of Water Programs, PADEP

3rd Alternate: Susan K. Weaver, Program Manager, Interstate Water Resources Management, PADEP

Delaware River, Head-Confluence of East & West Branches, N.Y.

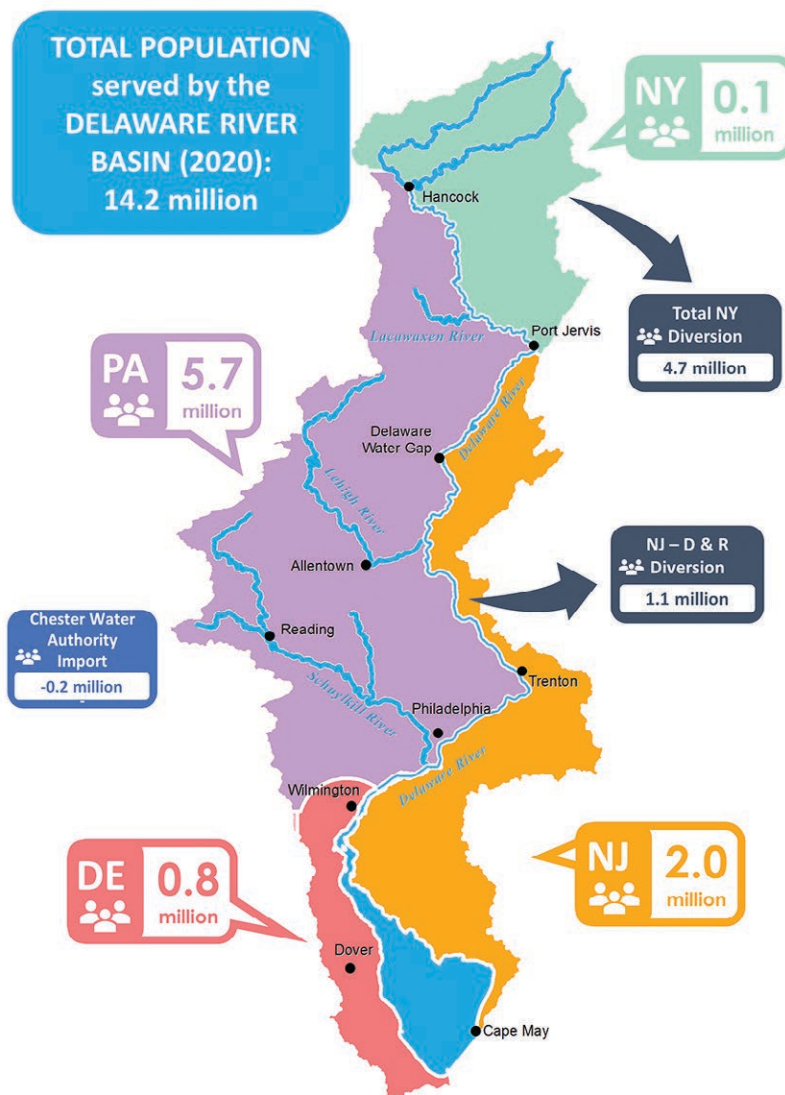
Mile 330.70: The town of Hancock marks the confluence of the Delaware's East and West Branches and the beginning of the mainstem Delaware River.

The Delaware River Basin

Lying in the densely populated corridor of the northeastern United States, the Delaware River stretches approximately 330 miles from its headwaters in New York State to its confluence with the Atlantic Ocean. The Basin totals 13,539 square miles, including approximately 12,800 square miles of land area, nearly 800 square miles of Delaware Bay and more than 2,000 tributaries, including many that are rivers in their own right. The northernmost tributaries to the Delaware River originate in the forested western slopes of the Catskill Mountains, which reach elevations of up to 4,000 feet. The East and West Branches meet at Hancock, N.Y., from where the Delaware River descends about 800 feet on its journey to the Atlantic Ocean. The Delaware River is the longest undammed river in the eastern United States. It is an interstate river its entire length—if one stands on one side of the river, there is a different state on the other side.

	POPULATION (2020)
State	
Delaware	0.774
New Jersey	1.989
New York	0.117
Pennsylvania	5.749
Total DRB Population	8.629
Import/Export	
NJ – D & R Diversion	1.087
Total NY Diversion	4.664
CWA Import	-0.187
Total Import/Export	5.564
TOTAL ESTIMATED POPULATION SERVED	14.193

Total NY diversion includes NYC diversion and upstate NY communities. All values are in million people.



Introduction

The Delaware River Basin Commission (DRBC) is pleased to present its annual report for 2023. This report highlights the agency's significant accomplishments and ongoing initiatives in managing and protecting the water resources of the Delaware River Basin:

- Published a study exploring the feasibility of additional freshwater storage in the Basin.
- Updated the official "Population Served" number, a key data point for managing water resources.
- Worked closely with EPA and the estuary states toward revising the aquatic life uses and associated dissolved oxygen criteria for the urban portions of the Delaware River Estuary.
- Launched a new regional workgroup focused on freshwater salinization.
- Led a Forum on Climate Change in the Delaware River Basin.
- Finalized a new rule prohibiting high-volume hydraulic fracturing wastewater discharges in the Delaware River Basin and regulating importations of water into and exportations of water from the Basin.
- Secured federal signatory funding for the first time in fifteen years.
- Increased the Commission's impact through enhanced community engagement.

Narrowsburg Eddy, N.Y.

Mile 289.9: The Delaware River's deepest and narrowest point is at Narrowsburg, N.Y., where the Big Eddy Narrows reaches 113 feet deep.

Financial Statement

As expressed in the federal statute that formed the DRBC, the Delaware River Basin Compact, P.L. 87-328, 75 Stat. 688 (1961), Art. 13.3(c), the Commission's five members are responsible, in part, for financially supporting the DRBC's operations. Under an equitable agreement between the Commission's four member states and the United States in 1988 to apportion signatory party contributions, the annual contributions since 2008 are as follows: Delaware \$447,000 (12.5%), New York \$626,000 (17.5%), New Jersey \$893,000 (25%), Pennsylvania \$893,000 (25%) and the United States \$715,000 (20%).

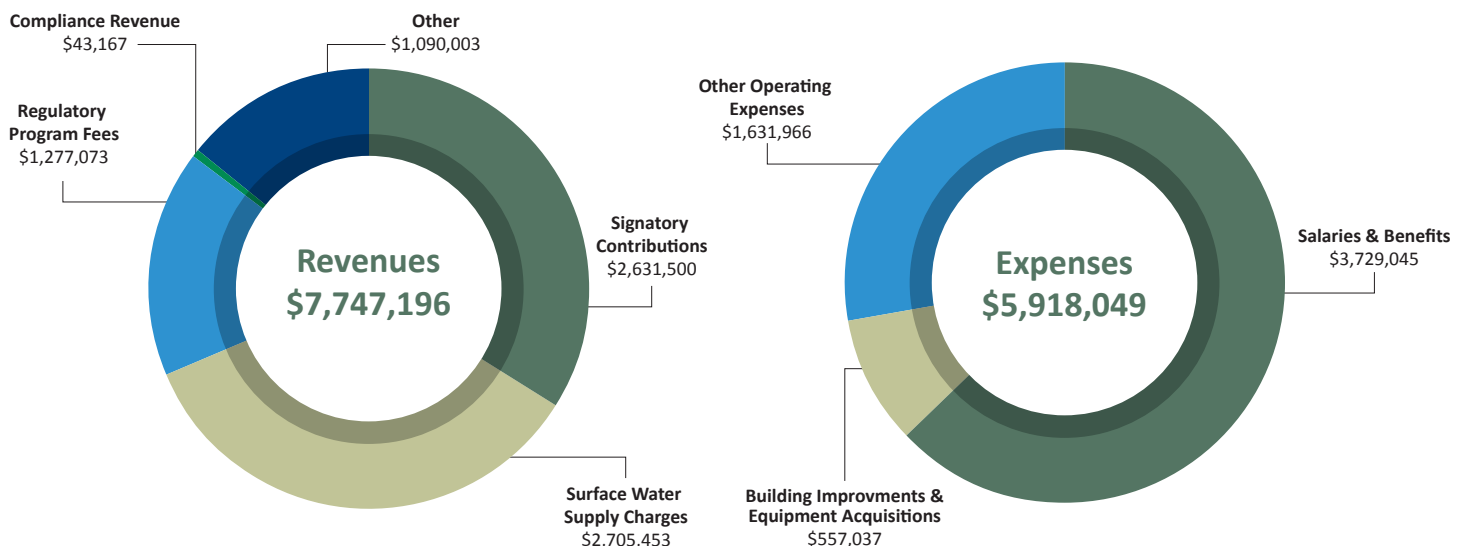
The DRBC operates and maintains two funds for budgeting purposes: a General Operating Fund and a Water Supply Storage Facilities Fund.

The General Operating Fund is the DRBC's basic and routine operating budget. It includes all revenues and expenses required for the agency's year-to-year operations and maintenance. Revenues come from signatory party contributions, regulatory program fees,

competitive grants, compliance revenue, transfers from the WSSF, and other sources. **The balance of the General Fund at the end of FY 2023 was \$7.25 million.**

The Water Supply Storage Facilities Fund was created to support reliable water supply in the Basin and is used to repay the obligations the DRBC assumed to purchase storage capacity at two federal reservoirs, Beltzville and Blue Marsh. The Water Supply Storage Facilities Fund also supports DRBC's pro rata share of the annual operations and maintenance costs of the two reservoirs, the water supply share of any future required improvements at these two facilities, a share of DRBC operating costs to support a sustainable water supply within the Basin (transfers to the General Fund) and any future required storage in the Basin. Revenues are generated from charges for applicable surface water withdrawals in the Basin. **The balance of the Water Supply Storage Facilities Fund at the end of FY 2023 was \$21.93 million.**

Fiscal Year 2023 Financials at a Glance



Our Water Resources

Water Resource Planning

Water Quality

Climate Change

Water Resources Management

TRI STATE
MONUMENT

Tristate Rock, N.Y.

Mile 253.64: This small landmark dates to 1882 and serves as a marker of the interstate nature of the River—showing the borders of New Jersey, Pennsylvania and New York, near where the Neversink and Delaware Rivers meet.



Michael Thompson presents DRBC's Water Audit Report at the American Water Works Association's 2023 North American Water Loss Conference.

Water Resource Planning

Storage Study

The Commission published a [study](#) exploring the feasibility of additional freshwater storage in the Basin. This forward-looking work is the most comprehensive, Basin-wide evaluation of potential storage options developed for the Delaware Basin in more than 40 years.

The DRBC began the study in 2021 to explore the feasibility of additional freshwater storage to meet future water availability and flow management needs in the Delaware River Basin. Future climate change scenarios also require storage needs planning for sea level rise, salinity intrusion and more variable flows, including more frequent drought conditions, to increase the resilience of the Delaware River Basin's water resources.

The study identifies, inventories, and evaluates the feasibility of options across a range of volumes, from 1 billion gallons (BG) to upward of 20 BG. An interactive [mapping tool](#) was also created in support of the study.

Ten-Year Water Audit Review

The Commission published a [report](#) in 2023 that detailed ten years of the Water Audit Program data. The report is the first of its kind in the country and was presented at AWWA's 2023 North American Water Loss Conference in December 2023.

Drinking water is a critical use of our Basin's resources, and data on water loss is a vital

Dam Removal

Dam removal on Bushkill Creek in Pennsylvania's Lehigh Valley reached a milestone in 2023 with the removal of the first of three dams. Planning for this project started in 2005 after fly ash from a nearby power plant was released into the Delaware and nearby waterways. Dams on the Bushkill Creek and in New Jersey were selected to restore the natural resources damaged by the spill. Kristie Fach of Wildlands Conservancy is leading the project team, which includes DRBC and state, federal and nonprofit partners.

Workers look on as a dam on Bushkill Creek is demolished.





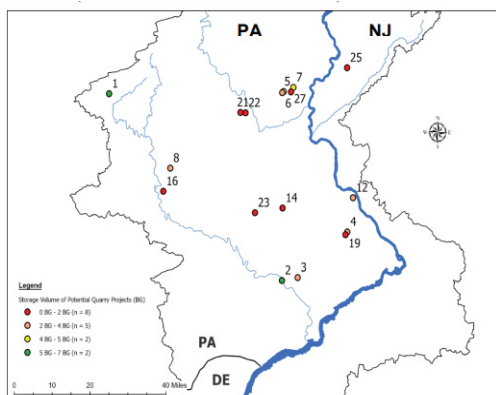
DRBC completed a comprehensive review of future water storage.

component of water resource planning. The report had several key takeaways. Approximately 300 public water supply systems perform annual water audits under the DRBC Program. Water losses have remained relatively constant over the past ten years, and there is broad compliance with the program. Water supply systems required to submit audits have done so, highlighting solid partnerships and communication between the DRBC and the regulated community.

Through the water audit program, the DRBC has a foundational dataset to support its Basin-scale planning efforts. The study's results support the Commission's ongoing water conservation goals by providing a quantitative data-based foundation to guide future practices and policies, helping ensure reliable and sustainable water supplies in the Basin.

Updating the Basin's Population Served

The DRBC's annual [Water Resources Program](#), adopted June 2023, includes a revised estimate of the number of people who rely on or the "population served" by Delaware River Basin waters. The current number stands at approximately 14.2 million people, based on recently published data from the 2020 Census. The DRBC staff worked with its Water Management Advisory Committee to identify a methodology to update the estimate and with NYCDEP, NJDEP, PADEP, and Chester Water Authority to update data.



18 potential quarry projects selected for project characterization and evaluation.



**USGS Gage (01438500)
at Montague, N.J.**

Mile 246.44: This gage is used to measure and ensure that a minimum of 1,750 cubic feet per second flows down the Delaware River as stipulated by the Supreme Court after a dispute between the states and New York City in the 1950s.



Bridge over the East Branch of the Delaware River in Hancock, N.Y.

Water Quality

Aquatic Life Designated Use

For over 60 years, the DRBC has worked to protect and improve water quality throughout the Delaware River Basin. The DRBC supports the “fishable” goals of the Clean Water Act and has taken numerous priority actions to advance these goals in the Delaware River Estuary, the tidal reach of the Delaware River. Recently, the DRBC developed several significant science, engineering, and socioeconomic studies that lay the foundation for revised and improved water quality standards to fully support aquatic life uses for the Estuary.

Based on findings documented in its [2022 draft technical reports](#), and in accordance with DRBC [Resolution 2017-4](#), DRBC has worked closely with the EPA and the estuary states toward

revising the aquatic life uses and associated dissolved oxygen criteria for the urban portions of the Estuary. The path to support and achieve a co-regulator approach for revised water quality standards to be issued by EPA was



Water Resource Scientist Elaine Panuccio conducts chloride monitoring at Kittatinny Point, N.J.



Senior Aquatic Biologist Jake Bransky collects samples for PFAS monitoring in fish tissue in the Delaware River.

outlined by the Commission on a [Resolution for the Minutes](#) on September 7, 2023.

The DRBC developed a methodology to estimate dissolved oxygen conditions in the urban estuary under different pollutant loading conditions over a 15-year period, enhancing our understanding of the range of outcomes expected under various management scenarios. This methodology, as well as additional technical and modeling support, is being used by EPA to upgrade designated aquatic life use and associated dissolved oxygen criteria.

On December 14, 2023, the EPA published a [proposed rule](#) to revise the aquatic life designated use and dissolved oxygen water quality criteria applicable to Zone 3, Zone 4 and the upper portion of Zone 5 of the Delaware River Estuary. The proposed rule's publication represented a milestone in the effort to reach a fishable Delaware River but is one step in an ongoing process to improve dissolved oxygen levels in the Delaware River Estuary.

The DRBC will continue to work with the EPA, state environmental agencies, and stakeholders to implement revised aquatic life use standards to improve water quality in the Delaware River Estuary.

The Delaware Water Gap, Pa./N.J.

Mile 210.80: The Delaware Water Gap is where the Delaware River cuts through a large ridge of the Appalachian Mountains. It began to form more than 400 million years ago. The area was the site of a controversial proposal to create a dam for flood control and water supply, creating a 40-mile-long lake. The so-called Tocks Island Dam project was a heated topic for over a decade and was eventually voted down by the DRBC in 1975. In 2023, the DRBC welcomed EPA Region 3 Administrator Adam Ortiz at the Gap as part of the Delaware Sojourn.



Assistant General Counsel Pam Bush and intern Bailey Adams assist with Special Protection Waters monitoring in Belvidere, N.J.

Freshwater Salts and Chlorides

Elevated chloride concentrations are a concern in the non-tidal Delaware River, despite protection under DRBC's Special Protection Waters regulations.

Over the past several years, instream monitoring of the non-tidal river has shown an upward trend in chloride concentrations. While concentrations are still below the criteria for drinking water and aquatic life use, the DRBC is monitoring this trend closely. Other areas of the U.S. with significant road deicing are also noting this trend. Additional monitoring and investigation into sources,



DRBC staff launches from the Ridley Township Marina in Pa., for a day of monitoring.

mitigation measures, and deicing alternatives to salt and brine are needed.

Beginning in 2021, the DRBC intensified efforts to address increasing chlorides and conductivity in the non-tidal Delaware River by implementing a dedicated chloride monitoring study and continuing the recently formed Salinity Impacts Freshwater Toxicity (SIFT) regional workgroup.

Toxics and Emerging Contaminants

In 2023, the DRBC's toxics monitoring focused on three projects examining 40 PFAS compounds in sediment, water and fish tissues

of the Delaware River and its tributaries from Lackawaxen, Pa. to Delaware City, Del.

The DRBC's work continued to focus on identifying occurrences and potential sources of PFAS, understanding risks to designated uses and evaluating the efficacy of regulatory and reduction management strategies in reducing exposure and risks from PFAS.

Sampling was expanded to include blue crab, channel catfish and white perch from the tidal Delaware River and white sucker and smallmouth bass from the non-tidal Delaware River.

The “Boat Run” Monitoring

Initiated in 1967, the DRBC's Delaware Estuary Water Quality Monitoring Program, known as the “Boat Run,” is one of the longest-running monitoring programs in the world. Partnering with DNREC, 22 sites in the Delaware River Estuary are monitored monthly from March through October. Parameters include bacteria, dissolved oxygen, pH, temperature, specific conductance, turbidity, nutrients, chlorides and metals. Bacterial data are posted on the [DRBC's data site](#), and all other data are available via the [EPA's Water Quality Portal](#).



Senior Chemist and Toxicologist Jeremy Conkle collects sediment samples for PFAS monitoring in Pennypack Creek.

Lehigh River, Pa.

Mile 183.66: The Lehigh River is the second-largest tributary to the Delaware, flowing over 100 miles through the Lehigh Valley, including the communities of Allentown, Bethlehem and Easton, Pa. It was once referred to as the “West Branch of the Delaware River.”



Water Resource Scientist Elaine Panuccio retrieves cyanotoxin monitoring equipment near Frenchtown, N.J.

Additional Monitoring Programs

The DRBC conducts a robust water quality monitoring program to ensure water quality criteria are being met. Highlights from 2023 include the following:

Special Protection Waters DRBC began a No Measurable Change Assessment for the Special Protection Waters Monitoring Program, which protects the existing high water quality in the non-tidal Delaware River. Samples were collected at 17 sites from May through September, twice a month. The National Park Service staff monitored the upper and middle Delaware, and the DRBC monitored

the lower Delaware. Parameters include alkalinity, chlorides, total dissolved solids, dissolved oxygen, turbidity, pH and temperature. The DRBC also updated plans for recurring measurable change assessments as well as measuring existing water quality at additional sites.

Cyanotoxins DRBC repeated work to track the presence or absence of cyanotoxins in the mainstem non-tidal Delaware River using Solid Phase Adsorption Toxins Tracking (SPATT) methodology. This method was first used in 2022 in the tidal mainstem Delaware River. DRBC staff constructed SPATT bags and deployed them at 15 locations. Partnering with DNREC, the samples were analyzed for the presence of three types of toxins responsible for harmful algal blooms.

Dissolved Oxygen in Sturgeon Habitat In 2023, the DRBC continued the second year of a study of DO trends in areas considered critical nursery grounds for juvenile endangered Atlantic sturgeon. DO loggers were deployed near Marcus Hook, Pa.

Storm-Based Bacteria The DRBC continues to study bacteria levels in sections of the Delaware River Estuary to identify if water quality criteria for primary contact recreation can be met. The DRBC collected data before, during and after rain events to track trends.



Senior Aquatic Biologist Jake Bransky and Director of External Affairs Beth Brown retrieve dissolved oxygen sensors near Chester, Pa.



L-R: DNREC Secretary Shawn Garvin, DRBC Dep. Ex. Dir. Kristen Bowman Kavanagh, DRBC Executive Director Steve Tambini, NJDEP Commissioner Shawn LaTourette and Regional Administrator Adam Ortiz of EPA Region 3 gather for DRBC's Climate Forum at the PDE Science and Environmental Summit in Atlantic City, N.J. in January.

Climate Change

In January, DRBC led a Forum on Climate Change in the Delaware River Basin as part of the Partnership for the Delaware Estuary's Science and Environmental Summit. The Forum was hosted by the DRBC's Advisory Committee on Climate Change.

The Forum featured NOAA scientist Dr. Phillippe Hensel as the morning keynote speaker. Hensel discussed his work and the important interconnection between sea level rise and land movement. The afternoon keynote speaker was journalist Catrin Einhorn of The New York Times.

The Forum included presentations on monitoring and modeling water quality in the Delaware River Estuary, a session on local and regional climate change impacts, a panel discussion among environmental leaders on climate planning and adaptation and a session on community climate resilience.

A highlight of the 2023 Climate Forum was a conversation among government leaders on their respective adaptation and mitigation strategies throughout the Delaware River Basin. Panelists were Commissioner Shawn LaTourette of NJDEP; Secretary Shawn M. Garvin of DNREC; Commissioner Rit Aggarwala of NYC Department of Environmental Protection; and Regional Administrator Adam Ortiz of EPA Region 3. The DRBC's Kristen Bowman Kavanagh moderated the panel.



Lambertville, N.J.

Mile 148: The American shad is the largest member of the herring family. Adults commonly reach 4-8 lbs. American shad begin their lives in fresh water. After hatching, they migrate downstream to the Atlantic Ocean. After 3-5 years at sea, they swim back to the Delaware to spawn. The Lewis Shad Fishery is the only commercial fishery remaining on the Delaware River.



The view from Little Tinicum Island.

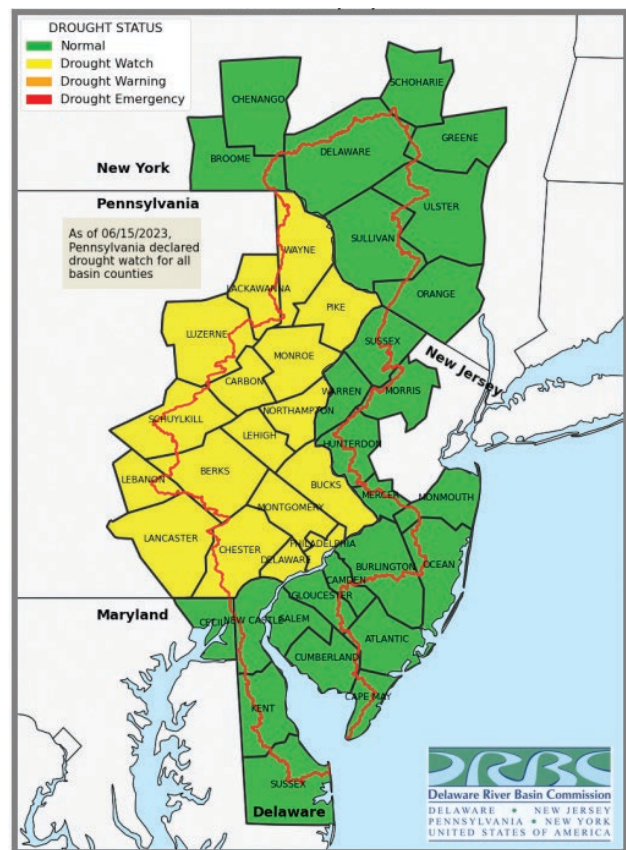
Water Resources Management

Hydrologic Conditions

The [2023 Annual Hydrologic Conditions Report](#) for the Delaware River Basin evaluates precipitation, streamflow, storage, groundwater and the salt front location.

Precipitation in 2023 was relatively normal; however, dry periods occurred in May, October and November. In June, Pennsylvania counties were placed on a drought watch and removed at different times as conditions improved. The year ended with above-normal precipitation in December, resulting in significant flooding in lower basin tributaries. Groundwater levels were below normal for most of the year but improved by December.

The salt front was between river miles (RM) 59 and 72 during the year until mid-December, when higher flows moved the salt front below RM 54, below which its location is not calculated. The most upstream location of the salt front was RM 71.8 on November 22.



Drought Status in the Delaware River Basin as declared by the individual basin states, effective June 15, 2023.

Our Regulated Community and Stakeholders

Regulatory Milestones

Engaging Our Basin Stakeholders

Advisory Committees



Regulatory Milestones

In March, the Commission issued a [final rule](#) related to water and wastewater, amending its Comprehensive Plan and the Delaware River Basin Water Code concerning importations of water into and exportations of water from the Delaware River Basin; its Special Regulations—High Volume Hydraulic Fracturing, to prohibit discharges to waters or land within the basin of wastewater from high volume hydraulic fracturing (HVHF) and HVHF-related activities; and its Water Quality Regulations, to facilitate the implementation in state-issued permits of the prohibition on such discharges.

In September, the Commission [proposed amendments](#) to its Rules of Practice and Procedure to a) resolve ambiguities around the automatic termination of project approvals issued by the Commission; b) make conforming amendments to related provisions as appropriate; c) update the Commission’s Water Resources Program and Project Review procedures to better conform them to current practice; d) remove references to the Federal Freedom of Information Act that create confusion about the regulations applicable to requests for Commission public records; e) and align pronouns with the Commission’s policies regarding diversity, inclusion, and belonging. Two public hearings were held in November and written comments were accepted from the public.

2023 Approved Dockets

DRBC approved the following dockets after public notice and comment.

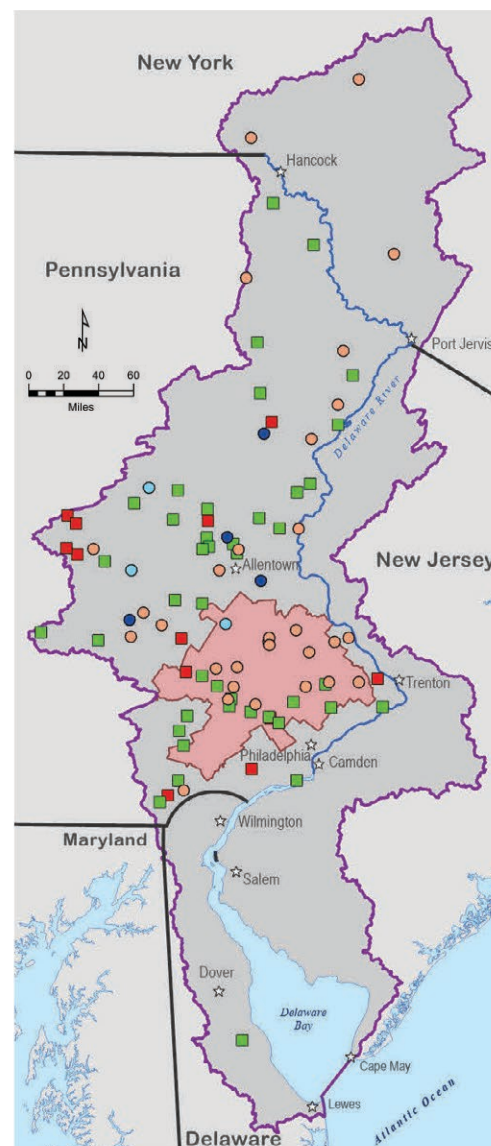
Docket Holder	Docket Number	County	State
Bear Creek Mountain Resort and Conference Center	D-2005-016 -4	Berks	PA
Cambridge-Lee Industries, LLC	D-2012-025 -2	Berks	PA
Carpenter Technology Corporation	D-2022-001 -1	Berks	PA
Delaware County Solid Waste Authority	D-1989-018 CP-8	Berks	PA
Hamburg Municipal Authority	D-2012-022 CP-2	Berks	PA
Lyons Borough Municipal Authority	D-1994-080 CP-5	Berks	PA
Maidencreek Township Authority	D-1991-058 CP-6	Berks	PA
Oley Township Municipal Authority	D-2001-036 CP-3	Berks	PA
Robesonia - Westernville Municipal Authority	D-1988-023 CP-4	Berks	PA
Bedminster Municipal Authority	D-2004-002 CP-3	Bucks	PA
Buckingham Township	D-2003-013 CP-8	Bucks	PA
Bucks County Water and Sewer Authority	D-1999-066 CP-3	Bucks	PA
George School	P-2013-015 -2	Bucks	PA
Grand View Hospital	D-1992-063 CP-4	Bucks	PA
Lehighton	D-2010-038 CP-4	Bucks	PA
Lower Bucks County Joint Municipal Authority	D-1993-068 CP-4	Bucks	PA
North Wales Water Authority	P-1973-020 -6	Bucks	PA
PEL Pharma, Inc.	D-1996-049 -5	Bucks	PA
Pennsylvania American Water Company	D-2008-002 CP-4	Bucks	PA
Spring Mill Associates	D-2011-013 -2	Bucks	PA
Telford Borough Authority	D-2004-010 CP-3	Bucks	PA
Jim Thorpe Borough	D-1996-019 CP-4	Carbon	PA
Northside Heights Mobile Home Estates	D-1996-039 CP-4	Carbon	PA
Palmerton Borough	D-1964-028 CP-4	Carbon	PA
Panther Creek Power Operating, LLC	D-1987-066 -7	Carbon	PA
Borough of Phoenixville	D-1967-080 CP-5	Chester	PA
Downingtown Area Regional Authority	D-1998-033 CP-5	Chester	PA

East Brandywine Township Municipal Authority	D-2007-043 CP-4	Chester	PA
East Marlborough Township	D-2000-043 CP-5	Chester	PA
East Vincent Township	D-1993-032 CP-5	Chester	PA
Kennett Square Borough	D-2012-003 CP-2	Chester	PA
Kimberton Golf Club	D-2001-004 -3	Chester	PA
London Grove Township Municipal Authority	D-2008-033 CP-4	Chester	PA
North Coventry Municipal Authority	D-1997-001 CP-5	Chester	PA
To-Jo Mushrooms, Inc.	D-2007-003 -4	Chester	PA
Upper Uwchlan Township	D-2000-055 CP-5	Chester	PA
Aqua Pennsylvania, Inc.	D-2008-025 CP-4	Delaware	PA
Jackson Township Authority	D-2007-004 CP-4	Lebanon	PA
Catasauqua Borough	D-1986-032 CP-4	Lehigh	PA
Catasauqua Borough	D-1987-060 CP-5	Lehigh	PA
Glencrest MHP LLC	D-2017-007 -2	Lehigh	PA
Lehigh County Authority	D-2017-012 CP-2	Lehigh	PA
Lehigh Valley Zoo	D-2013-006 CP-3	Lehigh	PA
Northampton Boro MA	D-2004-006 CP-3	Lehigh	PA
Saucon Valley Country Club	D-1967-022 -3	Lehigh	PA
South Whitehall Township	D-1991-082 CP-4	Lehigh	PA
CMBK Resort Holdings, LLC	D-2001-040 -3	Monroe	PA
Community Utilities of Pennsylvania, Inc.	D-1999-020 CP-5	Monroe	PA
Middle Smithfield Township	D-1990-080 CP-5	Monroe	PA
Pennsylvania American Water Company	D-2003-006 CP-3	Monroe	PA
Sanofi Pasteur, Inc.	D-1999-071 -6	Monroe	PA
Ambler Borough	D-1975-016 CP-6	Montgomery	PA
Bryn Athyn Borough	D-2008-013 CP-6	Montgomery	PA
Cleveland Cliffs Plate LLC	D-1979-026 -4	Montgomery	PA
East Greenville Borough	D-2004-003 CP-3	Montgomery	PA
Hatboro-Horsham School District	P-2012-027 -2	Montgomery	PA
Jeffersonville Golf Club	D-2002-030 CP-3	Montgomery	PA
Pottstown Borough Water Authority	D-2013-022 CP-2	Montgomery	PA
Ravens Claw Golf Course	D-2001-008 -3	Montgomery	PA
Rivercrest Homeowners Association	D-2001-045 CP-5	Montgomery	PA

USGS Gage (01463500) at Trenton, N.J.

Mile 134.32: The Delaware River flow target at Trenton, N.J. is 3,000 cubic feet per second. It was created to ensure that enough fresh water flows into the estuary to repel the salt front, protecting downstream drinking water and industrial intakes.

Schwenksville Borough Authority	D-2003-029 CP-3	Montgomery	PA
Upper Merion Township	D-1987-013 CP-4	Montgomery	PA
Upper Merion Township	D-1992-051 CP-4	Montgomery	PA
Viant Collegeville, LLC	D-1993-061 -4	Montgomery	PA
Whitemarsh Township Authority	D-1993-037 CP-6	Montgomery	PA
American Nickeloid Company	D-1985-030 -4	Northampton	PA
Bangor Area School District	D-2018-007 CP-2	Northampton	PA
Bangor Borough	D-1988-087 CP-2	Northampton	PA
Hickory Hills MHC	D-1973-079 -3	Northampton	PA
Nazareth Borough Municipal Authority	D-2002-038 CP-4	Northampton	PA
Northampton Borough - Northampton, PA	D-1987-046 CP-3	Northampton	PA
Strausser Enterprises Inc.	D-2002-043 -3	Northampton	PA
Philadelphia (City of)	D-1970-053 CP-2	Philadelphia	PA
Community Utilities of Pennsylvania, Inc.	D-1989-033 CP-5	Pike	PA
Lake Adventure Comm. Assoc.	D-2011-002 CP-2	Pike	PA
Pennsylvania American Water Company	D-1990-028 -4	Pike	PA
Coaldale-Landsford-Summit Hill Sewer Authority	D-1964-027 CP-4	Schuylkill	PA
Hydro Extrusion USA, LLC	D-2005-001 -6	Schuylkill	PA
Orwigsburg Borough	D-1992-005 CP-4	Schuylkill	PA
Schuylkill County Municipal Authority	D-1991-016 CP-4	Schuylkill	PA
Schuylkill County Municipal Authority	D-2010-019 CP-4	Schuylkill	PA
Schuylkill County Municipal Authority	D-2013-012 CP-3	Schuylkill	PA
Schuylkill County Municipal Authority	D-2013-013 CP-3	Schuylkill	PA
Aqua Pennsylvania, Inc.	D-1975-078 CP-6	Wayne	PA
Camp Morasha	D-2018-005 -2	Wayne	PA
Tyler Hill Camp, Inc	D-2017-001 -2	Wayne	PA
Wayne Economic Development Corporation	D-2007-018 -5	Wayne	PA
Deposit Village	D-1999-064 CP-3	Broome	NY
E Tetz & Sons	D-2020-001 -1	Sullivan	NY
The College Golf Course at Delhi	D-2012-006 CP-2	Delaware	NY
Kent County Levy Court	D-1977-087 CP-5	Kent	DE



2023 Dockets Map.

Map Key

Discharge Dockets

- Industrial Wastewater Treatment Plant
- Wastewater Treatment Plant

Withdrawal Dockets

- Groundwater
- Groundwater and Surface Water
- Surface Water

— DRB Boundary

SE PA GWPA



Manager of Water Resource Operations, Amy Shallcross, prepares to testify before the U.S. House Committee on Natural Resources, Subcommittee on Water, Wildlife, and Fisheries.

Engaging Our Basin Stakeholders

Working With Our Legislative Delegations

In 2023, the DRBC welcomed the following members of its federal delegation: Sen. John Fetterman (PA); Rep. Tom Kean, Jr. (NJ-7); Rep. Marcus Molinaro (NY-19); and Rep. Pat Ryan (NY-18).

On October 25, Kristen Bowman Kavanagh testified before the Pennsylvania Senate Democratic Policy Committee on Water, Sewer, and Stormwater Infrastructure.

Amy Shallcross provided testimony before the U.S. House Committee on Natural Resources, Subcommittee on Water, Wildlife, and Fisheries in support of H.R. 5770 “Water Data Improvement Act” on November 14, in her capacity as a member of the Interstate Council on Water Policy.

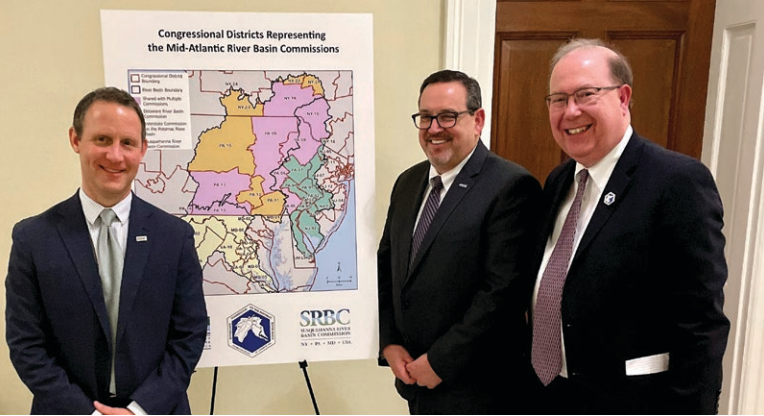
Mid-Atlantic River Basin Commissions Visit Washington

In February 2023, the Delaware River Basin Commission joined with the Susquehanna River Basin Commission and the Interstate Commission on the Potomac River Basin on Capitol Hill to provide a briefing on their water resources work and meet with members of Congress.

The day provided a key opportunity to meet with members of the Commissions’ respective, and in some cases overlapping, delegation members and to share the latest research, policy and funding updates. A highlight came as the Commission’s three Executive Directors provided a lunch briefing for a standing-room crowd of staffers and partners.

Head of Tide, N.J.

Mile 133.4: The transition from tidal to non-tidal river is here at Trenton, also marking the beginning of a change in protection status. The entire non-tidal reach of the Delaware River is part of the DRBC’s Special Protection Waters program.



L-R: Executive Directors Drew Dehoff of the Susquehanna River Basin Commission, Steve Tambini of the DRBC and Mike Nardolilli of the Interstate Commission on the Potomac River Basin teamed up to brief Capitol Hill staff on managing shared water resources.

Federal Signatory Funding

U.S. Representative Bonnie Watson Coleman (NJ-12) [secured](#) federal Community Project Funding for the DRBC for federal fiscal year 2023. The funding represents the federal government's annual signatory apportionment of the DRBC's budget and marked the first receipt of this funding in fifteen years. In August, Congresswoman Watson Coleman was joined by Commissioner Shawn M. LaTourette of NJDEP, Mayor Bert Steinmann of Ewing Township, Mayor Reed Gusciora of the City of Trenton and DRBC partners and staff to celebrate the milestone.



U.S. Rep. Madeleine Dean (PA-4) and LTC Beeman, Commander of the Army Corps Philadelphia District, participate in a roundtable on water resources convened by Rep. Dean and the DRBC.

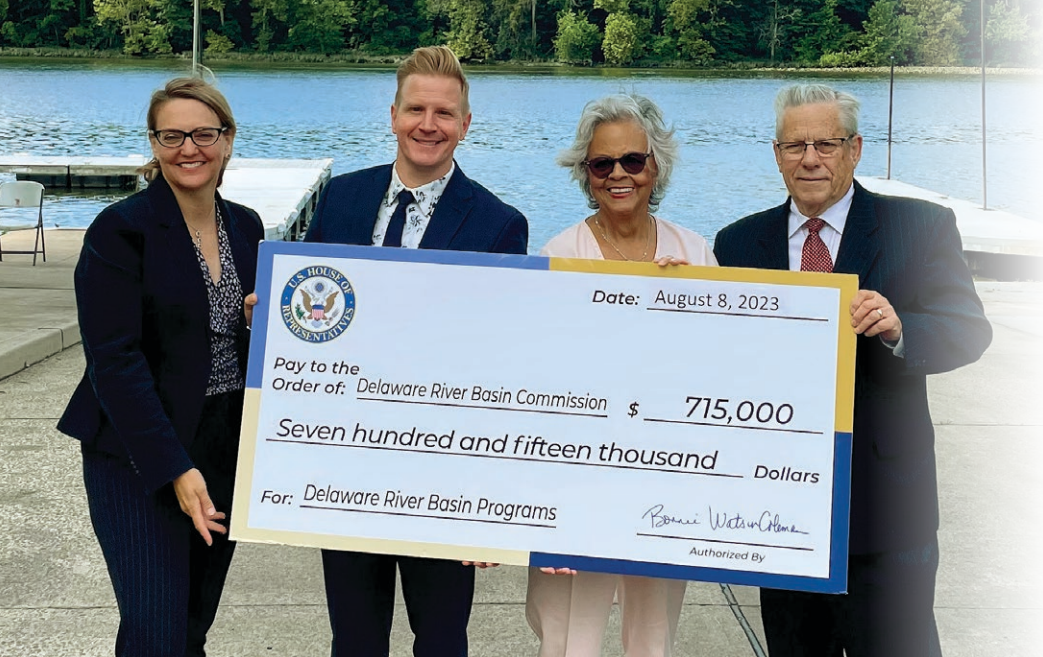
Our Shared Waters Tours Blue Marsh

In August, the DRBC, U.S. Representative Madeleine Dean (PA-4) and the Army Corps partnered on a tour of Blue Marsh Reservoir, and a lively roundtable discussion about the importance of clean, accessible and well-managed water; how communities recreate and connect with our water resources; challenges to equitable access; mitigating harmful algal blooms; climate change; and more.

Rep. Dean was joined by State Representatives Mark Rozzi (PA-126) and Johanny Cepeda-Freytiz, (PA-129) and staff of Senator Chris Gebhard (PA-48), who participated and shared their perspectives. Additional panelists included Steve Tambini, Lt. Col. Jeffrey Beeman, Commander of the Philadelphia District, Elaine Schaefer and Tim Fenchel of Schuylkill River Greenways, Chip Bilger, Executive Director of the Western Berks Water Authority, and Director and Assistant Director of Berks County Parks and Recreation Cathy Wegener and Brendan Lederer.



DRBC's Steve Tambini presents Camden Mayor Vic Carstarphen with a proclamation recognizing the City's relationship to the Delaware River.



L-R: DRBC's Deputy Exec. Dir. Kristen Bowman Kavanagh, NJDEP Commissioner Shawn LaTourette, U.S. Rep. Bonnie Watson Coleman (NJ-12) and Ewing Twp. Mayor Bert H. Steinmann hold a check for \$715,000 in Community Project Funding for the DRBC.

Camden Community Day

On June 7, the DRBC held its first-ever Camden Community Day. Held in conjunction with DRBC's second-quarter public business meeting, lauded the progress and partnerships that have supported the City of Camden's mission and investment in an economically thriving, dynamic and publicly accessible waterfront, as well as its commitment to healthy and sustainable water resources for its residents.

The day's activities began with a guided boat tour along the Camden waterfront, where DRBC was joined by partners, legislators and community leaders.

Following the boat tour, the DRBC held its quarterly business meeting at Rutgers-Camden, where the Commission gave special recognition to the City of Camden, presenting Mayor Vic Carstarphen with a resolution honoring and recognizing the City's commitment to its communities and natural environment. Mayor Carstarphen was joined in making remarks by Camden County Commissioner Jeffrey Nash, N.J. Department of Environmental Protection Assistant Commissioner for Community Investment Elizabeth Dragon, and U.S. Environmental Protection Agency Region 2 Senior Advisor for Equity Olivia Glenn. A period of open public comment came next, allowing community members to address the Commissioners directly about issues important to them regarding water resources.

Petty Island, N.J.

Mile 101.5: This 200+ acre island allegedly hosted Blackbeard and Ben Franklin. Today, it boasts rich biodiversity and is a gateway to nature, connected via Camden's waterfront trail.





L-R: U.S. EPA Region 3 Administrator Adam Ortiz and DRBC Executive Director Steve Tambini meet at Kittatinny Point in the Delaware Water Gap National Recreation Area, as part of the 2023 Delaware River Sojourn.



An enthusiastic visitor learns about the Delaware River at the 2023 Chester River Fest, organized by the Partnership for the Delaware Estuary.



L-R: DRBC Director of External Affairs Beth Brown and U.S. Rep. Bonnie Watson Coleman (NJ-12) attend Trenton's Juneteenth Reception at City Hall.

Resource Fair. Local advocacy organizations, private sector companies and representatives from the state government met to interact with members of the public on issues related to community health, the environment and more.

Public Outreach Events

The DRBC traveled to all four basin states throughout 2023 to engage with communities and educate partners and the public. Representative events included Lambertville Shad Fest, Narrowsburg Festival of the Founding Fish, Chester River Festival, Hydromania at Cedar Crest College in Allentown, Delaware River Festival, Camden Environmental Summit, World Environment Day, Trenton Youth Fishing Derby, Trenton Juneteenth Weekend, Camden Community Day, and more.

Delaware Sojourn

The 2023 Delaware Sojourn celebrated the Delaware River's free-flowing nature while highlighting important partner organizations, stewardship efforts throughout the watershed, and the ongoing work being done to improve the Delaware River and preserve its environment and rich history.

The DRBC was pleased to welcome Adam Ortiz, EPA Mid-Atlantic Regional Administrator, to the Delaware Sojourn's stop in the Delaware Water Gap. Ortiz joined Steve Tambini in providing remarks on the power of collaboration between communities and government agencies as well as improvements in water quality.

DEIJB Plan

The Commission made progress on its Diversity, Equity, Inclusion, Justice and Belonging (DEIJB) Strategic Plan throughout 2023, demonstrating the DRBC's commitment to a safe, respectful and inclusive workplace; environmental justice in our regulatory programs; and allyship with our diverse public and stakeholders. DRBC staff presented the draft to Commissioners in June 2023 and continued to refine the plan for finalization in early 2024.

Advisory Committees

The DRBC's advisory committees provide a forum for exchanging information and viewpoints on various issues, enhancing communication and coordination. The Commissioners recognize the importance of engaging qualified representatives from state and federal government agencies, industry, municipalities, academia, public health, and environmental and watershed organizations to inform their policy decisions. Advisory committee and subcommittee meetings are open to the public and continued to meet virtually during 2023. A complete and up-to-date list of members can be found on our website at:

www.nj.gov/drbc/about/advisory/index.html.

Advisory Committee on Climate Change (ACCC)

Reserved Members

Delaware

Robert Scarborough, Ph.D., Environmental Scientist V, Resource Protection Section, Division of Water, Delaware Department of Natural Resources and Environmental Control

New Jersey

Nicholas A. Procopio, Ph.D., GISP, Bureau Chief, Division of Science and Research, New Jersey Department of Environmental Protection

New York

Mark Lowery, Assistant Director, Office of Climate Change, New York State Department of Environmental Conservation

Pennsylvania

James Horton, Section Chief, Water Use and Planning Section, Compacts and Commissions Support at PADEP, Pennsylvania Department of Environmental Protection

Benjamin Franklin Bridge, Pa.

Mile 100.16: Historic drought pushed salt water upriver to this landmark in the 1960s, and the "salt front" may more frequently reach this area with future sea level rise.

United States Government

Amanda L. Babson, Ph.D., Coastal Landscape Adaptation Coordinator, National Park Service, Interior Region 1, North Atlantic - Appalachian

Arthur DeGaetano, Ph.D., Director, NOAA Northeast Regional Climate Center, Cornell University

New York City

Alan Cohn, Managing Director of Integrated Water Management, New York City Department of Environmental Protection

City of Philadelphia

Julia Rockwell, Manager, Climate Change Adaptation Program, Office of Watersheds, Philadelphia Water Department

Partnership for the Delaware Estuary

Danielle Kreeger, Ph.D., Senior Science Director, Partnership for The Delaware Estuary

Non-Reserved Members

Howard Neukrug, P.E., (Committee Chair), Professor, University of Pennsylvania, Founding Director, The Water Center at Penn

Marjorie B. Kaplan, Dr.P.H., (Committee Vice Chair), Associate Director, Rutgers Climate Institute, Rutgers University

Aneca Y. Atkinson, MSWREE, Director, Delaware River Watershed Program, National Audubon Society

William Brady III, P.E., Principal, CCS Strategies LLC

John Callahan, Ph.D., Visiting Assistant Professor, University of Delaware

James J. Chelius, P.E., American Water, Inc. (retired)

Upmanu Lall, Ph.D., Professor, Columbia University, Director, Columbia Water Center, Columbia University

Christopher Linn, AICP, Manager, Office of Environmental Planning, Delaware Valley Regional Planning Commission

David Velinsky, Ph.D., Department Head, Department of Biodiversity, Earth and Environmental Science, Drexel University and Senior Scientist, Academy of Natural Sciences of Drexel University

Water Quality Advisory Committee (WQAC)

Academia/Science

John K. Jackson, Ph.D., Stroud Water Research Center

Delaware

Bhanu Paudel, Ph.D., Delaware Dept. of Natural Resources and Environmental Control (DNREC), Watershed Assessment and Management Section

Stephen Williams, (Alternate), Delaware Dept. of Natural Resources and Environmental Control (DNREC), Div of Water Resources- Watershed Assessment Section

Environmental Professional

Maya K. van Rossum, Delaware Riverkeeper, Delaware Riverkeeper Network

Local Watershed Organization

Gail Farmer, Executive Director, Wissahickon Trails

National Park Service Wild and Scenic Rivers Program

Richard Evans, Ecologist, National Park Service, Delaware Water Gap National Recreation Area, Resource Management and Science

Peter Sharpe, Ph.D., PWS (Alternate), National Park Service, Natural Resources Stewardship and Science

New Jersey

Frank Klapinski, Environmental Specialist 3, New Jersey Department of Environmental Protection, Bureau of Environmental Analysis, Restoration, and Standards, Division of Water Monitoring and Standards

Biswarup (Roop) Guha, (Alternate), New Jersey Department of Environmental Protection, Bureau of Environmental Analysis, Restoration, and Standards, Division of Water Monitoring and Standards

New York

Sarah Rickard, New York State Department of Environmental Conservation, Research Scientist, Division of Water

Pennsylvania

Michael (Josh) Lookenbill, Pennsylvania Department of Environmental Protection, Acting Program Manager, Water Quality Division, Biologist, Monitoring Section Chief, Bureau of Clean Water

Kristen Schlauderaff, (Alternate), Pennsylvania Department of Environmental Protection, Environmental Group Manager, Standards Section, Bureau of Clean Water

Regulated Community - Industrial

Scott T. Northey, The Chemours Company, Chambers Works Facility

Lisa Pfeifer, PMP, (Alternate), Manager, Environmental Programs and Services, Pepco Holdings, an Exelon Corporation

Regulated Community - Municipal

Bryan P. Lennon, Assistant Water Division Director, City of Wilmington, Department of Public Works

Jason Cruz, (Alternate) (Committee Chair), Philadelphia Water Department

U.S. EPA

Kuo-Liang Lai, P.E., Office of Standards, Assessment, and TMDLs, Water Protection Division (3WP30), U.S. EPA Region 3

Brent Gaylord, Water Quality Standards Coordinator, Clean Water Regulatory Branch, Clean Water Division, U.S. EPA Region 2

Mouth of the Schuylkill River, Pa.

Mile 92.47: The Schuylkill River is the Delaware's largest tributary. The Schuylkill's watershed spans almost 2,000 square miles and parts of eleven Pennsylvania counties. The river flows through Philadelphia's Fairmount Park, Boathouse Row and the Fairmount Water Works, among other landmarks.

Monitoring Advisory and Coordination Committee (MACC)

Business/Industry

Daniel Penczak, Field Sales Lead, OTT HydroMet

Delaware

Christopher Main, Environmental Scientist, Delaware Department of Natural Resources and Environmental Control (DNREC), Division of Water, Environmental Laboratory Section

Education

Marc Peipoch, Stroud Water Research Center, Environmental Organization, Eileen Murphy, New Jersey Audubon

Robin Irizarry, Audubon Mid-Atlantic, The Discovery Center

Kurt Cheng, Partnership for the Delaware Estuary

Fisheries

Sheila Eyler, Delaware River Basin Fish and Wildlife Cooperative, U.S. Fish and Wildlife Service, Mid-Atlantic Fishery Resources Office

New Jersey

Chris Kunz, New Jersey Department of Environmental Protection, Bureau of Freshwater & Biological Monitoring

Brian Henning, (Alternate), New Jersey Department of Environmental Protection, Bureau of Freshwater & Biological Monitoring

New York

Sarah Rickard, Research Scientist, Division of Water, New York State Department of Environmental Conservation

Pennsylvania

Michael (Josh) Lookenbill, Program Manager, Water Quality Division, Pennsylvania Department of Environmental Protection

Erika Arnold, (Alternate), Monitoring Section Chief, Water Quality Division, Pennsylvania Department of Environmental Protection

Regulated Community

Matthew Fritch, City of Philadelphia, Philadelphia Water Department

U.S. Army Corps of Engineers

Vacant

U.S. EPA - Region III

Leah Ettema, United States Environmental Protection Agency, Region 3, EPA Environmental Center – Laboratory and Field Services

U.S. Geological Survey

Heather Heckathorn, Hydrologist/Water Quality Specialist, U.S. Geological Survey, New Jersey Water Science Center

Watershed Organization

Preston Luitweiler, Water Resources Association of the Delaware River Basin

Regulated Flow Advisory Committee (RFAC)

Delaware Department of Natural Resources and Environmental Control

Patty Murray, Program Manager, Division of Water Supply

Delaware Geological Survey

Stefanie Baxter, P.G., University of Delaware

New Jersey Department of Environmental Protection

Steve Domber, Environmental Specialist

Joseph A. Miri, Ph.D., Research Scientist

New York City Department of Environmental Protection

Jen Garigiano, (Committee Chair), Chief of Staff, Bureau of Water Supply

New York State Department of Environmental Conservation

Brenan Tarrier, Division of Water, Bureau of Water Resource Management

Office of the Delaware River Master

Kendra Russell, U.S. Geological Survey, Delaware River Master

Pennsylvania Department of Environmental Protection

Abdolhossian (Hoss) Liaghat, P.E., (Committee Vice-Chair), Consulting Hydrologist, Compacts and Commissions Office

Philadelphia Water Department

Kelly Anderson, Office of Watersheds

U.S. Army Corps of Engineers

Laura Bittner, Chief of Hydrology, Hydraulics, and Coastal Section

Marcus Hook, Pa.

Mile 79.56: In 2023, the DRBC conducted additional monitoring to better understand dissolved oxygen conditions in Atlantic sturgeon spawning habitat.



Toxics Advisory Committee (TAC)

Academic

David Velinsky, Ph.D., Academy of Natural Sciences of Drexel University, VP for Academy Science and Department Head

Keith Cooper, Ph.D., (Alternate for Dr. Velinsky), Department of Biochemistry & Microbiology, Rutgers, The State University of N.J.

Dibyendu “Dibs” Sarkar, Ph.D., P.G., (2nd Alternate for Dr. Velinsky), Professor of Environmental Engineering, Director, Sustainability Management Program, Department of Civil, Environmental and Ocean Engineering, Stevens Institute of Technology

Agriculture

Vacant

Delaware

John Cargill, Division of Waste and Hazardous Substances/Site Investigation and Restoration Section

Environmental/Watershed

Tracy Carluccio, Delaware Riverkeeper Network

Diana Oviedo-Vargas, Ph.D., Research Scientist, Stroud Water Research Center

EPA Region II

Brent Gaylord, U.S. EPA Region 2, Water Quality Standards Coordinator, Clean Water Regulatory Branch, Clean Water Division

EPA Region III

Kuo-Liang Lai, P.E., U.S. EPA Region III, Office of Standards, Assessment, and TMDLs, Water Protection Division

Federal Fish & Wildlife

Sean Michael Bugel, Ph.D., Fish and Wildlife Biologist, New Jersey Field Office

Industry

Scott Northey, EHS Supervisor, The Chemours Company, Chambers Works

Lisa Pfeifer, (Alternate), Manager Environmental Programs & Services, Pepco Holdings – Environmental Management

Municipal

Jason Cruz, Aquatic Biologist Supervisor, Philadelphia Water Department

Matthew Fritch, (Alternate), Environmental Engineer, Philadelphia Water Department

New Jersey

Biswarup (Roop) Guha, New Jersey Department of Environmental Protection, Bureau of Environmental Analysis, Restoration, and Standards, Division of Water Monitoring and Standards

Sandra M. Goodrow, Ph.D., C.F.M., (Alternate), Research Scientist I, New Jersey Department of Environmental Protection, Division of Science, Research, and Environmental Health

Stephen Seeberger, (2nd Alternate), Principal Environmental Scientist, New Jersey Department of Environmental Protection, Bureau of Surface Water Permitting, Division of Water Quality

New York

Jason R. Fagel, New York State Department of Environmental Conservation, Research Scientist, Bureau of Water Assessment and Management-Division of Water

Pennsylvania

Maria Schumack, Bureau of Clean Water – PA Department of Environmental Protection, Project Manager

Public Health

Eric Bind, M.P.P., New Jersey Department of Health, Research Scientist, Environmental and Chemical Laboratory Services

Water Management Advisory Committee (WMAC)

Constituencies per Resolution 98-21

State of Delaware

Patty Murray, Delaware Department of Natural Resources and Environmental Control, Division of Water Supply

Steven Smailer, P.G., (Alternate), Delaware Department of Natural Resources and Environmental Control, Division of Water

State of New Jersey

James MacDonald, New Jersey Department of Environmental Protection, Bureau of Water Allocation & Well Permitting

Joseph Miri, Ph.D., (Alternate), New Jersey Department of Environmental Protection, Water Supply Modeling & Planning Section

State of New York

Brenan Tarrier, New York State Department of Environmental Conservation, Division of Water

Commonwealth of Pennsylvania

Abdolhossian (Hoss) Liaghat, P.E., (Committee Vice-Chair), Pennsylvania Department of Environmental Protection, Compacts and Commissions Office

James Horton, (Alternate), Pennsylvania Department of Environmental Protection, Compacts and Commissions Support

U.S. Army Corps of Engineers

Laura Bittner, U.S. Army Corps of Engineers – Philadelphia District, Hydrology and Hydraulics Branch

Gregory Wacik, (Alternate), U.S. Army Corps of Engineers – Philadelphia District

U.S. Environmental Protection Agency

Katie Lynch, U.S. Environmental Protection Agency – Region II, Drinking Water and Groundwater Protection Section



Median Salt Front, Del.

Mile 70: The monthly median location of the salt front is here, at the confluence with the Christina River. In dry times, the transition from fresh to salt water has reached as high as River Mile 102.

U.S. Geological Survey

Brandon J. Fleming, USGS Pennsylvania Water Science Center

Curtis Schreffler, USGS Pennsylvania Water Science Center, Operations and Hydrologic Investigations

City of New York

Dana Olivio, New York City Department of Environmental Protection, Bureau of Water Supply, Strategic Services

City of Philadelphia

Kelly Anderson, (Committee Vice-Chair), Philadelphia Water Department, Source Water Protection Program, Division of Planning & Research

County Water Agency

Seung Ah Byun, Ph.D., P.E., (Committee Chair), Chester County Water Resources Authority

Water Resources Association

Preston Luitweiler, Water Resources Association of the Delaware River Basin

Industry

Jordan C. Rajan, Constellation – Limerick Generating Station

Water Utility

Kathleen Thaeder, Artesian Water Company, Inc., Virginia Eisenbrey (Alternate for Kathleen Thaeder), Artesian Water Company, Inc.

Agriculture

Sandra Howland, New Jersey Department of Agriculture, Division of Agriculture & Natural Resources

League of Women Voters or other Civic Organizations

Kathy Cook, League of Women Voters of Pennsylvania

Environmental Organization

Kelly Knutson, Coalition for the Delaware River Watershed

Watershed Organization

Laurie Ramie, Upper Delaware Council

Academia

Daniel J. Van Abs, Ph.D., FAICP/PP, Rutgers University, Department of Human Ecology, SEBS

Recreation

Emily Baldauff, Trout Unlimited

Fisheries

Sheila Eyler, Ph.D., U.S. Fish & Wildlife Service, Mid-Atlantic Fish & Wildlife Conservation Office

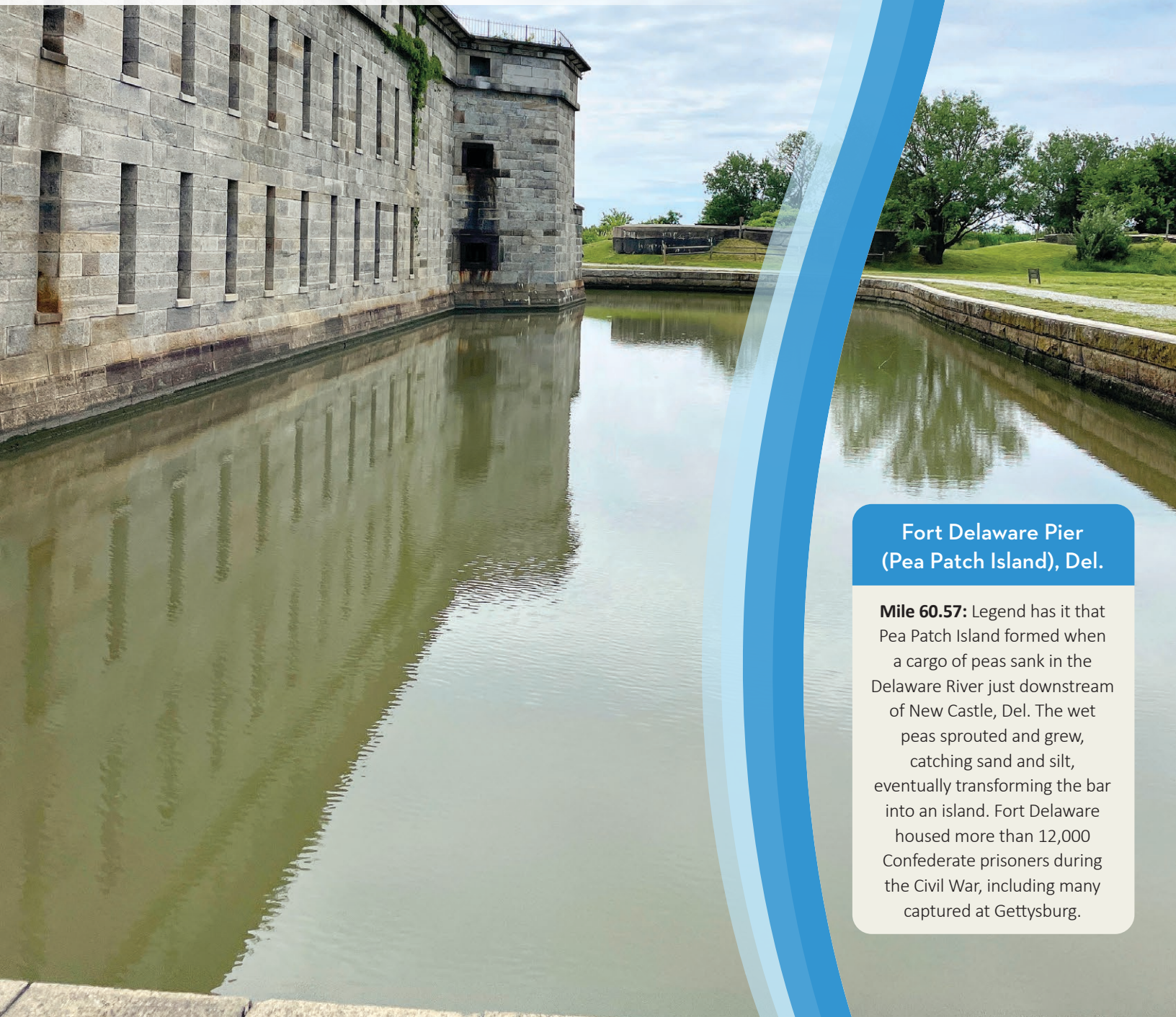
Note: *The Subcommittee on Ecological Flows and the Flood Advisory Committee did not meet during 2023.*

Our Employees and Workplace

Our Staff

Caring for Our Communities

Sharing Trusted, Technical Knowledge



Fort Delaware Pier (Pea Patch Island), Del.

Mile 60.57: Legend has it that Pea Patch Island formed when a cargo of peas sank in the Delaware River just downstream of New Castle, Del. The wet peas sprouted and grew, catching sand and silt, eventually transforming the bar into an island. Fort Delaware housed more than 12,000 Confederate prisoners during the Civil War, including many captured at Gettysburg.



Karl Heinicke enjoys a celebratory cake.



Densie McHugh (second from left) volunteers with DRBC staff at Hydromania.



DRBC staff participate in a day of service at the Mercer Street Friends food bank.

Our Staff

Staff Changes

The DRBC welcomed several new staff members in 2023, including:

- Mike Heller, Information Technology Specialist
- Alyssa Lutgen, Water Resource Scientist
- Amber Munchback, Finance and Administration Specialist
- Avery Lentini, Community Engagement Specialist

Karl Heinicke retired from the DRBC in September as IT Specialist, and Denise McHugh retired in July as Finance & Administration Specialist after 35 and 22 years of dedicated service to the Commission, respectively. We thank Karl and Denise for their many valued contributions to the Commission and extend our best wishes to them and their families for a well-deserved retirement.

Caring for Our Communities

In December, DRBC staff spent a day of service at the Mercer Street Friends Food Bank in Ewing Township, N.J. for the ninth year running. The food bank offers prevention programs and distributes millions of pounds of food items to a network of more than 100 shelters, soup kitchens and food pantries in Mercer County. In addition to running the food bank, Mercer Street Friends offers a free preschool and programs for youth, adults and parents. Staff helped make roughly 1,300 meals for their “Send Hunger Packing” program, providing schools throughout the county with food to cover weekend meals for students.

DRBC staff also volunteered an afternoon at Palmyra Cove Nature Park, an Our Shared Waters partner, helping clean up trash along its tidal Delaware River shoreline. This is the fifth time in recent years that Commission staff volunteered at Palmyra Cove.

Sharing Trusted, Technical Knowledge

Selected Presentations

Commission staff are routinely asked to speak on water resource management and technical issues. In 2023, these included:

Steve Tambini

Mid-Atlantic River Basin Commissions, Congressional Briefing hosted in conjunction with the Delaware River Watershed Caucus Co-Chairs, Feb. 28, 2023.

Basin-Wide Cooperation for Drought Resilience: Case Studies to Inform Transboundary Management, Water Center at Penn, March 17, 2023

[Improving Dissolved Oxygen and Aquatic Life Uses in the Delaware River Estuary](#), NJ-AWRA Watershed Leadership Forum, March 2023.

Panelist, Environmental Leaders Panel, NJ Water Environment Association Annual Conference, May 10, 2023.

Panelist, the Importance of Our Shared Water Resources, Blue Marsh Roundtable, August 3, 2023.

The State of the Basin, Water Resources Association of the Delaware River Basin Annual Meeting, Nov. 29, 2023.

DRBC Update, Chamber of Commerce of Southern New Jersey, December 19, 2023.

Kristen Bowman Kavanagh

Moderator, Panel Conversation on Climate Planning and Adaption, DRBC Climate Change Forum at the Delaware Estuary Science & Environmental Summit 2023, January 31, 2023.

Advancing Climate Resilient Infrastructure, US Water Alliance Water Equity Network Delaware River Basin Cohort event, March 21, 2023.

Delaware River and Bay Monument, Del.

Mile 48.18: This marker reads, in part, “A straight line drawn from the centre of this monument to the centre of a similar monument erected at the mouth of Hope Creek on the New Jersey shore is the dividing line between the Delaware River and Bay. Ascertained June 22 A.D. 1906.”



Chester and Marcus Hook, Pa. with the Commodore Barry Bridge in the foreground.

Delaware River Chemical Spill

On March 23, a spill into Otter Creek reached the Delaware River at Bristol, Pa., releasing approximately 8,000 gallons of latex polymer into the river. The Pennsylvania Department of Environmental Protection and the U.S. Coast Guard were the lead agencies responding to the spill, with numerous federal and state agencies engaged in the response to potential drinking water and aquatic life impacts. The DRBC tracked the spill, offered our river monitoring, modeling and technical expertise to the interagency response team, and shared trusted information with Basin communities on its website and social media. In response to the spill, the DRBC connected with the U.S. Coast Guard and identified several opportunities to engage in training and coordination. Additionally, the DRBC convened drinking water suppliers to discuss forming a source water protection group. These efforts would lead, in 2024, to the launch of a source water protection subcommittee of the DRBC's Water Management Advisory Committee.

Moderator, Women and Allies in Water, Water Resources Association of the Delaware River Basin event, April 20, 2023.

Moderator, Take Action: Using Science & Collaboration to Manage Flood and Climate Change Risks, Water Resources Association of the Delaware River Basin technical event, April 28, 2023.

DRBC Who??? - An Introduction to Interstate Watershed Management, Pennsylvania Association of Environmental Professionals meeting, June 8, 2023.

Panelist, Sustainable Water Infrastructure Management (SWIM) Center Conference and Workshop, December 12, 2023.

Amy Shallcross

Basin Wide Cooperation for Drought Resilience: DRB Case Study, UPenn presentation, March 2023.

The Flexible Flow Management Program: Effects on the Delaware River Basin, CDRW Forum, Sept. 29, 2023.

Ecosystems, Climate & Watershed Protection, Interstate Council on Water Policy's 64th Annual Meeting, Sept. 26, 2023.

Michael Thompson

Estimated Groundwater Availability in the Delaware River Basin 2020-2060, Pa. Groundwater Symposium, May 9, 2023.

Talkin' TREB Chapter 3 – Water Quantity, CDRW Forum, Sept. 29, 2023.

A Comprehensive Assessment of the Delaware River Basin Commission's Water Audit Program (2012-2021), AWWA North American Water Loss 2023 Conference, December 6, 2023.

Jeremy Conkle

Separate plastic from particulate organic matter in less time than it takes to bake a frozen pizza, SETAC Plastics Interest Group Fall Webinar, November 2023.

DRBCs PFAS Monitoring and Collaborators in the Delaware River Basin, USEPA Region 3 – Mid-Atlantic Source Water Protection Leadership Forum, November 2023.

John Yagecic and Elaine Panuccio

Where do ammonia and other nutrients in the Delaware Estuary originate, and how do we know? (Poster) Delaware Estuary Science & Environmental Summit, January 30, 2023.

John Yagecic

Near-Real-Time and Interactive Data Assessment in the Delaware River Basin, National Monitoring Conference, April 26, 2023.

How DRBC uses USGS Data; USGS Pa. Water Science Center Stakeholder Meeting, September 27, 2023.

Jacob Bransky

The State of the Watershed: Unveiling the 2022 Technical Report for the Delaware Estuary and Basin, Delaware Estuary Science & Environmental Summit, January 30, 2023.

Delaware Bayshore, Del.

Mile 0.37: Beginning at the Cape Henlopen Lighthouse, the Delaware Bay hosts the world's largest concentrations of spawning horseshoe crabs. People come from all over to view the spawning crabs and the associated migratory shorebirds.



DRBC monitoring by canoe in the Upper Delaware.

Flexible Flow Management Program Amended

On April 8, the parties to the 1954 Supreme Court Decree in New Jersey v. New York, [unanimously agreed](#) to amend the 2017 FFMP to continue studies evaluating the impacts of salt front repulsion, increased diversions, storage, balancing adjustment, and Excess Release Quantity and perform a new synthesizing study, through 2028.



L-R: David R. Wunsch Ph.D., P.G., of the Del. Geological Survey, Carol Lamb-LaFay, P.E., of NYSDEC, Patricia Gardner of NJDEP, Lisa Daniels of PADEP and Paul Rush, P.E. of the New York City Department of Environmental Protection sign an amendment to the Flexible Flow Management Plan.

Reducing Microplastics in the Delaware River Estuary, (poster) Delaware Estuary Science & Environmental Summit, January 30, 2023.

Leveraging continuous data to estimate dissolved oxygen at unmonitored locations and under different loading conditions, USGS Pa. Water Science Center Stakeholder Meeting, September 27, 2023.

Talkin' TREB, CDRW Forum, Sept. 29, 2023.

Tom Amidon

Improving Dissolved Oxygen and Aquatic Life Uses in the Delaware River Estuary (DRBC staff gave a multi-part presentation on this topic, organized by T. Amidon.) Delaware Estuary Science & Environmental Summit, January 30, 2023.

Sarah Beganskas

The State of the Watershed: Unveiling the 2022 Technical Report for the Delaware Estuary and Basin, Delaware Estuary Science & Environmental Summit, January 30, 2023.

Sara Sayed

Population Served by the Delaware River Basin, CDRW Webinar, June 14, 2023.

Beth Brown

Mid-Atlantic River Basin Commissions, Congressional Briefing hosted in conjunction with the Delaware River Watershed Caucus Co-Chairs, Feb. 28, 2023.

Our Shared Waters, An Introduction to the Delaware River Basin Commission, Camden Environmental Summit, April 19, 2023.

Population Served by the Delaware River Basin, CDRW Webinar, June 14, 2023.

Our Shared Waters, Water Table, Sept. 11, 2023.

Selected Publications

DRBC (2023). [*Delaware River and Bay Water Quality Assessment*](#). (DRBC Report No. 2023-1.) Delaware River Basin Commission.

DRBC (2023). [*Evaluation of Additional Storage in the Delaware River Basin*](#). (DRBC Report No. 2023-2.) Prepared by Mott MacDonald in association with GEI Consultants. Delaware River Basin Commission.

DRBC (2023). [*Water Resources Program FY24-26*](#). (DRBC Report No. 2023-3.) Delaware River Basin Commission.

DRBC (2023). [*2022 Hydrologic Conditions Report*](#). (DRBC Report No. 2023-4.) Delaware River Basin Commission.

MacGillivray, A.R. and Conkle, J.L. (2023). [*PFAS in Surface Water, Sediment and Fish in the Pennsylvania Coastal Zone*](#). (DRBC Report No. 2023-5.) Delaware River Basin Commission.

Conkle, J.L. (2023). [*PFAS Water Quality and Fish Tissue Assessment Study – Year 1*](#). (DRBC Report No. 2023-6.) Delaware River Basin Commission.

Thompson, M.Y., Sayed, S.C., & Pindar, C.E. (2023). [*A Comprehensive Assessment of the Delaware River Basin Commission's Water Audit Program \(2012-2021\)*](#). (DRBC Report No. 2023-7.) Delaware River Basin Commission.

DRBC (2023). [*FFMP Performance Report 2022-2023*](#). Delaware River Basin Commission.

Sayed, S., [*Over 14 Million People Rely on Our Shared Waters*](#), Coalition for the Delaware River Watershed Blog, available at: www.delriverwatershed.org.

Cape May, N.J. and Cape Henlopen, Del.

Mile 0.0: Mile zero is at the mouth of the Delaware Bay, where the bay meets the Atlantic Ocean, at the intersection of a line between the Cape May Lighthouse in N.J. and the tip of Cape Henlopen in Del., with the centerline of the navigation channel.



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