



Chester River

2016 Report Card



Message From the Riverkeeper

As the Chester Riverkeeper, it is my job to be the voice for the river – to be the eyes and ears on the ground (and on the water), intimately aware of what is going on in our watershed, and to be the voice that advocates for the protection of our waters.

But I am just one person, and this is where **YOU** come in. Look at the map of our watershed on the opposite page – how many people live, work, and play within these boundaries? Every single one of us can be the eyes and ears for our river.

Every single one of us needs to be the voice that advocates for this river – for its respect, protection, and restoration.

Do you raft up at Conquest Beach in the summer? Fish off the dock at Cliff City? Do your children swim at Gunston's beach, Rolph's Wharf, or Cacaway Island? Do you kayak near Eastern Neck?

The health and vitality of these waters depends on our ability to defend and enforce clean water laws. Political hearings in Annapolis impact the quality of the water in Langford Bay and legislators in Washington, D.C. affect the health of the stream behind your house.

Now, more than ever, we need to raise

EVERY voice for the Chester – for Comegy's Bight, Island Creek, Frying Pan Cove – for every tributary listed on the following pages.

CRA is fighting for clean water laws in Maryland and at the federal level. Add your voice to ours – tell your elected officials that you support environmental protection. Tell your county commissioners, your state senators and delegates, and your congressional representatives to stand up for your right to clean water.

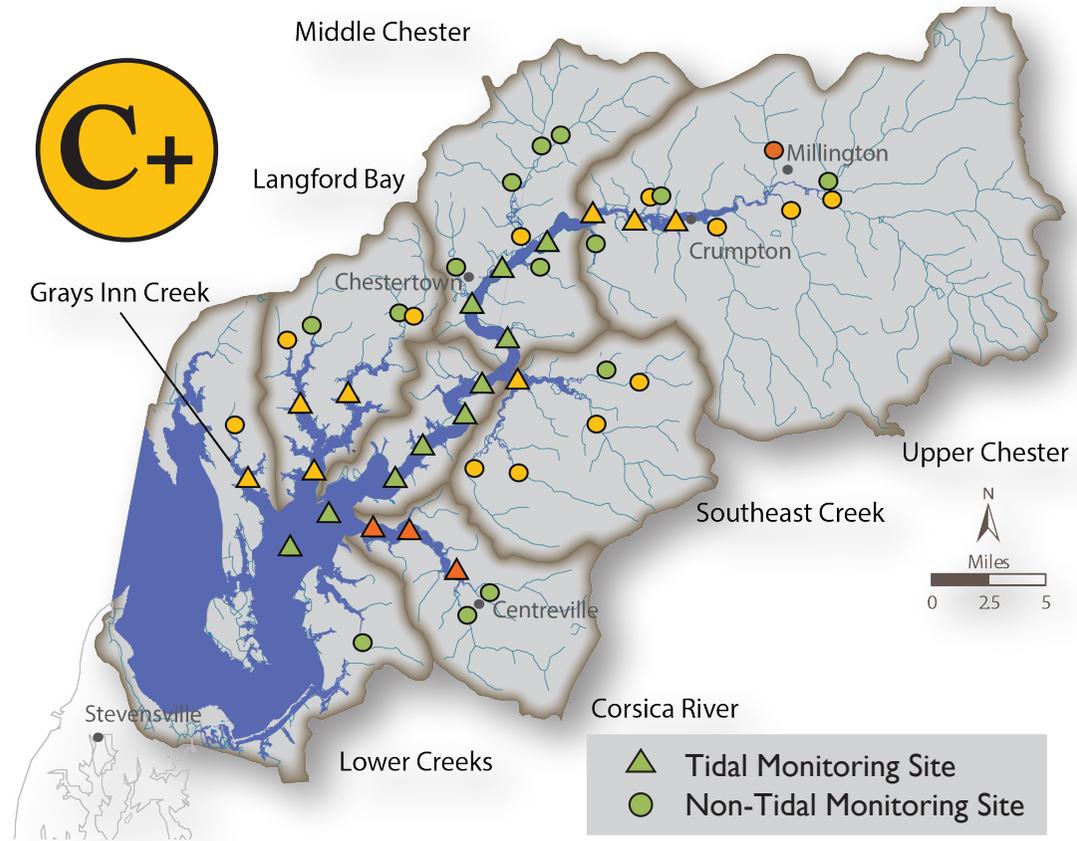
We all need to raise our voices for the Chester River.

Isabel Junkin Hardesty
Chester **RIVERKEEPER**



All Photos by:
Tim Trumbauer, Isabel Hardesty, or Shane Brill.

Chester River Grades



2016 on the Chester Water quality on the Chester held steady for the year, equaling last year's C+. However, a closer look reveals some subtle changes - water clarity improved, dissolved oxygen decreased (likely due to late summer heat waves), while nutrient pollution and algae blooms remained roughly the same. **Long term trends continue to indicate a river that is at risk, but slowly improving.**



Watershed	Dissolved Oxygen	Nutrients Nitrogen	Phosphorus	Clarity	Algae	Grade
Tidal Chester	71	60	34	47	49	C
Non-Tidal Chester	77	55	43	68	NA	C+

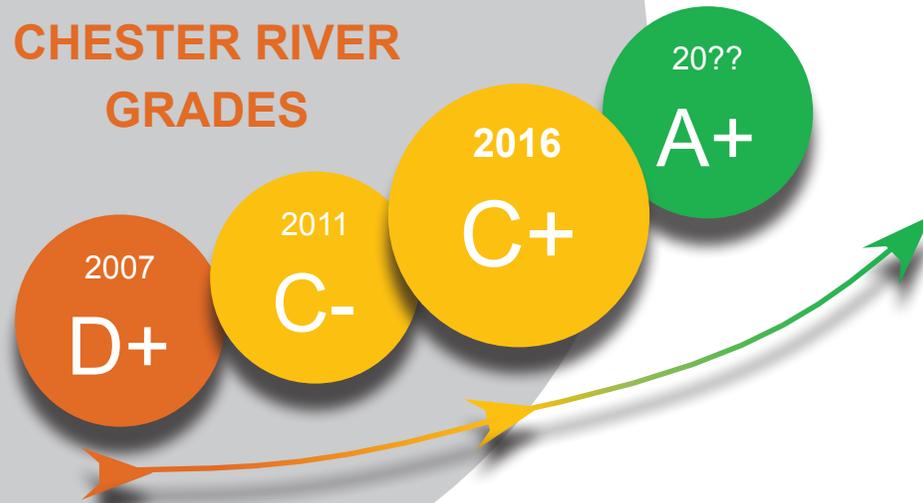
Restoration...

...Works

Thanks to the efforts of our local citizens, government, farmers, and, of course, water advocacy groups like the Chester River Association, **water quality in the Chester River and throughout the Chesapeake Bay is improving.**

In our first Report Card in 2007, the Chester River watershed received a grade of D+. Nearly ten years later, we have shown slow but steady improvement, earning a C+ in both 2015 and 2016.

CHESTER RIVER GRADES



The Chester is improving, but it is **still polluted**. Nutrient (nitrogen and phosphorus) and sediment pollution cause algae blooms. Algae blooms lead to poor water clarity, oxygen-starved dead zones, and ultimately threaten the entire ecosystem, including oysters, rockfish, crabs, grasses, and many other species.

So where does pollution in our river come from?

- Poorly managed farms create nutrient and sediment pollution.
- Yard fertilizer creates nutrient pollution.
- Failing septic and waste water treatment systems create nutrient pollution.
- Legacy nutrients and sediment from past farm practices continue to contribute to pollution.

In the past few years, we have worked hard building wetlands to treat pollution, working with farmers to develop and implement technologies to reduce pollution, planting native buffers to protect our fragile waterways, and targeting restoration in the most impaired areas of our watershed. We're doing our part, but **what can you do to help the Chester continue to heal?** Glad you asked!

Be a voice for the Chester

- Talk to your neighbors about river-friendly practices.
- Give them the Chester River Report Card!
- Contact your local, state, and federal representatives to support clean water legislation and regulation.
- Support local watershed groups like CRA.

Do your part

- Reduce or eliminate use of lawn fertilizer.
- Reduce lawn area and plant native plants.
- Install rain gardens, rain barrels, and other river-friendly yard practices.

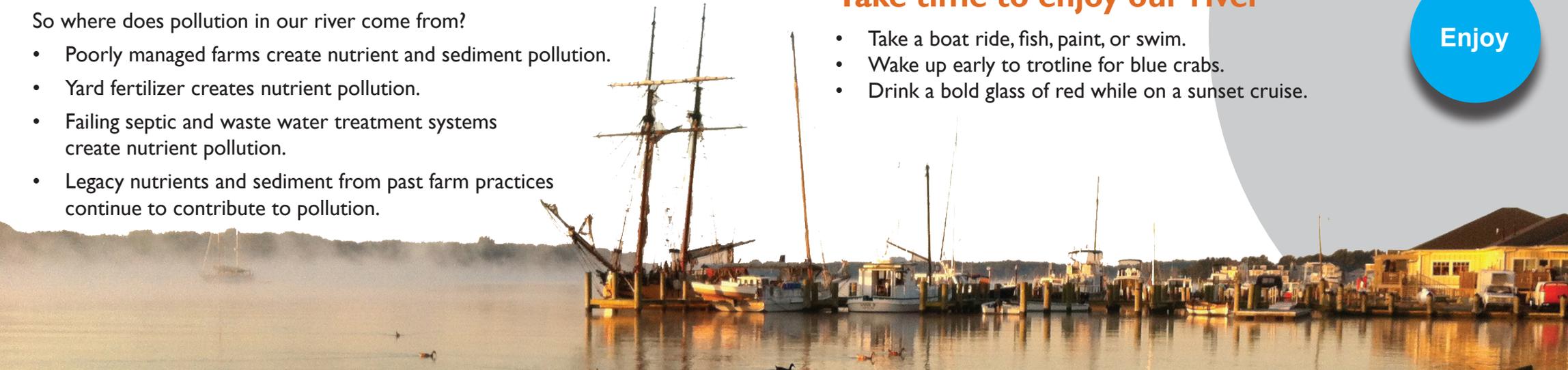
Take time to enjoy our river

- Take a boat ride, fish, paint, or swim.
- Wake up early to trotline for blue crabs.
- Drink a bold glass of red while on a sunset cruise.

Engage

Act

Enjoy



Indicators

Water Quality Index (WQI) Nearly 10,000 data points were collected by CRA staff and our Chester Tester citizen scientist volunteers in 2016. We also use publicly available data collected by the Maryland Department of Natural Resources. Report card grades are calculated using the WQI method, developed by independent scientific experts with the Mid-Atlantic Tributary Assessment Coalition (MTAC). The WQI is a measure of water quality based on established thresholds for water quality. All parameters are averaged for a final WQI and converted to a letter grade according to the table below. For more details on our methods, please visit www.chesterriverassociation.org/report-cards.

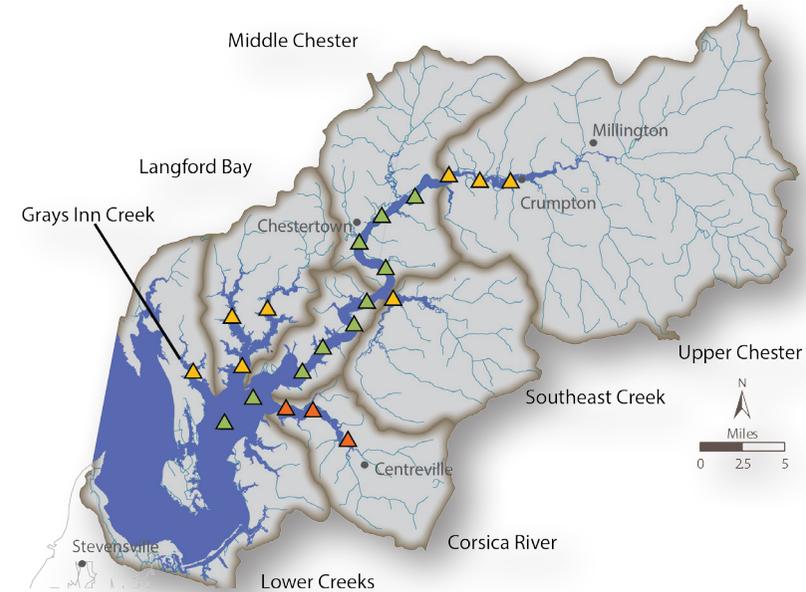


WQI	Grade
80-100	A (excellent)
60-79	B (good)
40-59	C (at risk)
20-39	D (degraded)
0-19	F (severely degraded)

Parameter	Water Quality Index (WQI)					Grade	
	Watershed	Dissolved Oxygen	Nutrients Nitrogen	Phosphorus	Clarity		Algae
Tidal Chester		85	59	31	40	52	C
Non-Tidal Chester		78	55	41	62	NA	C+

Parameter	Description
Dissolved Oxygen	<ul style="list-style-type: none"> Rockfish, oysters, crabs, and other underwater species require oxygen. Algae blooms fueled by nutrient pollution cause low dissolved oxygen. If the dissolved oxygen is too low (dead zone) aquatic species become stressed, evacuate the area, or die.
Nutrients	<ul style="list-style-type: none"> Nutrient pollution, primarily in the form of nitrogen and phosphorus, enters our waterways through farm and lawn runoff (fertilizer), failing septic systems, and outdated or failing wastewater treatment plants. Nutrient pollution causes harmful algae blooms.
Clarity	<ul style="list-style-type: none"> Sediment runoff and algae blooms reduce water clarity. Muddy waters block out sunlight, preventing growth of aquatic grasses. Excess sediments fall to the bottom and can smother bottom dwellers like oysters.
Algae	<ul style="list-style-type: none"> Algae blooms are caused by nutrient pollution. Algae clouds the water and blocks out sunlight for aquatic grasses. Decomposing algae depletes the water of dissolved oxygen. Some algae can be harmful to human health.

Tidal Grades

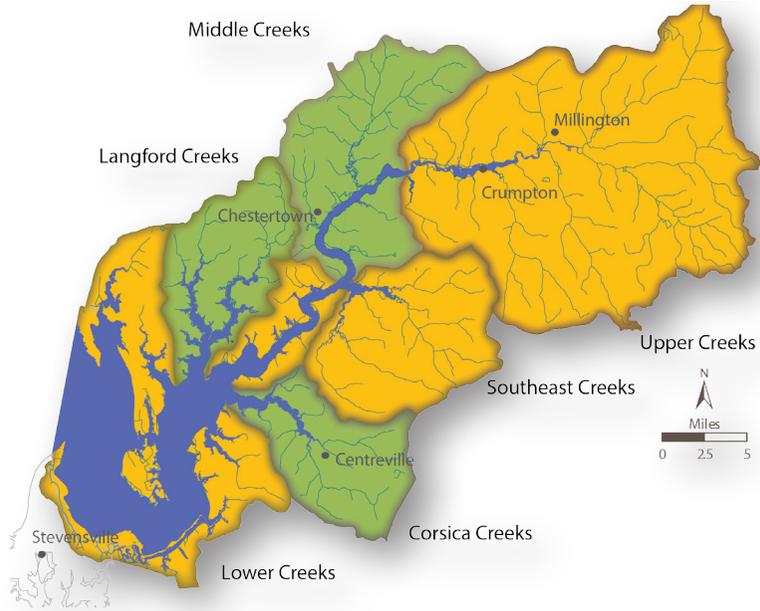
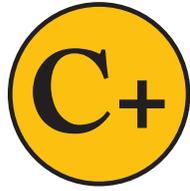


Tidal Grades In 2016, the tidal Chester matched last year's grade of C. While a C grade is technically passing, it still represents a river at risk. **The Chester continues to be impaired by nutrient pollution, sediment pollution, algal blooms, and deoxygenated dead zones.**



Watershed	Dissolved Oxygen	Nutrients Nitrogen	Phosphorus	Clarity	Algae	Grade
Upper Chester	69	37	35	40	78	C
Middle Chester	68	59	46	62	68	B-
Lower Chester	84	73	39	55	59	B-
Southeast Creek	56	67	43	41	56	C
Langford Bay	67	65	23	35	29	C-
Corsica River	67	35	17	37	19	D
Grays Inn Creek	81	81	34	39	44	C+

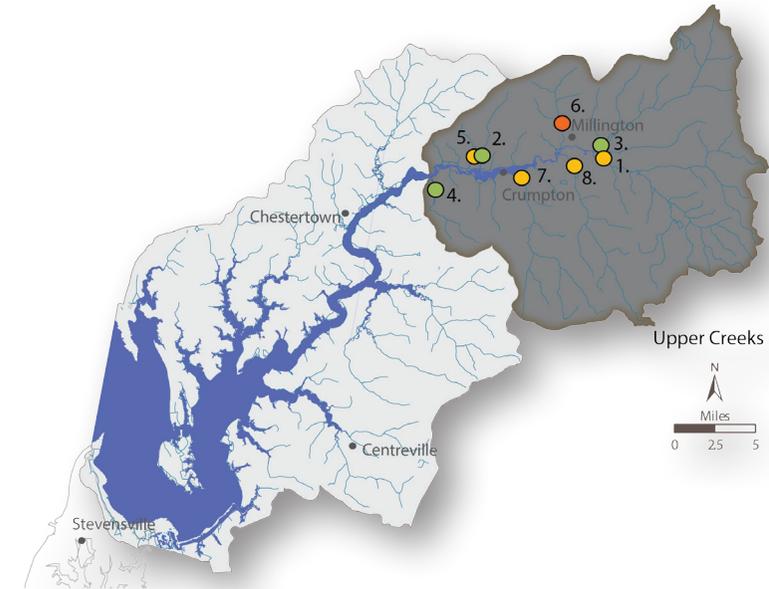
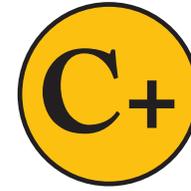
Non-Tidal Grades



Non-Tidal Grades Lack of oxygen, nutrient pollution, and sediment pollution continue to negatively impact the health of many of our creeks and streams. Fortunately, we are seeing gradual improvement in some areas. **To see the water quality in your watershed, please find your local creek or stream on the following pages.**



Upper Creeks



Upper Creeks Water quality in our Upper Creeks decreased slightly in 2016. Water quality also varies greatly from creek to creek, with some of our cleanest and most polluted creeks in this subwatershed. **This variability demonstrates how local land use and pollution sources impact water quality in individual creeks and streams.**

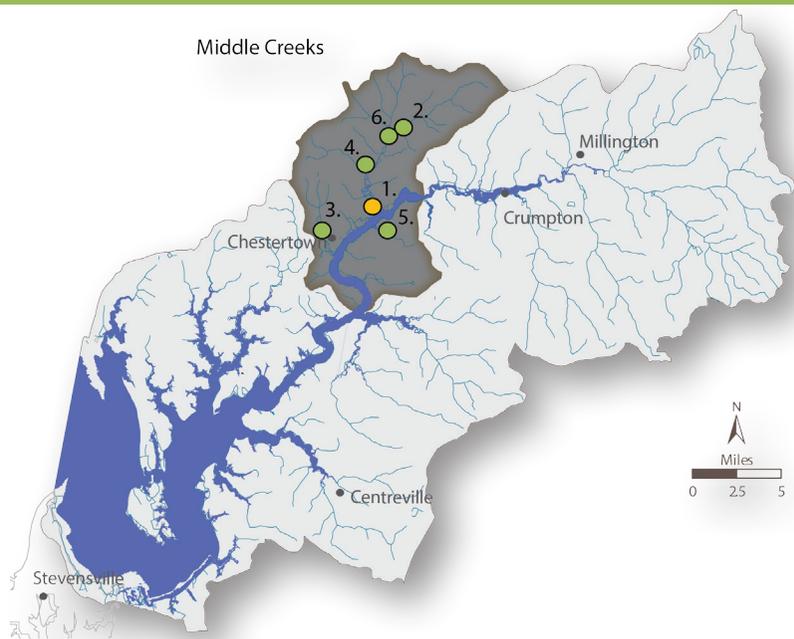


Watershed	Dissolved Oxygen	Nitrates	Nutrients Ammonia	Phosphorus	Clarity	Grade
Upper Creeks	57	43	55	52	72	C+
Middle Creeks	83	28	72	54	79	B-
Lower Creeks	79	100	48	13	43	C+
Southeast Creeks	97	53	45	28	74	C+
Langford Creeks	70	78	65	52	45	B-
Corsica Creeks	93	53	61	30	81	B-

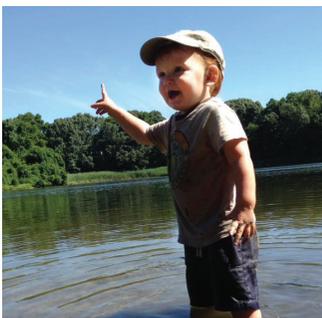
Watershed	Dissolved Oxygen	Nitrates	Nutrients Ammonia	Phosphorus	Clarity	Grade
1. Andover Branch	25	94	38	31	44	C
2. Chesterville Branch	100	0	87	53	93	B
3. Cypress Branch	71	88	38	58	58	B-
4. Foreman Branch	86	30	70	74	87	B
5. Harmony Woods Cr.	60	0	47	27	80	C-
6. Mills Branch	33	75	0	13	50	D
7. Red Lion Branch	0	43	83	52	83	C
8. Unicorn Branch	75	17	46	67	71	C+

Middle Creeks

B-



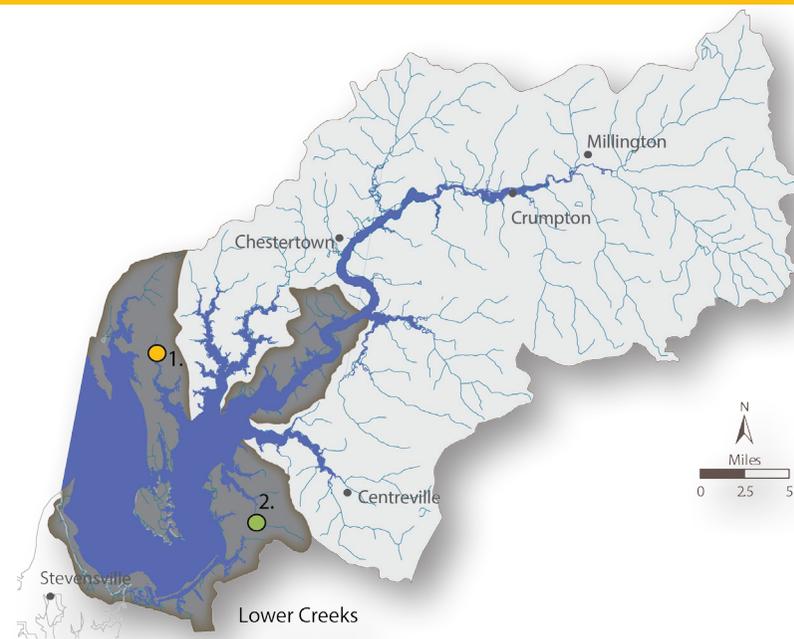
Middle Creeks Our Middle Creeks have improved from a C+ in 2015 to a B- in 2016. Most of this improvement is attributable to an improvement in water clarity, which may be due to a combination of improved regional agricultural practices, a cool spring, and/or a lack of severe rain events. **While the improvement is positive, nutrients continue to pollute the Chester River's Middle Creeks.**



Watershed	Dissolved Oxygen	Nitrates	Nutrients Ammonia	Phosphorus	Clarity	Grade
1. Morgan Creek	38	73	42	31	42	C
2. Perkins Hill Branch	100	5	89	37	94	B
3. Radcliffe Creek	71	13	80	73	87	B-
4. Rileys Mill Branch	100	20	88	20	88	B-
5. Rosin Creek	100	5	76	81	76	B
6. Urieville Lake Branch	100	36	64	95	95	B+

Lower Creeks

C+



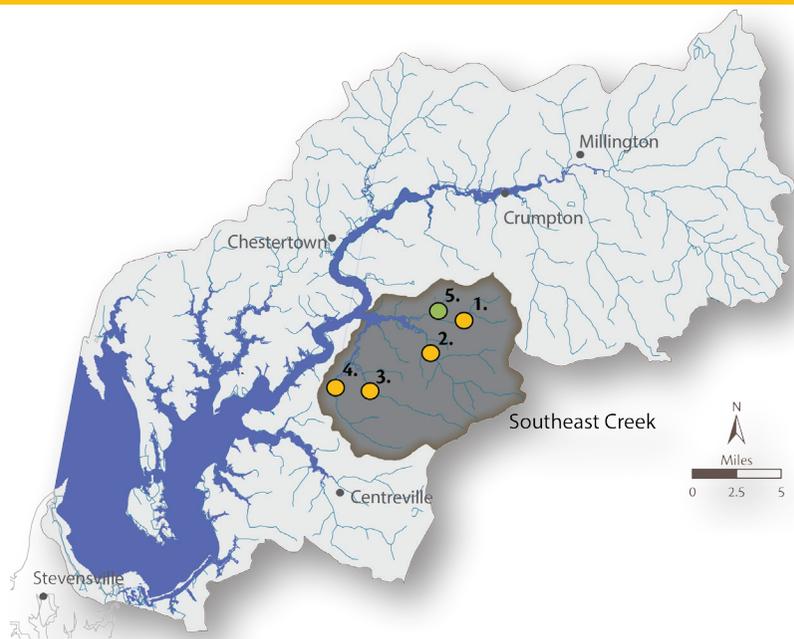
Lower Creeks The non-tidal portion of Grays Inn Creek has some of the worst measured water quality in our watershed. The creek is somewhat stagnant in its upper reaches, leading to low dissolved oxygen. Sediment and phosphorus pollution are also concerns. Reed Creek, on the other side of the Chester, shows high water quality in all aspects except for phosphorus pollution. **CRA is actively pursuing strategies to remove phosphorus pollution from these sensitive streams.**



Watershed	Dissolved Oxygen	Nitrates	Nutrients Ammonia	Phosphorus	Clarity	Grade
1. Grays Inn Creek	50	100	30	17	17	C-
2. Reed Creek	100	100	65	9	70	B

Southeast Creeks

C+



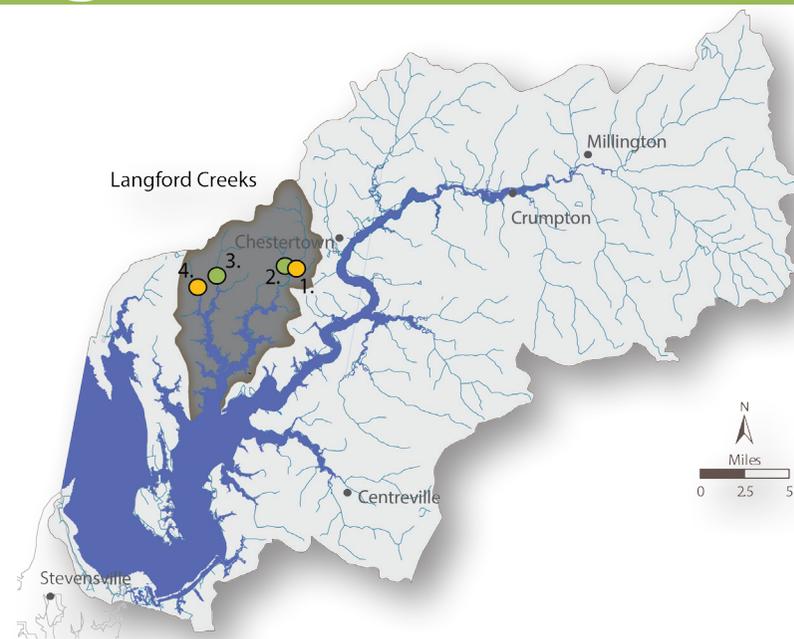
Southeast Creeks Encouragingly, nitrate pollution in almost all Southeast Creeks decreased, resulting in an **overall grade improvement from a C in 2015 to C+ in 2016**. We believe this improvement could be due to a combination of improved farm practices and weather (specifically the lack of large rain events). Unfortunately, there was little to no improvement in phosphorus pollution.



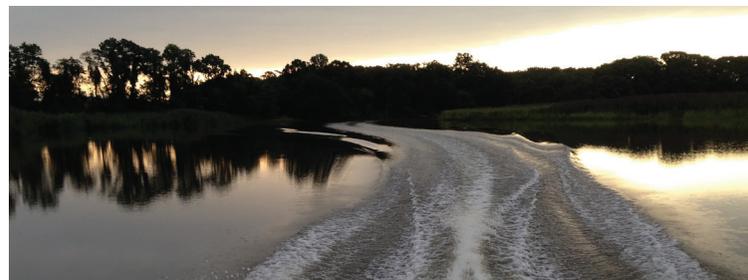
Watershed	Dissolved Oxygen	Nitrates	Nutrients Ammonia	Phosphorus	Clarity	Grade
1. Browns Branch	100	44	75	19	56	C+
2. Church Hill Branch	100	41	36	18	91	C+
3. Granny Finley Branch	100	8	76	24	84	C+
4. Island Creek Branch	86	96	13	8	63	C
5. Johnny Powell Branch	100	74	35	70	70	B

Langford Creeks

B-



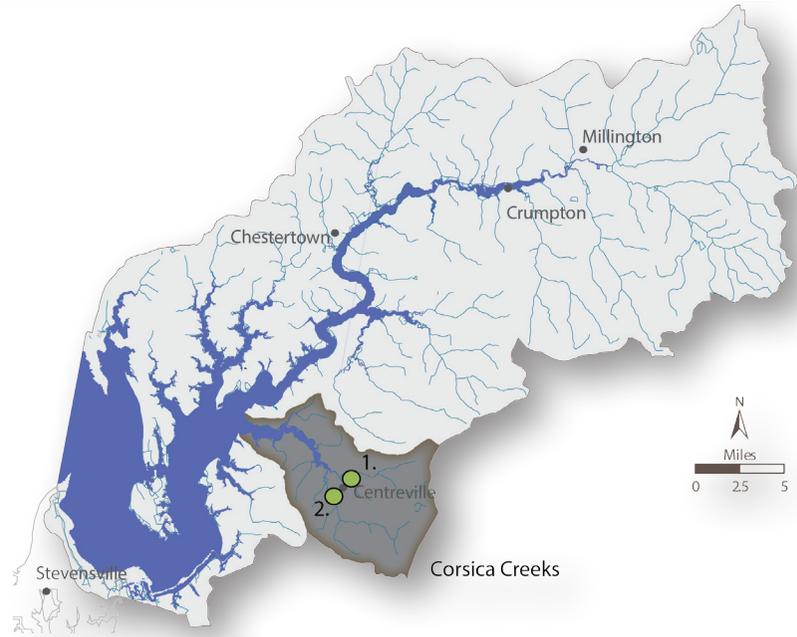
Langford Creeks 2016 water quality in the Langford Creeks remained relatively stable compared to 2015. While some of the Langford Creeks have relatively healthy water quality, **there is still much room for improvement**, particularly in Shipyard Creek.



Watershed	Dissolved Oxygen	Nitrates	Nutrients Ammonia	Phosphorus	Clarity	Grade
1. Airy Hill Creek	50	72	68	56	44	C+
2. Brices Mill Pond Creek	88	48	84	60	76	B
3. Sandy Bottom Creek	80	100	62	71	33	B
4. Shipyard Creek	50	100	39	11	17	C-

Corsica Creeks

B-



Corsica Creeks The Corsica watershed provides a bit of a water quality paradox - the non-tidal creeks and streams are relatively healthy, but the receiving tidal waters are significantly polluted. So why does this happen? The upper reaches of the tidal Corsica are relatively stagnant, shallow, and silted in. This combination of shallow, stagnant, warm water high in nutrients creates perfect conditions for harmful algae blooms. **This is just one example of the complexity of river restoration efforts.**



Watershed	Dissolved Oxygen	Nitrates	Nutrients Ammonia	Phosphorus	Clarity	Grade
1. Three Bridges Branch	100	65	61	22	74	B-
2. Old Mill Stream Br.	83	33	60	43	93	B-

In Your Words



The Chester River is the beating heart of Chestertown. **It represents our past** in that Chestertown was a thriving port. **It represents our future** because we are staking the Town's economic revitalization on the waterfront's redevelopment.

Sam Shoge
Chestertown Councilman

Daddy, may we please go for a...
boat ride?

Teddy "T-Bone" Trumbauer
4-year Old; Toy Truck Enthusiast



River quality is being improved at the **local level** by the local stakeholders. **The health of each individual stream is important** and the quality of the work being done by our local river organizations in this regard gives me hope that my granddaughters will have a healthy Corsica River.

Myron Richardson
Chester Tester; Corsica River Conservancy



Canoeing with my kids means no cell phones allowed, sparkling diamonds on the water all around, listening to the red wing blackbirds call and the croaking of the great blue heron or even the splashing of a fish close by - these are moments of tranquility that you can't find anywhere else. **On the river there is peace.**

Liza Goetz
Agri-Science Teacher; Tree Champion

Partners and Supporters



Our work is made possible by the generous support of our River Guardians, sponsors, members, foundations, and volunteers.

Thank you!



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