

# Delaware River Basin Commission

## Recreational Uses & Criteria in the Delaware River

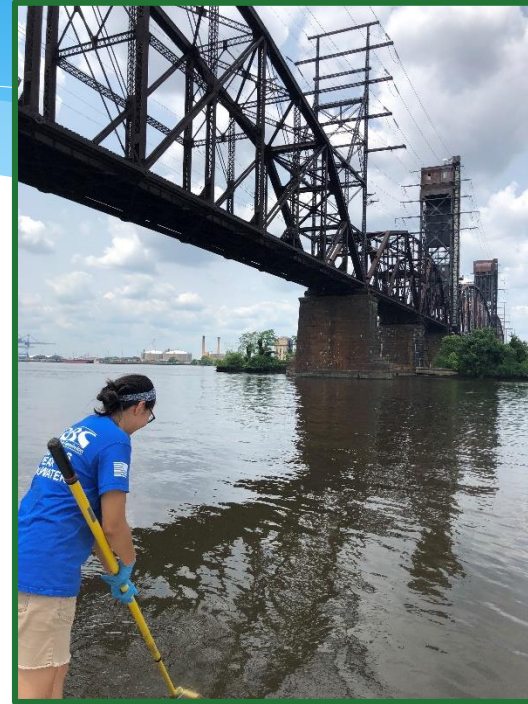
### Coalition for the Delaware River Watershed: Annual Forum

October 16-17, 2019

Allentown, PA

John Yagecic, PE

Manager, Water Quality Assessment DRBC



# Delaware River Basin Commission



**Compact signed 1961**

**Equal Members:**

- Delaware
- New Jersey
- Pennsylvania
- New York
- Federal Government

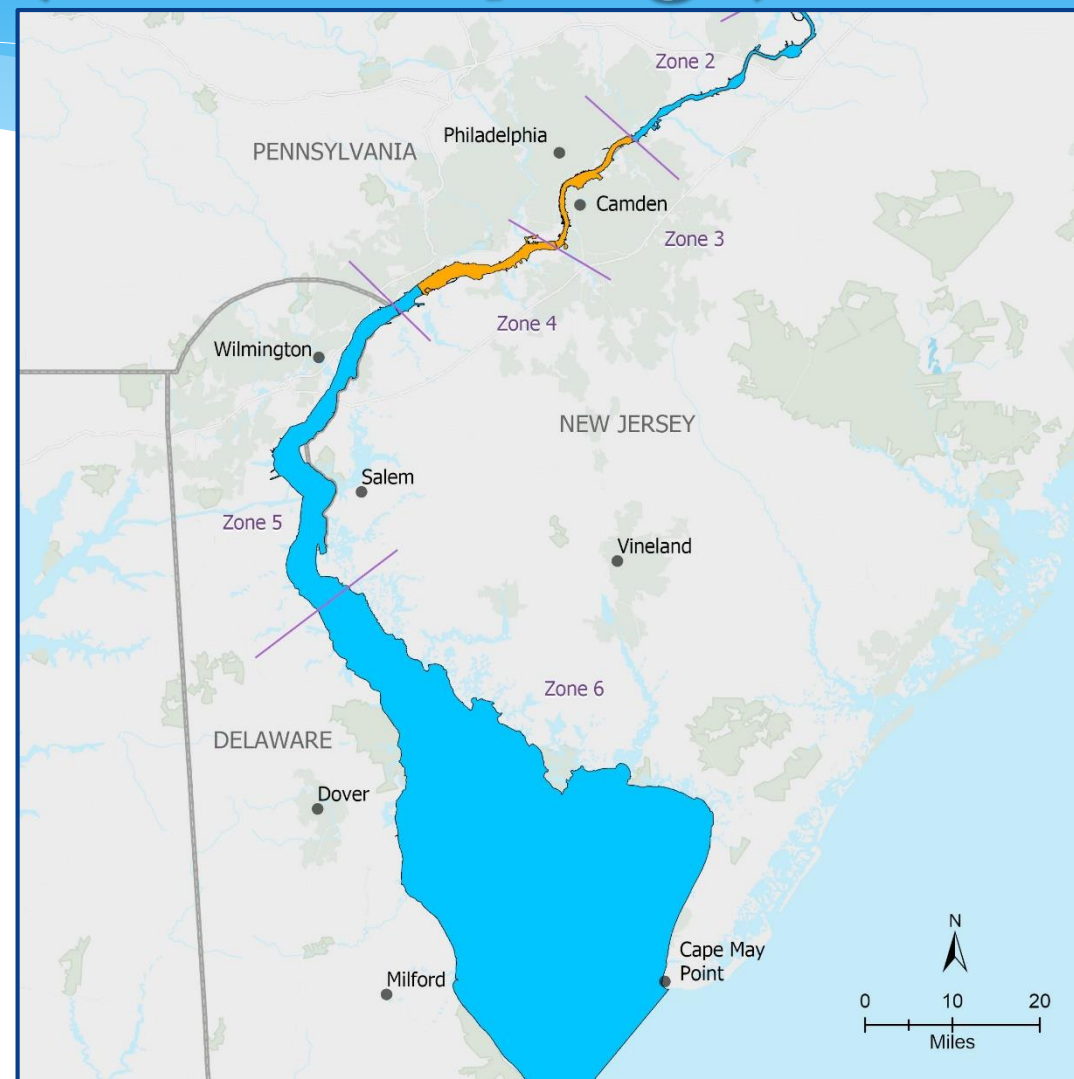
## Broad Responsibilities / Authorities

- \* Water Supply
- \* Drought Management
- \* Flood Loss Reduction
- \* **Water Quality**
  - **Establish Water Quality Standards**
  - **Monitoring & Assessment**
  - **Assimilative Capacity Determination**
- \* Watershed Planning
- \* Regulatory Review (Permitting)
- \* Outreach/Education
- \* Recreation

# Current Recreational Uses / Criteria in Delaware Estuary (DRBC WQ Regs)

<http://www.nj.gov/drbc/library/documents/WQregs.pdf>

Zone	Use	Fecal Coliform	Enterococcus
		Geometric mean colonies per 100 mL	
2	Recreation	200	33
3	Recreation – Secondary Contact	770	88
Upper 4			
Lower 4			33
5	Recreation	200	35
6			





# DRBC Water Quality Regulations

## Section 1.20.6

<http://www.nj.gov/drbc/library/documents/WQregs.pdf>

- F. "Recreation" includes all water-contact sports.
- G. "Recreation - secondary contact" restricts activities to where the probability of significant contact or water ingestion is minimal, encompassing but not limited to:
  - 1. boating,
  - 2. fishing,
  - 3. those other activities involving limited contact with surface waters incident to shoreline recreation.

# EPA Office of Water 820-F-12-058

**Table 1. Recommended 2012 RWQC.**

Criteria Elements	Estimated Illness Rate (NGI): 36 per 1,000 primary contact recreators		OR	Estimated Illness Rate (NGI): 32 per 1,000 primary contact recreators	
	Magnitude			Magnitude	
Indicator	GM (cfu/100 mL) <sup>a</sup>	STV (cfu/100 mL) <sup>a</sup>		GM (cfu/100 mL) <sup>a</sup>	STV (cfu/100 mL) <sup>a</sup>
Enterococci – marine and fresh	35	130		30	110
OR					
<i>E. coli</i> – fresh	126	410		100	320
<b>Duration and Frequency:</b> The waterbody GM should not be greater than the selected GM magnitude in any 30-day interval. There should not be greater than a ten percent excursion frequency of the selected STV magnitude in the same 30-day interval.					

<sup>a</sup> EPA recommends using EPA Method 1600 (U.S. EPA, 2002a) to measure culturable enterococci, or another equivalent method that measures culturable enterococci and using EPA Method 1603 (U.S. EPA, 2002b) to measure culturable *E. coli*, or any other equivalent method that measures culturable *E. coli*.

<https://www.epa.gov/sites/production/files/2015-10/documents/rwqc2012.pdf>

# 1988 Attainability Report

## Report on the Attainability of Swimmable Water Quality

DEL USA Project Element 19

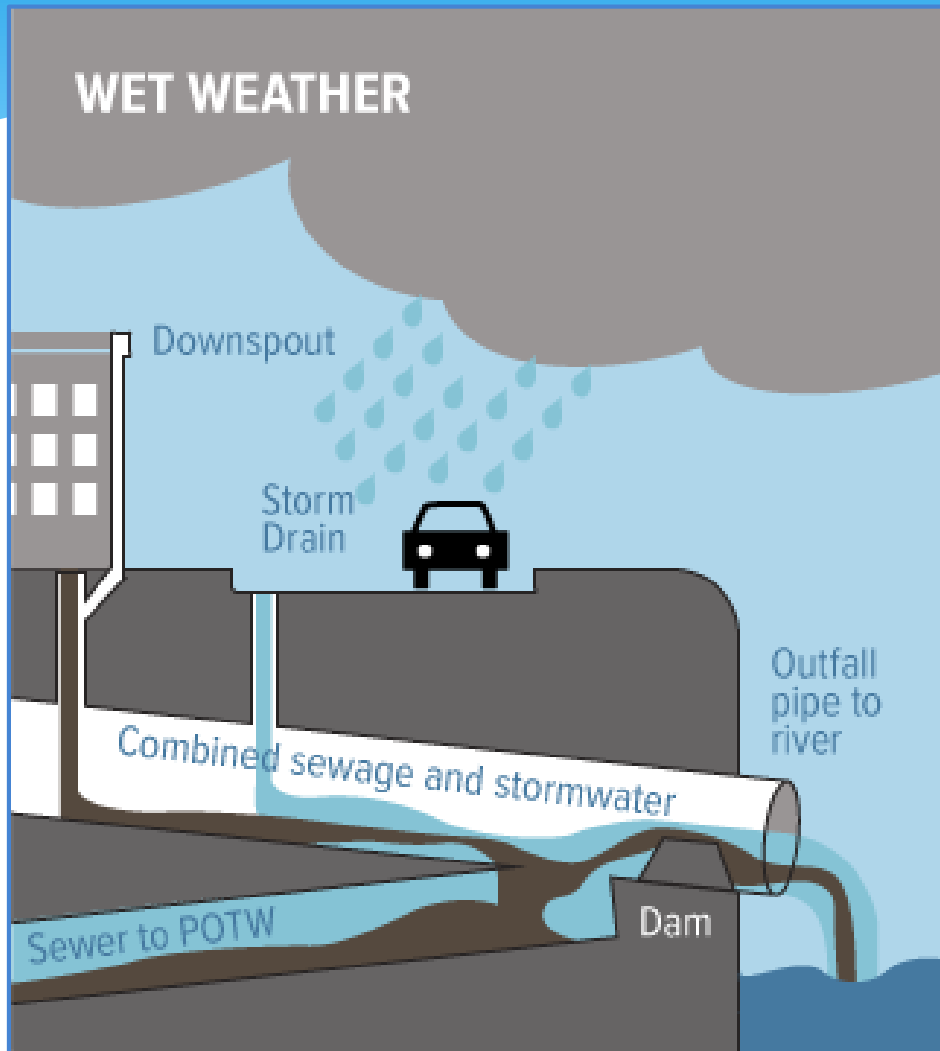


Delaware Estuary Use Attainability Project  
Delaware River Basin Commission  
West Trenton, New Jersey

December 1988

"The Use Attainability Swimmability Report states that significant segments of the Delaware Estuary will be recommended for reclassification to primary contact recreation - these include Zone 2 from the Burlington/Bristol bridge (R.M. 117.81) to Zone 3 (R.M. 108.4 - Zone 2/3 boundary), Lower Zone 4 (R.M. 83.8 - mouth of Ridley Creek), and Upper Zone 5 (R.M. 59.5). The secondary-contact use with 770 fecal colonies criteria for Zone 3 and Upper Zone 4 should be retained at this time. There is uncertainty of being able to attain a primary-contact use designation in these segments. The programs of CSO correction Philadelphia and Camden is expected to reduce fecal coliform levels which may result in future attainment of the primary recreation objective in Zone 3 and Upper Zone 4. Primary-contact will be a future use goal, based on an evaluation and a firm commitment to a CSO correction program."

# Combined Sewer Overflows



- \* Sanitary sewage and storm water in same pipes
- \* When flow exceeds capacity, overflows without treatment
- \* Legacy systems (100+ years) in our oldest, largest communities

Image credit: Jersey Water Works

# What has Changed since 1988?

- \* **CSO Long Term control programs are in place, making progress**
- \* **Much more accurate models of CSO systems – volume and timing of discharge**
- \* **Effort & enthusiasm for reconnecting regional urban areas to their waterways**
- \* **Very high level of public / NGO interest in this issue**
- \* **Statistical models providing guidance on current conditions relevant to contact recreation**



# CSO Long Term Control Plans



## Green City Clean Waters

PHILADELPHIA'S LONG-TERM CONTROL PLAN  
TO ADDRESS COMBINED SEWER OVERFLOWS

OCTOBER 24, 2013



## Camden County Municipal Utilities Authority: A Wet Weather Case Study of Incorporating Community Interests into Effective Infrastructure Decision-Making



Jurisdictions:

- City of Camden
- City of Gloucester
- Camden County



CCMUA: a county-wide public wastewater utility.

Wastewater System



Residents served	510,0000
Lines	125 mi.
Plant capacity	58 mgd



Receiving water: Delaware River



Revenues: ~\$100 million/annually



Average number of Combined Sewer Overflows annually: 70



LTCP required to be in place by 2020

CCMUA Goal: 2018

# PWD's Green City, Clean Waters Project by Project

From PWD's 2018 CSO & MS4 annual report at:

[http://archive.phillywatersheds.org/what\\_were\\_doing/documents\\_and\\_data/CSO\\_SW\\_AnnualReports](http://archive.phillywatersheds.org/what_were_doing/documents_and_data/CSO_SW_AnnualReports)

## Some completed projects

## Some future projects

Work Number	Project ID	Construction Complete Date	Storage Volume (cf)	New Trees	Drainage Area (acres)	Greened Acre (acre-inches)	SMP Types	Program	Green Construction Cost**	Partner(s)	Watershed
50112	1055	2/9/2018	10534	20	2.48	2.7	Infiltration Storage Trench, Rain Garden	Streets	\$500,000	Philadelphia Department of Parks & Recreation	Schuylkill
50098	1007	2/15/2018	6740	25	1.58	1.9	Infiltration Storage Trench, Rain Garden	Open Space	\$745,500	Philadelphia Department of Parks & Recreation	Delaware
50052	335	3/12/2018	6081	2	1.03	1.7	Bump-out, Infiltration Storage Trench	Streets	\$2,415,060	Southeastern Transportation Authority	TTF
50052	380	3/12/2018	29798	0	4.67	8.0	Stormwater Bump-out, Infiltration Storage Trench, Swale	Streets			TTF
50052	383	3/12/2018	6574	0	1.21	1.8	Infiltration Storage Trench	Streets			TTF
50053	295	3/28/2018	1213	0	0.18	0.3	Infiltration Storage Trench	Streets			TTF
50053	314	3/28/2018	6144	16	1.48	1.7	Tree Trench	Streets	\$1,926,357		TTF
50053	384	3/28/2018	4170	9	0.66	1.1	Tree Trench	Streets			Delaware
50053	385	3/28/2018	2959	7	0.50	0.8	Tree Trench	Streets			Delaware
50053	386	3/28/2018	5569	8	0.79	1.5	Tree Trench	Streets			Delaware
50053	413	3/28/2018	2458	0	0.41	0.7	Stormwater Bump-out, Infiltration Storage Trench	Streets			Department of Public Property

Work Number	Project ID	Sewer Type	Watershed	Program	Status	Estimated SMP Type(s)	Potential Partner(s)	Greened Acre (acre-inches)	Completion Date Estimate	Estimated Construction Cost
50233	1390	Combined	Cobbs-Darby	Open Space	In Design	Rain Garden		0.6	2021	TBD
50234	1388	Combined	Delaware	Streets	In Design	Bump-out, Planter, Tree Trench	Impact Services CDC	4.7	2021	TBD
50235	1392	Combined	Delaware, TTF	Streets	In Design	Tree Trench		5.0	2021	TBD
50236	1393	Combined	TTF	Parking, Streets, Vacant Land	In Design	Tree Trench	Frankford Community Development Corporation	6.7	2021	TBD
50238	1396	Combined	Delaware	Streets	In Design	Bump-out, Infiltration Storage Trench, Tree Trench		5.6	2021	TBD
50239	1397	Combined	Delaware	Open Space, Streets	In Design	Infiltration Storage Trench, Planter, Tree Trench	Department of Parks & Recreation (PPR), Office of Housing & Community Development (OHCD)	6.8	2021	TBD
50240	1401	Combined	Cobbs-Darby	Open Space, Streets	In Design	Bump-out, Tree Trench		12.7	2021	TBD
50241	1403	Combined	TTF	Open Space, Streets	In Design	Infiltration Storage Trench, Rain Garden, Swale		6.3	2021	TBD



# Uses Happening Now



Photo credit: Paul Michael Bergeron



Photo credit: Aqua Vida



Photo credit: Aqua Vida

# Gradient of Primary Contact Criteria Attainment

Where are  
we now?



Primary contact  
criteria  
*never* met

Primary contact  
criteria  
*always* met



# DRBC Monitoring

Delaware Estuary Water Quality Monitoring Program  
Locations & DRBC Water Quality Zones

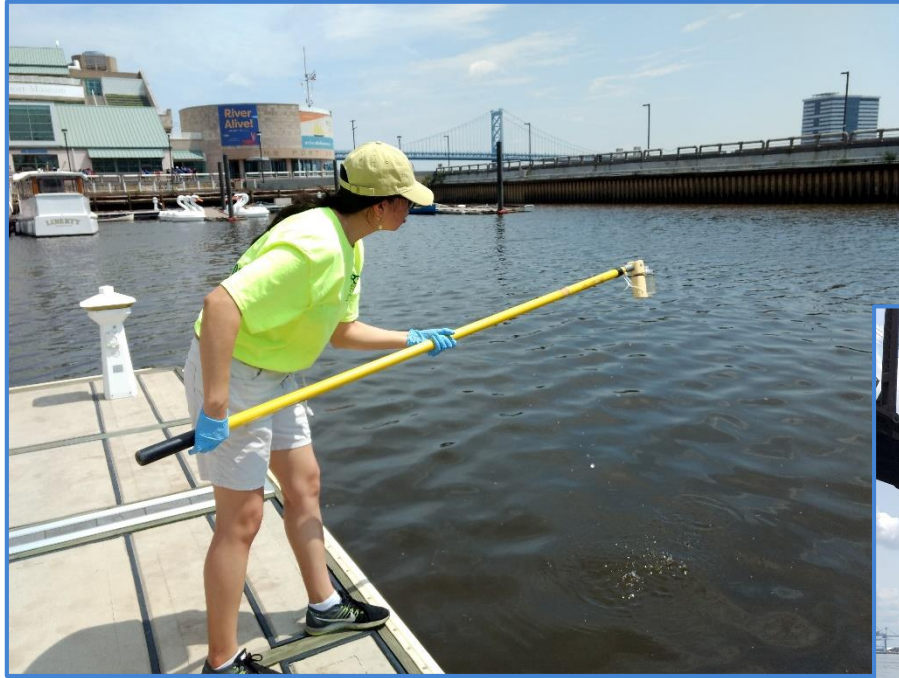


- \* DRBC's long-running (50+ year) monitoring program
- \* 1x per month
- \* Center channel
- \* Just below Trenton to just above Atlantic Ocean
- \* Bacteria results posted on DRBC web site at <https://www.nj.gov/drbc/quality/datum/boat-run.html>

Most Recent Bacterial Sampling Data:

Sampling Site	River Mile	9/9/19 Enterococcus	Enterococcus Std.	9/9/19 Fecal Coliform	Fecal Coliform Std.
Trenton	131.04	32	33	170	200
Florence	122.4	10	33	180	200
Burlington Bristol Br.	117.8	8	33	63	200
Torresdale	110.7	9	33	110	200
Betsy Ross Br.	104.75	5	88	83	770
Benjamin Franklin Br.	100.2	9	88	180	770
Navy Yard	93.2	6	88	63	770
Paulsboro	87.9	n/a	88	39	770
Eddystone	84.0	n/a	88	31	770
Marcus Hook	78.1	n/a	35	23	200
Oldmans Pt.	74.9	n/a	35	29	200
Cherry Island	71	n/a	35	27	200
New Castle	66.0	n/a	35	38	200
Pea Patch Is.	60.6	n/a	35	27	200
Reedy Island	54.9	n/a	35	23	200
Liston Pt.	48.2	n/a	35	12	200
Smyrna River	44.0	n/a	35	5	200
Ship John Light	36.6	1	35	ND	200
Mahon River	31.0	ND	35	1	200
Elbow of Crossledge Shoal	22.75	ND	35	10	200
South of Joe Flogger Shoal	16.5	ND	35	ND	200
South Brown Shoal	6.5	ND	35	ND	200

# Monitoring Summer 2019



Shore-based, where recreation more likely  
~ 5x per month, May - September  
Fecal coliform, enterococcus, E. coli

- \* Riverton Yacht Club
  - \* Palmyra Cove Nature Center
  - \* Pennsauken Access
  - \* Pyne Poynt Park
  - \* National Park
- } NJ
- \* Washington Ave. Green
  - \* Penns Landing Lagoon
  - \* Frankford Arsenal Boat Ramp
- } PA





Wednesday, July 11  
Current RiverCast:  
**GREEN**  
[Terms of Use](#)



Water Temp: **80 °F** | **26 °C**  
River Flow: **1630 cfs**

### Welcome to Philly Rivercast

Home

Definitions of Water Quality Designations

How the RiverCast is Created

Why Water Quality Changes

Water Quality and Health Concerns

Maps and Links

Contact Us

#### What is RiverCast?

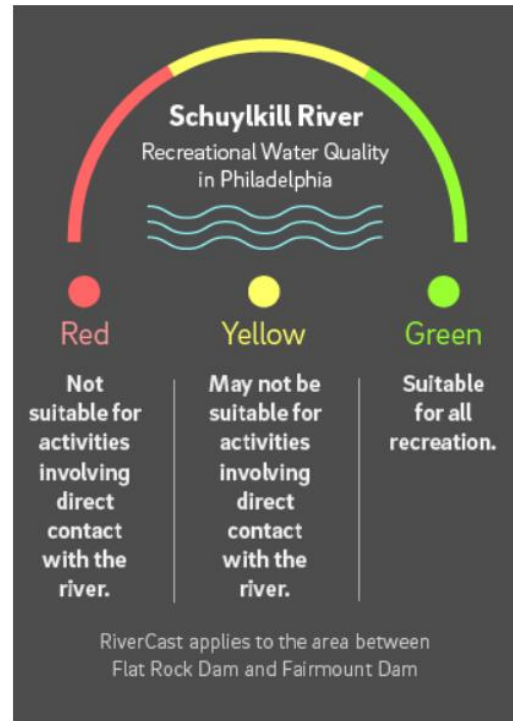
The Philly Rivercast is a forecast of water quality that predicts potential levels of pathogens in the Schuylkill River between Flat Rock Dam and Fairmount Dam i.e. between Manayunk and Boathouse Row [View Map](#).

The Schuylkill River, like all working rivers, is not a pristine body of water and is subject to contamination from many sources and activities that either discharge directly, or enter the river during rain events. Because rivers are vulnerable to such contamination, recreation in or upon

any body of water has with it an inherent risk of illness and infection for the individual involved.



#### RiverCast Water Quality Designations:



#### Limitations of Philly Rivercast

Inherent uncertainty and potential for error is associated with any forecast of water quality. Therefore, the RiverCast should be considered a guideline and general estimate of water quality at a given period of time and not a direct measurement of water quality. Other information, policies, regulations, public health statements, data, or observations should be considered in addition to RiverCast before any individual or organizational river recreation occurs. The RiverCast does not endorse or permit activities that are in violation of any City, State, and Federal policies, regulations and laws.



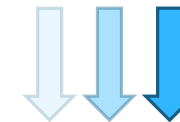
For more information about Philadelphia's Watersheds and watershed planning efforts, please visit

[Philly Watersheds](#)

Number of visitors

000001127116

<http://www.phillyrivercast.org/>



# DRBC Next Steps

- \* Assess the shore-based data collected in 2019
- \* Boat-based transect monitoring in 2020 to determine if near-shore concentrations are higher than center channel concentrations
- \* Coordination with our Water Quality Advisory Committee (WQAC)
- \* [https://www.nj.gov/drbc/about/advisory/WQAC\\_index.html](https://www.nj.gov/drbc/about/advisory/WQAC_index.html)



# Other Hazards / Other Challenges



- \* **Busy shipping ports**
- \* **Hazardous currents**
- \* **Debris, pilings, junk**
  
- \* **Beaches have an elaborate protocol for monitoring, beach closures, re-opening**
  
- \* **Liability >> Responsibility & Authority**

# What can you do?

## Citizens

- \* Stay tuned in to DRBC's Water Quality Advisory Committee & list servs
  
- \* Volunteer monitoring? Maybe, but...
  - Develop & follow an approved Quality Assurance Project Plan (QAPP)
  - State certified laboratory
  - Short 6-hour holding time from sample dip to drop off at lab
  - Get your data into WQX
  - Government organizations cannot take on liability for volunteers

## NGOs

- \* Support development of forecasting tool
- \* Support monitoring
- \* Support green infrastructure?

# Questions & Discussion

## Resources

### **DRBC's Water Quality Advisory Committee**

[https://www.nj.gov/drbc/about/advisory/WQAC\\_index.html](https://www.nj.gov/drbc/about/advisory/WQAC_index.html)

### **DRBC e-mail groups**

<https://www.nj.gov/drbc/contact/interest/index.html>

### **Philadelphia Green City Clean Waters**

<https://www.phila.gov/water/sustainability/greencitycleanwaters/Pages/default.aspx>

### **Camden County MUA Green Infrastructure**

<http://www.ccmua.org/index.php/green-initiatives/green-infrastructure/>

## Contact

### **John Yagecic**

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