

## How does ENERWA perform water quality sampling?

Working in teams of two, a dedicated corps of volunteers, led by George Kaplan and Ron Hartman, performs monthly sampling at selected sites from April to November. Each site is accessible from the shore and teams sample their assigned site(s) once each month. Some analysis is performed in the field (temperature, pH, dissolved oxygen, etc.) while samples are also collected for total nitrogen and phosphorus and sent to a lab for analysis.



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## North East and Elk Rivers Water Quality Report 2021



### Join Us!

If you are interested in learning more about how we sample or would like to volunteer, please contact us at [enerwa@hotmail.com](mailto:enerwa@hotmail.com). Training is provided and you can be teamed with an experienced volunteer as you learn and become comfortable with the process!

**Join ENERWA! Annual Membership Dues:**  
**\$20.00 Individual \$10.00 Students**

**Checks payable to: ENERWA (see address on this page)**

**Or by credit card at:**  
**[elkandnortheastrivers.org](http://elkandnortheastrivers.org)**

**TAX DEDUCTIBLE**

### Things we can all do to improve water quality:

- Recycle, and dispose of trash properly
- Don't over fertilize lawns and never within 15 feet of a waterway or well
- Minimize rainwater runoff from your property by using rain barrels and replacing lawn, where possible, with native plants
- Fix any oil, antifreeze, or other leaks from your vehicles
- Use commercial car washes (which recycle water)
- Maintain septic systems: pump out regularly
- Never discharge waste liquids from a boat
- Volunteer to help with a stream cleanup
- Support ENERWA's water sampling: volunteer or contribute to lab costs



Thanks to our partners:



**50** ALLIANCE  
for the Chesapeake Bay



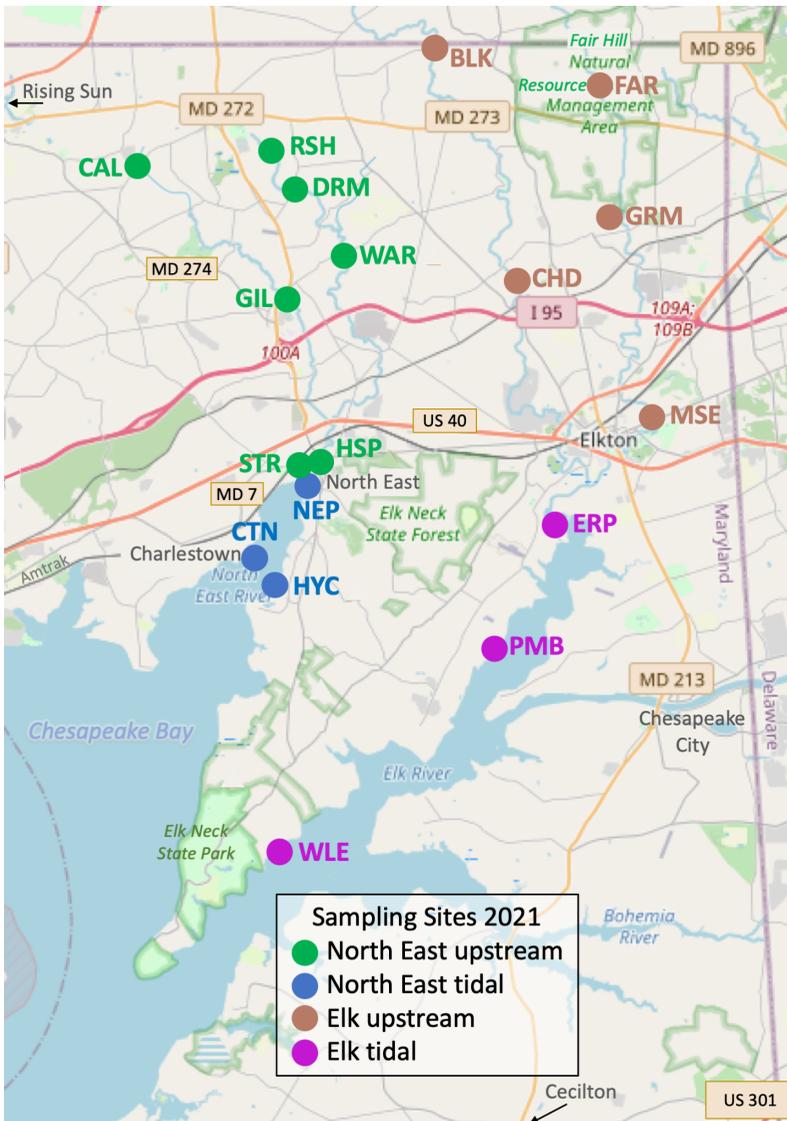
## What is being measured and why is it important?

- Air and water temp.
- Total nitrogen
- Total phosphorus
- Water clarity (turbidity)
- pH
- Conductivity
- Dissolved oxygen

Nitrogen, phosphorus, and sediment are the three pollutants addressed by the Bay's "pollution diet" overseen by the EPA. In our measurements, total nitrogen, total phosphorus, and water clarity are the parameters that directly relate to these pollutants. Conductivity is another measure of undesirable solids dissolved in water, and dissolved oxygen tells us how well a waterway can support living things — fish, invertebrates, etc.

## What sites are now being monitored?

The map below shows the sites that we monitored in 2021: 10 sites in the North East River watershed and 8 sites in the Elk River watershed. Of those, 3 sites in each watershed were tidal, the rest, upstream (non-tidal).



## North East River Watershed

2021 Grade: **C-**

### Upstream Sites

Site	Conductivity	Nitrogen	Phosphorus	Clarity	Site Grade
STR	C =	A- ↓	B =	C+ ↓	B- ↓
HSP	C- ↑	D- =	D+ ↓	C ↑	D+ =
GIL	D+ ↓	F =	D+ ↑	D+ ↓	D =
CAL	D ↓	F =	C ↑	B ↑	D+ ↑
WAR	C- ↑	D =	D+ ↓	B- ↑	C- =
DRM	D+ =	F =	F =	D+ ↑	D ↑
RSH	C-	D	C-	B	C-
All sites	C- =	D- ↓	C- =	C =	D+ =

### Tidal Sites

Site	Oxygen	Nitrogen	Phosphorus	Clarity	Site Grade
CTN	B ↓	B =	C+ ↓	D ↓	C+ ↓
HYC	A+	B-	C	D-	C+
NEP	A+ =	C =	C- ↓	F ↓	C ↓
All sites	A =	C+ ↑	C ↓	D- ↓	C+ ↓

Sites RSH and HYC were new in 2021.

## Elk River Watershed

2021 Partial Grade: **C**

### Upstream Sites

Site	Conductivity	Nitrogen	Phosphorus	Clarity	Site Grade
MSE	D	F	A	C	C
CHD	D =	F =	B ↑	B ↑	C- ↑
GRM	C-	A-	A+	A+	A-
FAR	D =	F =	C =	B+ ↑	C- ↑
BLK	C-	F	A	A	C
All sites	D	F	B	B+	C

### Tidal Sites

Site	Oxygen	Nitrogen	Phosphorus	Clarity	Site Grade
WLE	A+	C	A	D+	B
PMB	A+	C+	D-	F	C
ERP	A+	F	D-	F	D+
All sites	A+	D+	D+	F ↓	C

All sites except CHD and FAR were new in 2021. Only sites CHD, FAR, PMB, and ERP had data prior to August.



## How is the grade calculated?

ENERWA uses the sampling and analysis protocols developed by the Mid-Atlantic Tributary Assessment Coalition (MTAC). There are specific protocols for tidal sites and non-tidal sites.

View the raw ENERWA data at each site on the Chesapeake Monitoring Cooperative (CMC) Data Explorer: <https://cmc.vims.edu/#/home>, which is maintained by the Alliance for the Chesapeake Bay.



The tables on the left show the complete scorecards, according to the MTAC protocols, for our 2021 measurements. Dissolved oxygen is not scored for the upstream sites (although it is used as a check) because oxygen is generally good in flowing streams. Conductivity is not scored for tidal sites because it is very sensitive to changes in salinity (salt content).

The differences in scoring from 2020 to 2021 are indicated by the small marks on the right side of each box, where ↑ means better in 2021, ↓ means worse, and = means the scores for the two years are the same.

Note the high nitrogen content for most of the upstream sites in both watersheds, and the poor water clarity in all the tidal sites. The GRM site in the Elk watershed is the best site overall, because Gramies Run, sampled there, drains wooded land in Fair Hill.

We especially thank the **Town of North East** for funding the purchase of new equipment last year, which allowed us to cover both watersheds more completely. Because half of the Elk River sites didn't have measurements until August, when the new equipment was first used, the grade for the Elk River is labeled "partial". We plan to have a full season of coverage of both watersheds in 2022.