2021 ASTSWMO Mid-Year Meeting

Planning for Resiliency and Sustainability of Remedies in a Changing Climate

ASTSWMO Investigation and Remedy Selection Focus Group

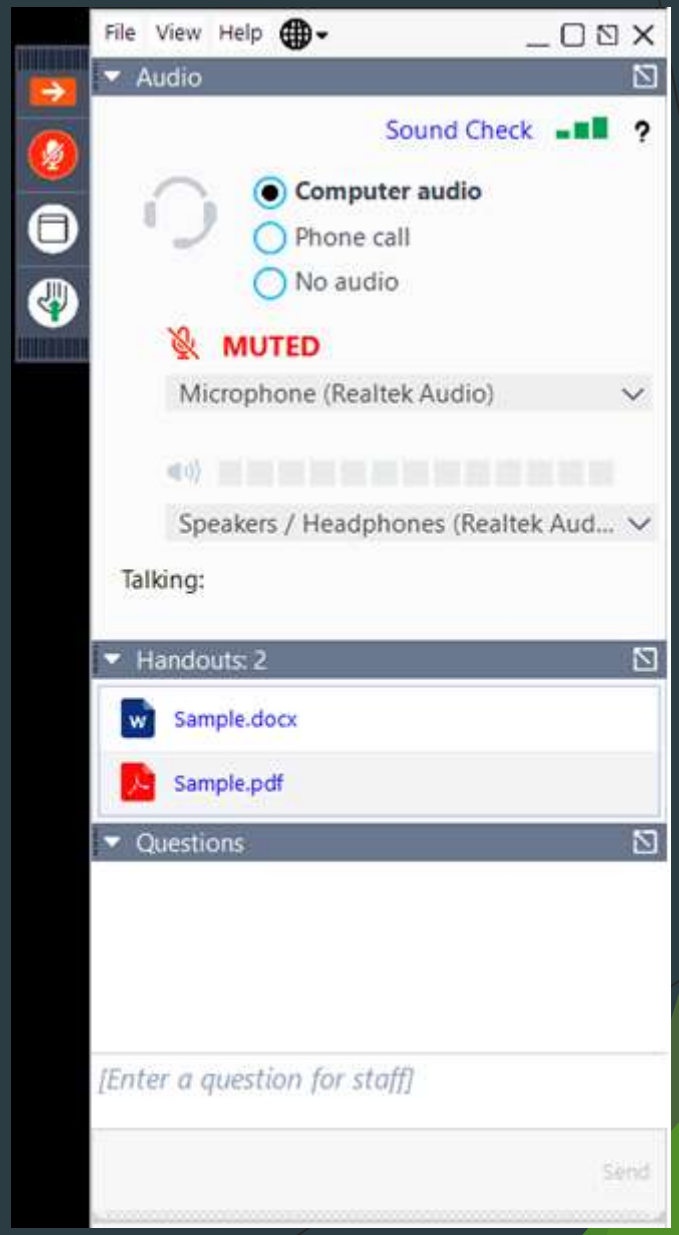
Logistics

Audio

If you cannot hear us speaking right now or hear an echo, make sure your audio settings are configured correctly →

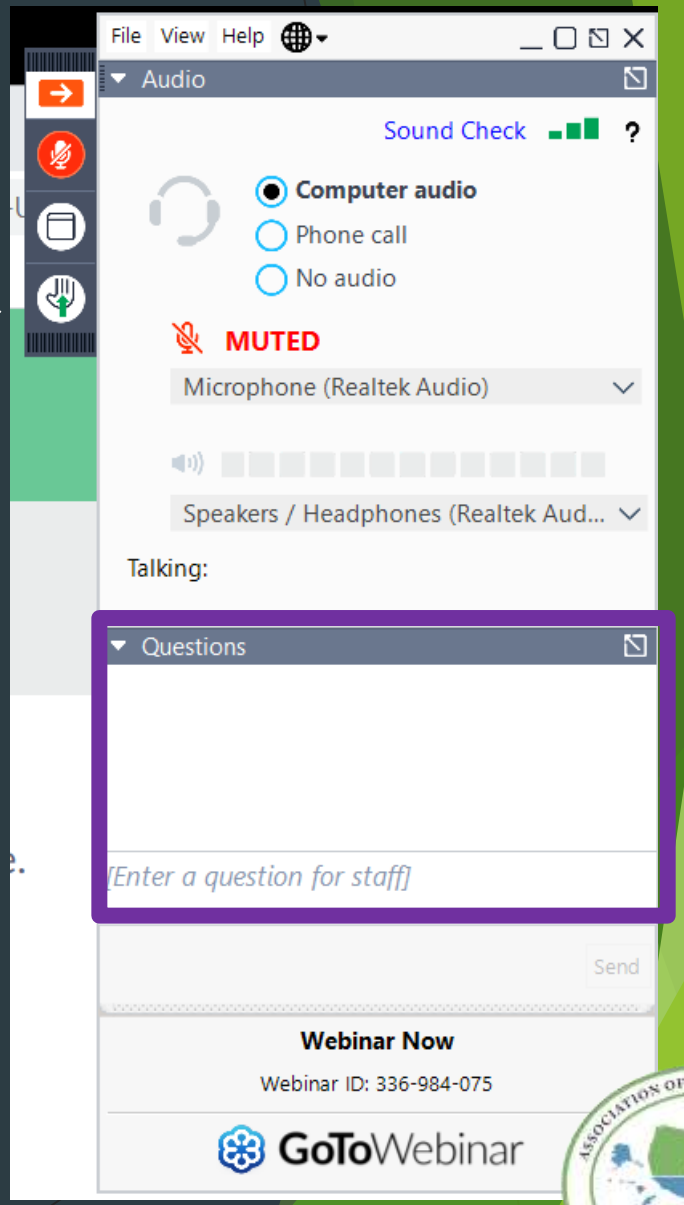
Handouts

Bios from each speaker are available to download here→



Before We Start

- All attendees will be muted throughout the webinar.
- **Questions:** Use the Questions Panel in the dashboard to send questions to the speakers during the webinar.
- **Note who the question is directed to in your submittal.**
- Questions will be answered at the end of the webinar.
- You can also "Raise Your Hand" so that we can unmute your microphone to ask any questions as well.
- The webinar is being recorded and will be made available on the ASTSWMO website.



ASTSWMO Investigation and Remedy Selection Focus Group Project

- Focus: How climate change impacts sites
  - Wildfires and Windstorms
  - Increased Frequency of Significant Atmospheric Events
    - Tornados, Hurricanes, Mesoscale Storms, Ice Storms
  - Sea Level Rise
    - Groundwater Level Rise, Storm Runoff, Flooding in Rivers and Lakes
  - Increasing Precipitation
  - Increasing Drought Conditions

Project Timeline and Next Steps

- Expected to be published this summer
- Another session/webinar focusing on “Planning for Resiliency and Sustainability of Remedies in a Changing Climate” later this year

Climate and Superfund Remedy Resiliency

2021 ASTSWMO MID-YEAR MEETING

April 28, 2021

Robert Pope, Acting Chief
Technology Integration and Information Branch
Office of Superfund Remediation & Technology Innovation
(OSRTI)

EPA

Executive Order on Tackling the Climate Crisis at Home and Abroad

- **EPA is working on how to respond to the E.O. that was issued in January**
- **https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/**
- **"America is back, climate action is here, and with it we will create good-paying jobs" (Michael Regan, Administrator)**

Superfund Remedial Program Climate Change Activities

Developed a protocol for assessing remedy vulnerabilities and compile tools and information

Developed fact sheets on adaptation at high risk, longer-term remedies

Developed and held intern and external training sessi

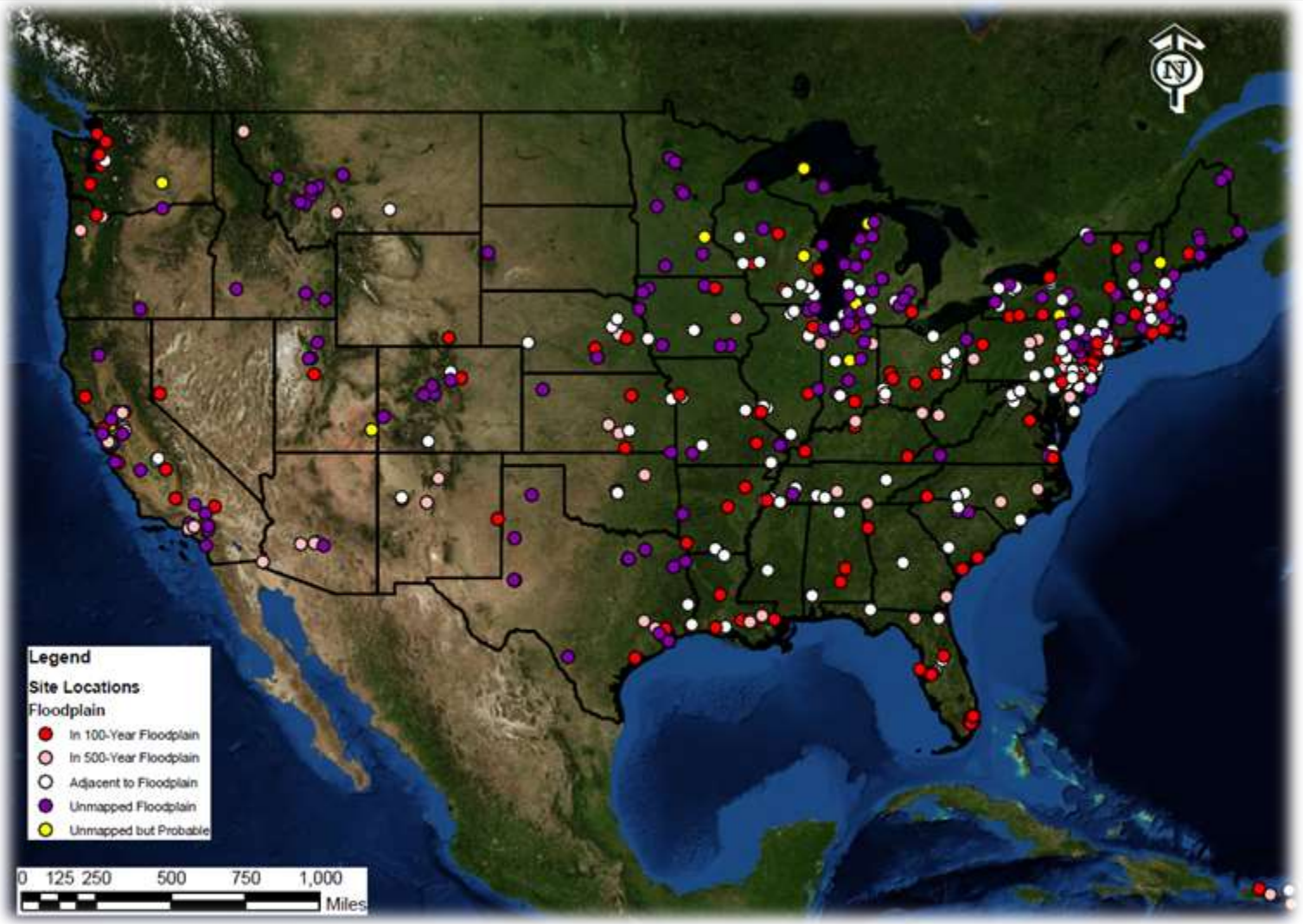
Integrated evaluation of extreme weather impacts into the existing Superfund process

Continuing outreach with legal and enforcement teams to anticipate future scenarios

https://www.epa.gov/sites/production/files/2018-08/documents/oswer-climate-change-adaptation-plan.pdf

Vulnerability of Superfund Sites from a 2012 Evaluation

- 1639 NPL sites at the time of analysis
- 521 with on-site containment and/or groundwater P&T were within 100-year floodplains or within 1.5m mean sea level rise (mSLR)



2012 Vulnerability Analysis

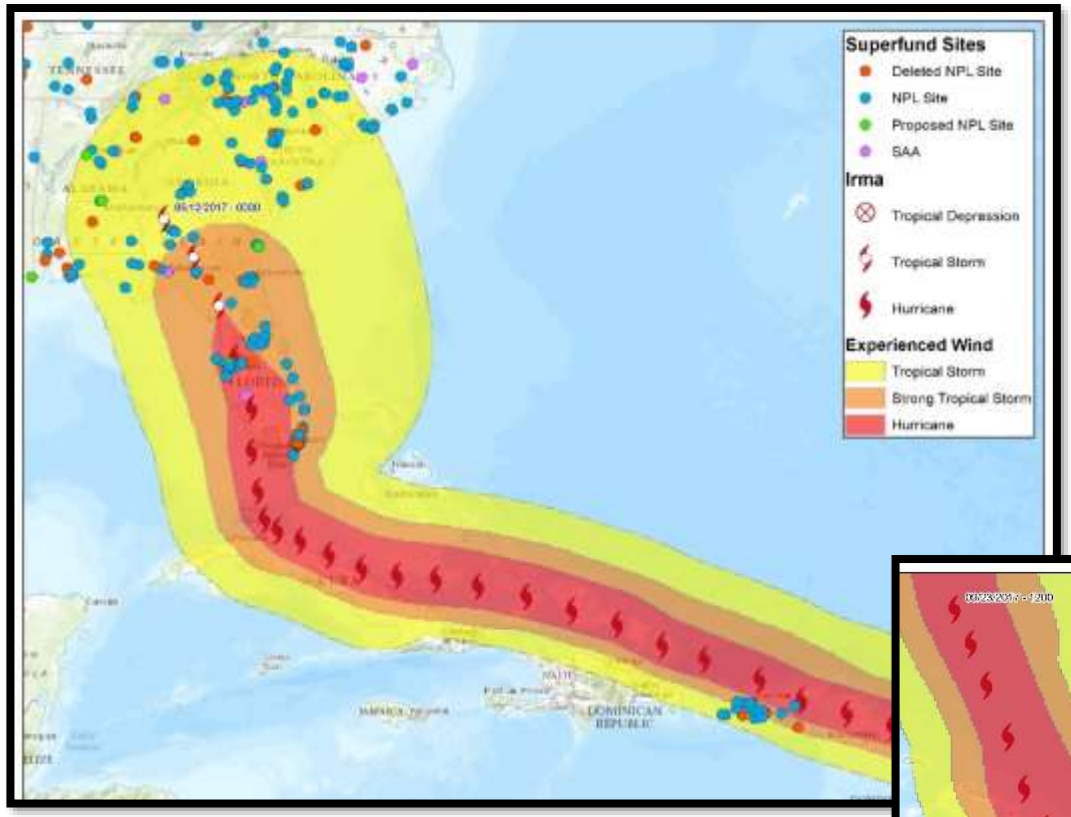
- Qualitative Vulnerability Analysis
- Most common remedy types based on 2010 Superfund Remedy Report

Common Remedy Types*	Extreme Weather Scenarios							
	Flooding (Event)	Inundation (Chronic)	Extreme Storms	Large Snowfall	Wild Fires	Drought	Extreme Heat	Landslide (Precip)
Source In Situ								
Soil Vapor Extraction								
Solidification/Stabilization*								
In Situ Thermal Treatment								
Multi-phase Extraction								
Bioremediation								
Source Ex Situ								
Solidification/Stabilization*								
Physical Separation								
Recycling								
Surface Water Treatment								
Unspecified Off-Site Treatment								
On-site Containment								
Groundwater In Situ								
Bioremediation								
Chemical Treatment								
Air Sparging								
Permeable Reactive Barrier								
Groundwater Ex Situ								
Pump & Treat								
Vertical Engineered Barrier								
Monitored Natural Attenuation								

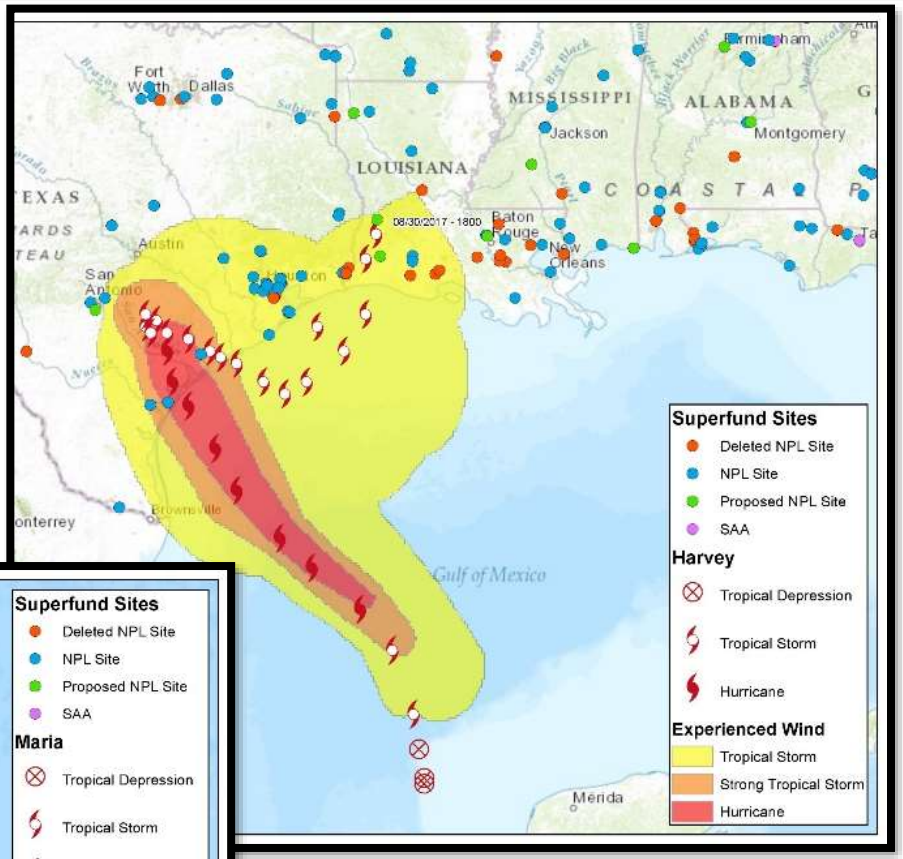
No known potential impacts
Minor impacts: Potential for temporary loss of remedy functionality or effectiveness, contaminant(s) remain contained
Moderate impacts: Potential for total loss of remedy functionality and effectiveness indefinitely, contaminant(s) remain contained
Major impacts: Potential for total loss of remedy functionality and effectiveness indefinitely, contaminant(s) release

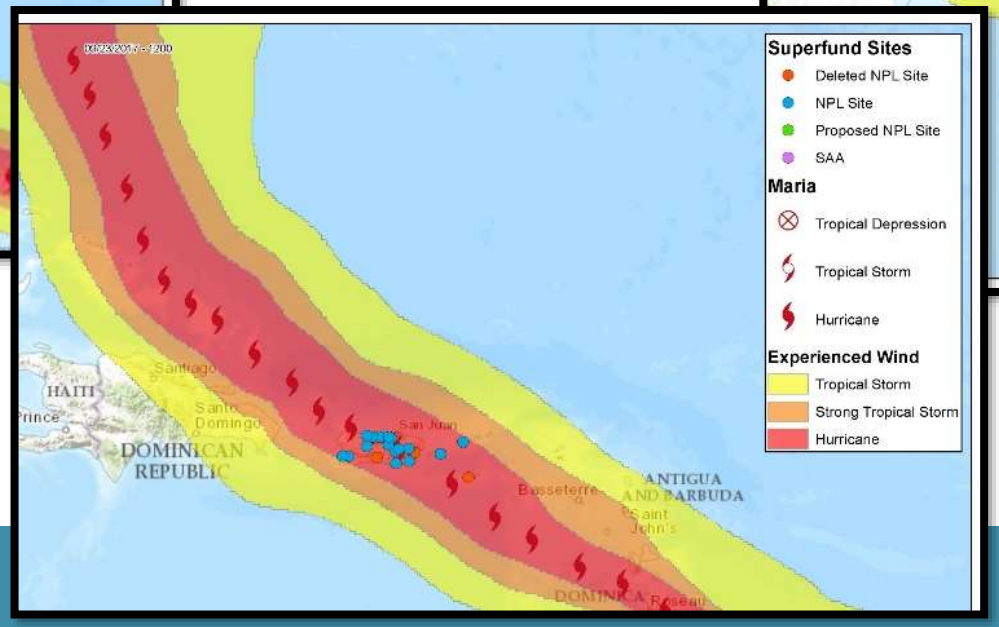
EPA

2017 Hurricane Season
Superfund Remedy Resiliency



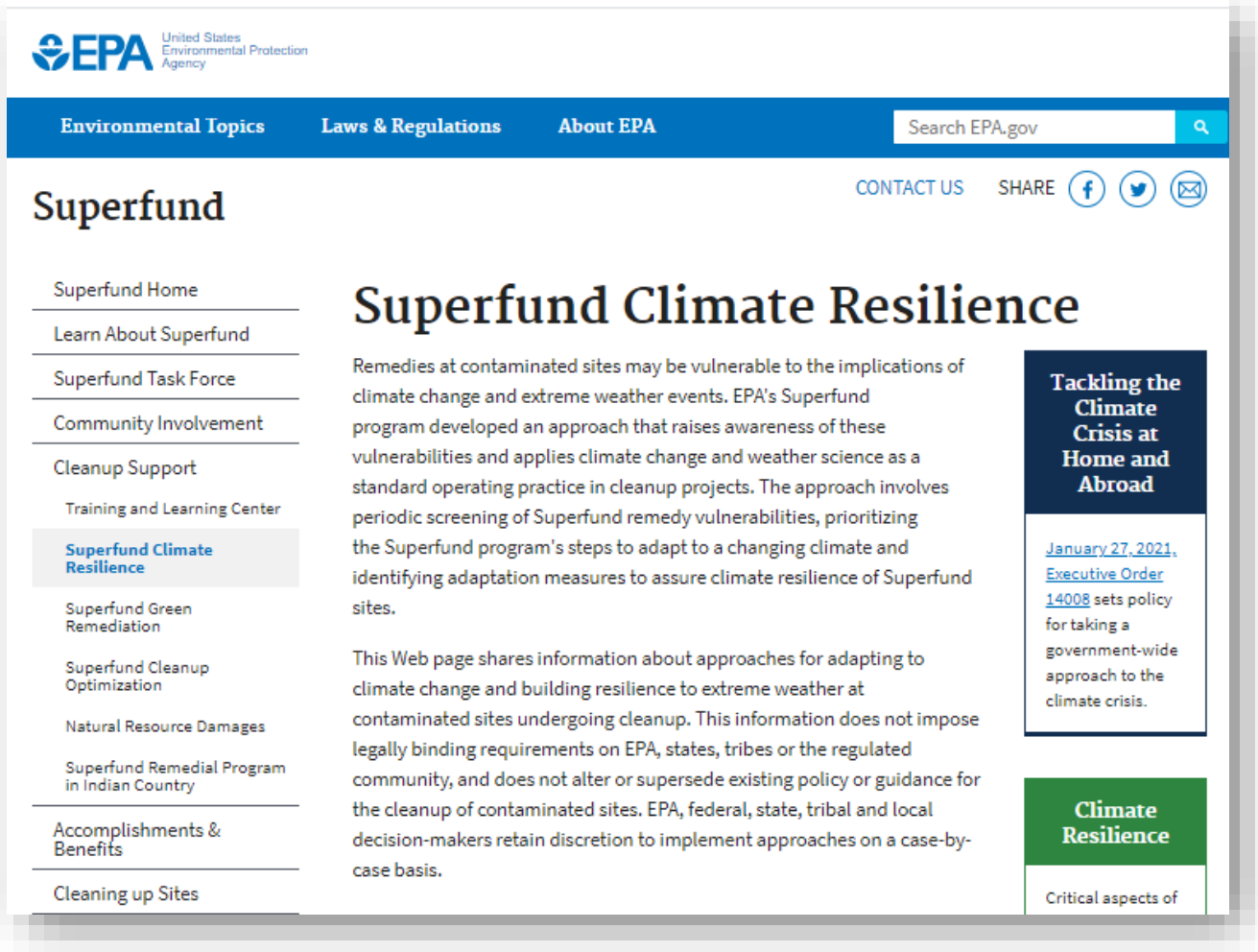
- **National Hurricane Center Experience Wind Data for Hurricanes Irma (left), Maria (below) and Harvey (right).**





- **Key Finding: The state of the remedies is "Resilient"**

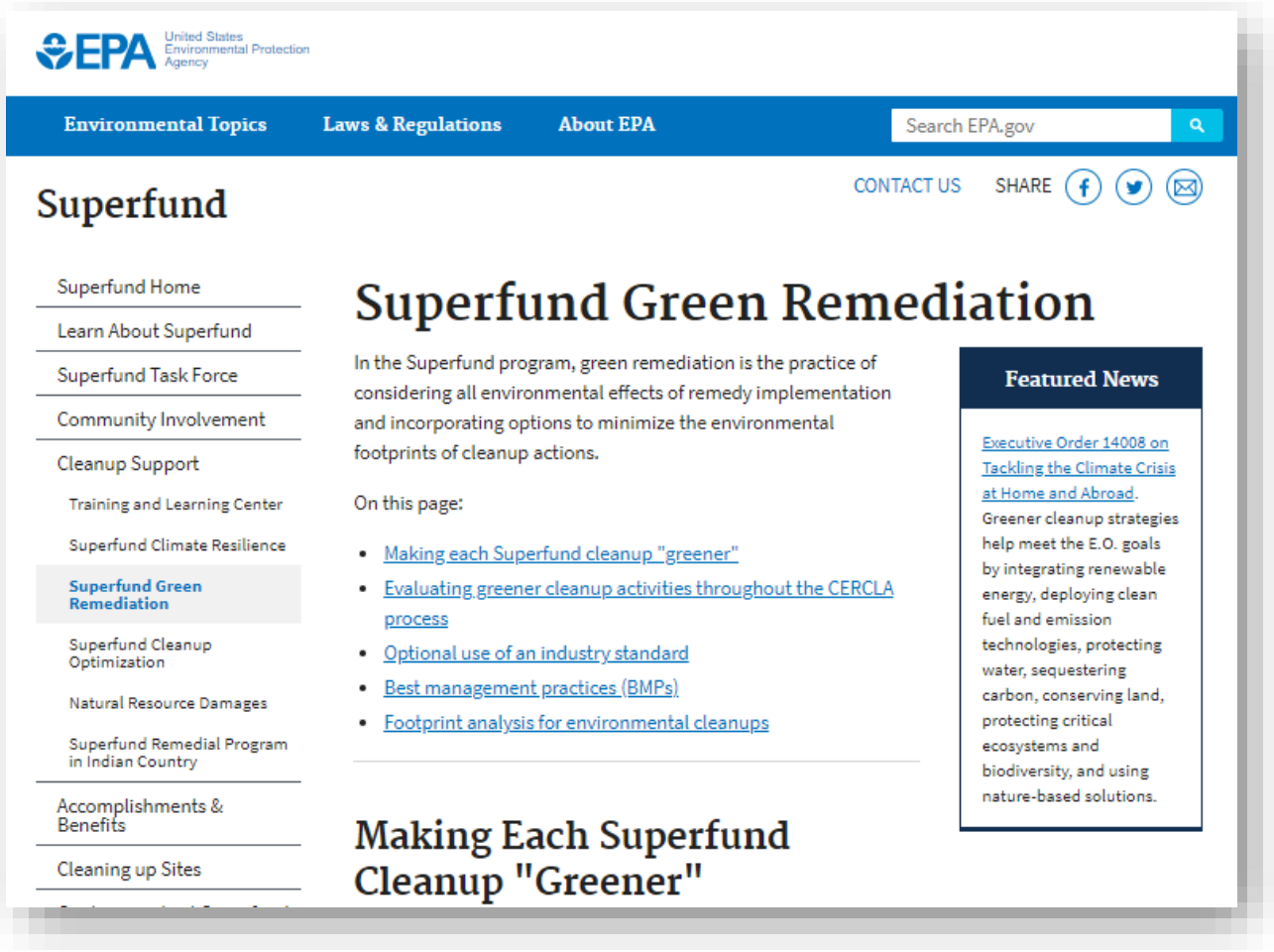
Superfund Climate Resilience Resources



<u>3 Tech Fact Sheets</u>:
Groundwater; Waste Containment; Sediments

https://www.epa.gov/superfund/superfund-climate-resilience

Superfund Green Remediation Resources



Footprint Analysis for Environmental Cleanups

https://www.epa.gov/superfund/superfund-green-remediation

Contact Information

- **Carlos Pachon,** Climate Resilience/Green Remediation Subject Matter Expert

  Technology Integration & Information Branch

  Office of Superfund Remediation & Technology Innovation (OSRTI)

  Pachon.Carlos@epa.gov

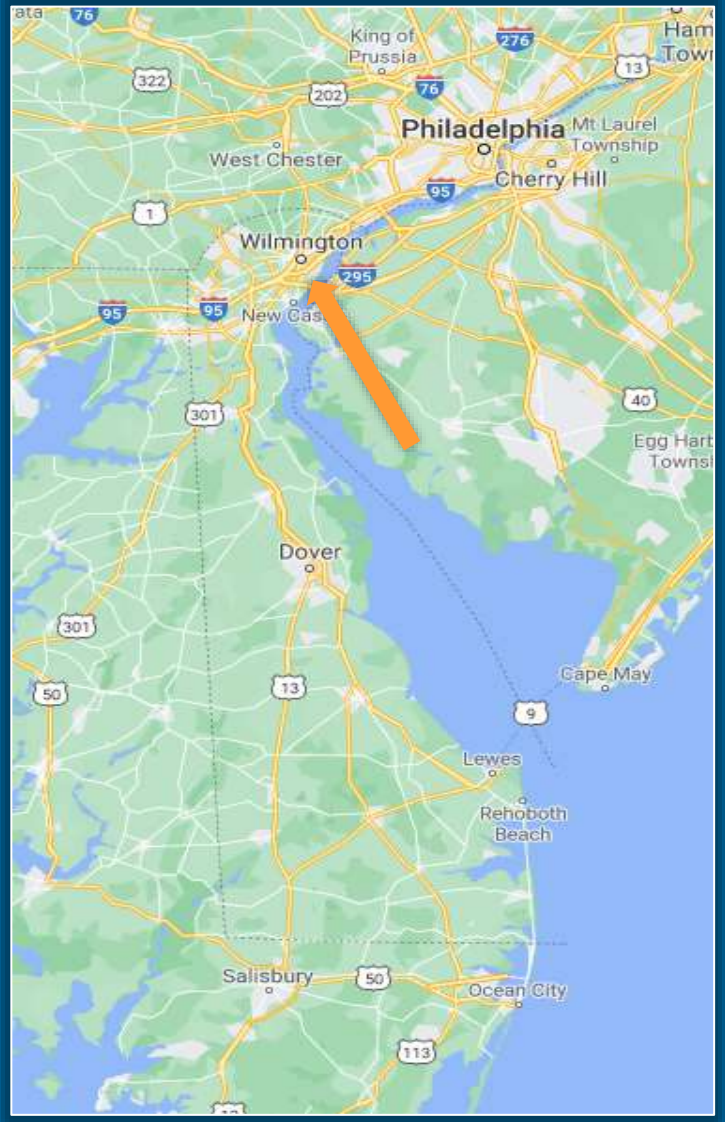
Environmental Justice & Urban Waters:
Wilmington, Delaware Updates

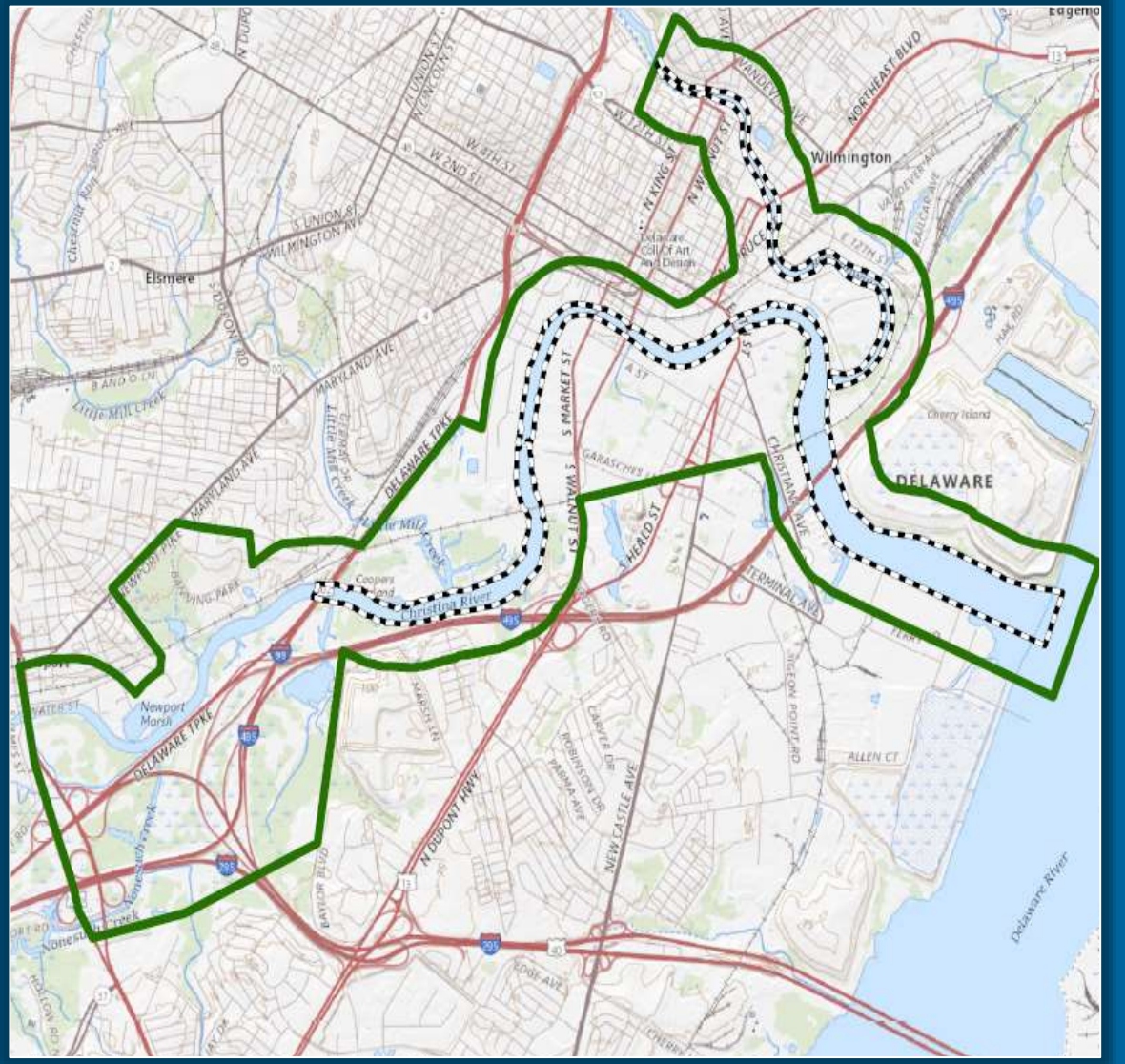
2021 ASTSWMO Mid-Year Meeting - CERCLA and Brownfields Session
April 28, 2021

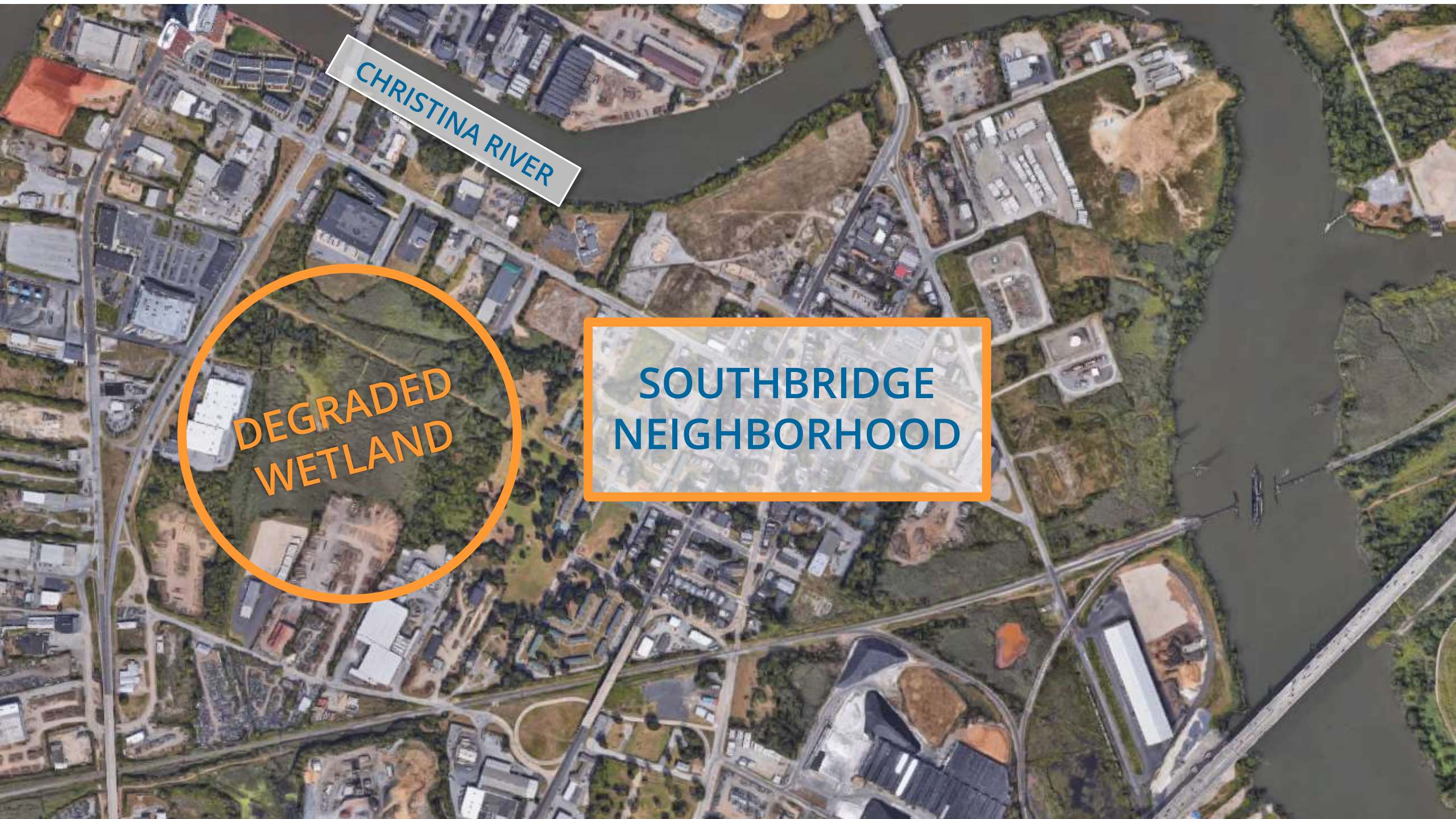
Marian Young, Owner
Brightfields, Inc.

John Cargill, Hydrologist
Delaware Department of Natural Resources and Environmental Control

Project Area






CHRISTINA RIVER
DEGRADED WETLAND
SOUTHBRIDGE NEIGHBORHOOD

Years of Flooding in Southbridge

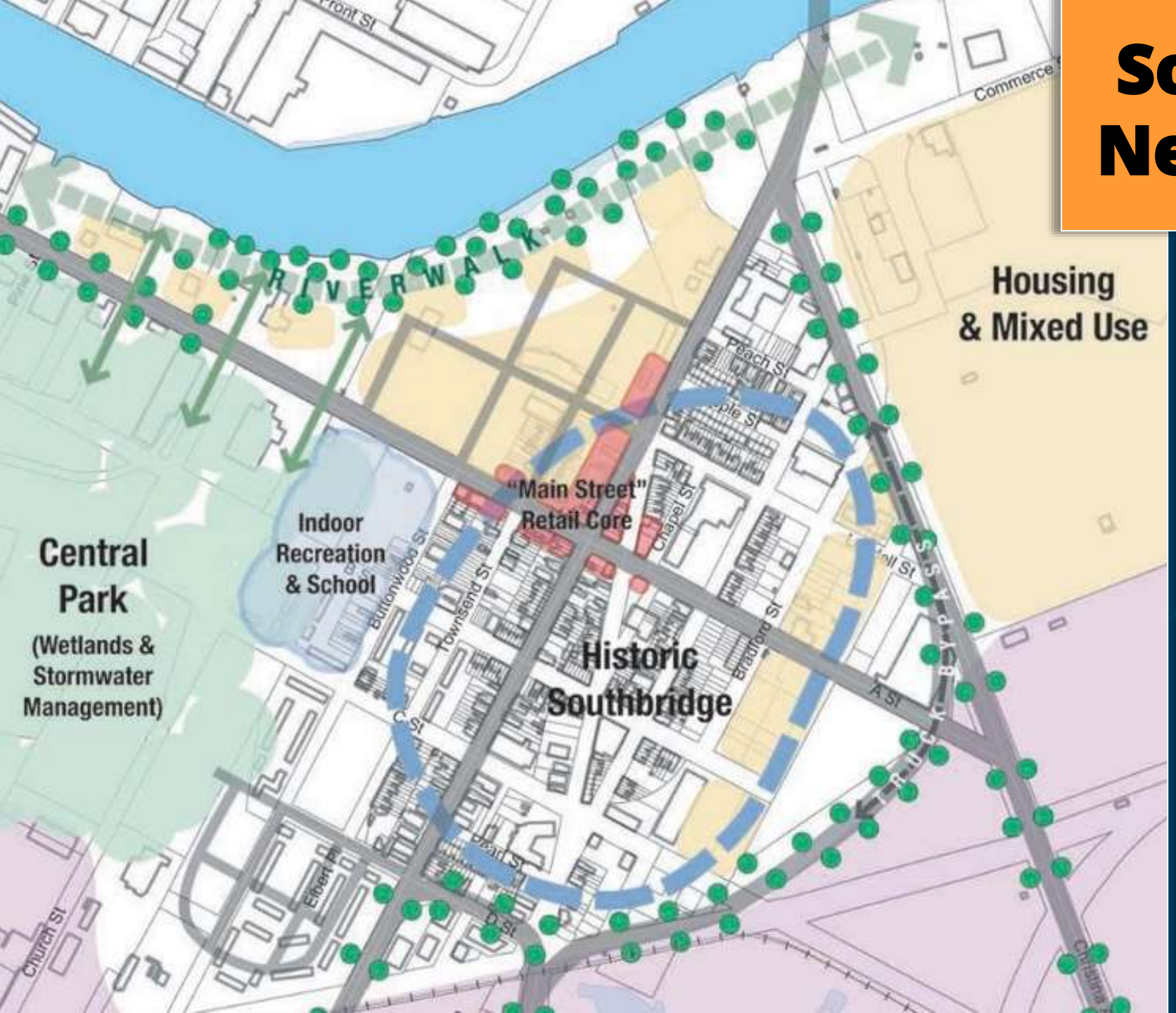
South Wilmington Neighborhood Plan

Prepared by the **South Wilmington SAMP Neighborhood Plan Work Group**

"We are small, compact — 1.64 miles, Southbridge. It's populated primarily by African Americans. And we have not been able to get the attention financially, the support that we think we deserve, over the years. We find ourselves today a little bit better off because of this document."

- Marvin Thomas, former civic leader

South Wilmington Neighborhood Plan



Purpose of the Wetland Park

- Create a **stormwater management** facility to reduce flooding in Southbridge.
- **Restore the degraded marsh** to high-functioning freshwater tidal wetland habitat.
- **Clean up** a brownfield.
- **Create new open space** and a new park for the community.
- **Provide walking connectivity** to jobs and shopping.
- **Enhance** coastal resiliency.

DESIGN BY RUMMEL KLEPPER & KAHL, LLP AND OASIS DESIGN GROUP

Walking Connection to Jobs & Shops

Phragmites Spraying & Chopping

Excavation of 110,000 Cubic Yards of Soil

PHOTO BY PETER TOBIA FOR LANDSCAPE ARCHITECTURE MAGAZINE AUGUST 2017

Cleaning and Stabilization of the A Street Ditch

A Street Ditch PCB Sampling Methods

- Sediment Collection
- Passive Samplers

A Street Ditch PCB Remediation

Applying combination of:

- Sedimite pelletized activated carbon
- PCB-degrading bacteria

Spraying Activated Carbon along edge of capped low-level PCB Landfill – April 2020

Sedimite Application in Channel by A-Street Ditch Connection – July 2020

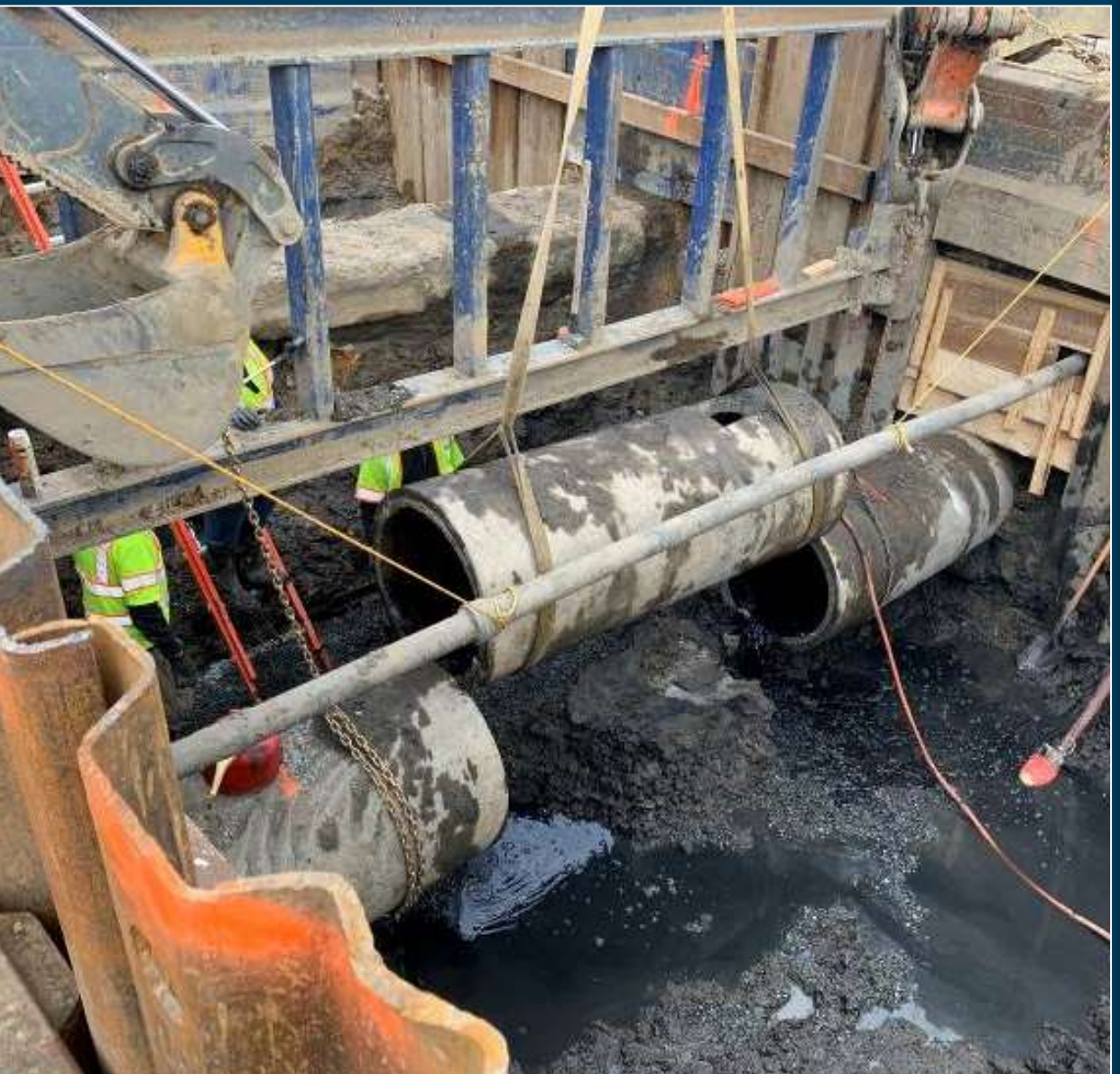
Hydroseeding – February 2020

Topsoiled, Strawed and Seeded – April 2020

Greening Up! – May 2020

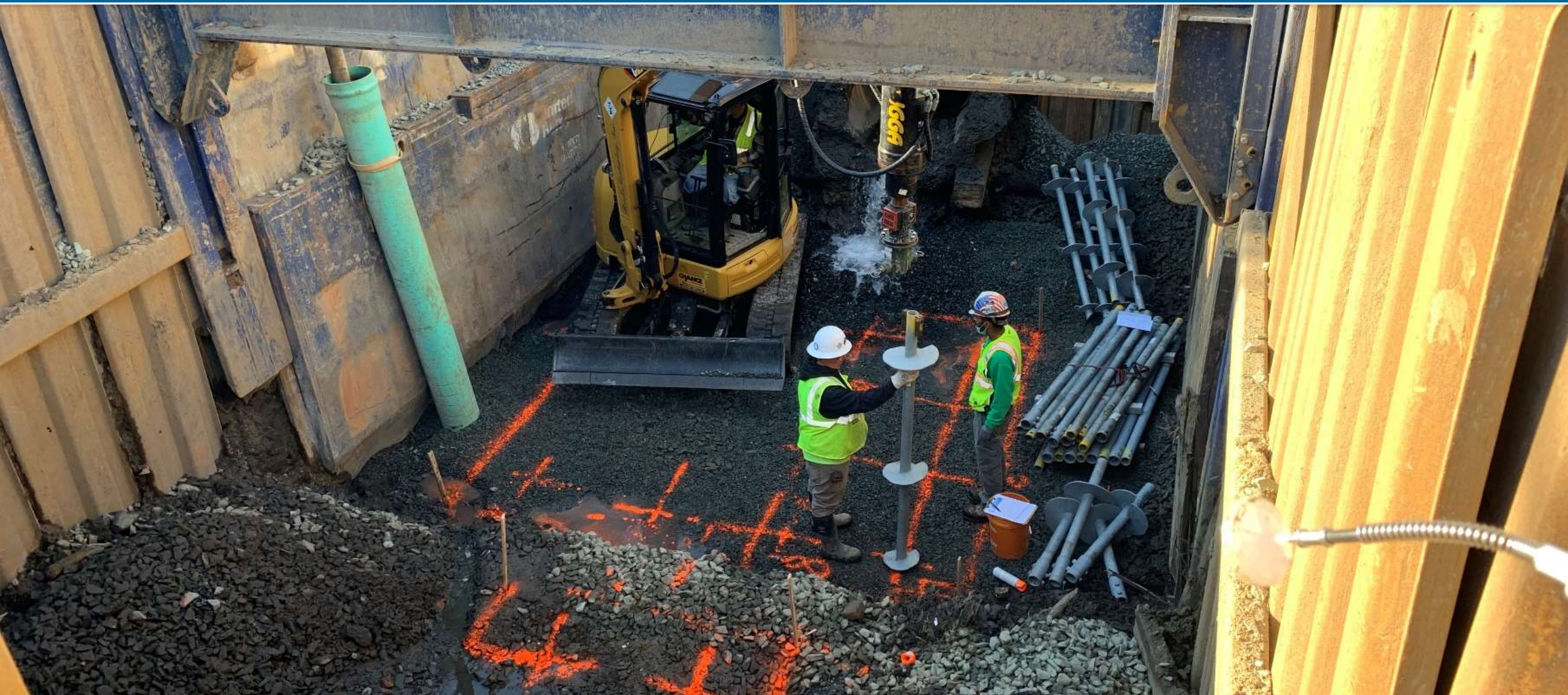
Boardwalk Construction

New Storm Pipe Sections & Manhole



Excavation for Headwall in Christina River – June 2020

Helical Pile Foundation Installation to support Automatic Gate Valve – Sept 2020



Perspective Locations

Wilmington Wetland Park

December 13, 2016

OASIS DESIGN GROUP

Watershed Approach to Toxics Assessment & Restoration (WATAR)

Focus on Persistent, Bio-accumulative, and Toxic (PBT) compounds – Risk drivers for fish advisories (PCBs, metals, pesticides)

Linking Sources and Sinks – advanced sampling and analysis utilizing multiple lines of evidence

Clean Water Act (1972), 303d listing and TMDL implementation tool - assess impact of toxics in waterways

Hazardous Substance Cleanup Act (HSCA) Tool site prioritization tool – target DNREC remediation efforts

WATAR's Goal

Fishable, swimmable, potable surface water in the shortest timeframe possible.

Polychlorinated Biphenyl (PCB) mass loading from sites

- Purpose: estimate PCB load from sites to surface water via overland flow + groundwater transport
- Phase I completed 2009 (n = 32, Christina Basin); Phase II completed 2015 (n = 29, rest of DE)
- Provides individual & cumulative loading, relative ranking & framework for tracking
- 2017 Update- Uncontrolled PCB sites reduced from 58 to 22
- Potential PCB load to surface water dropped approximately 48%

Waste Site PCB Loading – TOP 10*

1. Amtrak Refueling (DE-0266) – OU-3 Final Plan 8/2020
2. Amtrak Maintenance (DE-0170) – RI/FS Being Drafted for Global Remedy at Wilmington Shops
3. Amtrak West Yards (DE-0159) – RI comments with Amtrak 2/2021
4. ~~American Scrap & Waste (DE-1131)~~
5. ~~South Wilmington Wetland Area (Kreiger Sites & Marsh) (DE-1500)~~ – Near Completion
6. ~~Former Carney Harris (DE-1397)~~
7. ~~Dravo Shipyard – Harbor Associates (DE-1096)~~
8. ~~American Tank & Trailer Cleaning (DE-1180)~~ – PCB Remediation Done – Re-Use Pending
9. ~~Purina Tower B (DE-1246)~~
10. Electric Hose & Rubber (DE-0174) – RI Approved 8/2019

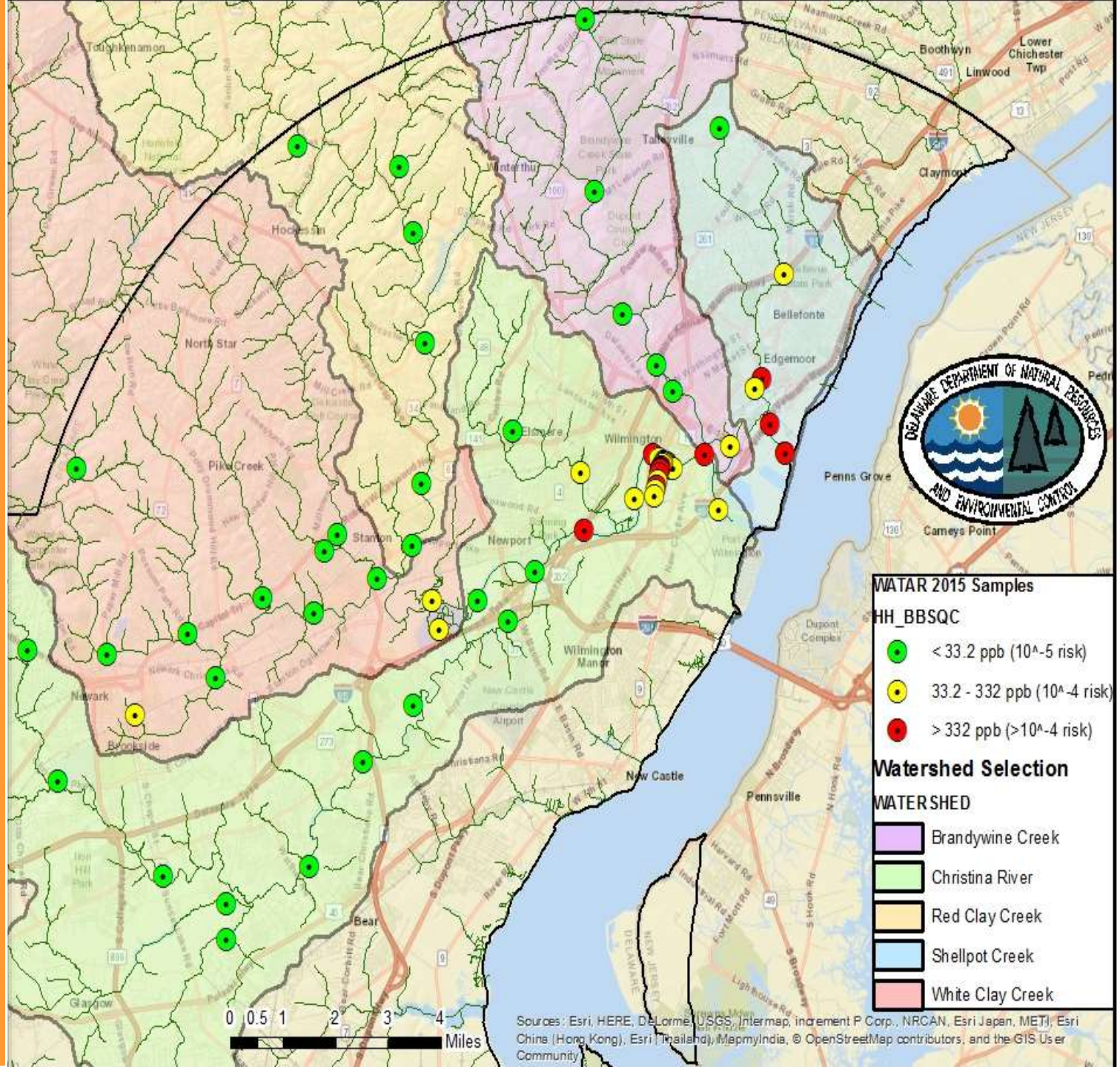
*Based Upon 2009 Mass Loading Summary Report
---------- Negligible Load Following Site Remediation

Christina Basin Sampling 2015

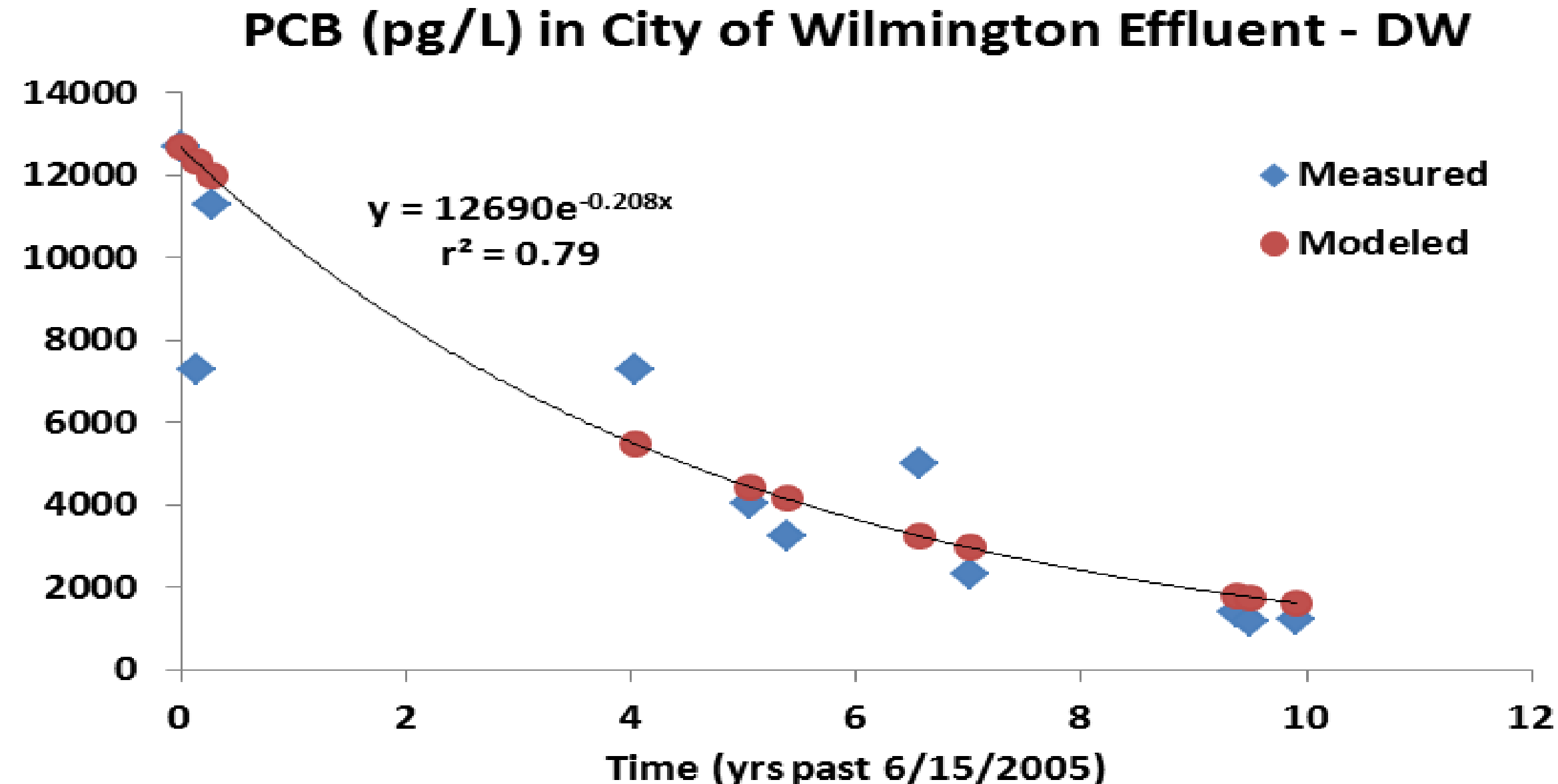
65 Sediment Samples
25 Surface Water Samples
25 Fish Tissue Samples

Results:

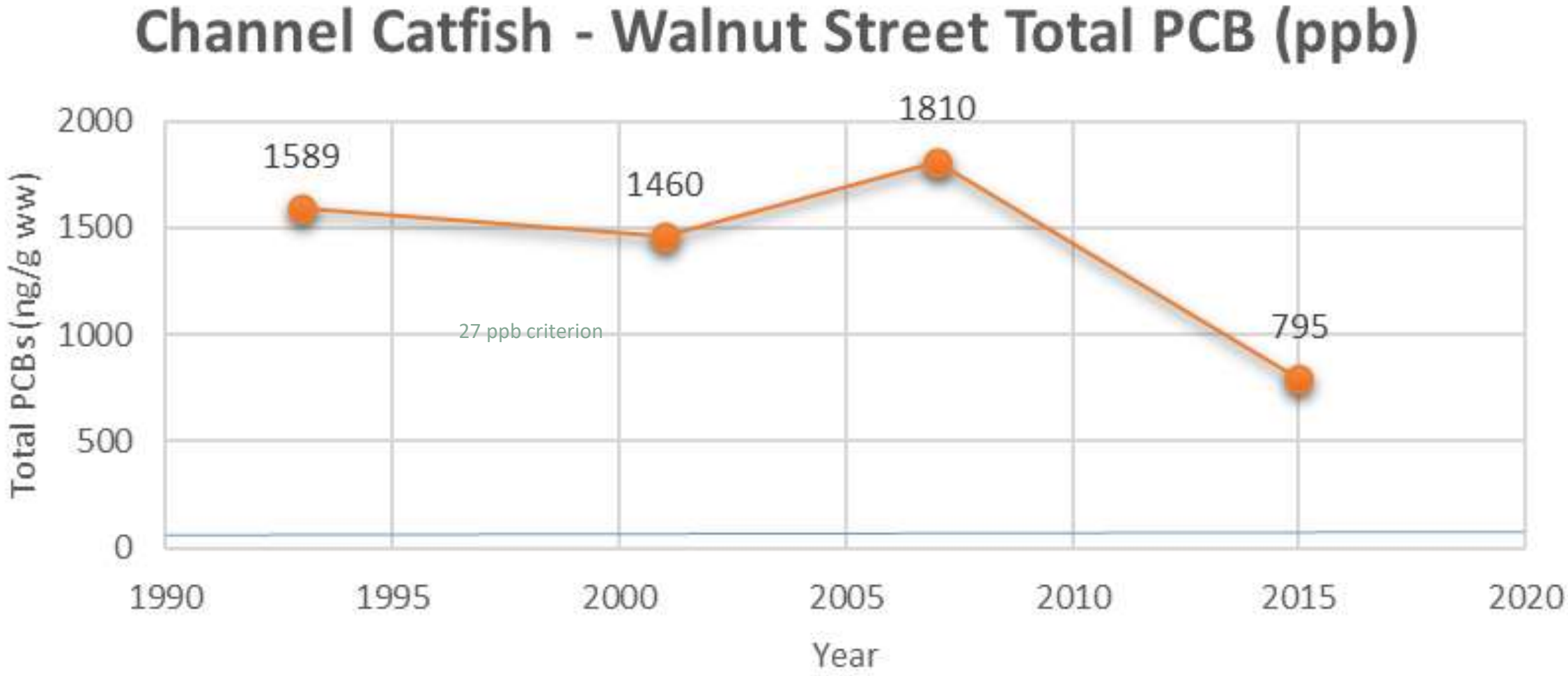
- Lower Christina, tidal Brandywine & lower Shellpot AOCs
- Tributaries are not heavily contaminated with toxics
- Fish improved overall.
- No ambient toxicity



~90% PCB Reduction – Wilmington WWTP



Examples of Fish Tissue Improvements
Tidal Christina River



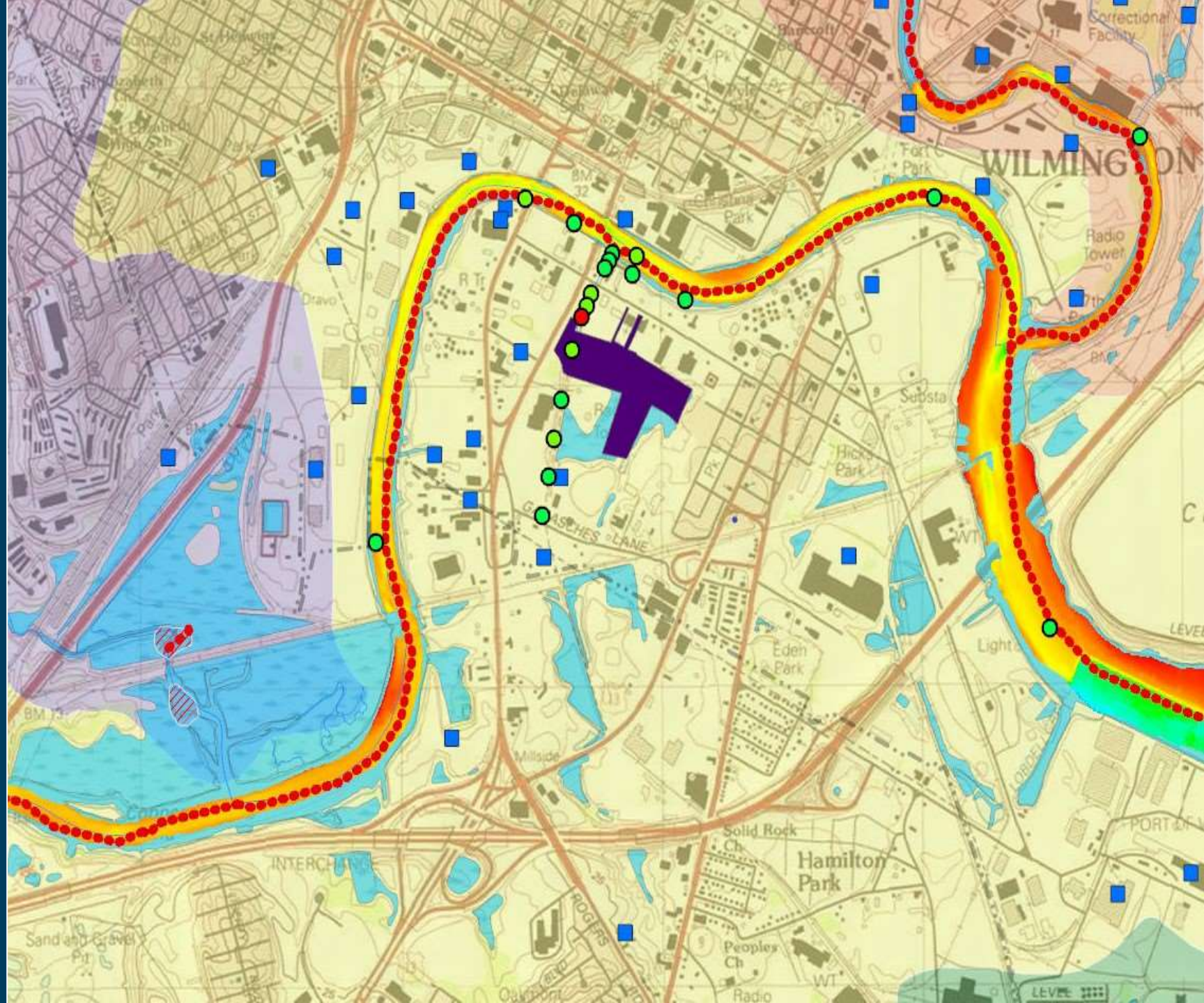
Lines of Evidence

- PCB Mass Loading Analysis
- WATAR Sampling
- 303d Listed Water - Toxics
  Fish Consumption Advisories
- Targeted Projects
- Bathymetric Survey

PCB Sewer-shed Trackback

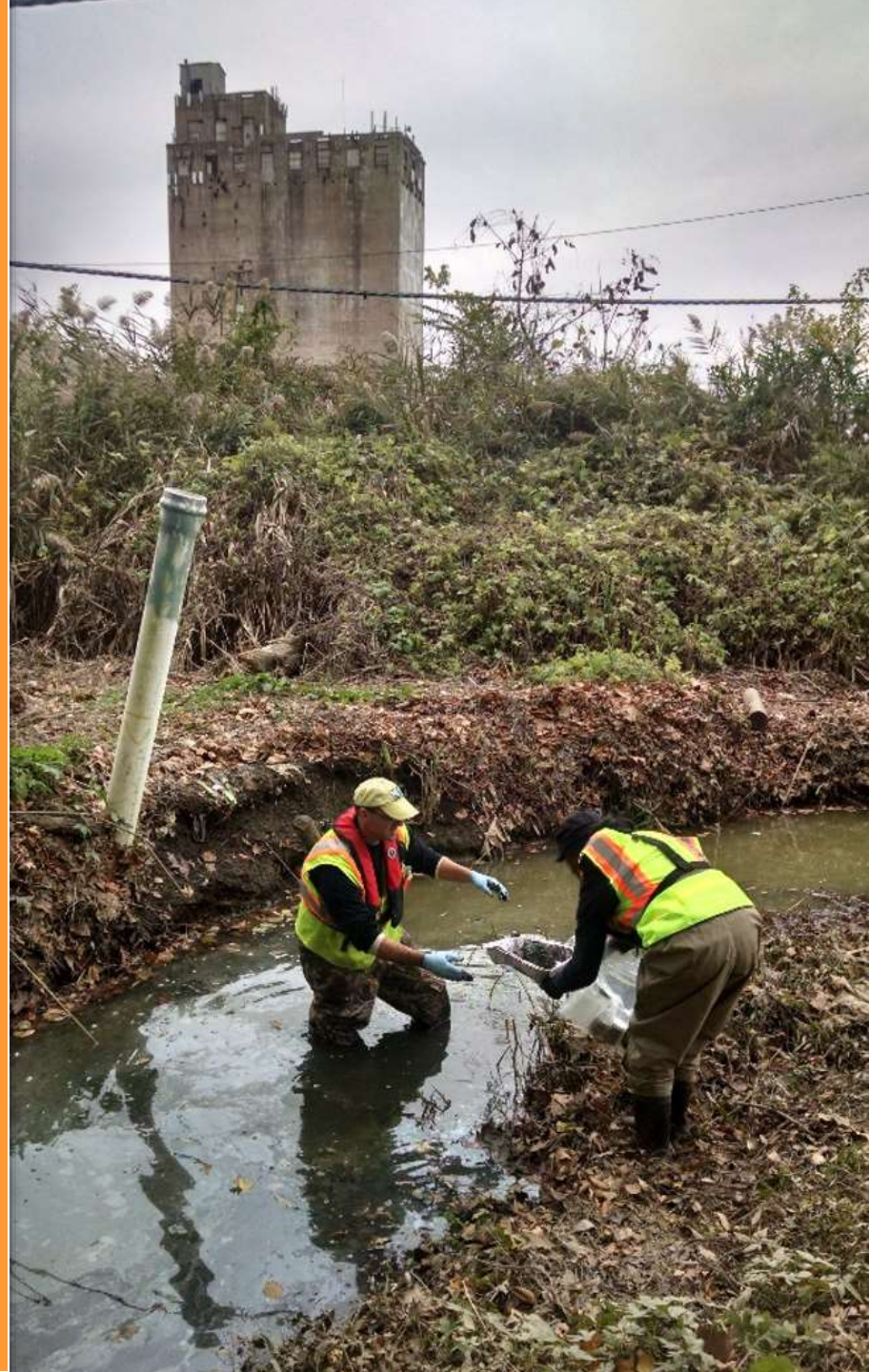
Effective Innovative Remedies

- Meco Drive
- South Wilmington Wetlands
- A Street Ditch



CBR4 – Why Now? Remediation Perspective

- Toxics impacts isolated in the lower tidal portion of basin
- Prioritized upland source control underway (Top 10 plus)
- Partnered efforts to reduce load more than just sites
- Innovative sediment remediation pilot implemented
  - A Street Ditch bio-amended carbon
- Feasibility study for sediment remediation started
- Coordination to address basin- wide topics underway



Restoration Resilience

Partner and Inform

- Christina Conservancy /American River planning grant
- DNREC Coastal Management Program – Engaged and leading
- FUNDED -Sediment Remediation Feasibility Study Underway Brightfields and Anchor QEA

Past Southbridge Civic Association President Marvin Thomas and current President Marie Reed

SOPHIA SCHMIDT, DELAWARE PUBLIC MEDIA 2019

DNREC's <u>WATAR GOAL:</u>
Fishable, swimmable, potable surface water in the shortest timeframe possible.

Questions and Further Discussion

astswmo.org

scottl@astswmo.org