

2018 Magothy River Index

Presented at "State of the Magothy" 3/15/19 by the MRA
Event sponsored by the Environmental Center
at Anne Arundel Community College



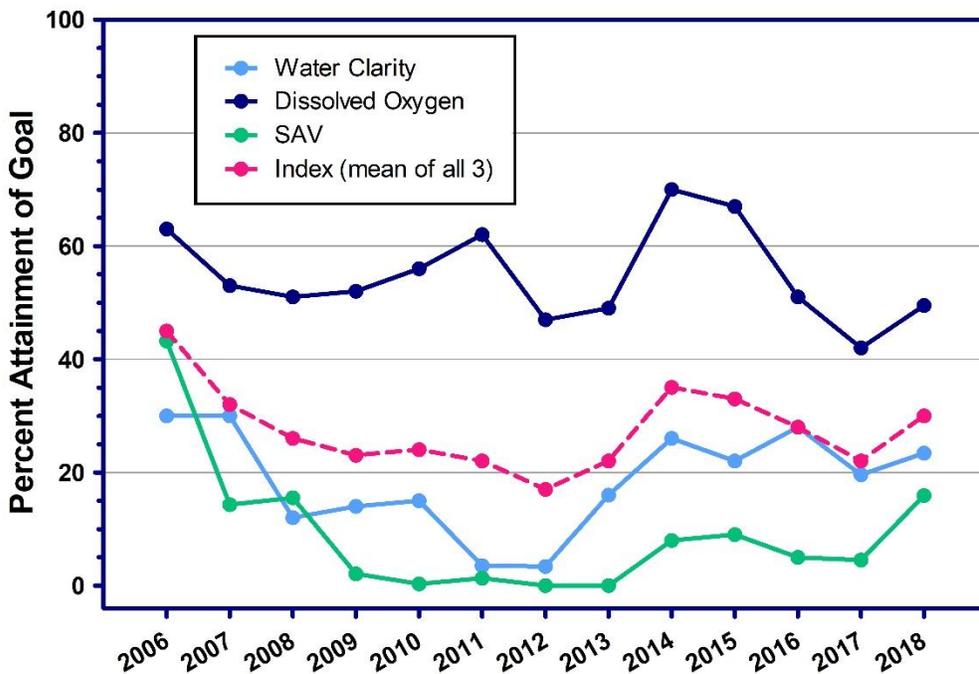
Magothy River Assn., Inc.
P. O. Box 550
Severna Park MD 21146

Magothy River Health Improved in 2018

The Magothy River Association's annual "Magothy River Index", first presented in 2003, assesses water quality in the tidal river. The Index is based on three criteria established by the Chesapeake Bay Program for ecosystem health, and is expressed as percent attainment of a desirable goal and as a letter grade where 0-20% is an F, 21-40 is a D and 41 to 60 is a C. The criteria are percent attainment of:

- water clarity based on Secchi disk depth of at least 1 meter
- dissolved oxygen of at least 5 mg/L in the deepest water at each station and
- achievement of the Chesapeake Bay Program Goal of 544 acres of submerged aquatic vegetation (SAV) as measured by the Virginia Inst. of Marine Science and BayLand Consultants & Designers, Inc.

Magothy River Index, 2006-2018



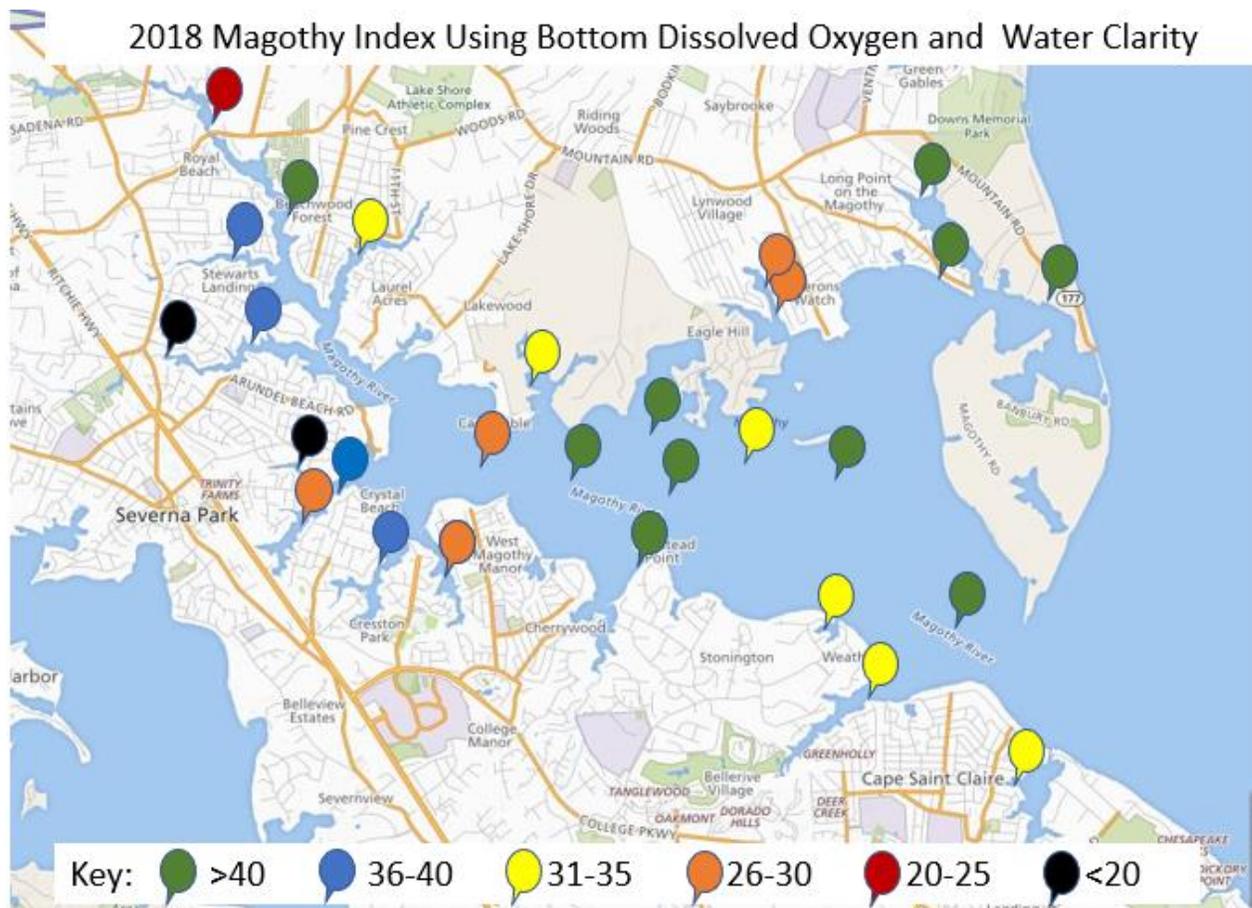
SAV requires water clarity for growth and provides dissolved oxygen as well as key food and habitat for fish and crabs while reducing the impact of wave action on the shore. Most fish and aquatic invertebrates require at least 5 mg/L dissolved oxygen in the water column for their growth and reproduction. In 2018, BayLand surveyed four creeks (Cattail, Cypress, Mill and Cornfield), finding 51 acres of submerged grasses. Although Cattail, Cypress and Mill Creeks had primarily horned pondweed, which is gone by end of June, they found seven grasses in Cornfield Creek including the native grasses Curly Pondweed, Redhead, and

Wild Celery. Kayaking trips in Cornfield Creek by MRA volunteers also revealed an abundance of redhead and milfoil. VIMS aerial data for 2018 showed 36 acres of SAV primarily in Eagle Cove and smaller patches at north and south Ferry Point, Ross Cove, north Gray's Creek, James Pond and Cooley Pond. This year no grasses were reported in the Little Magothy although we know there were some grasses based on small boat surveys taken during the summer by MRA volunteers. There is virtually no overlap between the BayLand acres and the VIMS acres of coverage so we were able to add the two amounts. This brings us to a total of 87 acres which is 16% of the goal. Compared to last year's 24 acres, we saw more than three times as much grass this year.

Why did grasses increase so much last year? Certainly an important component is the presence of Dark False Mussels. They are filter feeders that remove both algae and sediments from the water column, resulting in greater water clarity. We often found mussels growing on the stems of grasses in Eagle Cove during our small boat survey. The high rainfall in 2018 caused the River's salinity to remain very low all summer and this seems to be what encourages the mussels. Once the grasses are established, they are able to pump oxygen into the roots and the water column, helping to raise bottom dissolved oxygen concentrations. Water temperature and pH were about the same as last year, only salinity was significantly different.

This year's index is based on data collected by volunteers from ten mainstem sites and 17 creek or cove sites. We did not include the most upstream site of Cattail Creek in the final index since we don't sample in the headwaters of any of the other creeks. A rating of 30 is a D, but this index is higher than what we have seen in the past three years. All indicators are up this year, with the grasses showing the greatest improvement. We had only two very poor water quality sites this year; one was the upstream Cattail site, where a restoration project was installed this spring and summer, and the other was a new site in North Cypress Branch. This site is indeed downstream of a large restoration project that was completed in 2011, however this stream's watershed is the most heavily urbanized watershed in the River as it includes the two shopping centers in Severna Park.

In the figure below, the Index is calculated for each station using only bottom DO and water clarity data, rather than including SAV coverage since we don't have SAV coverage goals for creeks. Colored points on the map represent the percentage of the time that water clarity ≥ 1 m and bottom DO ≥ 5 mg/L. Almost all creeks showed an improvement in their water quality scores this year compared to last year. The mainstem of the River continues to have good water quality, especially for those sites that are over oyster bars.

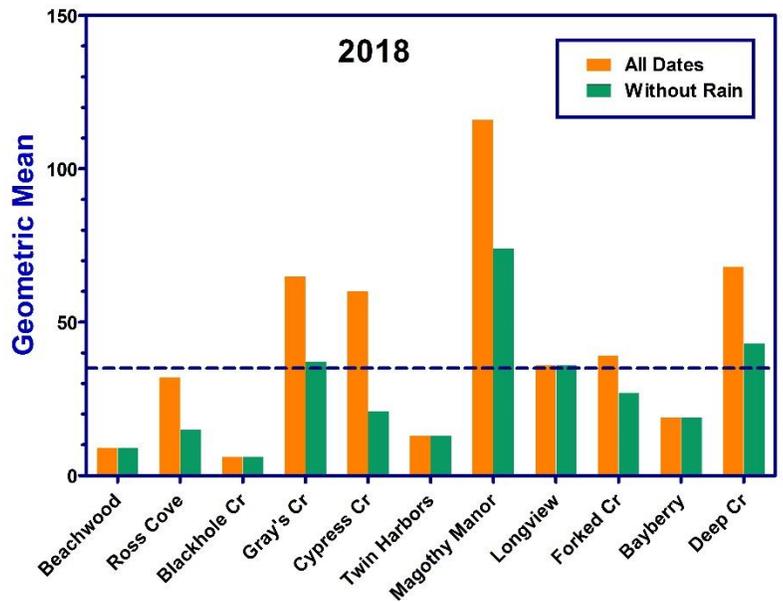


We thank our volunteer monitors for their dedicated work again this year: Steve Troy, Mike Lehman, Charles Haslup, Chris Kerchner, Paul Spadaro, Bob Royer, Dick Carey, Tonya Powell, Jim Crafton, Kristen and Eve Vickery, Chuck McClain, Jim Palmer, Roger Winstanley, and Tom Caperna. We sincerely thank waterfront property owners for access to their piers. Charles Germain and Mike Maguire were our drone videographers, with boat support from Paul Spadaro. See Youtube MRA for interesting drone videos.

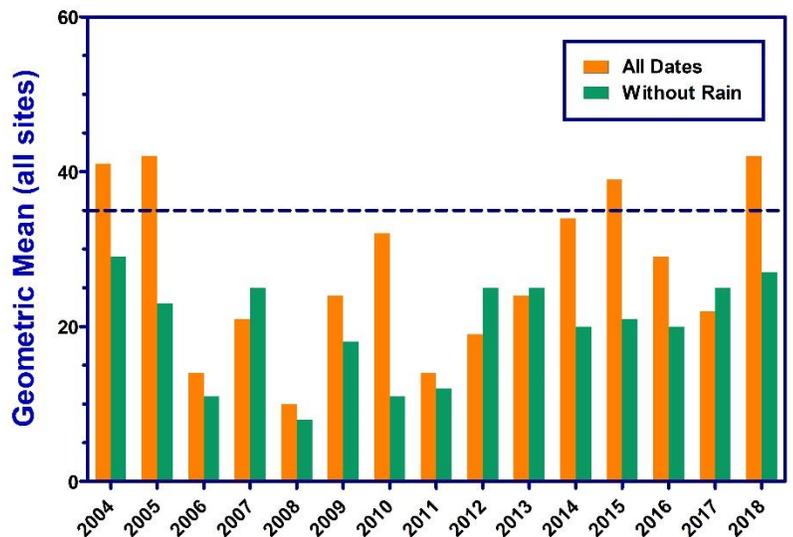
Stormwater Contributes to Fair Bacterial Water Quality in 2018

Our waterways were generally safe for recreational use this summer. We monitor the population of enterococci (*Enterococcus faecalis*) in our waterways as this bacterium is an indicator of recent input of fecal waste. Most sites are sampled biweekly by students at AACC in the Magothy Clearwater program. Water samples are collected on Wednesday mornings, processed by filtration at the lab, and results, expressed as colony forming units or CFU/100 ml, are posted on Dr. Tammy Domanski's website (<https://ola2.aacc.edu/tldomanski>). In the figure to the right, bacterial numbers are expressed as the geometric mean, which enables us to see the summary for each site for the season. The dotted line is drawn at 35 CFU/100 ml, which is the upper limit for safe recreational use. Heavy rains produce stormwater runoff, sweeping pet and wildlife waste into our creeks. By showing both dry weather conditions and all weather conditions, we can clearly see which sites are impacted by stormwater. Magothy Manor beach has a stormwater pipe discharging directly into the beach area and this is the only site sampled on the Magothy that doesn't have a pier for deeper water access.

The second figure shows the trend for the last 15 years. Wet summers typically result in higher bacterial counts. It is important to note that swimming in the 48 hours following a heavy rain is not recommended. While the fecal bacteria that are enumerated are not in themselves likely to cause disease, they indicate the presence of pathogenic bacteria.



Enterococci (CFU/100 ml) at Magothy sites



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MRA Volunteers & Rotary Club Plant Trees at Beachwood Park

June 2, 2018 – Rotary Club of Lake Shore-Severna Park brought volunteers from the Freetown Boys and Girls Club to help plant 12 trees at Beachwood Park in Pasadena. Rotarians paid for four each Southern Yellow Pine, Eastern Redbud and Atlantic White Cedar; all are native trees to this area. MRA supplied planting materials and the County brought a big pile of mulch. Students from Severna Park High School helped spread the mulch.



Congratulations to AACC Student Alexander Thompson for Receiving MRA Scholarships

He earned a BS in Environmental Biology at Beloit College in 2016 and is now working toward an AS in engineering at AACC. He hopes to eventually earn an MS in environmental engineering and to work in stormwater management and stream restoration. Alex has worked and volunteered in the environmental field with various local organizations, mainly the West & Rhode Riverkeeper and Anne Arundel Watershed Stewards Academy.



President's Statement: As we sit in traffic consider this: even the best hotel at some point has to put out a No Vacancy sign. To protect our quality of life and the future health of the Magothy it is time that we seriously address our over development issues by participating in the county GDP process.

MRA Volunteers in Action:

- Waterfront residents can buy floating gardens from the Providence Center. Download copies of The Floating Gardener Newsletter at our website, magothyriver.org. Click on the Programs tab. We thank Lise Crafton for this timely information.
- Contact Paul Spadaro at president@magothyriver.org to volunteer for water quality monitoring or to help in circumnavigation of the river.
- Paddle in our creeks and look for SAV. Contact sally.hornor@gmail.com.
- Help monitor construction sites for sediment runoff; contact Randy Bruns at rbbruns@verizon.net.
- Do you have stories about growing up on the Magothy that you would like to share in our Living History project? Contact Andrea Germain at a3germain@gmail.com.
- Join MRA (MagothyRiver.org); only \$20 for individuals and \$25 for communities.

This index prepared by Sally Hornor with graphics support from Tom Caperna.