

2008 Chester River Report Card



Creeks Final Grade



- Turbidity, orthophosphate and ammonia-nitrogen values were generally low in 2008 due to the lack of rain events.
- Dissolved oxygen was also generally good, until the summer period where values dropped significantly.
- Nitrate values were high throughout the year, which is related to groundwater flow.

Estuary Final Grade



- The Upper Estuary was very turbid compared to the Middle and Lower Estuary.
- Water input from the creeks was low and temperature was high, which was ripe for algae growth.
- Bottom dissolved oxygen values were very low in the Upper and Lower Estuaries.

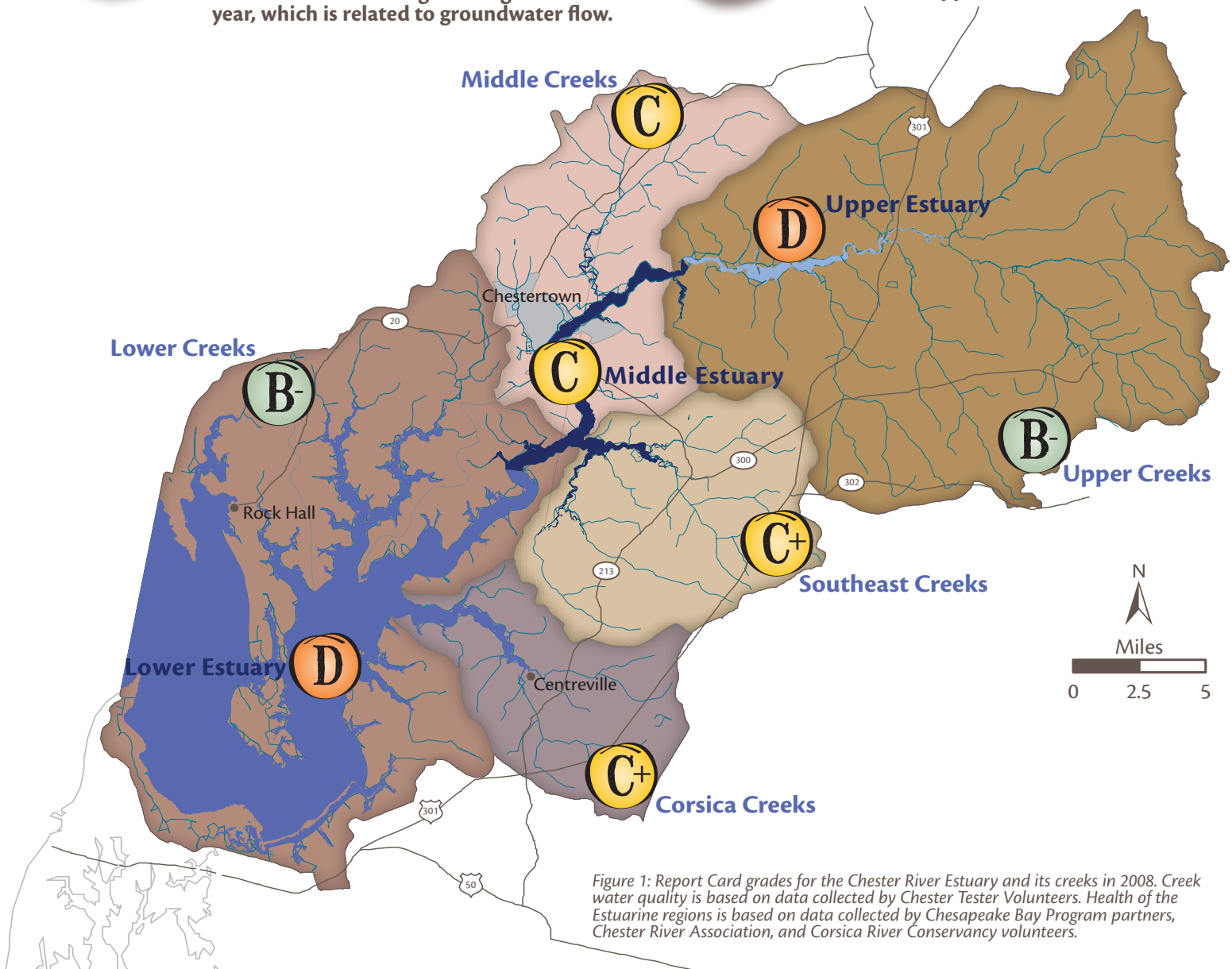


Figure 1: Report Card grades for the Chester River Estuary and its creeks in 2008. Creek water quality is based on data collected by Chester Tester Volunteers. Health of the Estuarine regions is based on data collected by Chesapeake Bay Program partners, Chester River Association, and Corsica River Conservancy volunteers.

What do The Grades Mean?

- A** All water quality and biological health indicators meet desired levels. Quality of water in these locations tends to be very good, most often leading to very good habitat conditions for fish and shellfish.
- B** Most water quality and biological health indicators meet desired levels (60% to 79%). Quality of water in these locations tends to be good, often leading to good habitat conditions for fish and shellfish.

- C** There is a mix of healthy and unhealthy water quality and biological health indicators (40% to 59%). Quality of water in these locations tends to be fair, leading to fair habitat conditions for fish and shellfish.
- D** Some or few water quality and biological health indicators meet desired levels (20% to 39%). Quality of water in these locations tends to be poor, often leading to poor habitat conditions for fish and shellfish.
- F** Very few or no water quality and biological health indicators meet desired levels. Quality of water in these locations tends to be very poor, most often leading to very poor habitat conditions for fish and shellfish.

SLIGHT IMPROVEMENT OF CREEKS WATER QUALITY

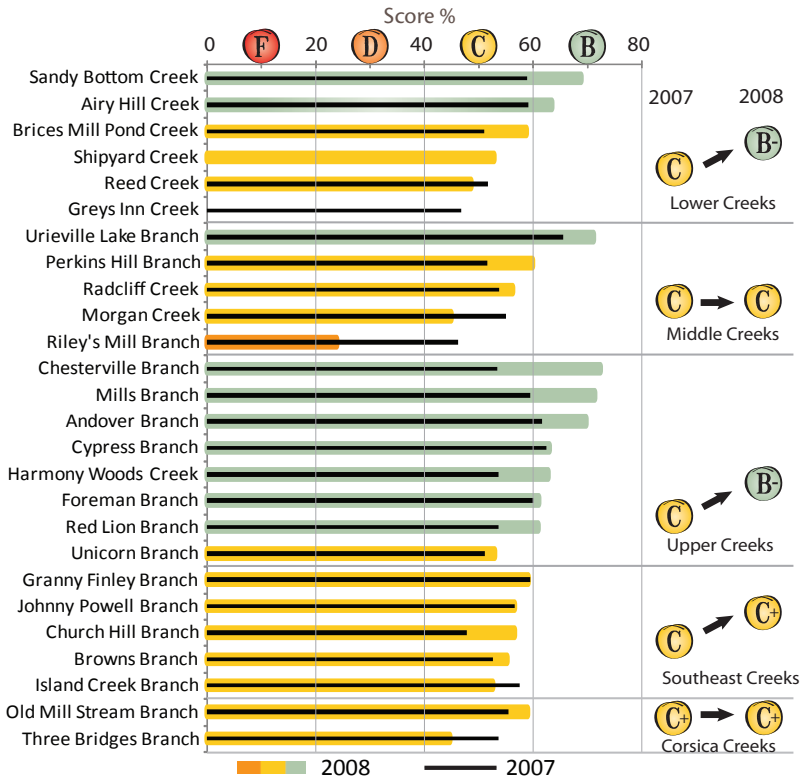


Figure 2. Comparison of the Chester Tester creek monitoring stations from 2007 to 2008, grouped by watershed.

2008 was a dry year, which means there was less sediment and phosphorus runoff from the land into the creeks and streams. Phosphorus tends to stick to sediment particles and the combination can increase the cloudiness of the creeks and fuel algae growth. Even though the creeks looked cleaner this year, excess nutrients, including nitrogen flowing from groundwater, and reduced available oxygen still created stressed conditions for fish and other aquatic organisms.

75% of the streams sampled in 2008 scored higher than 2007. Eleven of the streams received a B- or better, which means that most of the creek health indicators and targets were met. The Riley's Mill Branch (which flows from Worton) scored the lowest of all the streams, mainly because of the phosphorus load coming from an industrial source upstream. In comparison the highest score goes to Chesterville Branch, where significant improvements in the headwaters have resulted in decreased sediment and phosphorus loads.

Monitoring these sites from year to year allows us to track the health of the streams. We also use the data collected to focus in on smaller areas and locate potential nutrient and sediment sources. For further information on testing protocols or the methods used in calculating the grades, please go to www.chesterriverassociation.org.

INCREASED MONITORING EFFORTS IN 2008

The estuary as a whole scored slightly better in 2008 than 2007, going from 28% to a 33%, but still received the same grade, D. The three tidal regions did not fair any better with a score of 53% in the Middle Estuary, a 33% in the Upper Estuary and a 30% in the Lower Estuary.

In the 2007 report card, the estuary was divided into two regions, upper and lower. However, Maryland recognizes three regions, so we decided to collect weekly samples every two miles down the tidal mainstem in 2008. In doing so, we accomplished two things: 1) more water samples were collected to get a better health assessment of the three tidal regions; and 2) we were able to visually see any physical changes in the water and on the shoreline.

In the second week of August 2008, while collecting samples, we visually spotted a change in water color in large patches from Chestertown, down river, to Camp Pecometh. After collecting samples and sending them to a lab, it was confirmed there was a very large, non-toxic, brown algae bloom. The following week the algae bloom was gone. This upriver bloom consisted of a type of algae that is typically found during the warmer months only at the mouth of the river. Unusually warm water temperatures, along with the lack of fresh water caused by the drought, may have changed the water chemistry in the river to allow such an abnormally widespread bloom. This was proof to us that our tidal monitoring is a necessary component, and we plan to expand in 2009.

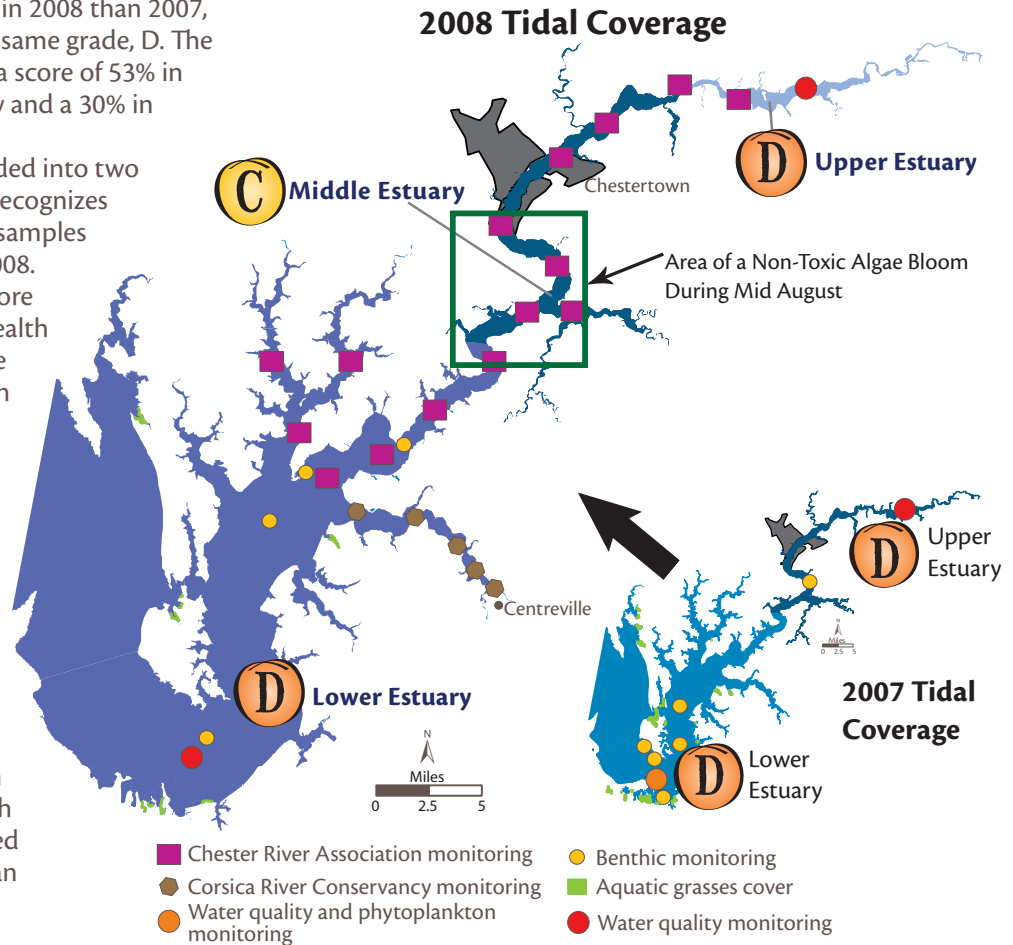


Figure 3. Comparison of Chester River tidal monitoring stations from 2007 to 2008.

USE OF GOOD PRACTICES RESULTS IN A CLEANER RIVER

POLLUTION SOURCES

Like many rivers in Chesapeake Bay, the Chester River is threatened by excess nutrient and sediment pollution.

Sources of nutrients include:

- Wastewater Treatment Plants contribute nitrogen and phosphorus.
- Conventional septic systems contribute nitrogen.
- Excess nitrogen from row crops.
- Improperly placed or weather exposed manure piles.
- Fertilizers from residential properties contribute phosphorus.

Sources of sediment pollution:

- Construction site runoff.
- Stream banks eroded by cattle or lack of tree buffers.
- Exposed agricultural soils.

Sources of habitat destruction:

- Hardened shorelines.
- Critical Area tree cutting.

Nutrient and sediment pollution upsets the natural balance in the Chester River and can cause toxic/non-toxic algae blooms and reduced water clarity. Those in turn, cloud the water, keeping sunlight out, and result in a loss of Submerged Aquatic Vegetation (SAV). Eventually, the algae die off, reducing dissolved oxygen to low levels that can cause fish kills. A loss of SAV also means a loss in blue crabs and high sediment can cause a loss of oyster beds.

HEALTHY CHOICES

Recovering the health of the Chester River will require several actions from the community:

- Upgrade Wastewater Treatment plants to Enhanced Nutrient Removal systems.
- Retrofit conventional septic systems to Biological Nutrient Removal (BNR) septic systems and require BNR for all new construction.
- Planting cover crops after corn and soybean harvest.
- Reduce or eliminate residential lawn fertilizer use.
- Properly protect or place manure piles.

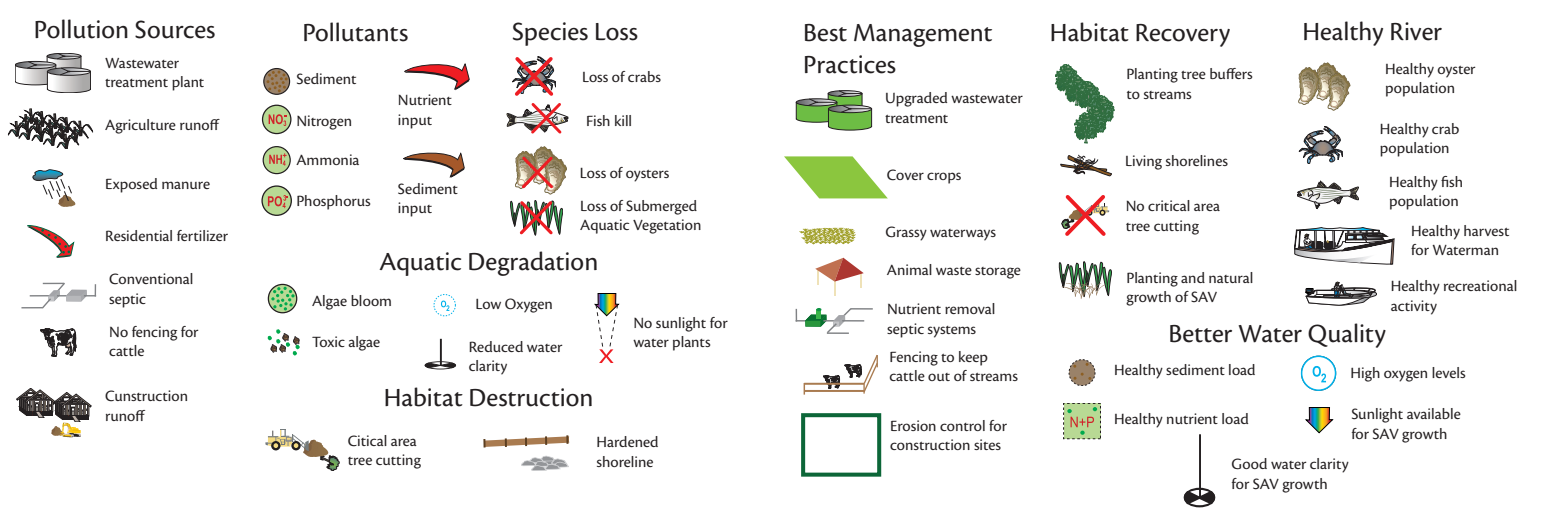
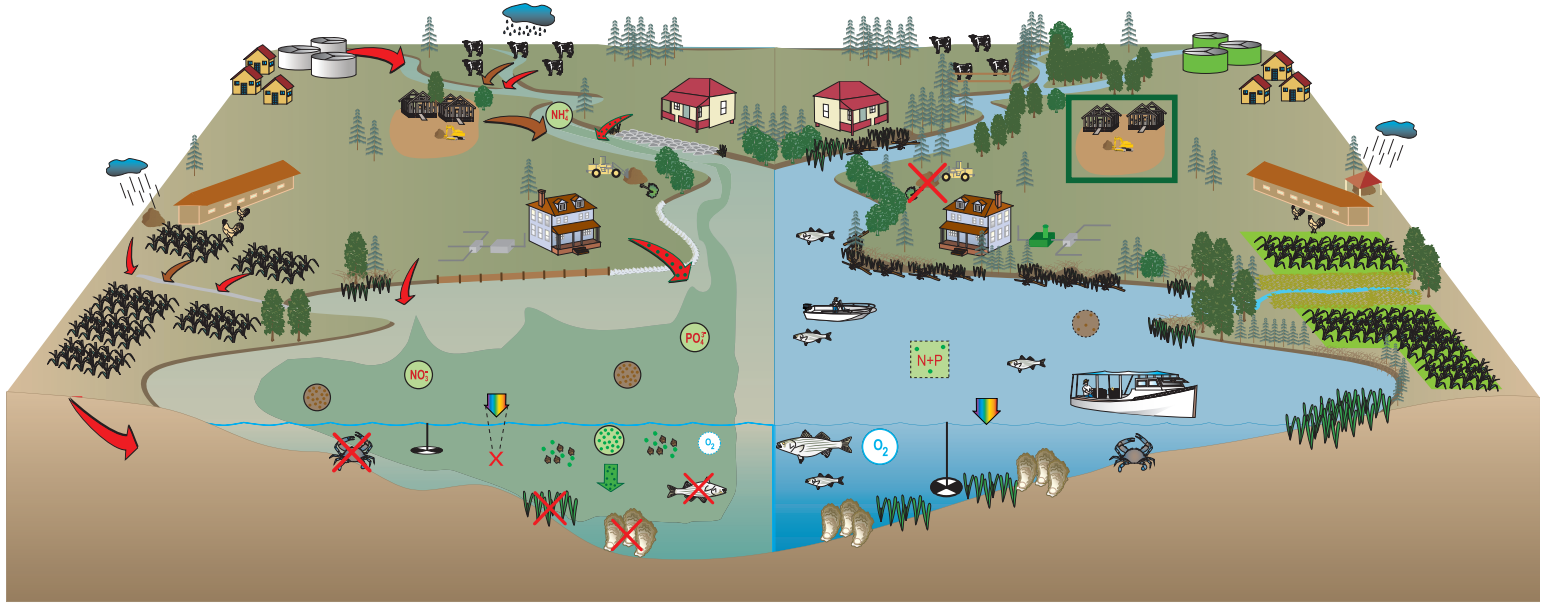
Sediment reduction can be accomplished by:

- Construction sites using Best Management Practices (BMP)
- Planting grassy waterways in field drainage ditches.
- Fencing cattle or other livestock out of streams.

Habitat enhancement that also acts as a nutrient sponge:

- Tree planting along streams.
- Living shoreline construction.
- No Critical Area tree cutting.

These practices will improve the water quality by restoring the right balance of nutrients and sediment, increasing water clarity, maintaining higher dissolved oxygen levels and providing more sunlight for plant growth. With good water quality, we will achieve more SAV habitat, increased oyster beds, and thriving fish and crab populations on the Chester River.



HOMEWORK TO IMPROVE THE RIVER



PLANT LIVING SHORELINES

- Use living shoreline concepts instead of rock to shore up your waterfront property.
- Living shorelines provide quality habitat and create a natural sponge for nutrients and sediment.
- Contact the CRA for more information to get you started.



ENHANCE YOUR ENVIRONMENT

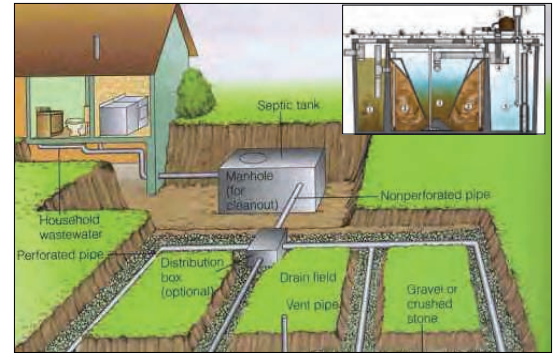
- Design a rain garden next to your house with native plants.
- Build rain barrels to catch water for your flower and vegetable garden.
- Plant some trees along a river or in your backyard for wildlife.
- Plant warm-season grasses in large patches instead of mowing your lawn.



SUPPORT YOUR LOCAL FARMS

- Shop at the Farmers Market in Chestertown and Centreville.
- Look for restaurants that offer local products.
- Support Maryland's cover crop program by asking your State Congressman to push for more money.
- Request your local supermarket to carry local meat and produce.

Photo Credits: (starting top right to bottom left) Hoot Systems, LLC and www.mmseptic.com; Environmental Concern; RAN group @ www.uvm.edu; www.cityofpflugerville.com.



UPGRADE YOUR SEPTIC SYSTEM

- It's free. Your "Flush Tax" dollars pay for the installation and maintenance for five years.
- Biological Nutrient Removal (BNR) septic systems can reduce your nutrient loading to the Chester River by 60%.
- 30 system retrofits have been completed so far in the Chester River watershed.
- Contact the CRA to get started and add your name to the list.

OTHER THINGS YOU CAN DO

- Reduce, Reuse and Recycle. It's a lifestyle change, but you will feel better.
- When using motor oil, paint, and gasoline around your boat, take care that none gets into the water.
- Don't wash pesticides, oil, grease or paint down the drain.
- Don't over-fertilize your lawn.
- Get out onto the river and into the streams to experience what we need to protect.

WHAT THE CHESTER RIVER ASSOCIATION IS DOING

- Continuing our agriculture program encouraging farmers to plant cover crops and switchgrass to absorb excess nutrients.
- Continuing to hold seminars encouraging homeowners to retrofit septic systems with nutrient removal technology using "Flush Tax" funds.
- Continuing to implement the river advocacy program targeting specific polluters in the watershed.
- Continuing to grow by hiring a Targeted Watershed Coordinator to focus on the Morgan Creek area aiming to reduce its nutrient load.
- Continuing to monitor the enforcement of the consent decree against Velsicol/Genovique, prohibiting discharges of carcinogens and phosphorus.

Support the Chester River Association (CRA):

- Donate or become a member of the CRA.
- Become a volunteer Chester Tester or a committee member.
- Immediately contact the CRA if you discover a problem, so that we can follow up with the appropriate department.

To contact the CRA:

Email: info@chesterriverassociation.org

Phone: 410-810-7556

Website: www.chesterriverassociation.org

Data: www.imrivers.com/chesterriver

The Chester River Association (CRA) would like to thank the Chesapeake Bay Trust for funding this report card and to the dedication of the Chester Tester Volunteers. We would also like to thank the Chesapeake Bay Program and its partners for providing data for the tidal regions. This project would not have been possible without the contributions and support of the following individuals and agencies:



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