

UPPER/MIDDLE ANACOSTIA CITIZEN SCIENCE WATER QUALITY MONITORING

Olivia Anderson, Project Coordinator and Development Lead

9/1/2020



Welcome!

- Programs Background
- Importance of Water Quality Testing
- Parameters
- Upper Anacostia Results
- How to get involved
- Q & A

Anacostia Riverkeeper's Monitoring Programs

- DC Sampling, started in 2019
- 22 sites in all 3 watersheds, weekly
- Water and air temperature, pH, turbidity, bacteria
- Upper/Mid Anacostia Tributaries, started in 2020
- 7 sites in MD/DC, biweekly
- Same parameters and dissolved oxygen (DO), specific conductivity



WE ARE WASHINGTON
DC GOVERNMENT OF THE DISTRICT OF COLUMBIA
MURIEL BOWSER, MAYOR



NFWF



Anacostia Riverkeeper 2020 Monitoring





DOEE Monitoring Sites

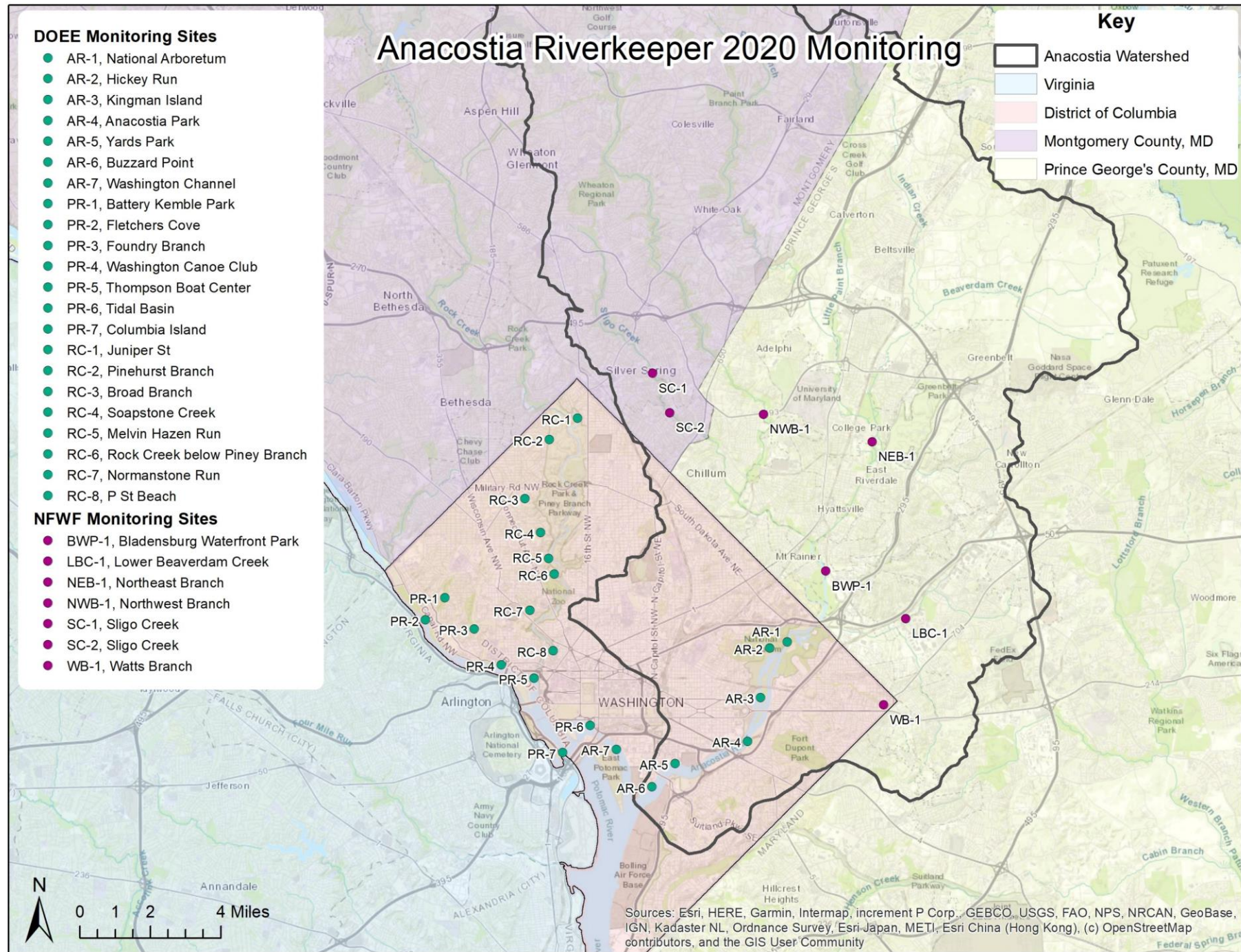
- AR-1, National Arboretum
- AR-2, Hickey Run
- AR-3, Kingman Island
- AR-4, Anacostia Park
- AR-5, Yards Park
- AR-6, Buzzard Point
- AR-7, Washington Channel
- PR-1, Battery Kemble Park
- PR-2, Fletchers Cove
- PR-3, Foundry Branch
- PR-4, Washington Canoe Club
- PR-5, Thompson Boat Center
- PR-6, Tidal Basin
- PR-7, Columbia Island
- RC-1, Juniper St
- RC-2, Pinehurst Branch
- RC-3, Broad Branch
- RC-4, Soapstone Creek
- RC-5, Melvin Hazen Run
- RC-6, Rock Creek below Piney Branch
- RC-7, Normanstone Run
- RC-8, P St Beach

NFWF Monitoring Sites

- BWP-1, Bladensburg Waterfront Park
- LBC-1, Lower Beaverdam Creek
- NEB-1, Northeast Branch
- NWB-1, Northwest Branch
- SC-1, Sligo Creek
- SC-2, Sligo Creek
- WB-1, Watts Branch

Key

-  Anacostia Watershed
-  Virginia
-  District of Columbia
-  Montgomery County, MD
-  Prince George's County, MD



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



Importance of WQ Monitoring



Share data with the public



Help enforcement/
watershed
management



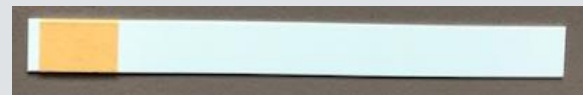
Inform policy
decisions



Overall watershed
health

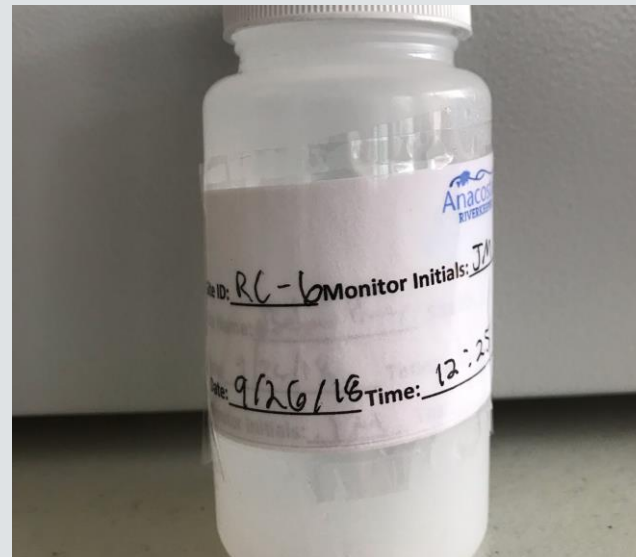
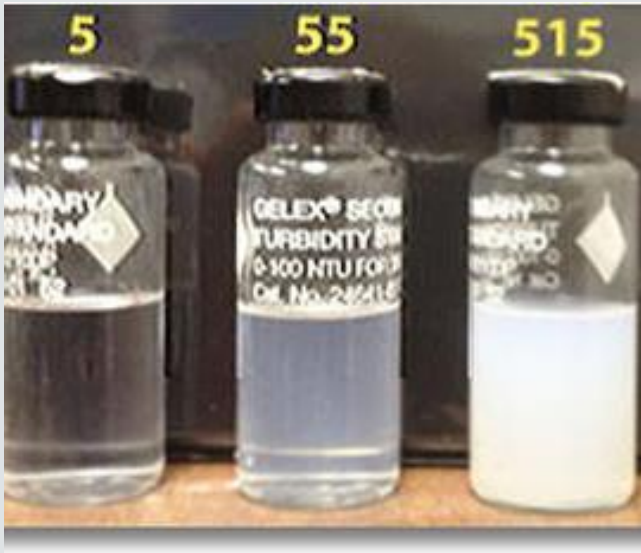
Parameters

- Air and water temperature
- pH (acidity)



Parameters

- Turbidity (cloudiness)
- Bacteria (*E. coli*)

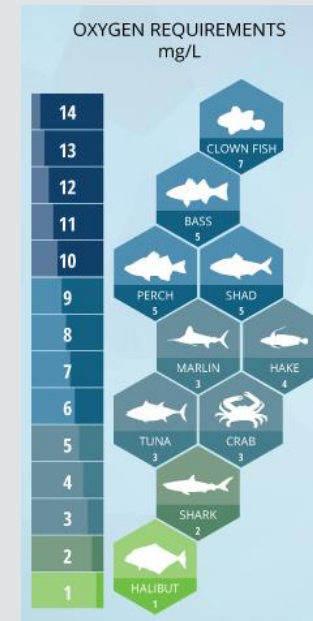
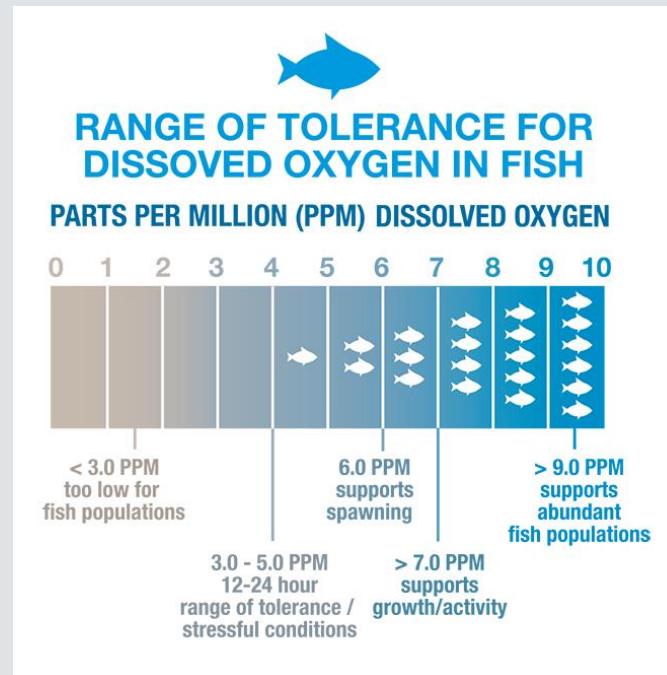


Parameters (Upper Anacostia)

- Dissolved Oxygen (DO % and mg/L)
- Specific Conductivity ($\mu\text{S}/\text{cm}$)

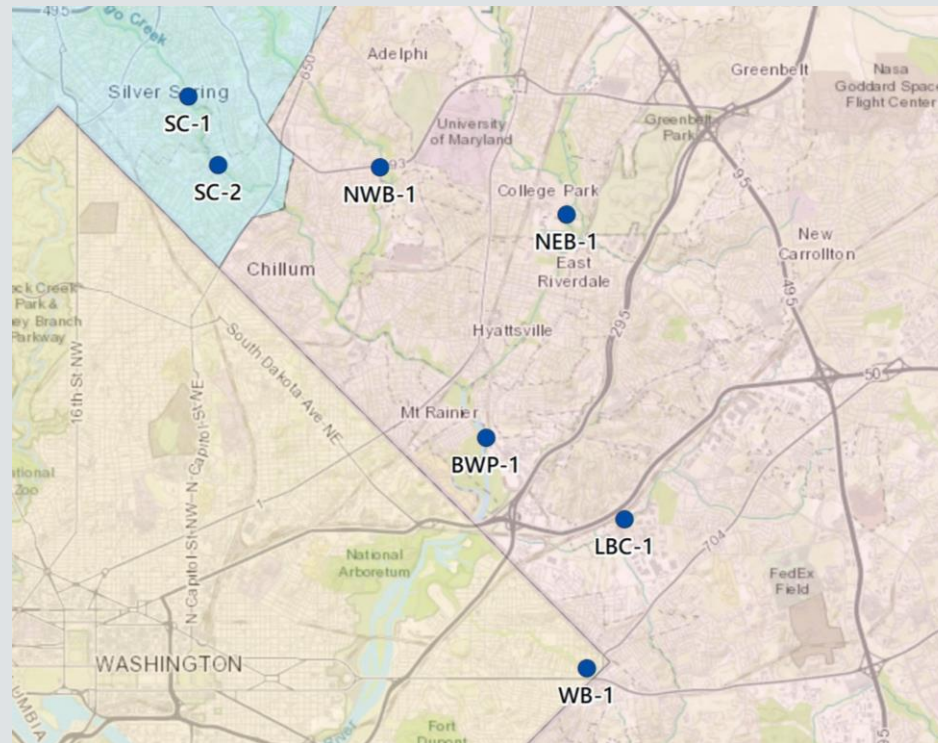


	uS/cm
DISTILLED WATER	0.5 - 3
MELTED SNOW	2 - 42
TAP WATER	50 - 800
POTABLE WATER IN THE US	30 - 1500
FRESHWATER STREAMS	100 - 2000
INDUSTRIAL WASTEWATER	10000
SEAWATER	55000



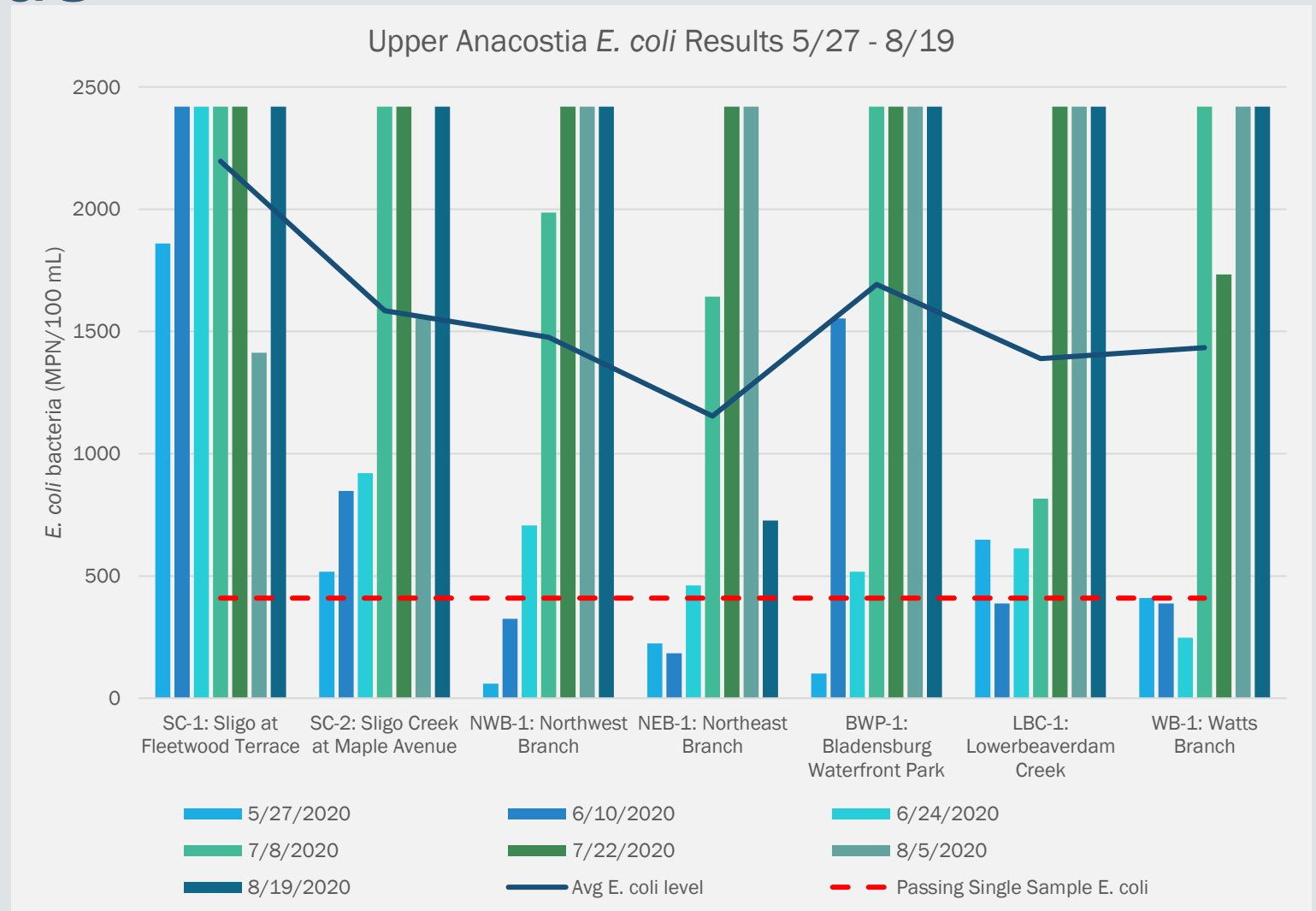
Summer 2020 Results

	SC-1	SC-2	NWB-1	NEB-1	BWP-1	LBC-1	WB-1
Avg E. coli level	2195.9	1585.3	1476.7	1154.2	1692.9	1389.2	1434.0
Avg DO%	91.0	96.5	86.9	90.8	72.9	78.9	94.5
Avg DO mg/L	7.9	8.4	7.5	7.8	6.1	6.7	8.1
Avg Spec. Conductivity	412.2	443.2	310.5	267.4	261.2	343.1	304.0

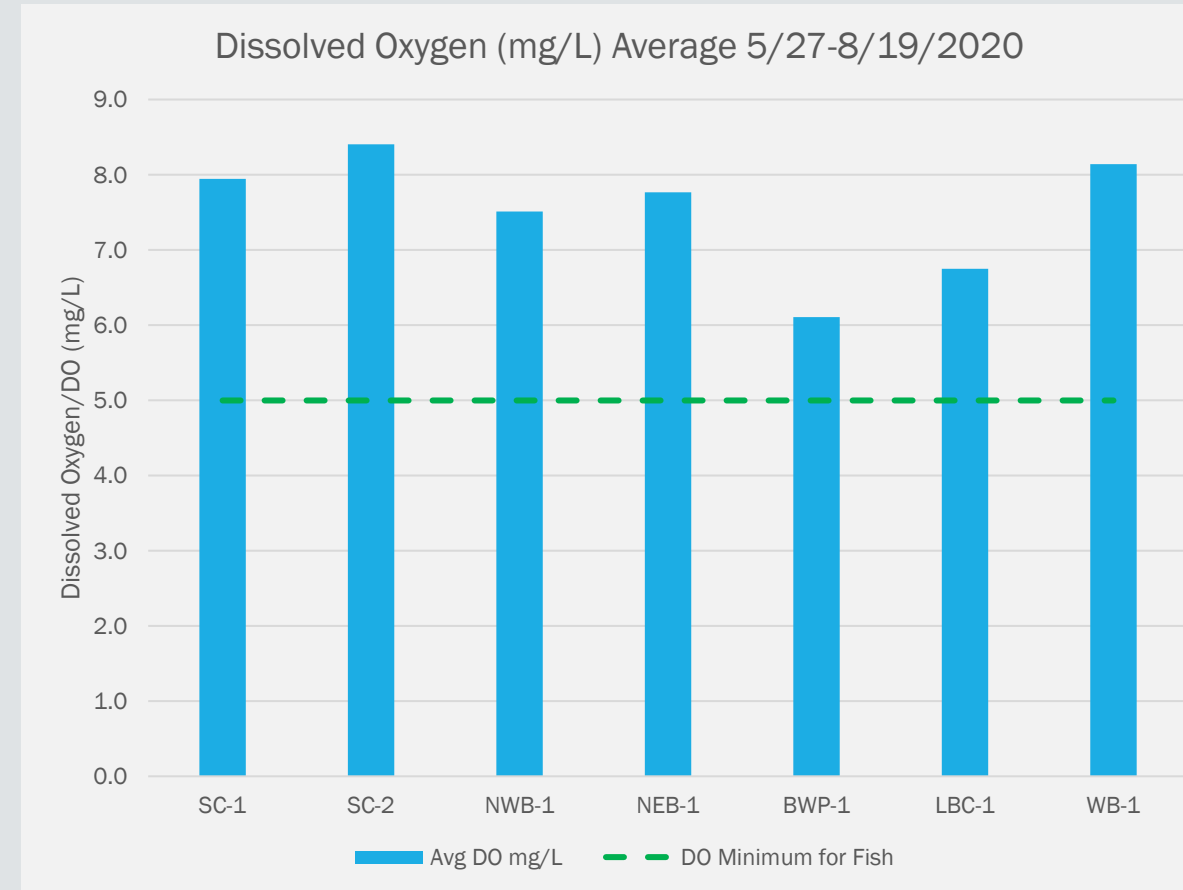
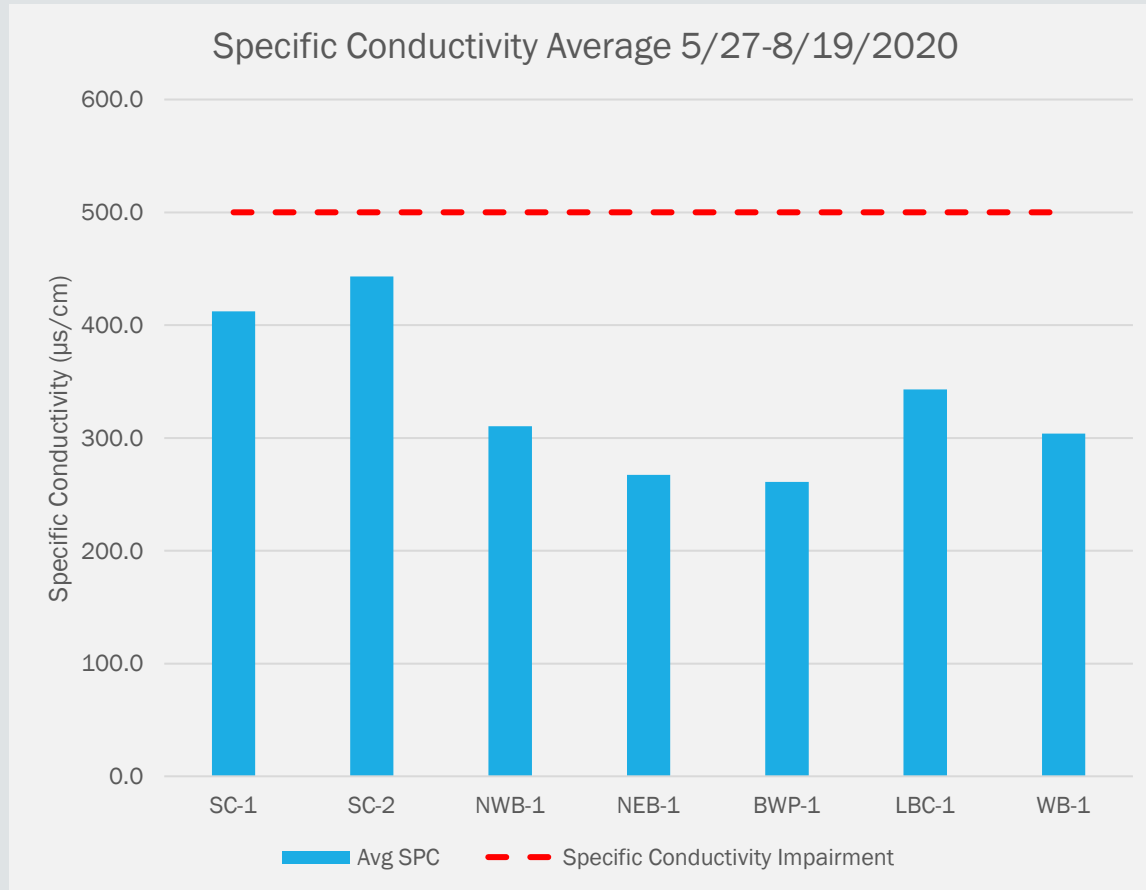


Bacteria Trends

- Heavy precipitation = bacteria off the charts
- Stay at home order, lower bacteria
 - *Less traffic, cars, people, etc.*
- SC-1 and 2, hot outfall
 - *Just north of SC-1 (Wayne Avenue)*
- 7/22 - 8/19 extremely high across the board
 - *Why?*
 - 3+ inches of rain 7/8 and 8/5



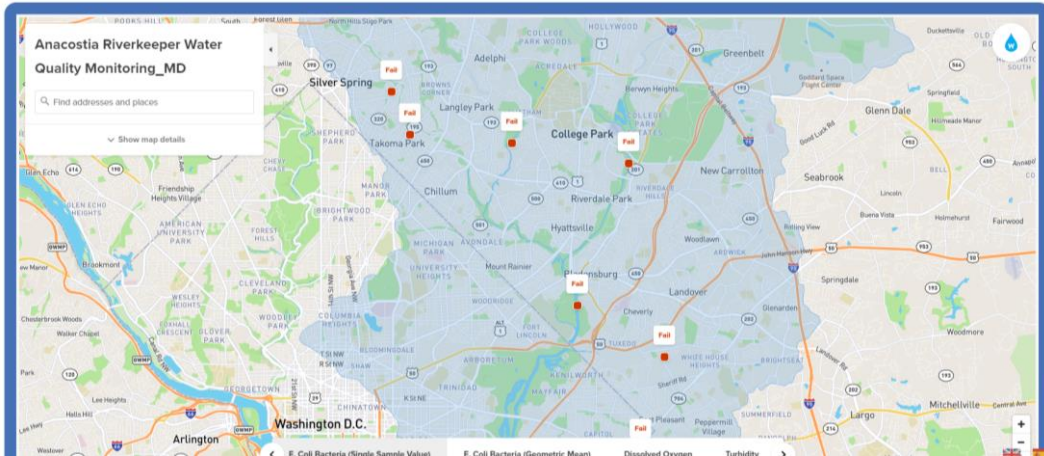
Specific Conductivity and Dissolved Oxygen



SC-1: Sligo at Fleetwood Terrace
 SC-2: Sligo Creek at Maple Avenue
 NWB-1: Northwest Branch
 NEB-1: Northeast Branch

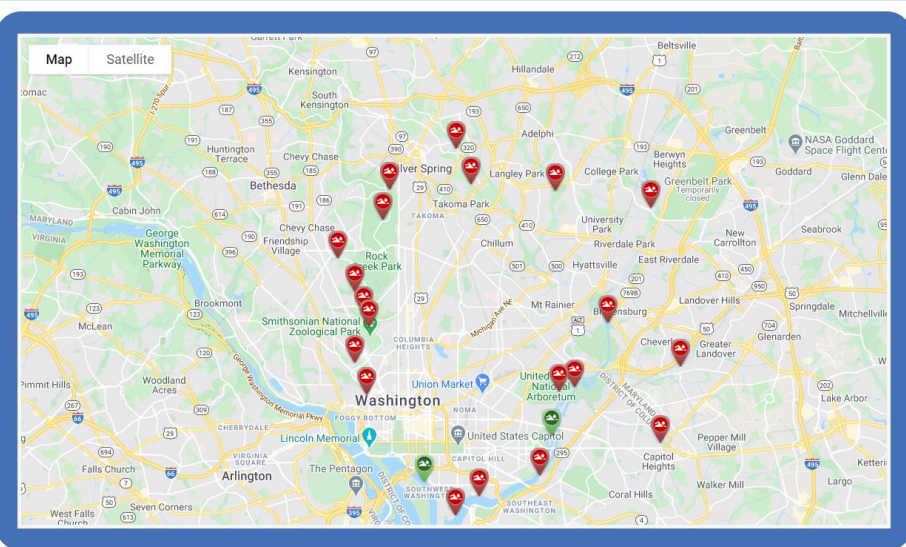
BWP-1: Bladensburg Waterfront Park
 LBC-1: Lowerbeaverdam Creek
 WB-1: Watts Branch

Where We Monitor



Where to find weekly data

- <https://www.anacostiariverkeeper.org/md-water-quality/>
- Maps are embedded in ARK website and reports the results for that week as well as stores past data
- Swim Guide shows P/F and Water Report shows P/F and quantitative results



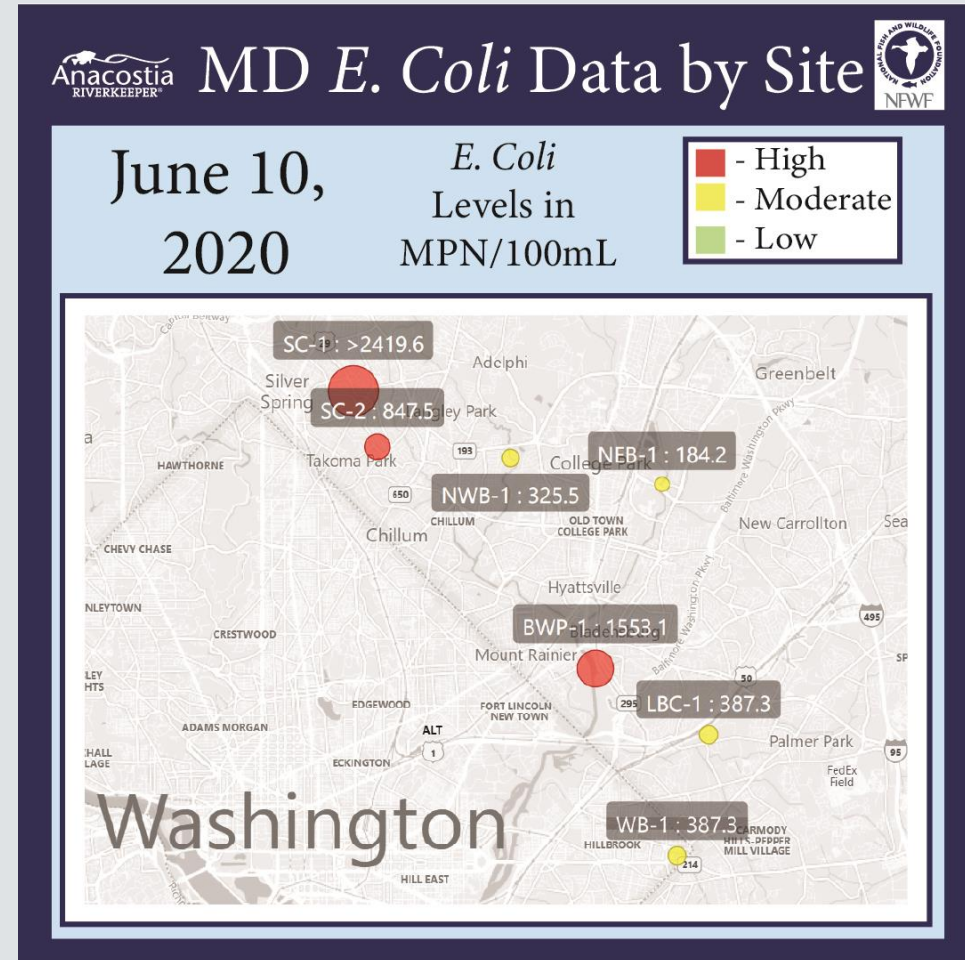
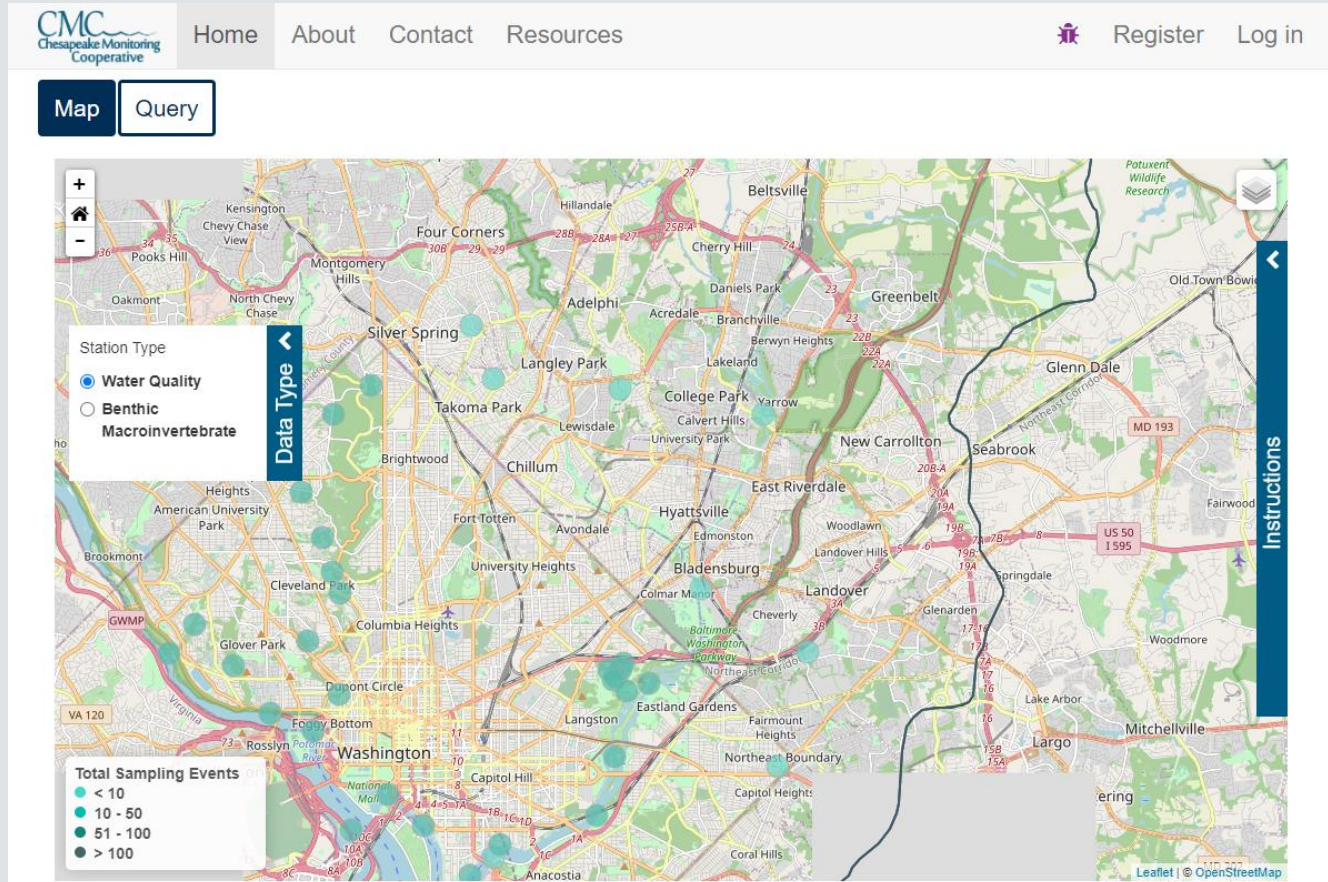
Anacostia Riverkeeper Upper Watershed Community Science Water Quality Results

August 19, 2020

Site	¹ Funder	E. Coli Bacteria, Single Day (MPN/100mL)	Dissolved Oxygen (mg/L)	Conductivity (µS/cm)	Air Temperature (°C)	Water Temperature (°C)	pH	Turbidity (NTU)
Anacostia River Watershed								
Sligo Creek @ Fleetwood Terrace	NFWF	>2419.6 - FAIL	8.68	288.1	-	21.3	7.09	9.68
Sligo Creek @ Maple Avenue	NFWF	>2419.6 - FAIL	8.86	409.6	21	21.3	7.37	7.44
Northeast Branch	NFWF	>2419.6 - FAIL	8.15	293.3	21	21.5	7.4	11.7
Northwest Branch	NFWF	727 - FAIL	8.52	239.2	20	22.1	7.52	7.07
Bladensburg	NFWF	>2419.6 - FAIL	7.09	254.8	21	23.2	7.34	15.2
Lower Beaverdam Creek	NFWF	>2419.6 - FAIL	8.13	218.7	21	22.3	7.52	50.1
Watts Branch	NFWF	>2419.6 - FAIL	8.56	250.9	19.5	22.8	7.7	44.3

¹NFWF = National Fish and Wildlife Foundation

Where to find weekly data



- CMC can be found at <https://cmc.vims.edu/> (left map)
- ARK maps can be found on social media as well (along with Swim Guide and Water Reporter maps)

How to help



Become a citizen science water quality monitor



Write your local councilmembers about issues



Be aware!

Report unusual smell or look of the water



Stormwater management

Rain gardens, rain barrels, decrease impervious pavement



Stay updated on the results

www.anacostiariverkeeper.org/md-water-quality

Thank you for joining!

Go

Go to our website

- www.anacostiariverkeeper.org/md-water-quality

Follow

Follow us on social media

- Facebook - Instagram - Twitter

Email

Email us for updates or to become a Citizen Science Water Quality Monitor:

- monitor@anacostiariverkeeper.org
- olivia@anacostiariverkeeper.org

Resources

- <https://www.anacostiariverkeeper.org/water-quality/>
- <https://water.usgs.gov/owq/WhyMonitorWaterQuality.pdf>
- <https://archive.epa.gov/water/archive/web/html/vms50.html>
- https://www.chesapeakebay.net/discover/ecosystem/dissolved_oxygen
- <https://www.epa.gov/national-aquatic-resource-surveys/indicators-conductivity>
- <https://www.idexx.com/en/water/water-products-services/colilert/>