Delaware River Basin Commission

DRBC Water Resources Programs Overview

Kristen Bowman Kavanagh

Deputy Executive Director

Advisory Committee on Climate Change

August 4, 2020

Photo: http://pariveroftheyear.org/wp-content/uploads/2014/01/cody20102.jpg

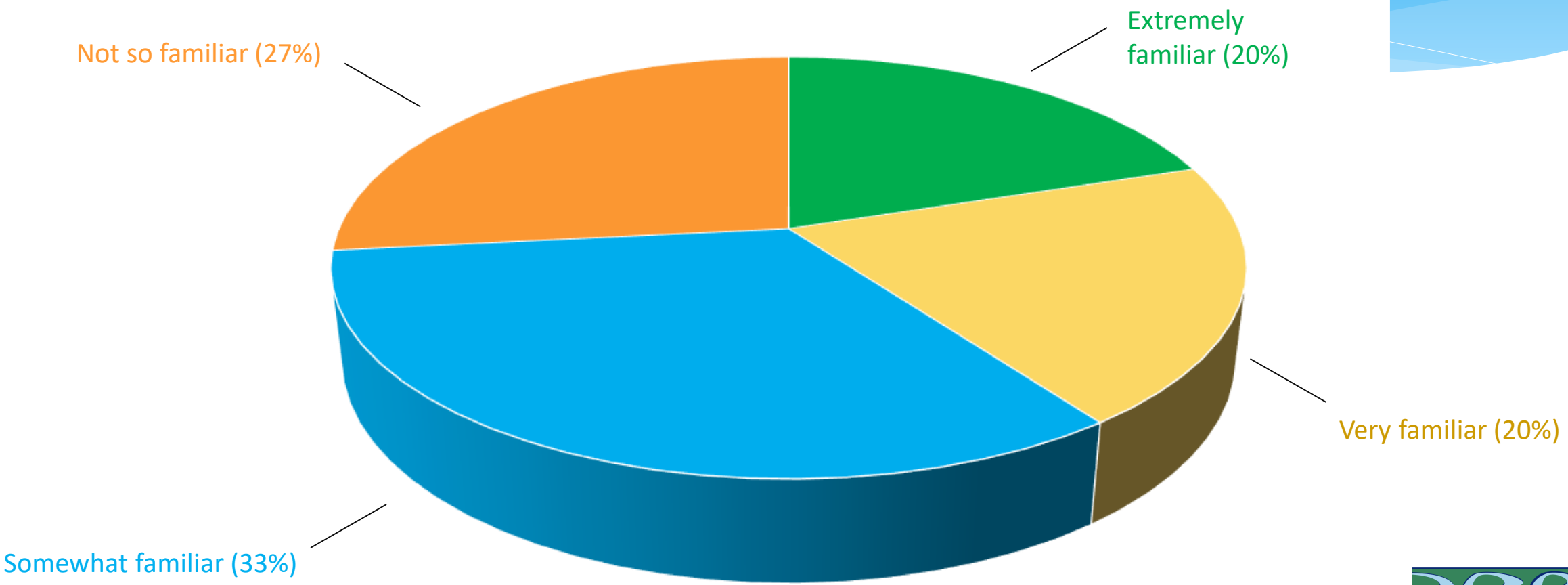
Photo courtesy of U.S. Army Corps of Engineers

Delaware River Basin Commission

DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Question to new ACCC members:

How familiar are you with the DRBC scope, mission, and work?



Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Why was the DRBC created?

- Water supply shortages and disputes over the apportionment of the Basin's waters;
- Severe pollution in the Delaware River and its major tributaries;
- Serious flooding

1937

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Why was the DRBC created?

- Water supply shortages and disputes over the apportionment of the Basin's waters;
- Severe pollution in the Delaware River and its major tributaries;
- Serious flooding

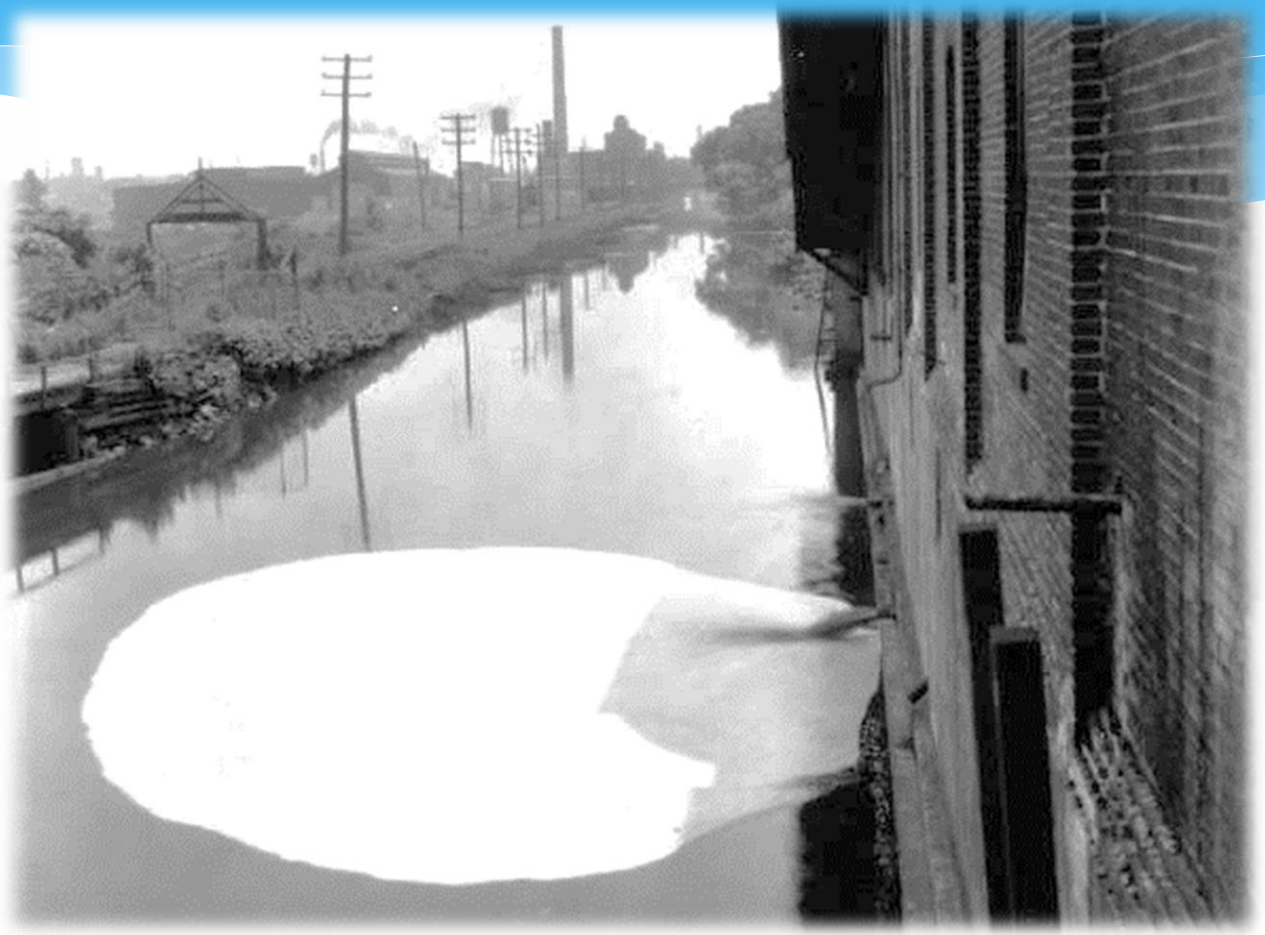
Parties to 1954 Supreme Court Decree

- Delaware 
- New Jersey 
- Pennsylvania 
- New York State 
- New York City 

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Why was the DRBC created?

- Water supply shortages and disputes over the apportionment of the Basin's waters;
- Severe pollution in the Delaware River and its major tributaries;
- Serious flooding



Slaughterhouses discharging in 1928
(courtesy of the Phila. Water Dept. Historic Collection)

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Why was the DRBC created?

- Water supply shortages and disputes over the apportionment of the Basin's waters;
- Severe pollution in the Delaware River and its major tributaries;
- Serious flooding

Fish kill on the Delaware from oil spill in 1929 (courtesy of Temple University Archives)

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

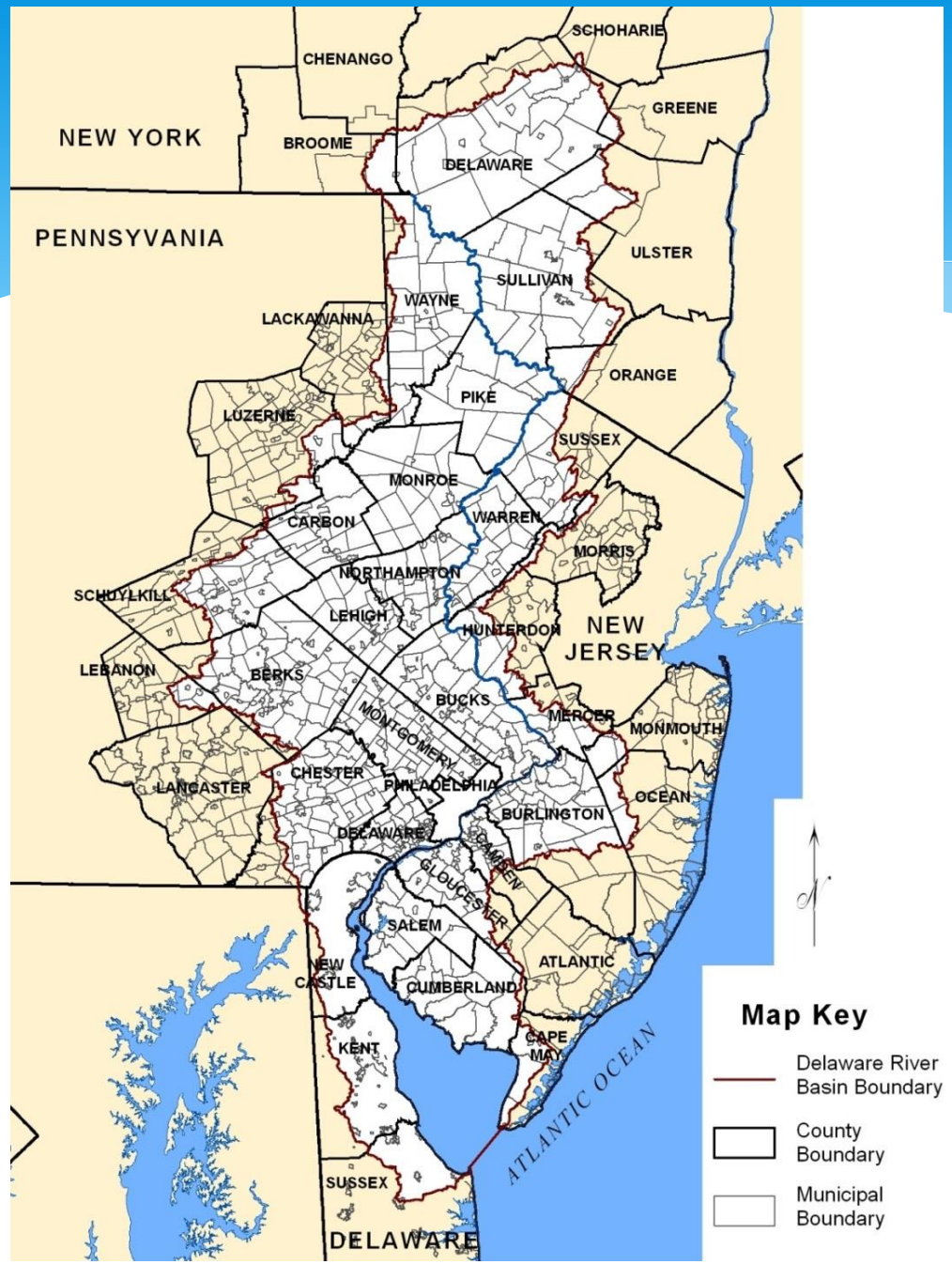
Why was the DRBC created?

- Water supply shortages and disputes over the apportionment of the Basin's waters;
- Severe pollution in the Delaware River and its major tributaries;
- Serious flooding

Easton-Phillipsburg free bridge in 1955 (lehighvalleylive.com file photo)

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Need for Basin-Scale Planning and Management



- 4 States
- 42 Counties
- 838 Municipalities
- NY City

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

The Delaware River Basin Compact:

A Vision for Our Shared Water Resources with the Force of Law

"...the signatory parties recognize the water and related resources of the **Delaware River Basin as regional assets** vested with local, State and National interests, **for which they have joint responsibilities**..."

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Delaware River Basin Commission
Founded by Compact in 1961

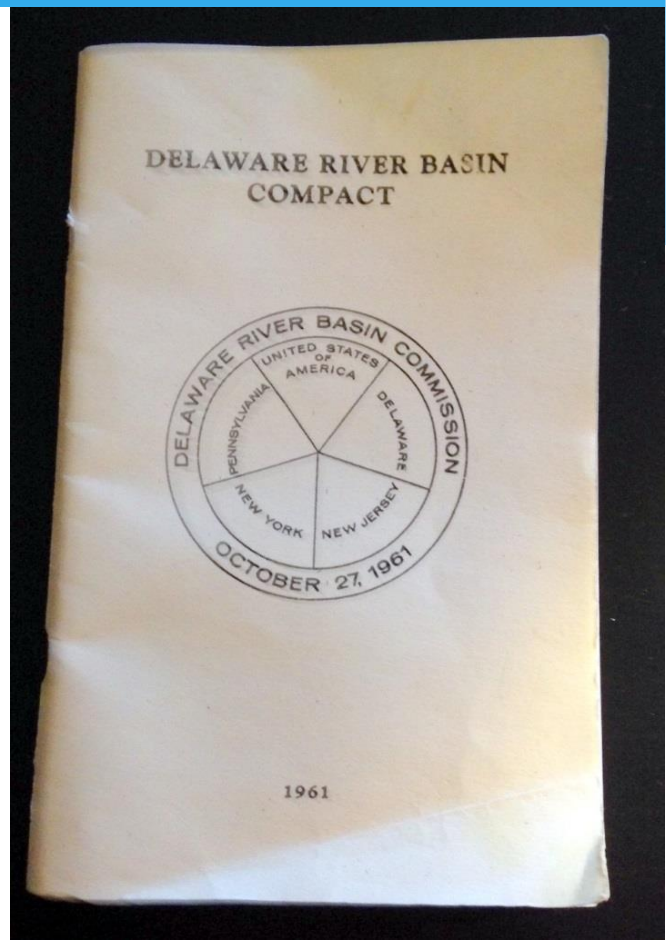
- Five Equal Members:
  - Delaware  
  - New Jersey  
  - Pennsylvania  
  - New York  
  - Federal Government   
- Four Governors are the Commissioners
- Commissioner may select alternates
- Federal Commissioner is Commanding General, USACE, NAD
- Majority rules in most voting
- Meets quarterly

Note: New York City and Philadelphia are “advisors” and not members

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Basic "Charges" of The Compact

- ***From the Compact Preamble:***
- a **Comprehensive Plan** administered by a basin wide agency will provide
  - ✓ **flood damage** reduction;
  - ✓ conservation and **development of ground and surface water supply…;**
  - ✓ development of **recreational facilities;**
  - ✓ **propagation of fish and game;**
  - ✓ promotion of related… **watershed projects;**
  - ✓ **protection to fisheries…;**
  - ✓ development of **hydroelectric power;**
  - ✓ improved **navigation;**
  - ✓ **control of movement salt water;**
  - ✓ **abatement and control of stream pollution;**
  - ✓ And **regulation towards the attainment of these goals.**

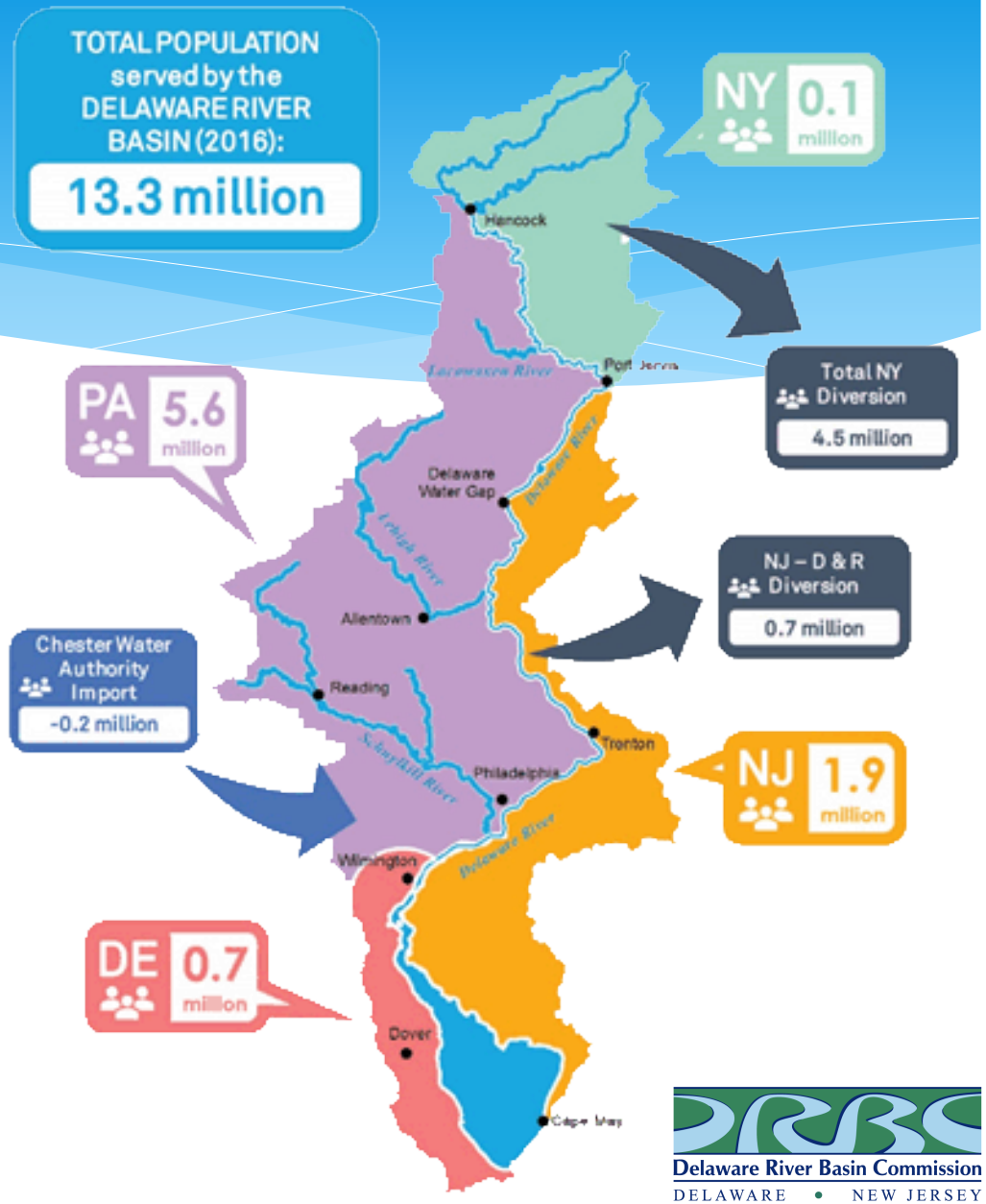


Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

DRBC Core Water Resource Management Responsibilities

- **Water QUANTITY** - Adequate, sustainable and resilient flow.
- **Water QUALITY** - Clean and healthy.

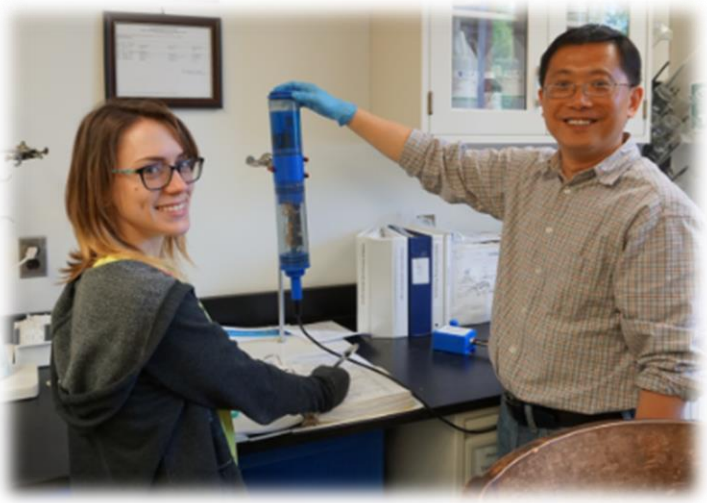
Partnering to achieve for the Basin what individual members could not accomplish alone.



Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

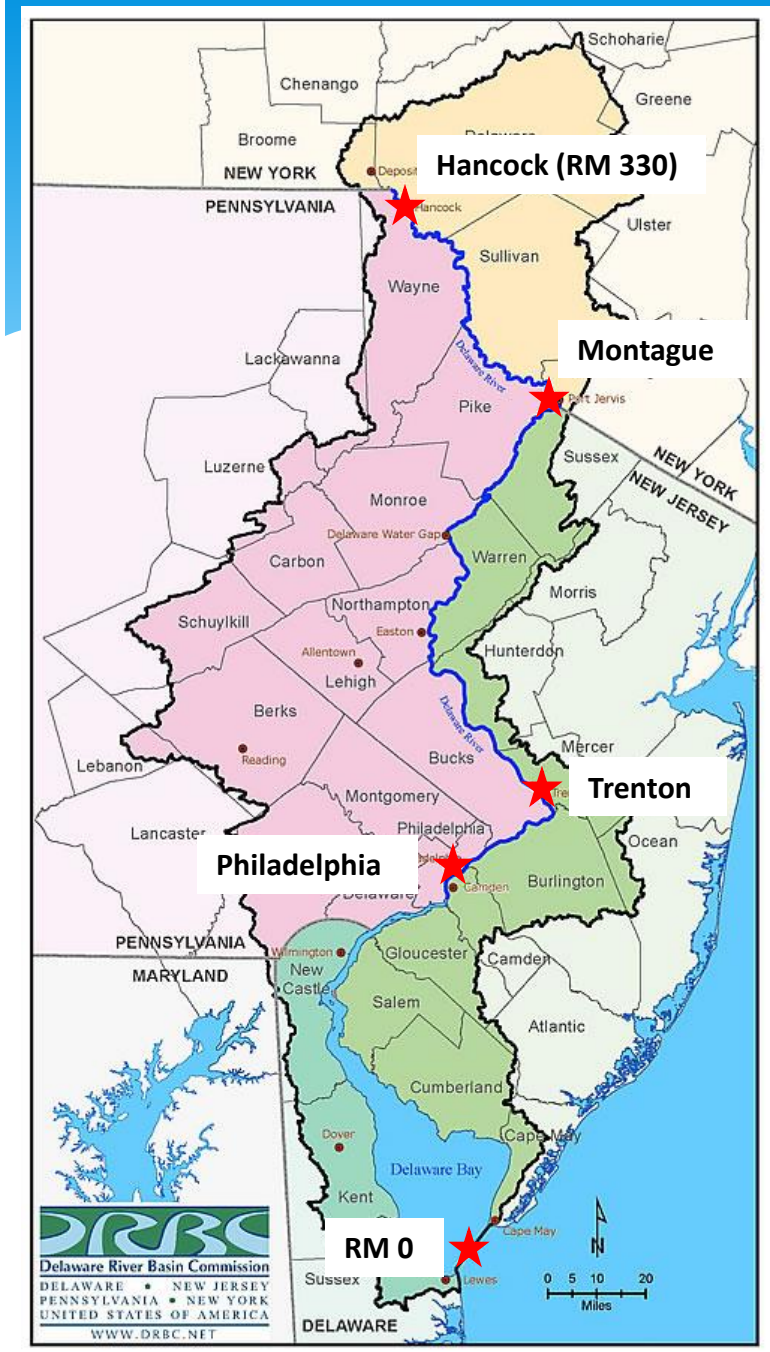
DRBC Staff and Organization

- Professional Planners, Engineers and Scientists
- 39 Budgeted Staff (33 FTEs w/ vacancies)
- FY21* Budget = $5.9 M
- FY21* funding from “Signatory Members” = $2.4 M
- Located in West Trenton, NJ since 1974



* Proposed

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA



"A river is more than an amenity, it is a treasure"

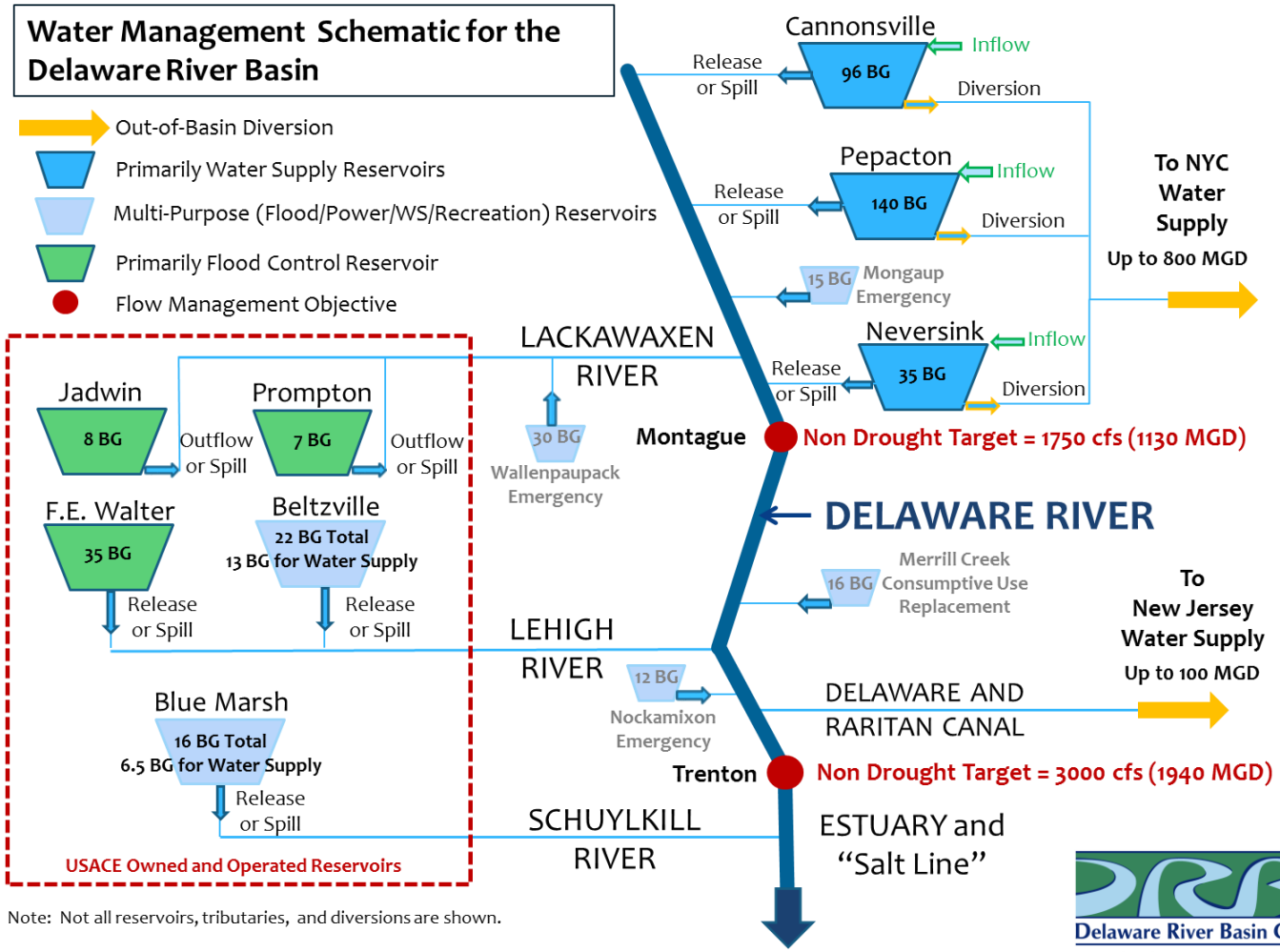
- Oliver Wendell Holmes, US Supreme Court Justice

Fast Facts:

- Main stem is **330 miles long**
- Forms an interstate boundary over its entire length
- **Drains 13,539 square miles** in 4 states
- **13.3+ million people** (about 5% of the U.S. population) rely on the waters of the Delaware River Basin
- Water **withdrawal** in the Basin = **6.4 billion gallons/day**
- **Significant Exports: NYC (up to 800 MGD) and NJ (up to 100 MGD)**
- Longest, un-dammed U.S. river east of the Mississippi
- **Contributes over $21B i**n economic value

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

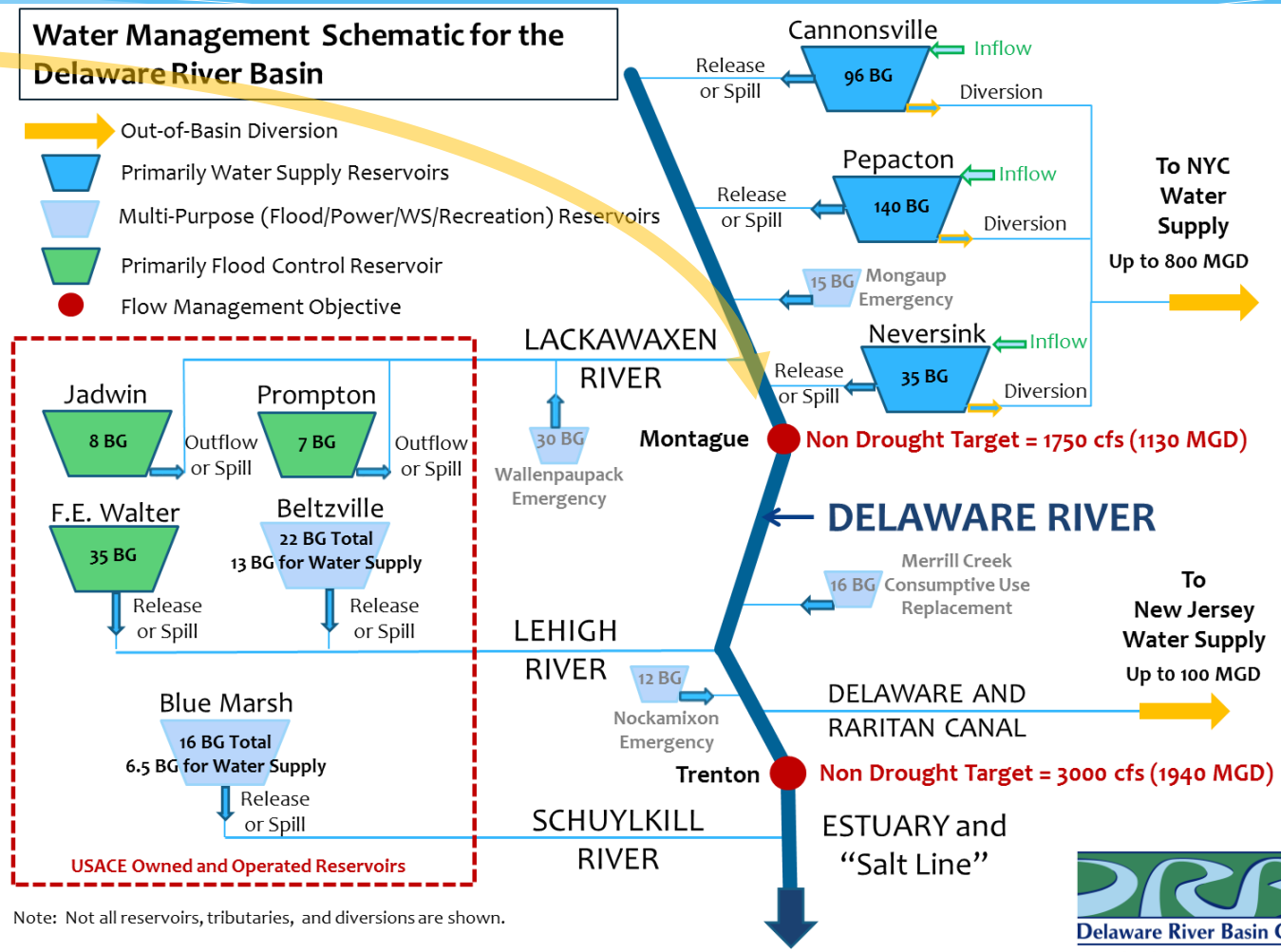
Complex Flow Management



Note: Not all reservoirs, tributaries, and diversions are shown.

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

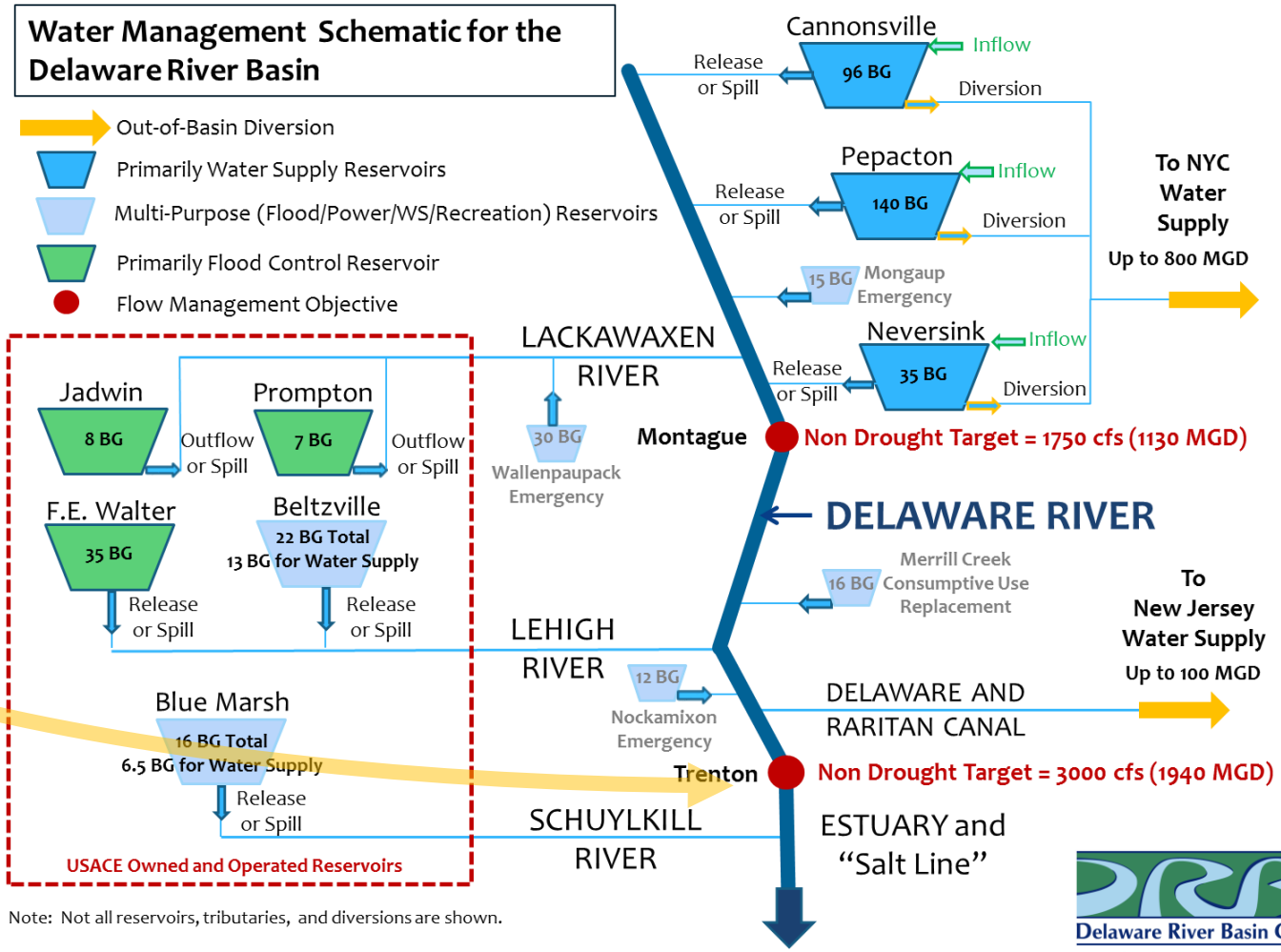
Complex Flow Management



Note: Not all reservoirs, tributaries, and diversions are shown.

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Complex Flow Management

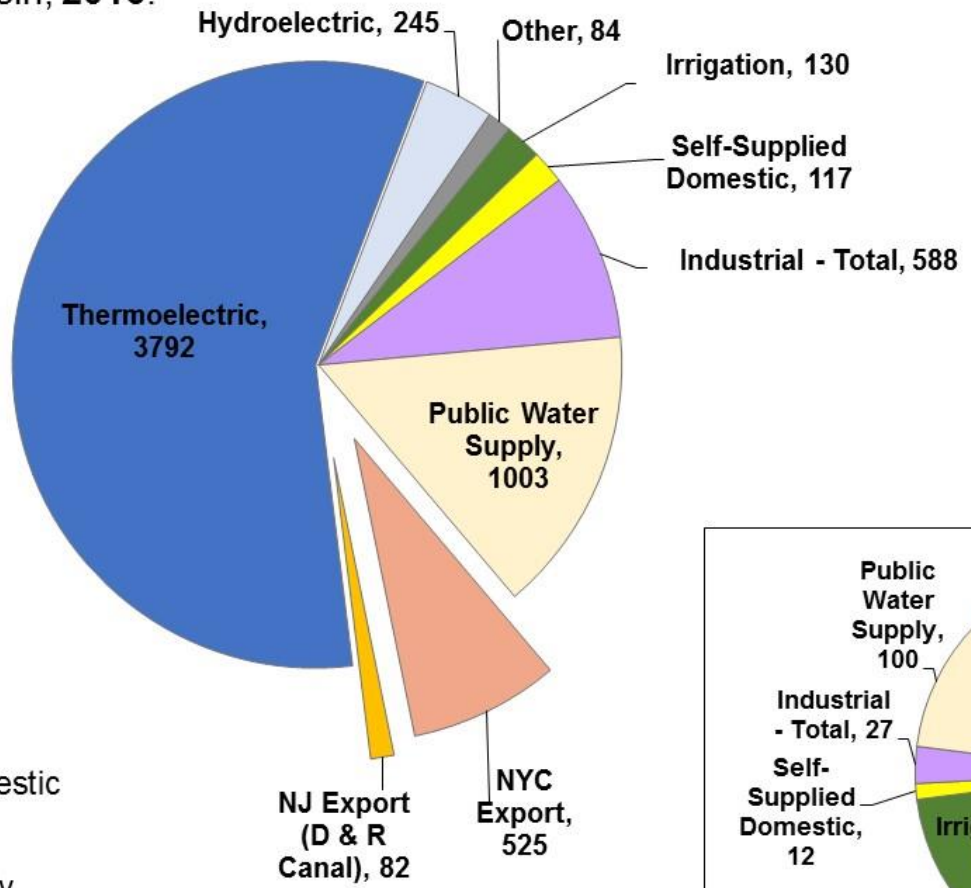


Note: Not all reservoirs, tributaries, and diversions are shown.

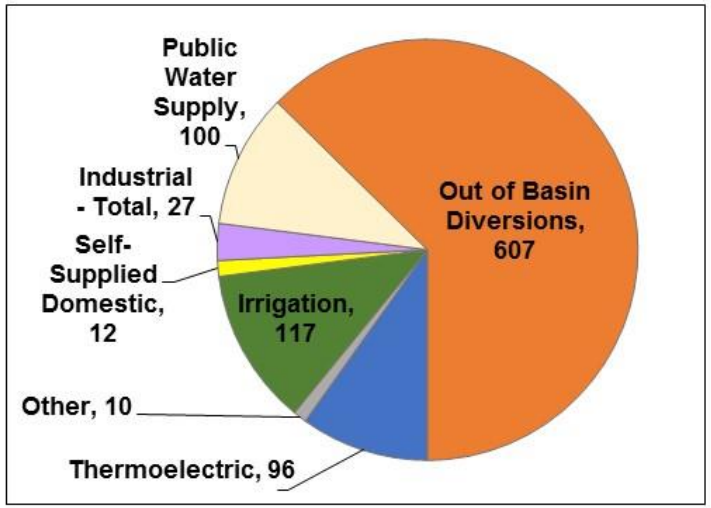
Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Basin Water Use

Total Water Withdrawals (ground and surface) from the Delaware River Basin, **2016**: 6,565 mgd



Consumptive Use and Major Basin Exports: 969 mgd



Consumptive Use:

Water that is withdrawn that is not returned to the surface waters of the basin undiminished

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

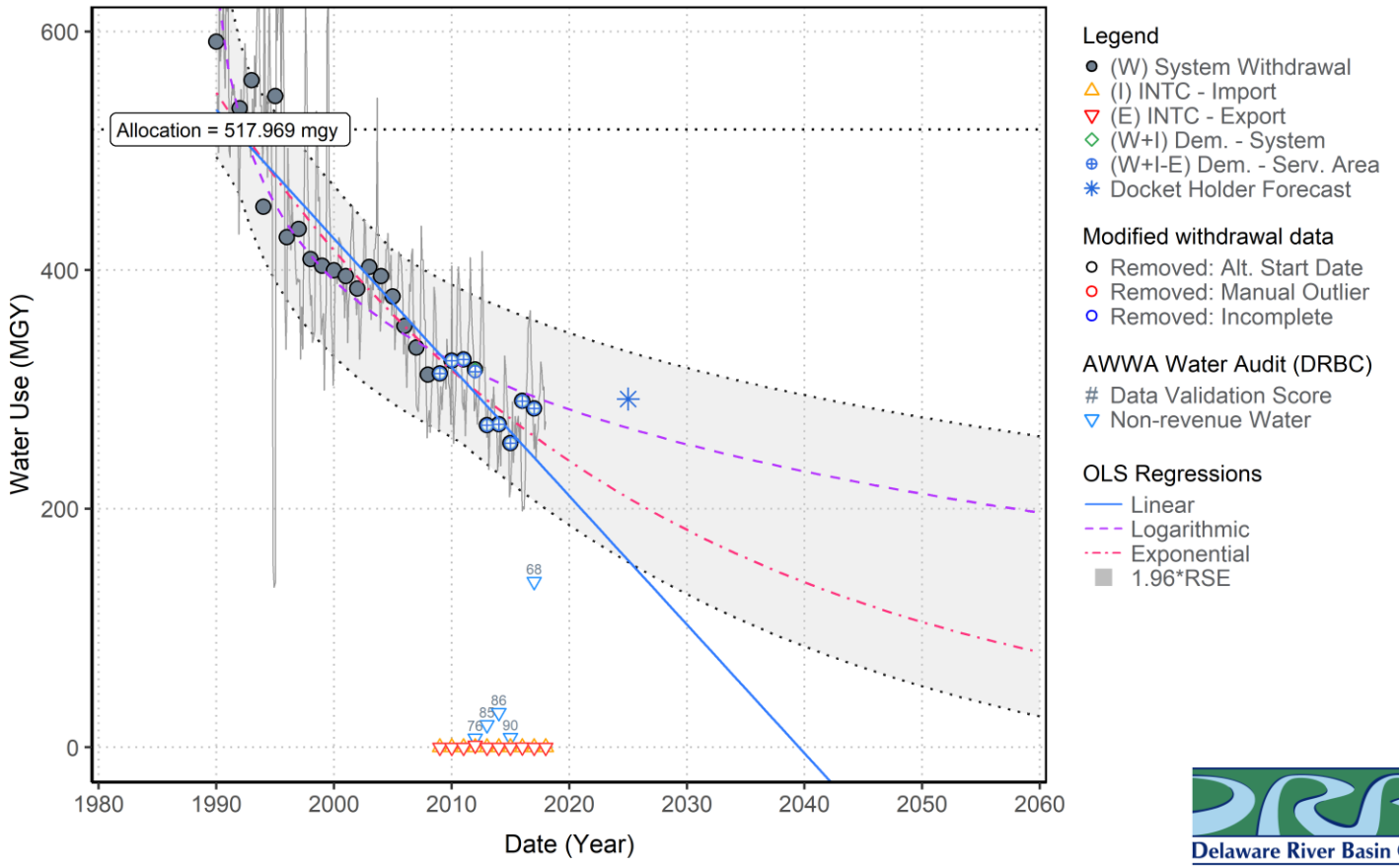
DRBC Water Resources Program

Planning	Operations	Project Review (Regulation)	Science & Water Quality
Sustainable water availability	Flow / reservoir management	Water withdrawals & wastewater discharges	Water quality monitoring
Future water use	Drought management	Imports and exports	Water quality assessments
Water use trends	Salinity control	Flood plain	Emerging contaminants & toxic pollutants
Consumptive water use	Decree parties	Groundwater special protection	Fish consumption
Water efficiency	Hydrologic models	Water quality standards - Interstate Waters	Water quality modeling
Water audits	Water charges	Special protection waters	Designated uses
Climate Change			

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Planning Activities

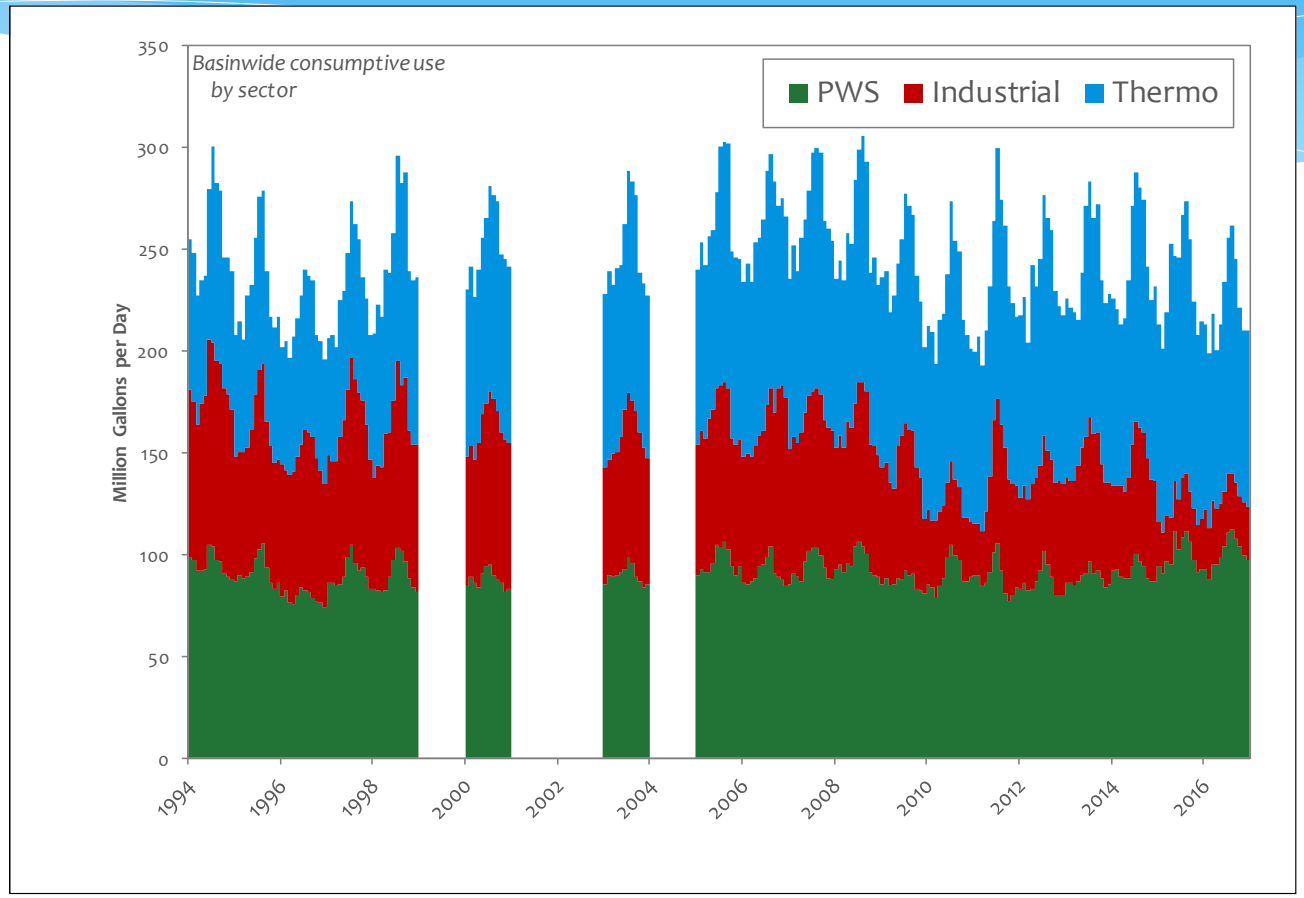
- Sustainable water supply plan
- Future water use projections
- Water use trends
- Consumptive water use
- Water efficiency
- Water audits
- Climate change



Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Planning Activities (cont)

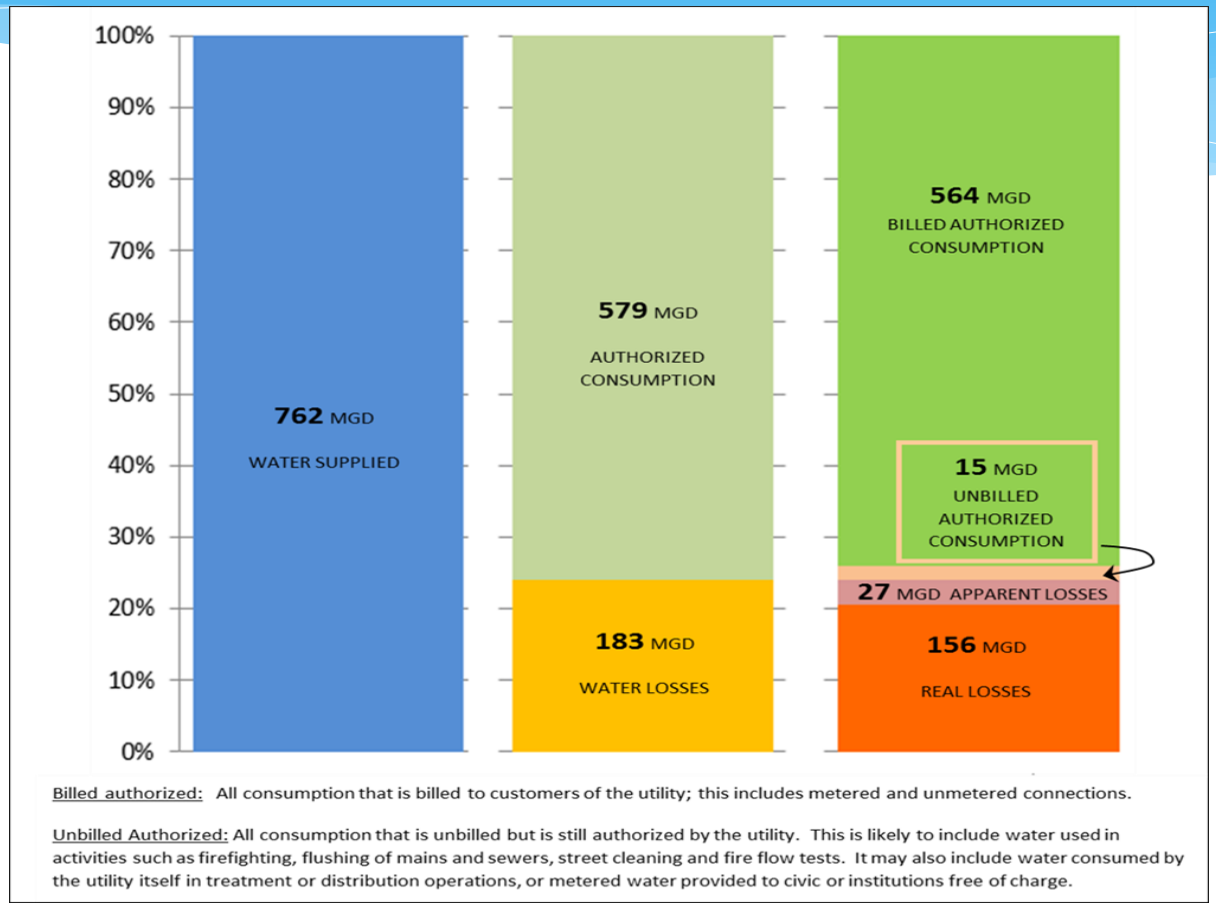
- Sustainable water availability
- Future water use projections
- Water use trends
- Consumptive water use
- Water efficiency
- Water audits
- Climate change



Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

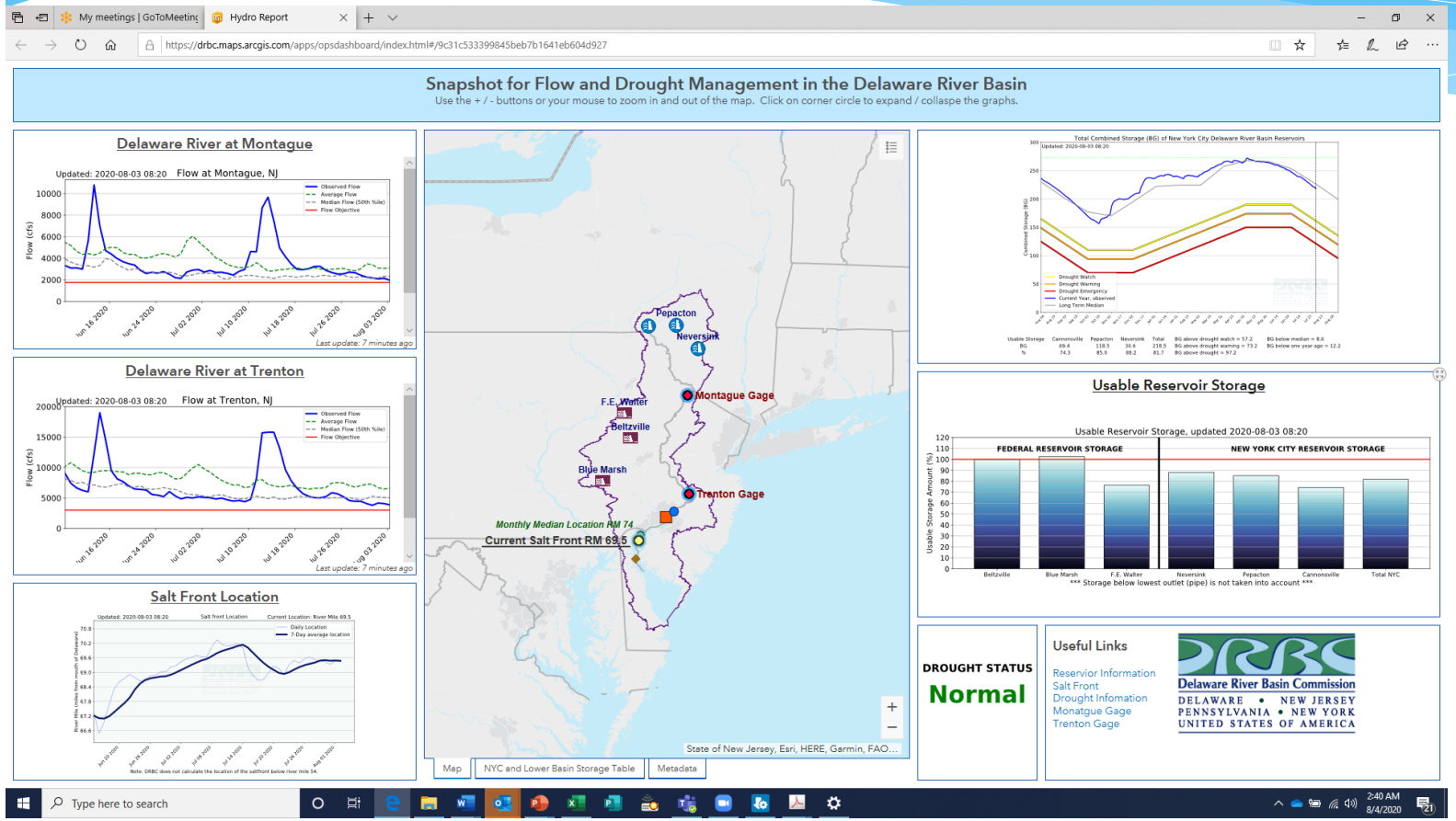
Planning Activities (cont)

- Sustainable water availability
- Future water use projections
- Water use trends
- Consumptive water use
- Water efficiency
- Water audits
- Climate change



Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Operations Activities



- Flow/reservoir management
- Drought management
- Salinity control
- Decree parties
- Hydrologic models
- Water charges
- Climate change

hydrosnap.drbc.net

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Operations Activities (cont)

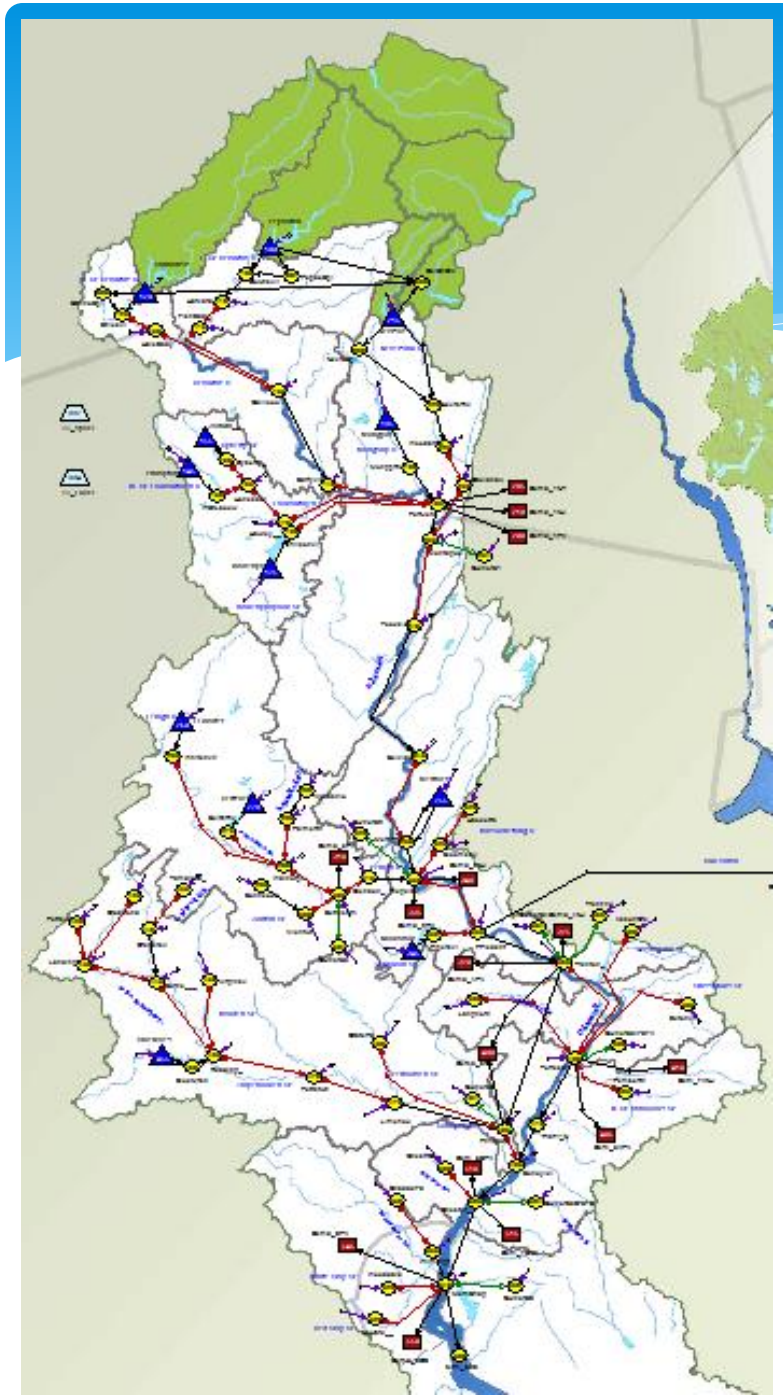
DRBC Advisory/Technical Support

- Regulated Flow Advisory Committee
- Subcommittee on Ecological Flows
- Salinity modeling

- Flow/reservoir management
- Drought management
- Salinity control
- Decree parties
- Hydrologic models
- Water charges
- Climate change

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Operations Activities (cont)



For example:

- ✓ GCMs
- ✓ WATER
- ✓ SWEET
- ✓ HEC-HMS
- ✓ DRB-PST Model (Planning Support Tool)
- ✓ EFDC (3-D)

- Flow/reservoir management
- Drought management
- Salinity control
- Decree parties
- Hydrologic models
- Water charges
- Climate change

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Project Review/Regulatory Activities

- Water withdrawals & wastewater treatment/discharges
- Imports and exports
- Flood plain
- Other projects that may have a substantial effect on water resources of the basin
- Groundwater special protection
- Water quality standards
- Special protection waters

- Dockets - DRBC
- Administrative Agreements (AA) - DE
- One Process One Permit (OP) – NJ, NY

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEPARTMENT OF ENVIRONMENTAL PROTECTION · NEW JERSEY

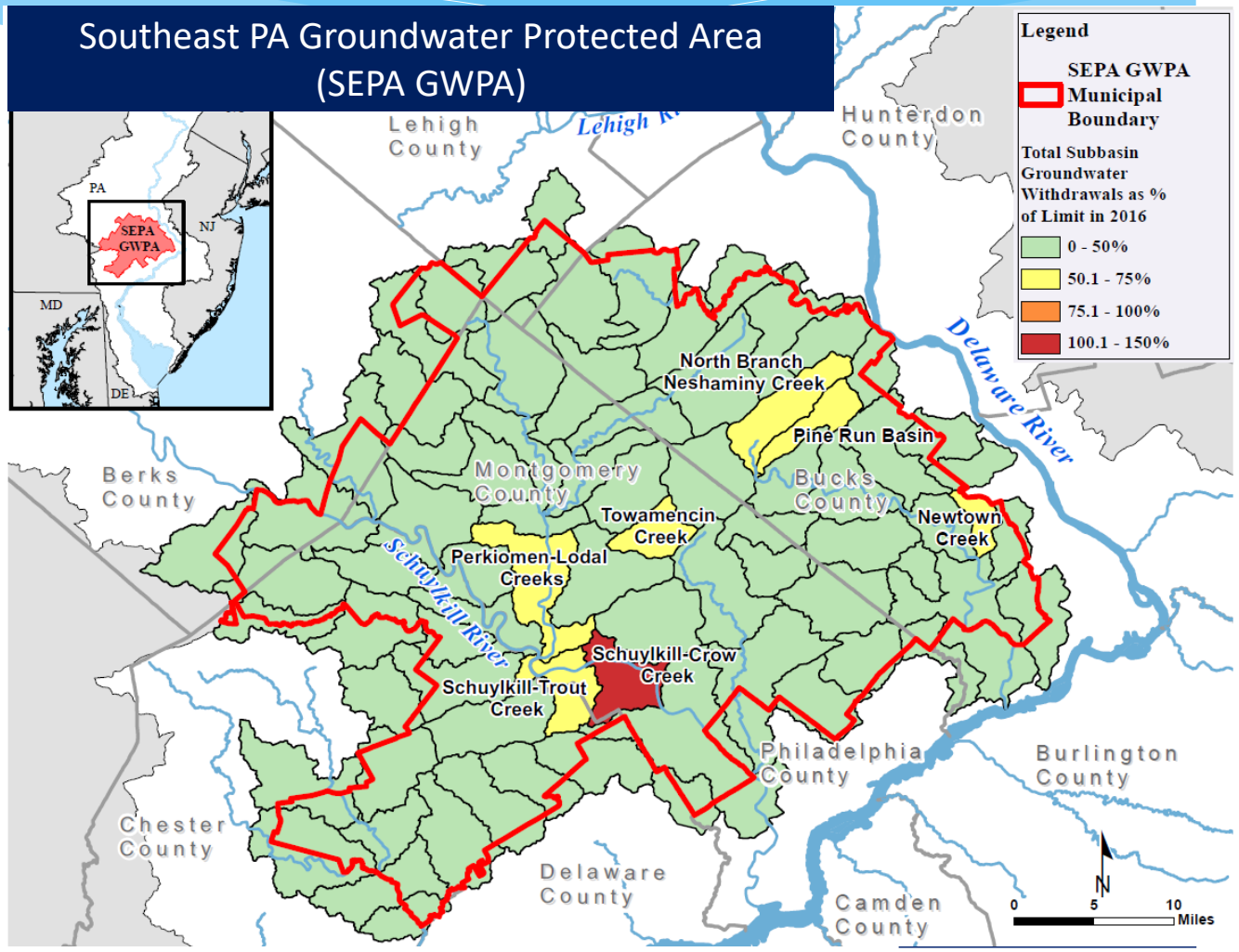
DEPARTMENT OF ENVIRONMENTAL CONSERVATION · NEW YORK STATE

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

DRBC
Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

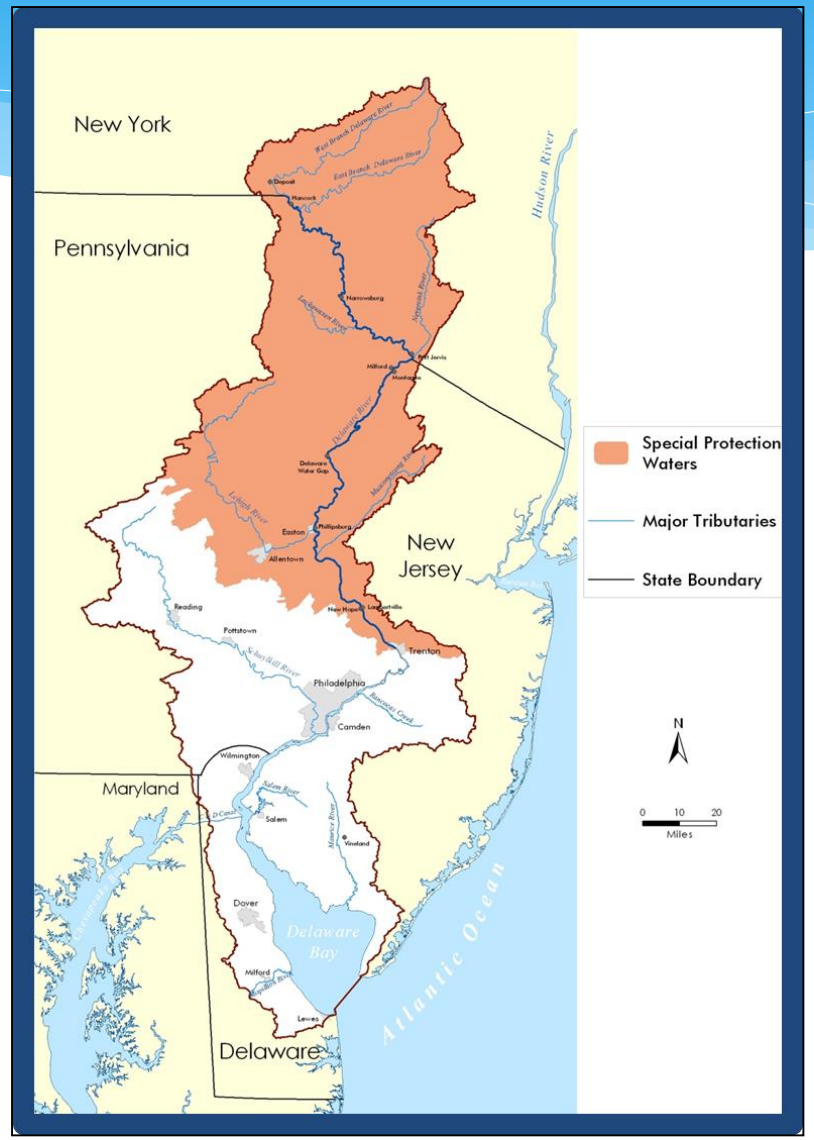
Project Review/Regulatory Activities (cont)

- Water withdrawals & wastewater treatment/discharges
- Imports and exports
- Flood plain
- Other projects that may have a substantial effect on water resources of the basin
- Groundwater special protection
- Water quality standards
- Special protection waters



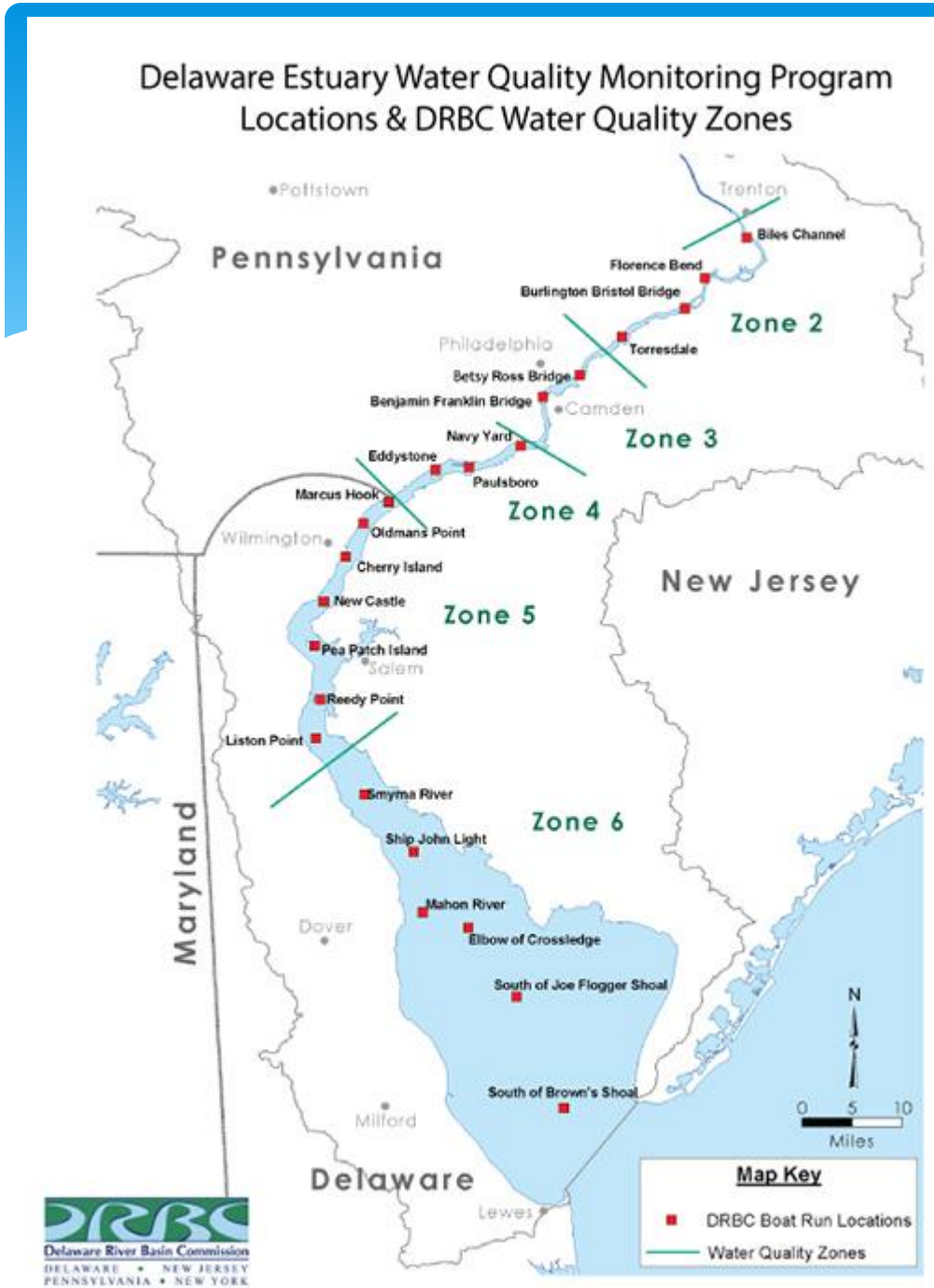
Project Review/Regulatory Activities (cont)

- Water withdrawals & wastewater treatment/discharges
- Imports and exports
- Flood plain
- Other projects that may have a substantial effect on water resources of the basin
- Groundwater special protection
- Water quality standards
- Special protection waters



Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

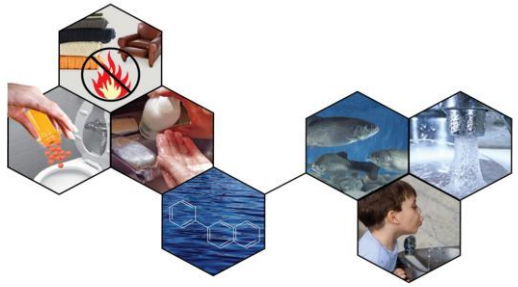
Science & Water Quality Activities

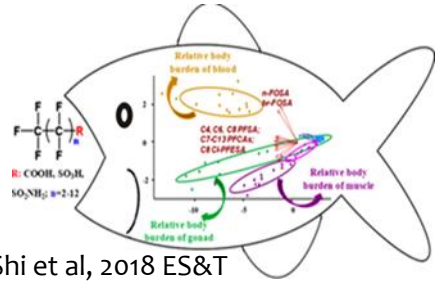


- Water quality monitoring
- Water quality assessments
- Emerging contaminants & toxic pollutants
- Fish consumption
- Water quality modeling
- Designated uses

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

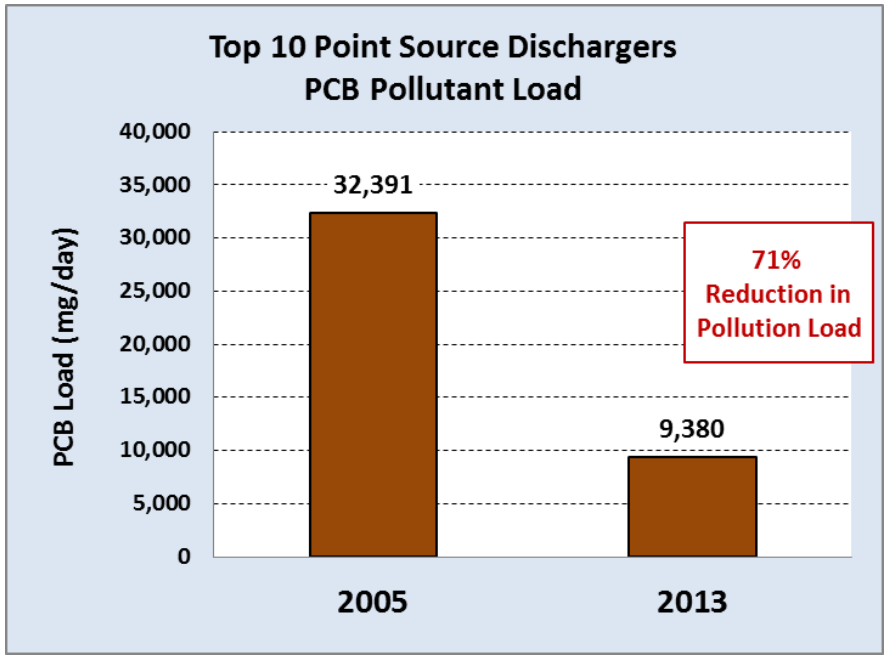
Science & Water Quality Activities (cont)





Shi et al, 2018 ES&T

www.itrcweb.org



- Water quality monitoring
- Water quality assessments
- Emerging contaminants & toxic pollutants
- Fish consumption
- Water quality modeling
- Designated uses

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Science & Water Quality Activities (cont)

No Measurable Change (NMC) water quality model for Special Protection Waters

Acute mixing zone/dilution factors

Heat dissipation areas

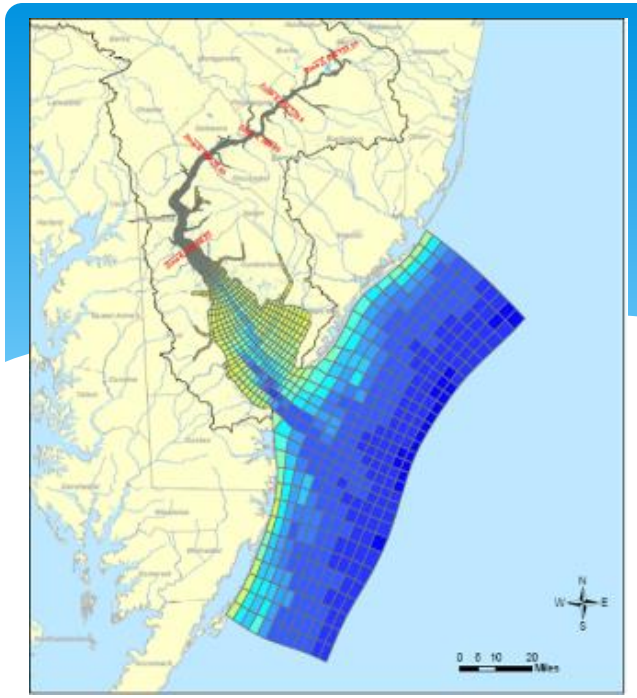
TDS mixing zones

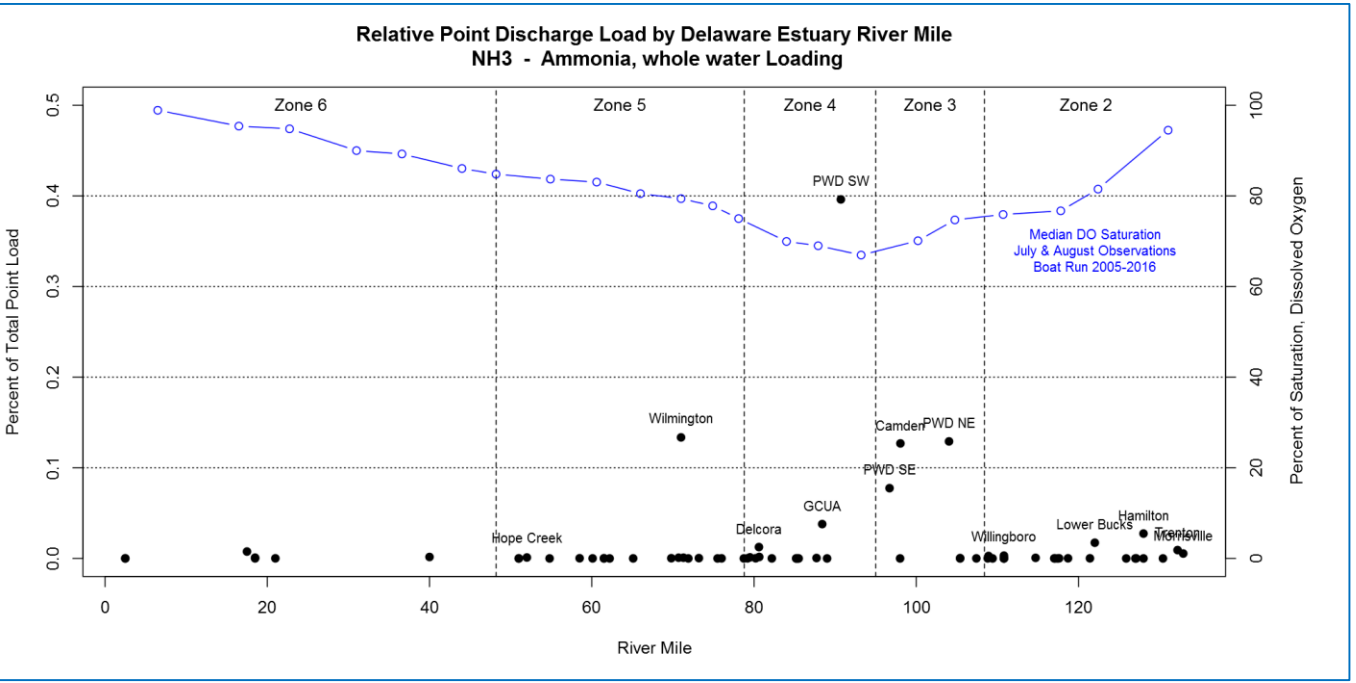
Daily spill modeling for emergency response

- Water quality monitoring
- Water quality assessments
- Emerging contaminants & toxic pollutants
- Fish consumption
- Water quality modeling
- Designated uses

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Science & Water Quality Activities (cont)



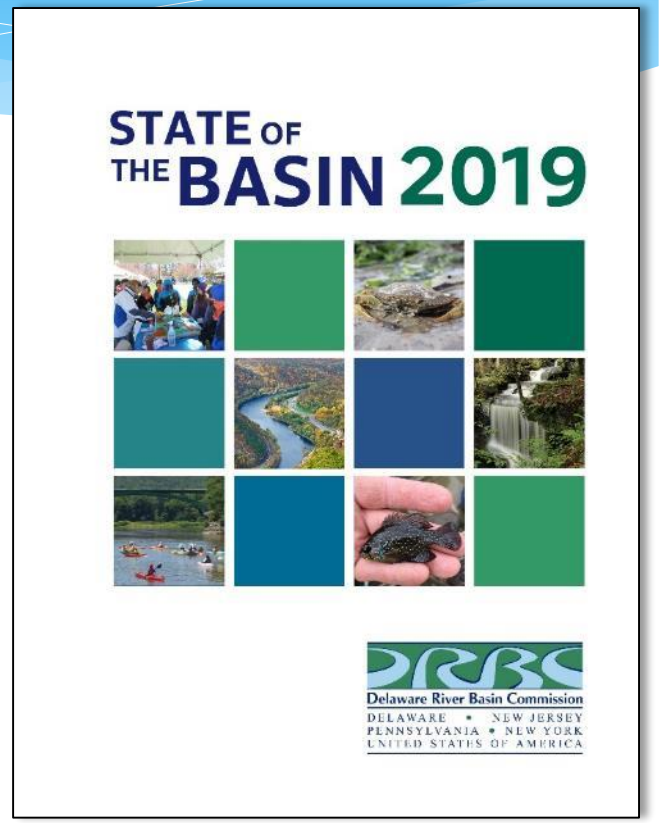


- Water quality monitoring
- Water quality assessments
- Emerging contaminants & toxic pollutants
- Fish consumption
- Water quality modeling
- Designated uses

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Stakeholder and Public Input, Outreach Expertise and Collaboration

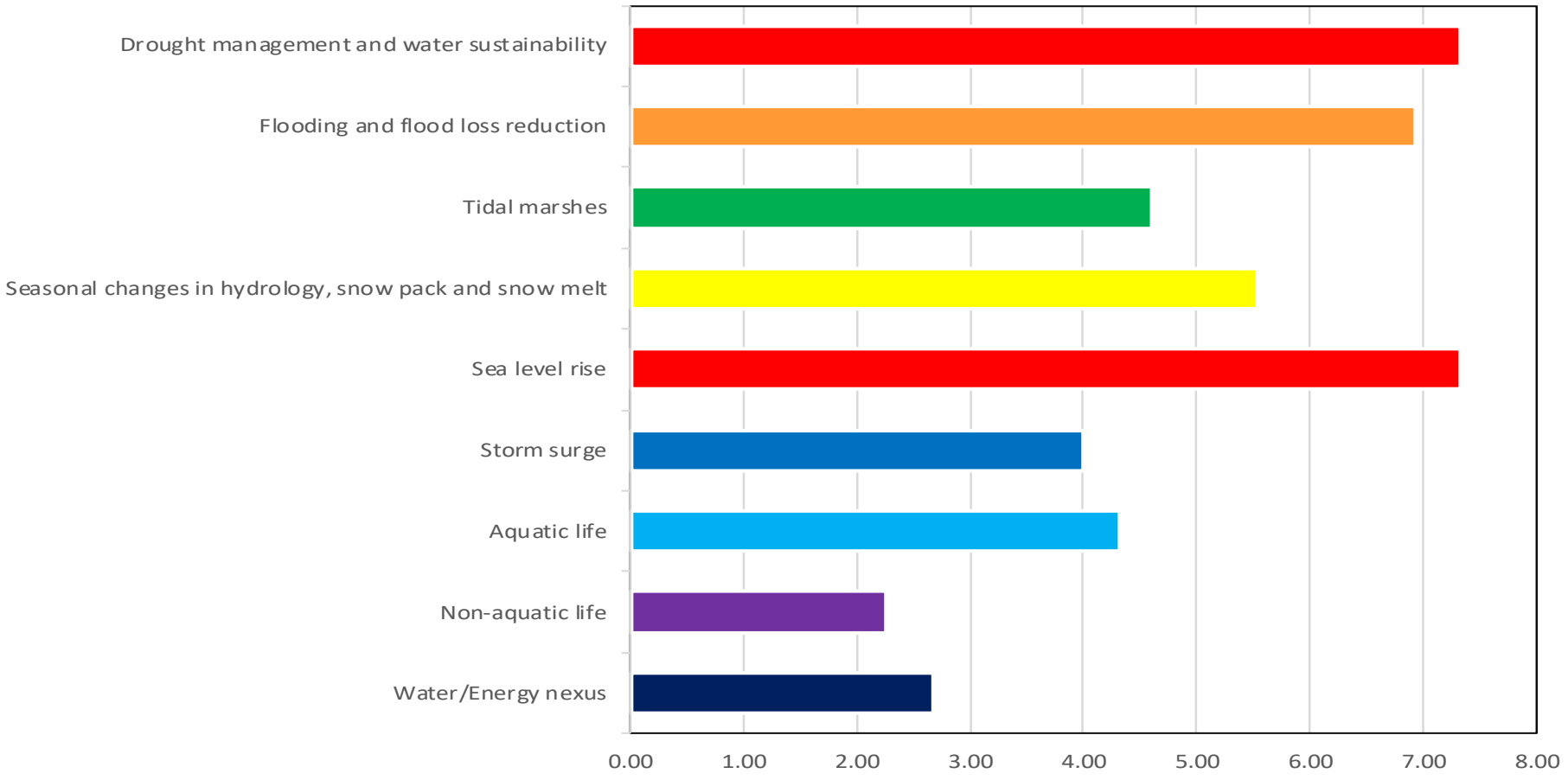
- Public input, engagement, partnership, and outreach
- Science, engineering, planning and input through Advisory Committees on:
  - ✓ Water Quality
  - ✓ Water Management
  - ✓ Toxics
  - ✓ Monitoring
  - ✓ Regulated Flow
  - ✓ Floods
  - ✓ Climate Change (ACCC)



Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Question to new ACCC members?

When considering the following climate change impacts and issues, please force rank what you believe the priorities should be for the DRBC in terms of water resources management.



Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA