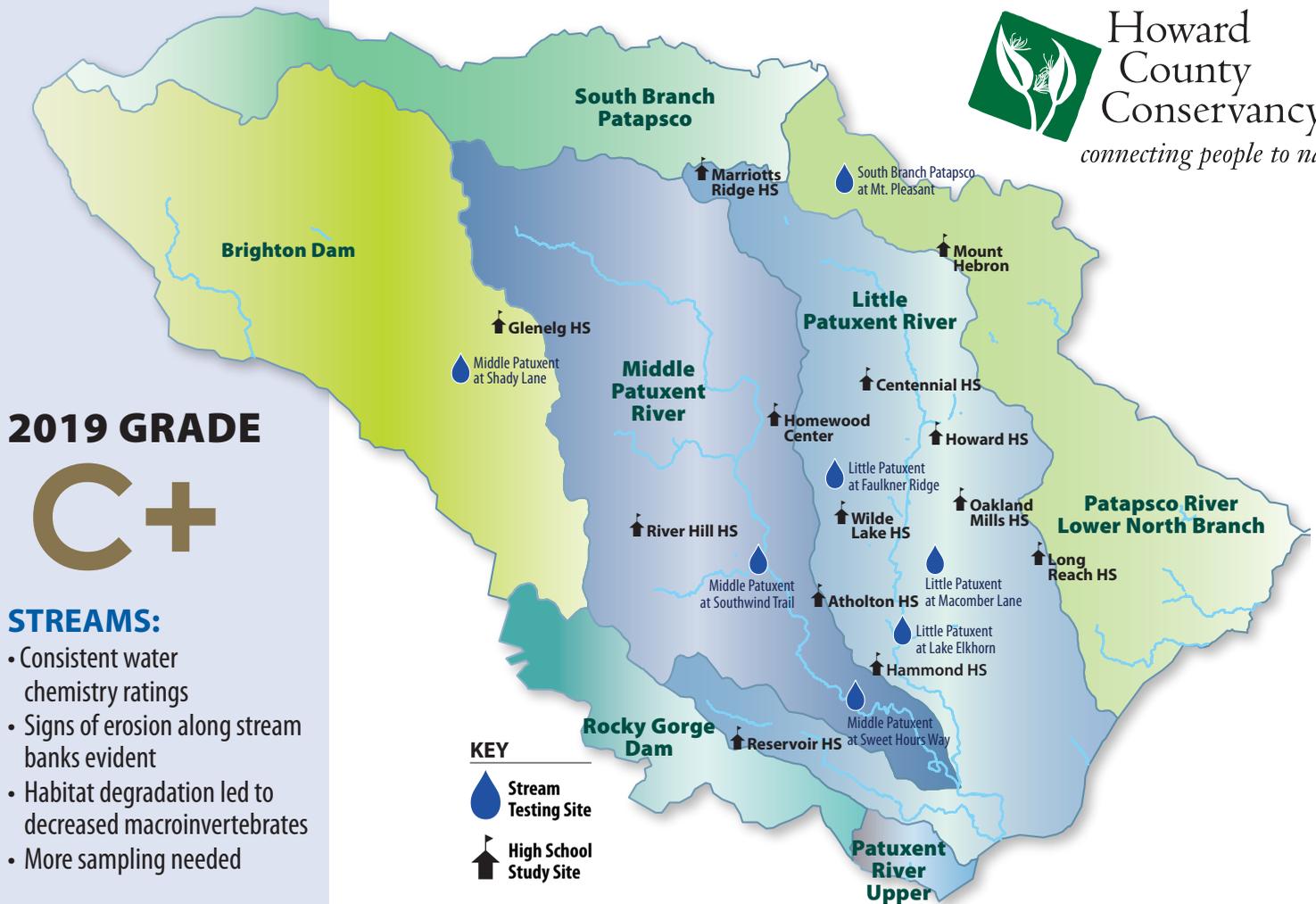


2019 HOWARD COUNTY WATERSHED REPORT CARD

Student Scientists in Action



2019 GRADE
C+

STREAMS:

- Consistent water chemistry ratings
- Signs of erosion along stream banks evident
- Habitat degradation led to decreased macroinvertebrates
- More sampling needed

SCHOOLYARDS:

Improved in the past year:

- Vegetative cover

No change in the past year:

- Pollution
- Waste
- Stormwater

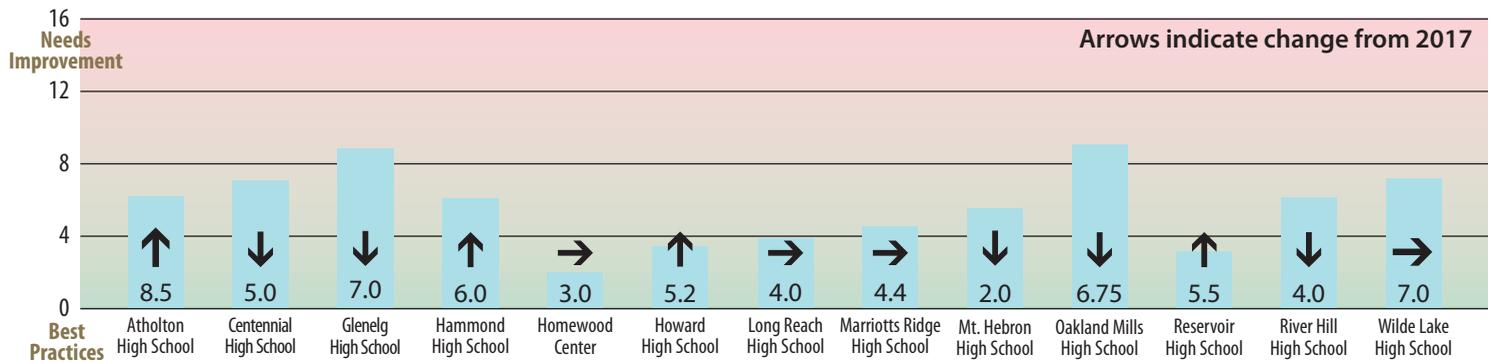
ABOUT THE PROGRAM

This program was designed to provide a systemic opportunity for Howard County Public School 9th grade students to participate in a Meaningful Watershed Educational Experience. Students participate in data collection in their local schoolyard and stream, analyze data, examine and critique local policies, and advocate with decision makers in the county. This year more than 5,000 Earth Science and Biology students participated in this project! This experience provides the opportunity for students to engage in an authentic and meaningful exploration of the local watershed.



Project supported by the NOAA BWET program

Overall Schoolyard Data



Students collected data on erosion, downspouts, storm drains, parking lots, dumpsters, turf management, water chemistry, permeable surfaces and tree canopy to determine their schoolyard's overall score. The lower values reflect evidence of effective stormwater management practices. Schoolyard data was collected one time in the fall over a period of days and all student data was averaged.

SCHOOLYARD FEEDBACK

Atholton High School

- + Storm drains stenciled
- No low mow zones

Centennial High

- + Storm drains stenciled
- + Low mow meadow

Glenelg High School

- + No mow zone
- Low forest cover

Hammond High School

- + Excellent water chemistry
- No stormwater pond/buffer

Homewood Center

- + Increased native plants in existing gardens
- + Second highest scoring school

Howard High School

- + Expansive area of native trees
- Litter present in schoolyard

Long Reach High School

- + Native plant garden
- Trash and plastics in schoolyard

Marriotts Ridge High School

- + Good water quality and native plant garden
- Lack of buffer near stormwater pond

Mt. Hebron High School

- + Highest overall rating, native trees
- Litter found in schoolyard

Oakland Mills High School

- + Expanded native plant garden
- Schoolyard litter

Reservoir High School

- + Schoolyard compost bins and native plants
- Trash found in schoolyard

River Hill High School

- + Stenciled storm drains and rain garden
- Concerns about nitrate values

Wilde Lake High School

- + Updated rain garden and stenciled storm drains
- High soil compaction

PHOTO BY EMILY CALKINS



Streams Studied

South Branch Patapsco at Mt. Pleasant.....	■	Little Patuxent at Macomber Lane	■
Middle Patuxent at Sweet Hours Way	■	Little Patuxent at Faulkner Ridge	■
Little Patuxent at Lake Elkhorn	■	Middle Patuxent at Shady Lane.....	■
Middle Patuxent at Southwind Trail	■		

KEY
■ Poor ■ Moderate ■ Good

SENSITIVE MACROINVERTEBRATE CHART

	CADDISFLIES	MAYFLIES	STONEFLIES	WATER PENNIES	HELLGRAMMITES
South Branch Patapsco at Mt. Pleasant	●	●	●		●
Middle Patuxent at Sweet Hours Way	●	●			●
Little Patuxent at Lake Elkhorn	●	●	●		●
Middle Patuxent at Southwind Trail	●	●	●		●
Little Patuxent at Macomber Lane	●	●			
Little Patuxent at Faulkner Ridge	●	●			
Little Patuxent at Shady Lane	●	●	●		●

Macroinvertebrates are often used in studies to determine the water quality due to their known pollution tolerances, limited mobility and dependence on the land environment around the stream. The sensitive macroinvertebrates are of particular importance, because they do not tolerate high levels of pollution. At each stream site, students searched riffles, runs, and pools under cobbles and leaf matter and through root wads using D-Nets to find a variety of macroinvertebrates. Each stream was sampled twice in the fall.

STREAM FEEDBACK

South Branch Patapsco at Mt. Pleasant

- Fair water quality with high levels of nitrate found
- Few sensitive macroinvertebrates found
- Uneven stream banks with major erosion cut outs

Middle Patuxent at Sweet Hours Way

- High nitrates
- High stream bank erosion and moderate water clarity
- Found two sensitive macroinvertebrates

Little Patuxent at Lake Elkhorn

- Wide diversity of macroinvertebrates found
- Stream banks disconnected to flood plain

Middle Patuxent at Southwind Trail

- Sensitive macroinvertebrates
- High levels of dissolved oxygen

Little Patuxent at Macomber Lane

- Low number of macroinvertebrates found
- Higher than average conductivity rates

Little Patuxent at Faulkner Ridge

- Low dissolved oxygen
- Stream bank instability

Middle Patuxent at Shady Lane

- Variety of macroinvertebrates found
- High levels of nitrates



Stream Recommendations

South Branch Patapsco at Mt. Pleasant

Shore up erosion on far stream bank to improve water clarity. Continue citizen science monitoring upstream in newly restored stream area to examine relationship to stream life downstream.

Middle Patuxent at Sweet Hours Way

Plant buffers to slow runoff and to reduce plastic litter found in the stream. Weekly visual checks and regular stream clean ups.

Little Patuxent at Lake Elkhorn

Increase riparian buffer to reduce the speed of incoming runoff.

Middle Patuxent at Southwind Trail

Decrease use of fertilizers, increase buffer and add native trees to reduce erosion.

Little Patuxent at Macomber Lane

Regular stream clean up, continue data collection especially for conductivity measurements.

Little Patuxent at Faulkner Ridge

Encourage community-wide stream clean up to decrease litter. Stabilize stream banks to decrease erosion.

Middle Patuxent at Shady Lane

Add more native plants and trees to filter the water. Remove invasive species. Set up composting station for horse manure.

SCHOOLYARD RECOMMENDATIONS

	Low Mow Meadow	Native Plants & Trees	Compost Bins	Green Roof	Outdoor Recycle Bins	Awareness Campaign	Schoolyard Clean Up	Porous Pavers
Atholton High School					●		●	
Centennial High School		●				●	●	
Glenelg High School	●	●	●	●	●			
Hammond High School		●						
Homewood Center		●	●					
Howard High School	●					●	●	
Long Reach High School		●				●		
Marriotts Ridge High School	●	●						
Mt. Hebron High School		●			●			
Oakland Mills High School	●	●					●	
Reservoir High School			●					●
River Hill High School	●	●		●			●	●
Wilde Lake High School							●	●



Thank you to the following for contributing countless hours:

HCPSS Earth Space Systems Science and Biology G/T teachers

Watershed Team

Conservancy Volunteer Naturalists
HCPSS Secondary Science Office

THANK YOU TO OUR PARTNERS

