

# Delaware River Basin Commission

## 简报

Briefing for

中华人民共和国水利部

Ministry of Water Resources of  
the People's Republic of China

2019年11月21日

Nov. 21, 2019

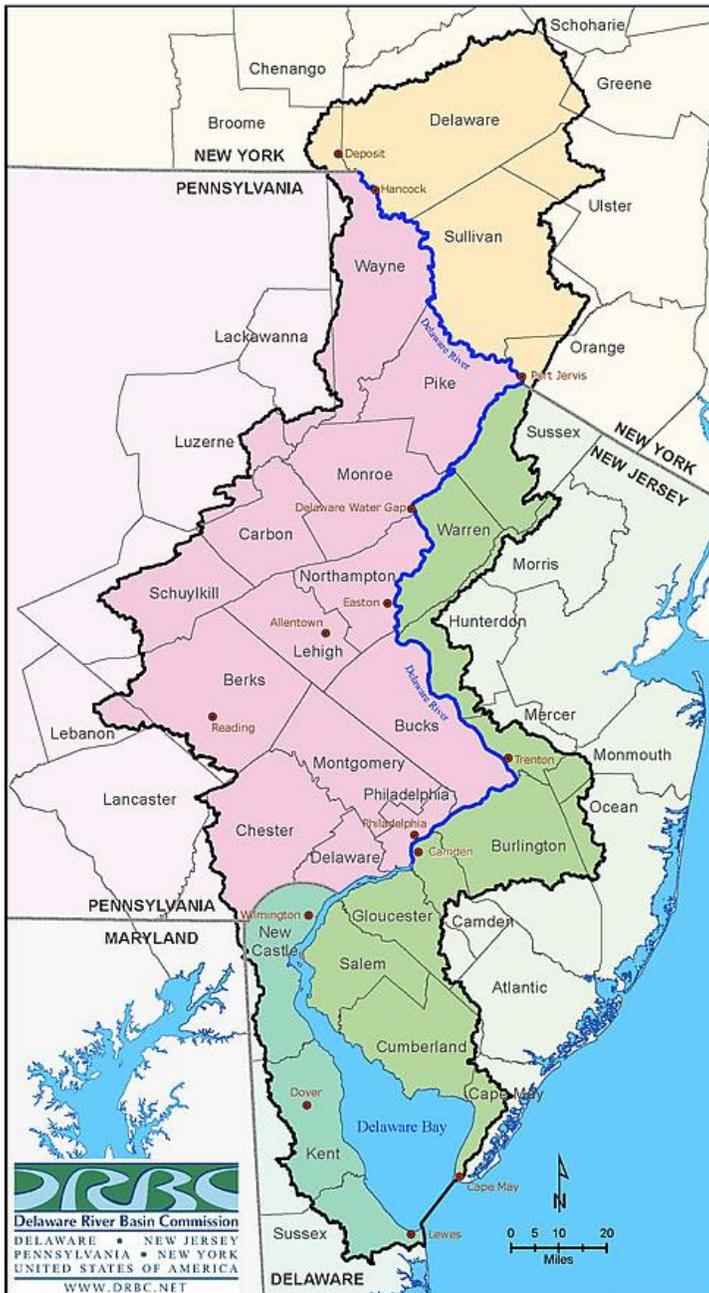


Photo courtesy of the U.S. Army Corps of Engineers



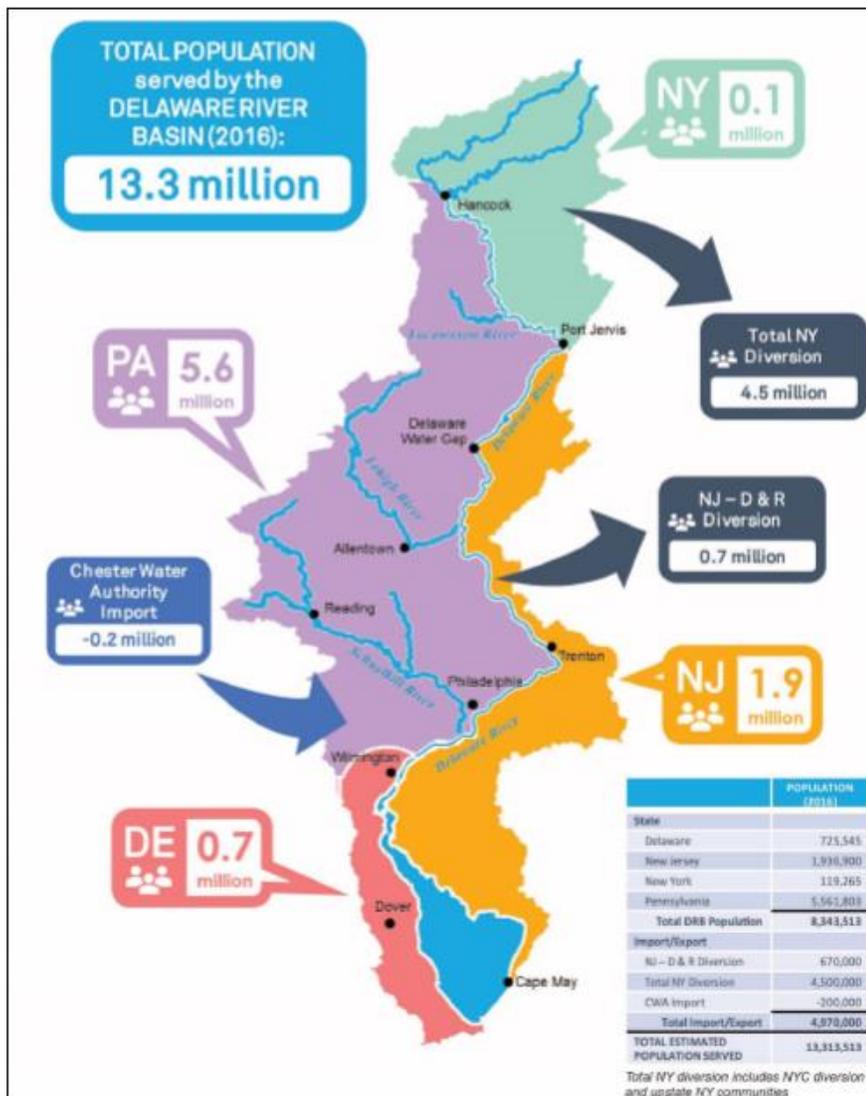
# The Delaware River

- 531 Kilometers long.
- Interstate boundary its entire length.
- Longest, un-dammed U.S. river east of the Mississippi (dams are located on tributaries, not the main stem Delaware).
- Tidal to Trenton, NJ.



# The Delaware River Basin

- ~13 million people (about 5% of the U.S. population) rely on its waters
- Provides half the drinking water to NYC
- Drains 35066 square kilometers of watershed in 4 states.
- 24.2 billion liters are withdrawn every day



# The Delaware River “Today”



Photo: Delaware River Sojourn



Photo: Nicholas A. Tonelli



Photo: Aqua Vida



Photo: Delaware River Sojourn



# It Used to Look Like...



*Slaughterhouses discharging in 1928  
(courtesy of PWD Historic Collection)*



*Bridgeport Canal up from Schuylkill River in 1928.  
(courtesy of PWD Historic Collection)*

# And Sometimes It Looked Like...



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



*Delaware River at Trenton in 1965  
(DRBC photo)*

EDITORIAL PAGE  
**PHILADELPHIA RECORD**

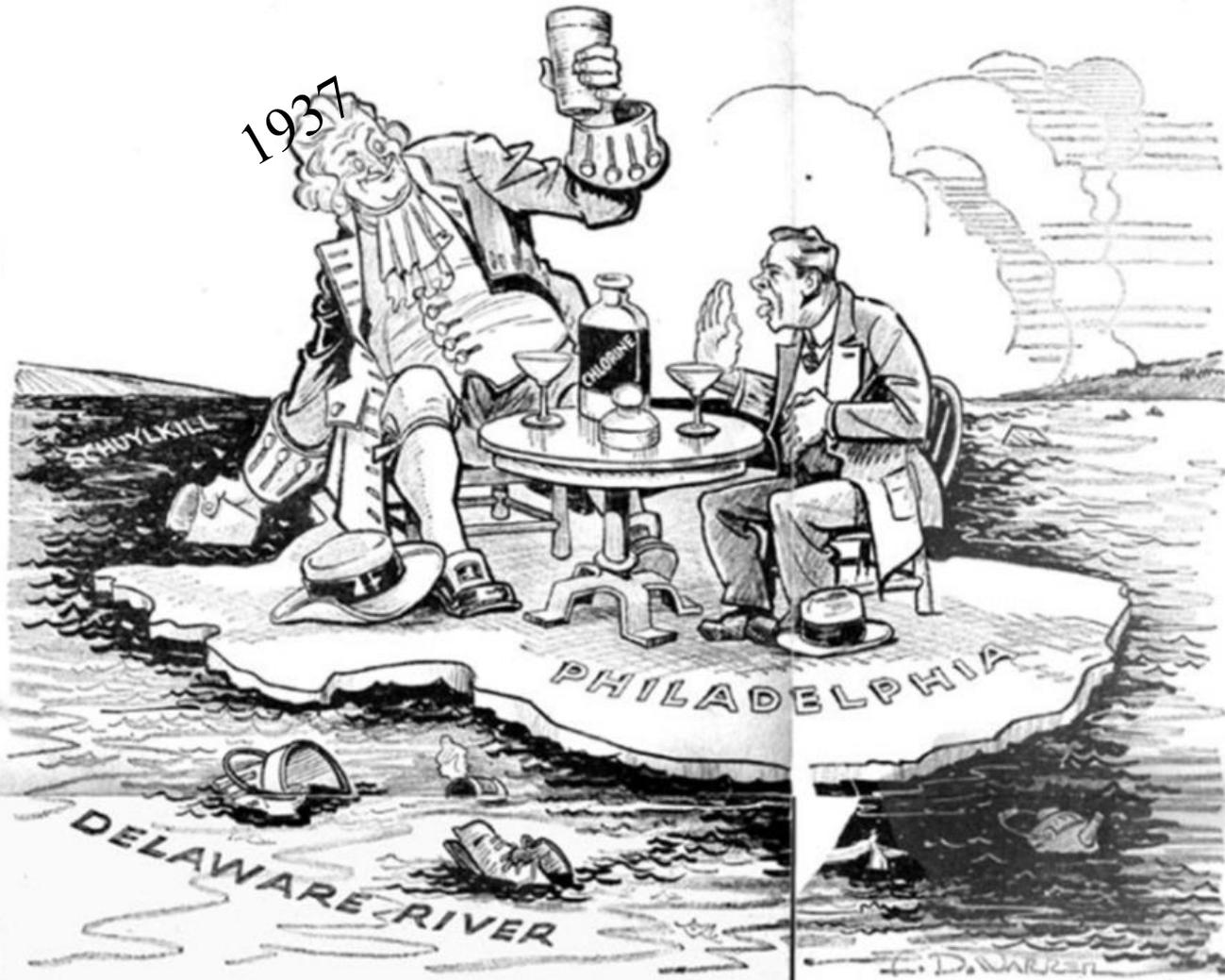
The War in Outline :: America Speaks :: Travel

SUNDAY, MARCH 14, 1937

Screen :: Stage :: Music :: Art :: Radio :: Puzzles

**WATER, WATER EVERYWHERE, BUT NOT A DROP FIT TO DRINK.**

1937

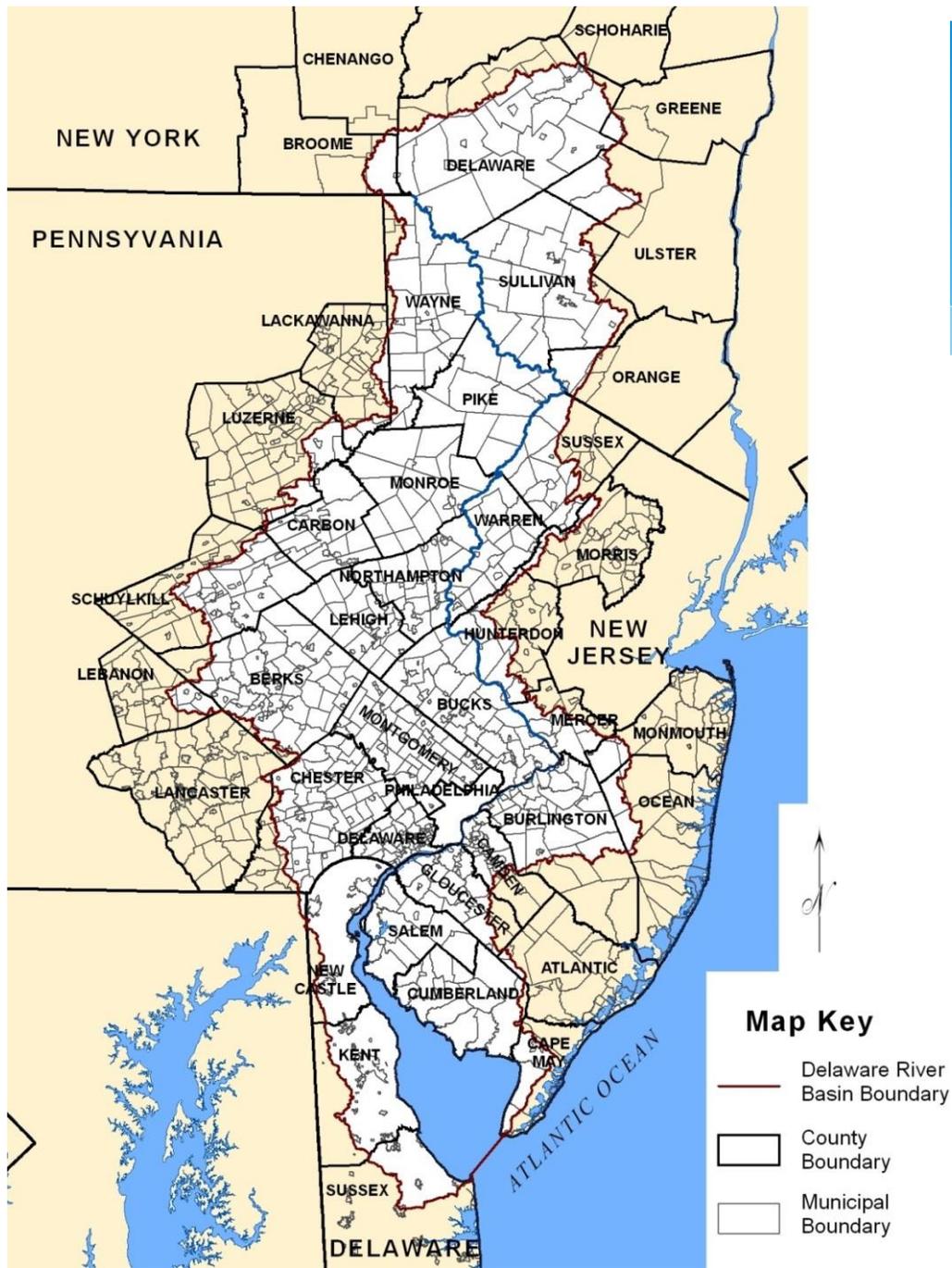


# The Problems

- 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

# The Challenge

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



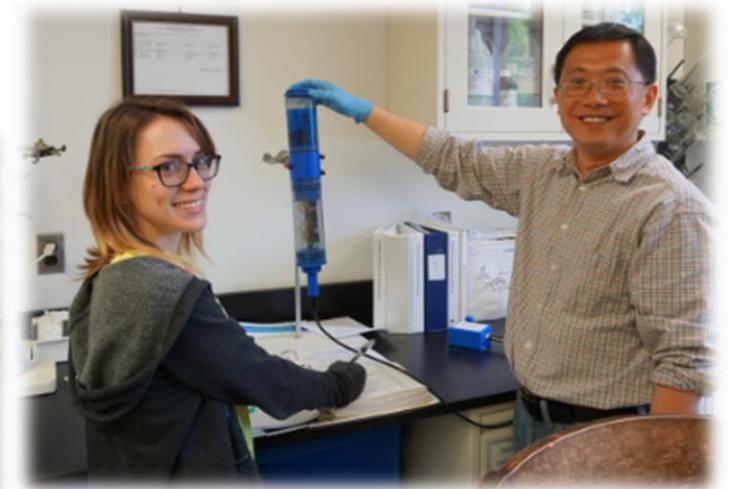
# The Solution: The Delaware River Basin Commission

1961 – President Kennedy and the four Basin State Governors sign the Delaware River Basin Compact, the federal/state law that formed the Delaware Basin Commission (DRBC)



# DRBC Staff and Budget

- Professional Planners, Engineers and Scientists
- 39 Budgeted Staff (12% Vacancy Rate)
- FY2019 Budget = \$6.3 million
- Funding from “Signatory Members” = \$1.7 M (27%)
- Located in West Trenton, NJ since 1974



# Compact Designated Responsibilities

## Create a Comprehensive Plan

- Flood damage (and drought) reduction
- Ground and surface water supply development
- Propagation of fish and game
- Related watershed projects
- Recreational facilities
- protection to fisheries...;
- Hydroelectric power development
- Control of movement salt water;
- Abatement and control of surface water pollution;

and the regulations towards the attainment of these goals

# DRBC Core Responsibilities

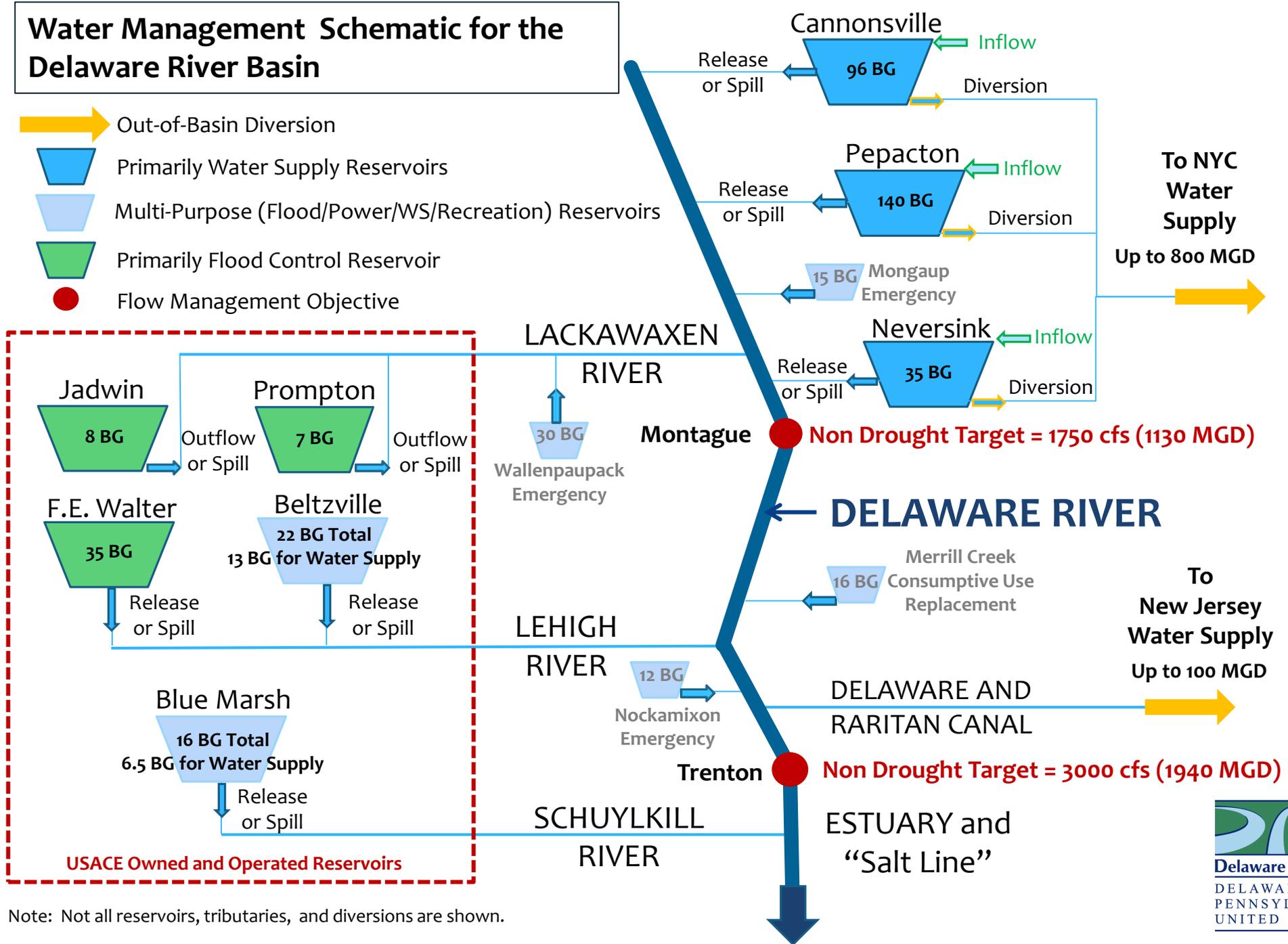
- **FLOW** - An adequate and sustainable supply of water.
- **QUALITY** - Clean and healthy water resources.



*View from Bowman Hill Tower by Linda Park*

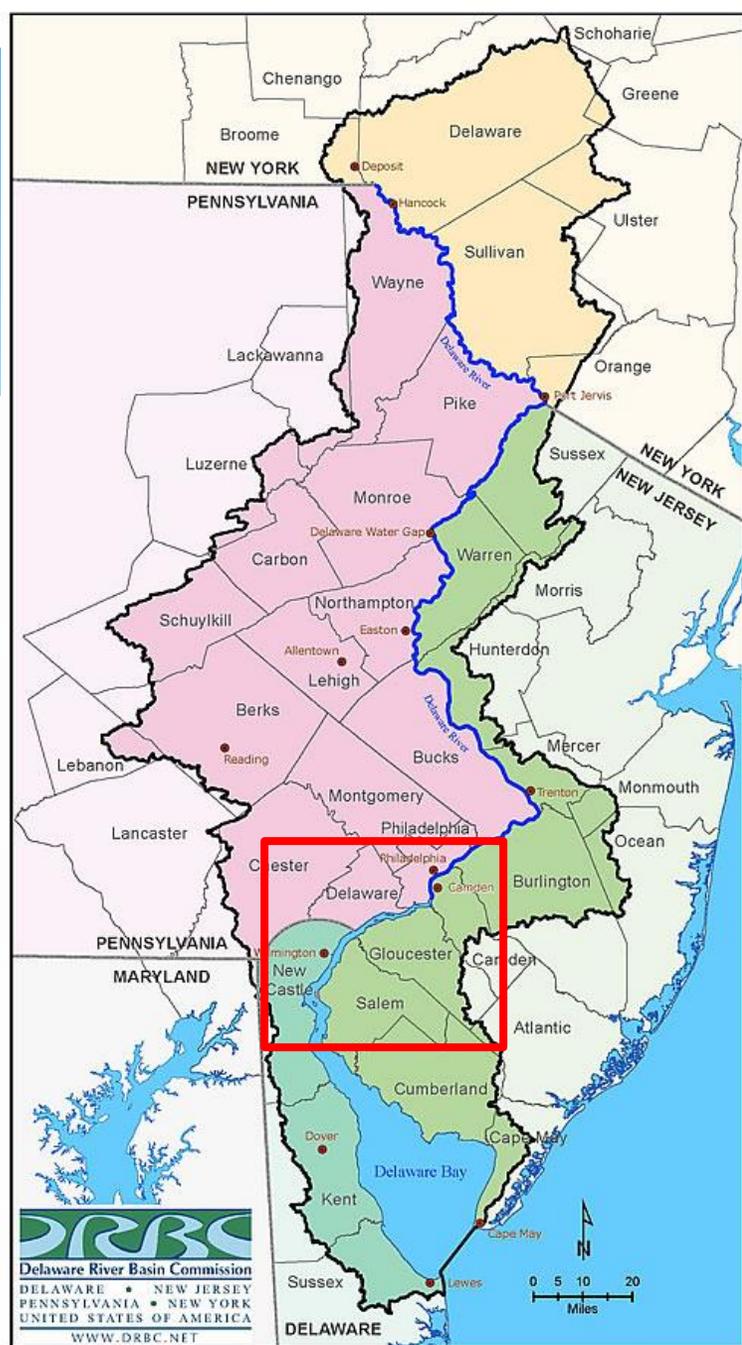
# Water Management Schematic for the Delaware River Basin

-  Out-of-Basin Diversion
-  Primarily Water Supply Reservoirs
-  Multi-Purpose (Flood/Power/WS/Recreation) Reservoirs
-  Primarily Flood Control Reservoir
-  Flow Management Objective



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





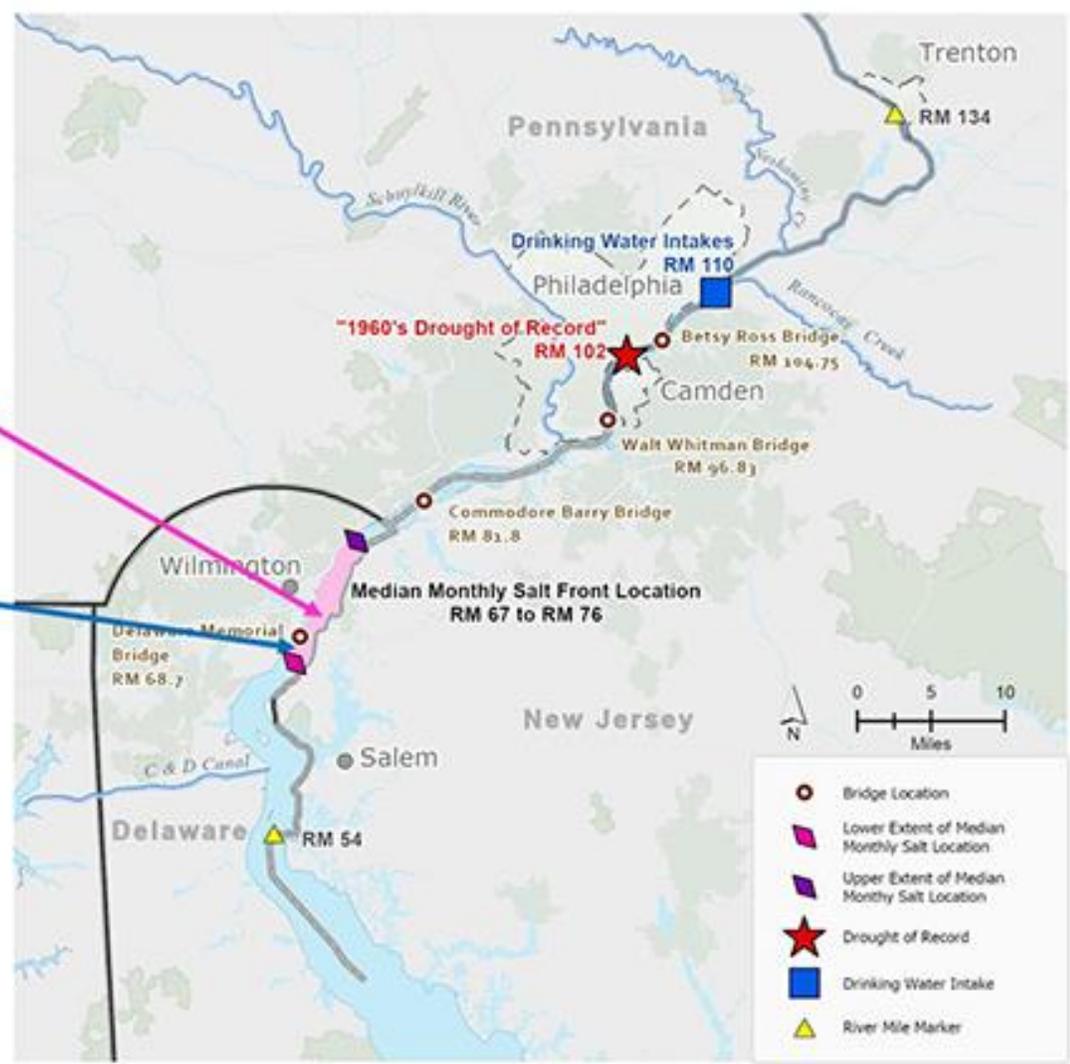
# Salt Line Location: November 18, 2019

**Normal November  
Location:  
RM 70**

**11/18/2019  
Location:  
RM 68**

**Median Monthly Salt Front Locations**

January	69
February	71
March	70
April	67
May	68
June	69
July	70
August	74
September	76
October	72
November	70
December	69





# Water Quality

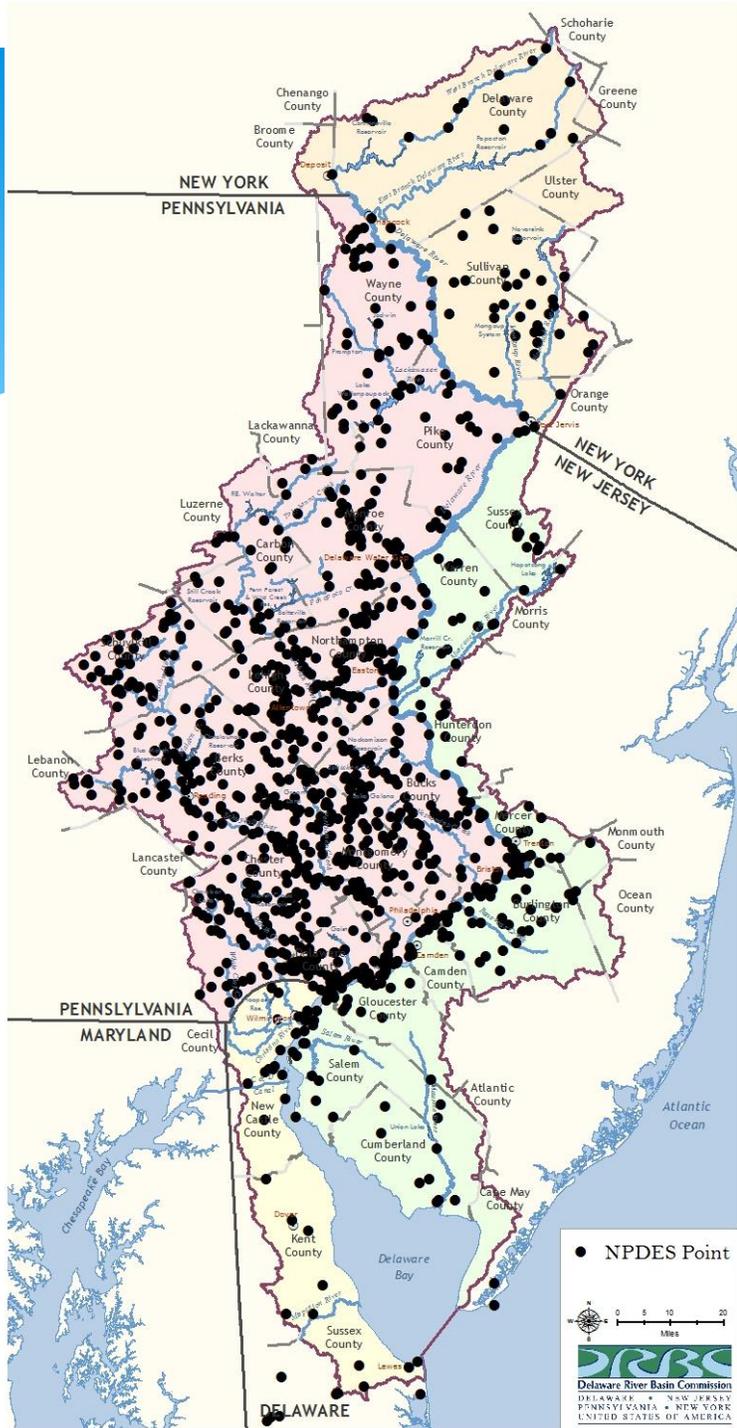


*Fish kill on the Delaware from oil spill in 1929  
(courtesy of Temple Archives)*



*Plastic Pollution*

# NPDES Dischargers in DRB



- NPDES = National Pollutant Discharge Elimination System: Requires Permit to discharge
- Set effluent limits and monitoring requirements in the permit
- 1,164 active discharge permits in Delaware River Basin

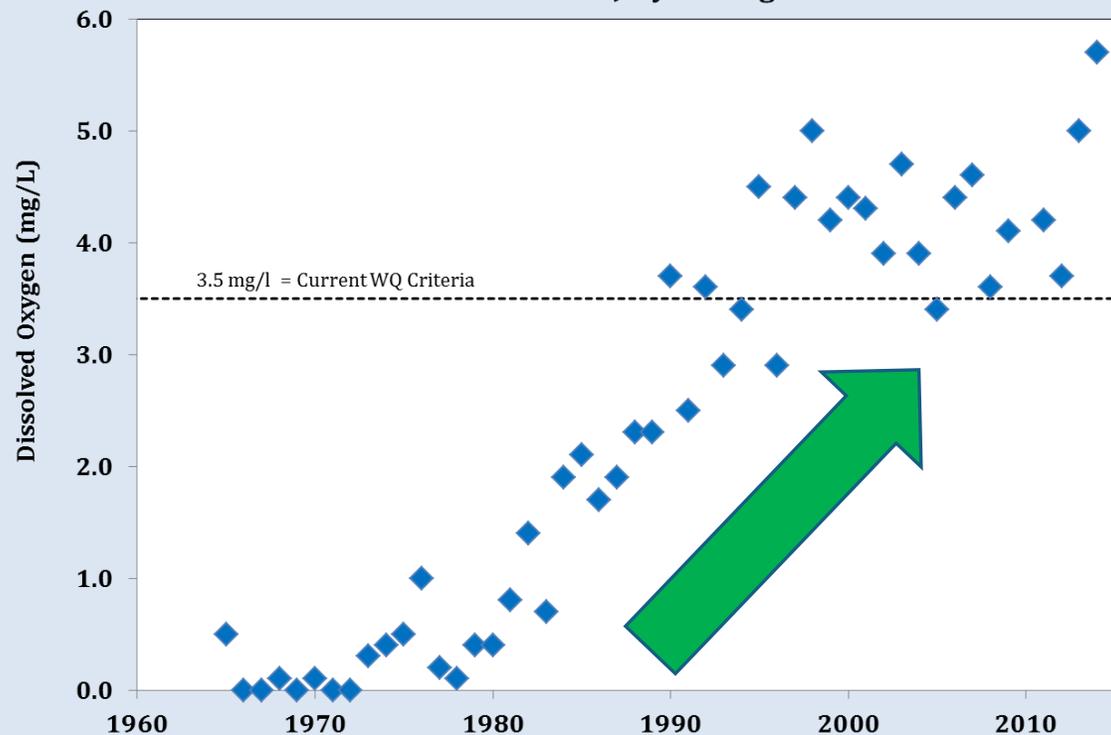
# DRBC Collaborative Results

## Aquatic Life Benefits



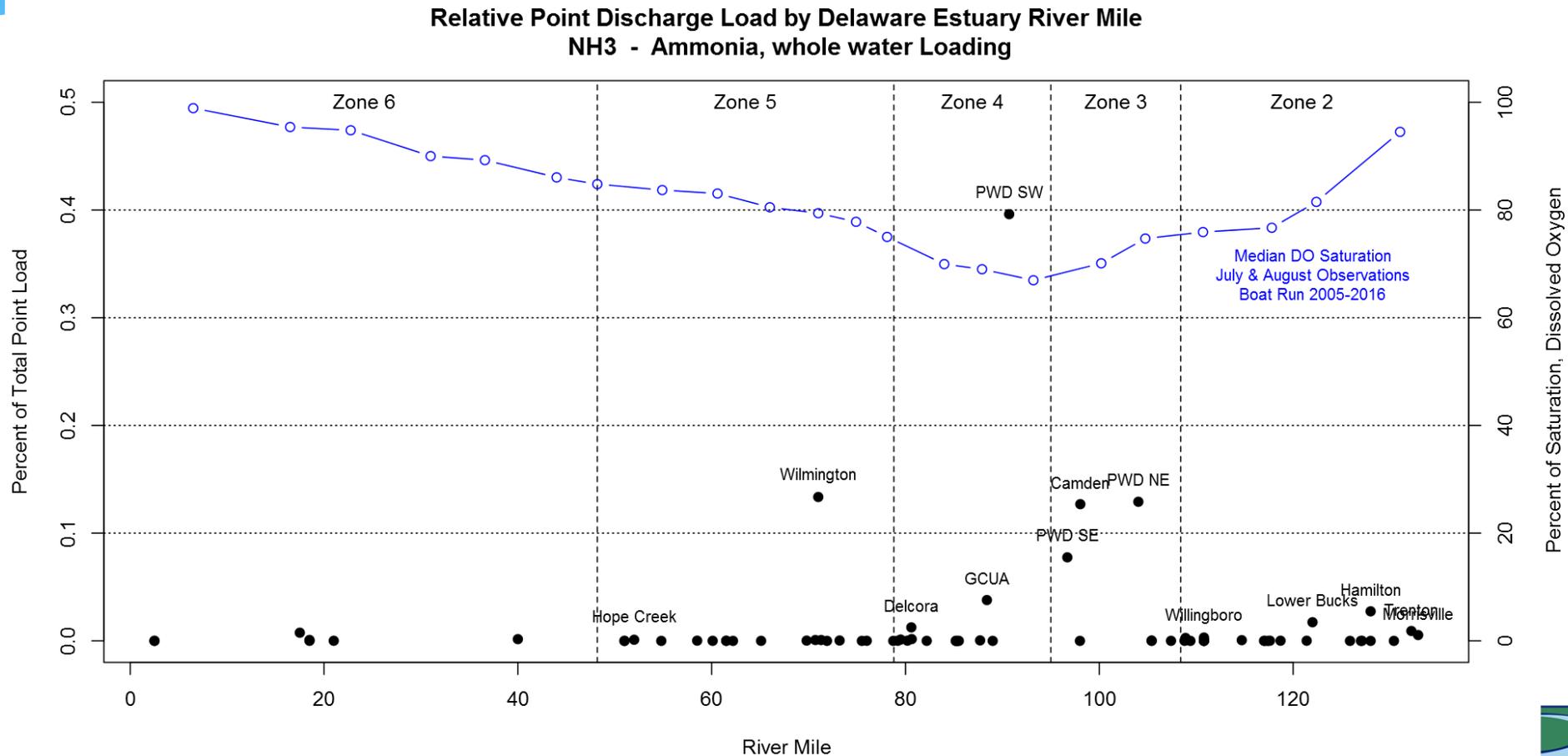
Fisheries.noaa.gov

**Delaware River Dissolved Oxygen  
@ River Mile 100/ Ben Franklin Bridge  
Minimum of all July Averages**



- **A dead zone in the Estuary restored.**
- Significant improvement in dissolved oxygen.

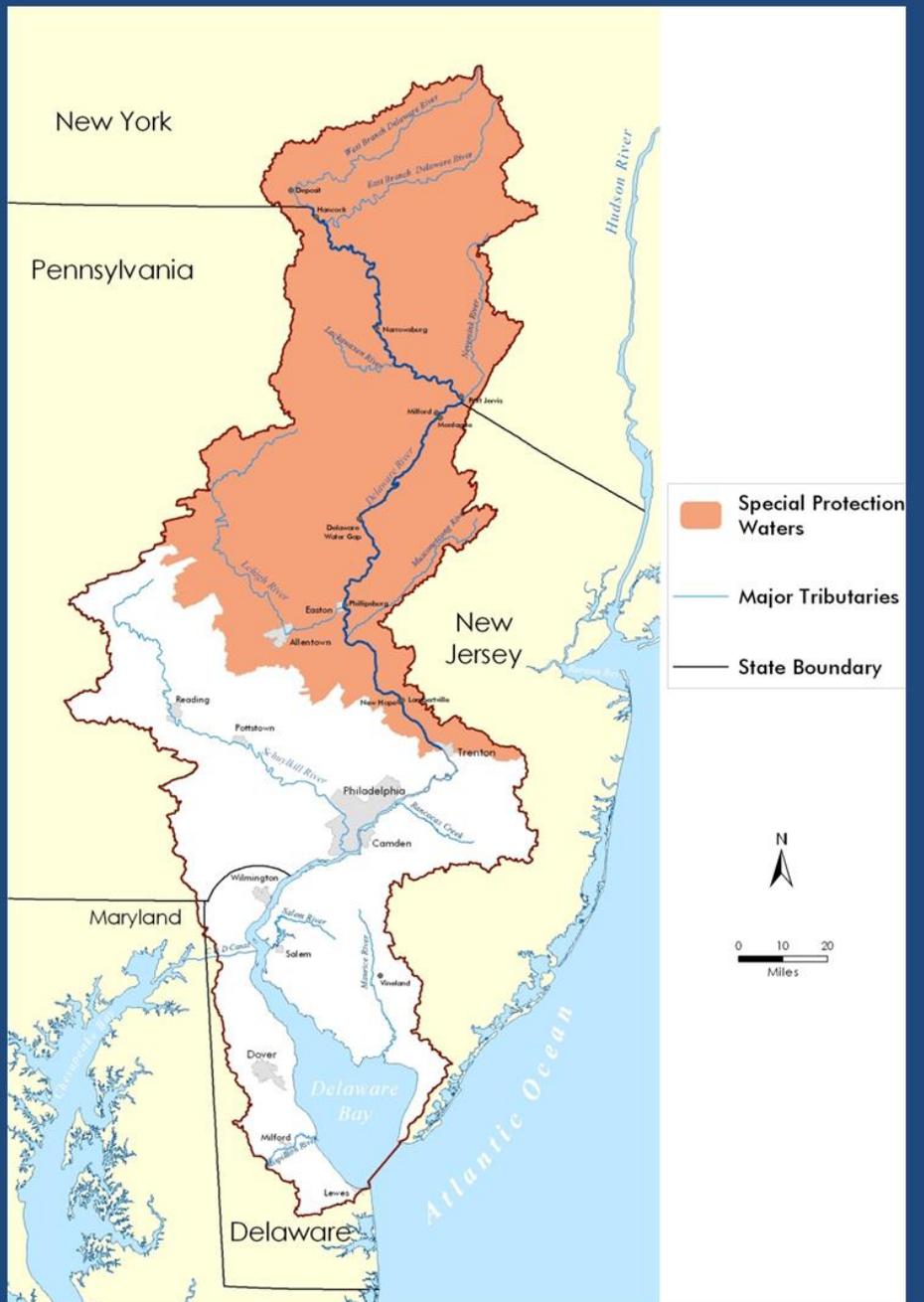
# Delaware Estuary DO "Sag"



The Dissolved Oxygen "sag" in the Estuary is primary influenced by point source discharges

# Special Protection Waters

## Keeping Clean Waters Clean



- Entire basin upstream from Trenton
- Believed to be the longest anti-degradation reach in the US.
- It's more beneficial to “keep the clean waters clean” than to allow them to become degraded and attempt to restore them later.

# Other Challenges

## What's in our waters?

- PFAS
- Microplastics
- PCBs
- Other Contaminants of Emerging Concern

## Climate

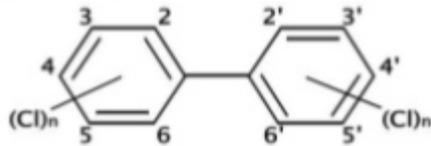
- Precipitation
- Temperature
- Sea Level Rise

## Can we Swim in it?

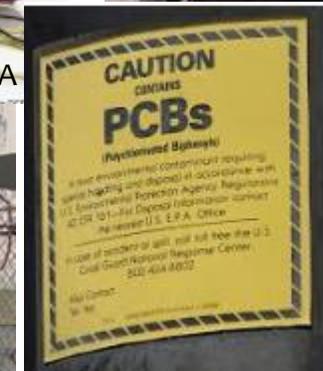
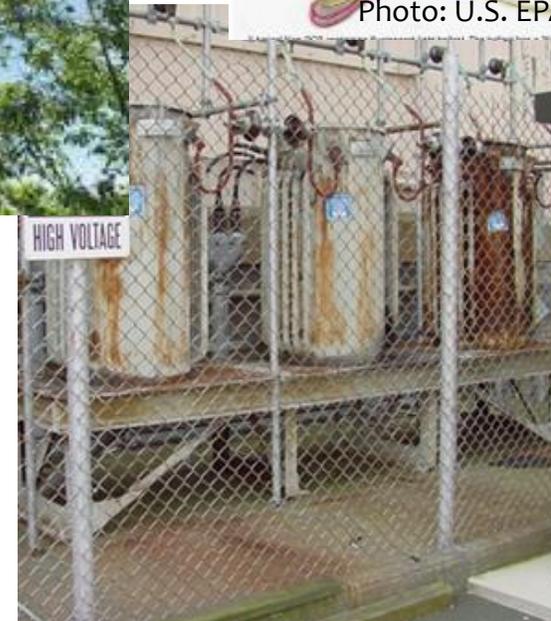


*Frozen Stemware on the Flat Brook by Evan Kwityn*

# Polychlorinated Biphenyls (PCBs)

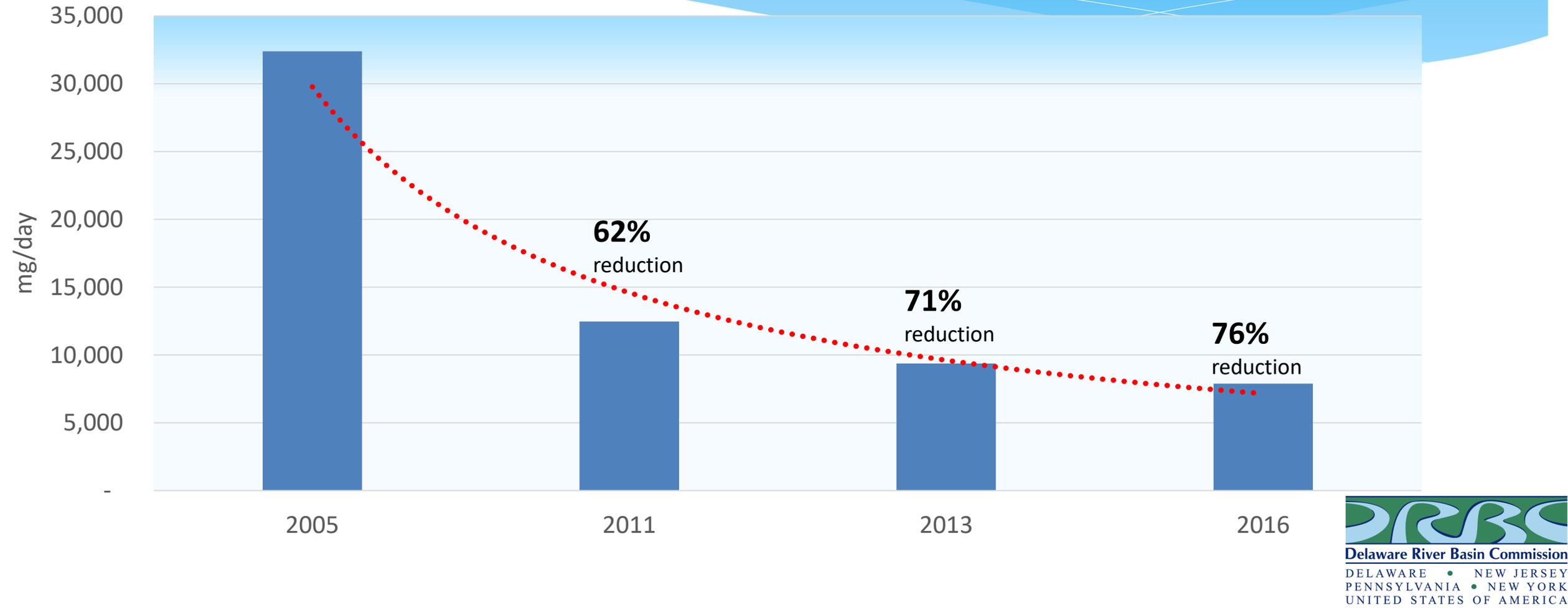


- Man-made organic chemicals
- Industrial and commercial applications
  - Electrical insulating
  - Flame retardant
- Banned in 1979
- Possible human carcinogen
- Not water soluble



# PCB Loadings

## Top Ten Point Source Dischargers mg/day





# Microplastics

**Small plastic pieces** less than five millimeters long which can be harmful to our ocean and aquatic life.

- Primary microplastics include microbeads which were commonly found in health care products like face washes and toothpastes.
- Secondary microplastics occur when larger pieces of plastic like bottles and fishing line break down through photodegradation.



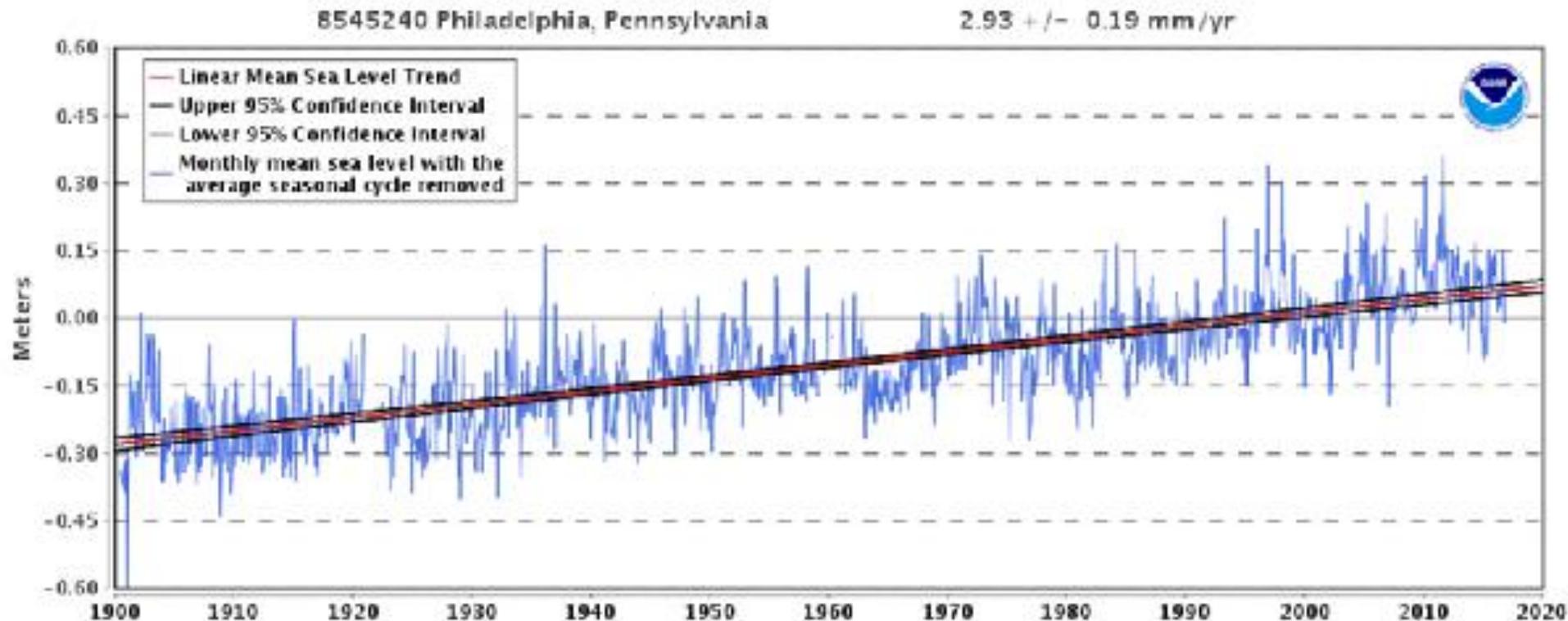
*University of Delaware*

# Climate Change

- More warm extremes and fewer cold extremes
- Heavy rains become more intense
- More frequent dry spells
- Rising sea level with increased frequency and intensity of coastal flooding

# Sea Level Rise

**“Regional Sea Level Change Projections:** It is very likely that in the 21st century and beyond, **sea level change will have a strong regional pattern**, with some places experiencing significant deviations of local and regional sea level change from the global mean change.” -IPCC 2013



## NOAA Mean Sea Level Trend, Philadelphia:

- 2.93 mm/year (1/10 inch/year)
- 11.5 inches/century



**Delaware River Basin Commission**

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PENNSYLVANIA • NEW YORK  
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*Managing, Improving and  
Protecting Our Shared Water  
Resources since 1961*