



# 2019 Report Card for the South, West, and Rhode Rivers



Our mission is to protect, preserve, and restore the South, West, and Rhode Rivers, while inspiring future generations to connect meaningfully with nature.

## Methods:

The report card scores are calculated with data from 22 tidal sites in the South River and 30 between the West and Rhode Rivers. Seven parameters are measured weekly (Apr.-Oct.) using water quality instruments: Hach Hydrolab for the South, an YSI meter for West and Rhode, as well as a Secchi disk for clarity. Bacteria samples are collected in the summertime from 36 popular swimming areas by Arundel Rivers Federation and Anne Arundel County. Our scoring system uses the approach of the Mid-Atlantic Tributary Assessment Coalition.

## We are grateful for:

Dr. Jennifer Gundersen and Dr. Wayne Martin, our Quality Assurance Officers. Anne Arundel County, Maryland Department of Natural Resources, and Virginia Institute of Marine Science also provided data. Thank you to our generous supporters and volunteers who make this scientific data collection possible.



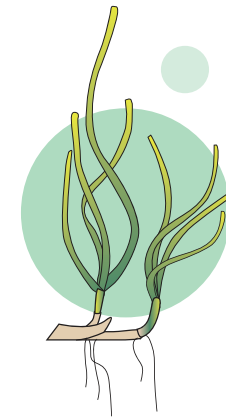
Cover Photo: "A Smith Brother's Tug from the West River by David Sites. Icons are from Integration and Application Network, University of Maryland Center for Environmental Science (ian.umces.edu/symbols/). Graphics by JoEllen Kidwell, JH Graphics.

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## Rivers Responded to Less Stormwater

In 2019, all of our rivers showed their resiliency to the setbacks presented by record rainfall in 2018, seeing overall improvement. All three rivers improved in **Bacteria, Temperature, and pH scores. Water Clarity**, the driver for underwater grasses, improved in the South, held steady in the Rhode, and decreased in the West. **Dissolved Oxygen**, critical for fish and oysters, slightly worsened in the South, improved in the Rhode, and held steady in the West.



## Underwater Grasses

Return of the grasses! The decreased polluted stormwater in 2019 was a gift to underwater grasses, which surged back from non-existent in 2018 to the highest levels we've seen since 1978 for the Rhode River and since 2010 for the South River. We also saw a large dense bed develop behind Holland Point in Herring Bay. Unfortunately, the West River went without any returning grasses in 2019, perhaps due to the West River's diminished clarity.



## Oysters

In the South River, 2019 was our first year consistently monitoring water quality at our sanctuary oyster reef. It turns out the oysters worked hard, delivering increased pH to combat Bay acidification, and outperforming 90% of other South River stations for clarity and 95% for dissolved oxygen.



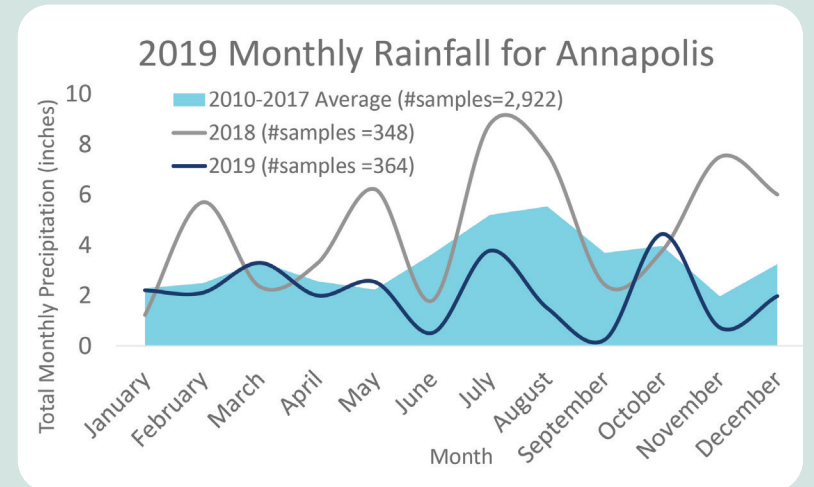
## Bacteria

Of all 3 rivers, West had the best score for Bacteria levels, 91.24 or an A.

Water Quality Indicators	South River		Rhode River		West River	
	Score/Change from 2018	Grade	Score/Change from 2018	Grade	Score/Change from 2018	Grade
<b>pH Score</b>	99.1 (+16)	<b>A+</b>	97.2 (+1)	<b>A+</b>	97.2 (+3)	<b>A+</b>
<b>Bacteria</b>	89.6 (+4)	<b>A</b>	81.3 (+1)	<b>A-</b>	91.3 (+2)	<b>A</b>
<b>Dissolved Oxygen</b>	74.2 (-2)	<b>B+</b>	80.6 (+4)	<b>A-</b>	76.2 (Same)	<b>B+</b>
<b>Bottom Temperature</b>	45.4 (+3)	<b>C</b>	50.6 (+10)	<b>C</b>	55.6 (+17)	<b>C+</b>
<b>Water Clarity</b>	35.2 (+4)	<b>D+</b>	27.9 (Same)	<b>D</b>	24.1 (-4)	<b>D-</b>
<b>Underwater Grasses</b>	3.6 (+4)	<b>F</b>	4.1 (+4.1)	<b>F</b>	0.0 (Same)	<b>F</b>
<b>Total Phosphorus</b>	51.3 (+12)	<b>C</b>	47.5 (+7)	<b>C</b>	55.7 (+5)	<b>C+</b>
<b>Total Nitrogen</b>	42.7 (+11)	<b>C-</b>	37.5 (+2)	<b>D+</b>	34.3 (-7)	<b>D</b>
<b>GRADES</b>	<b>56 (+5)</b>	<b>C+</b>	<b>57 (+5)</b>	<b>C+</b>	<b>57 (+4)</b>	<b>C+</b>

Dissolved oxygen was collected using slightly different protocol and are not comparable across rivers.  
 Phosphorus and Nitrogen data are collected by MD Dept. of Natural Resources from one station on each river.

Scores improved across all 3 rivers in 2019.  
 Rainfall decreased by 31 inches from 2018, which meant less stormwater driven pollution.



## Grasses

This year, 5.1 acres of underwater grass appeared on Glebe Bay, the most grass observed in decades.

## Help Map the Grasses!

If you see underwater grass beds when walking or paddling, let the Riverkeeper know so they can get mapped!



- A** (80-100) = Rockfish are Rockin'
- B** (60-79) = Happy as a Clam
- C** (40-59) = Hanging in There
- D** (20-39) = Troubling Times
- F** (0-20) =

0 1 Mile

