

A photograph of a small stream flowing through a forest with autumn foliage. The water is clear and turbulent, surrounded by trees and bushes with yellow, orange, and brown leaves. The text is overlaid on the image.

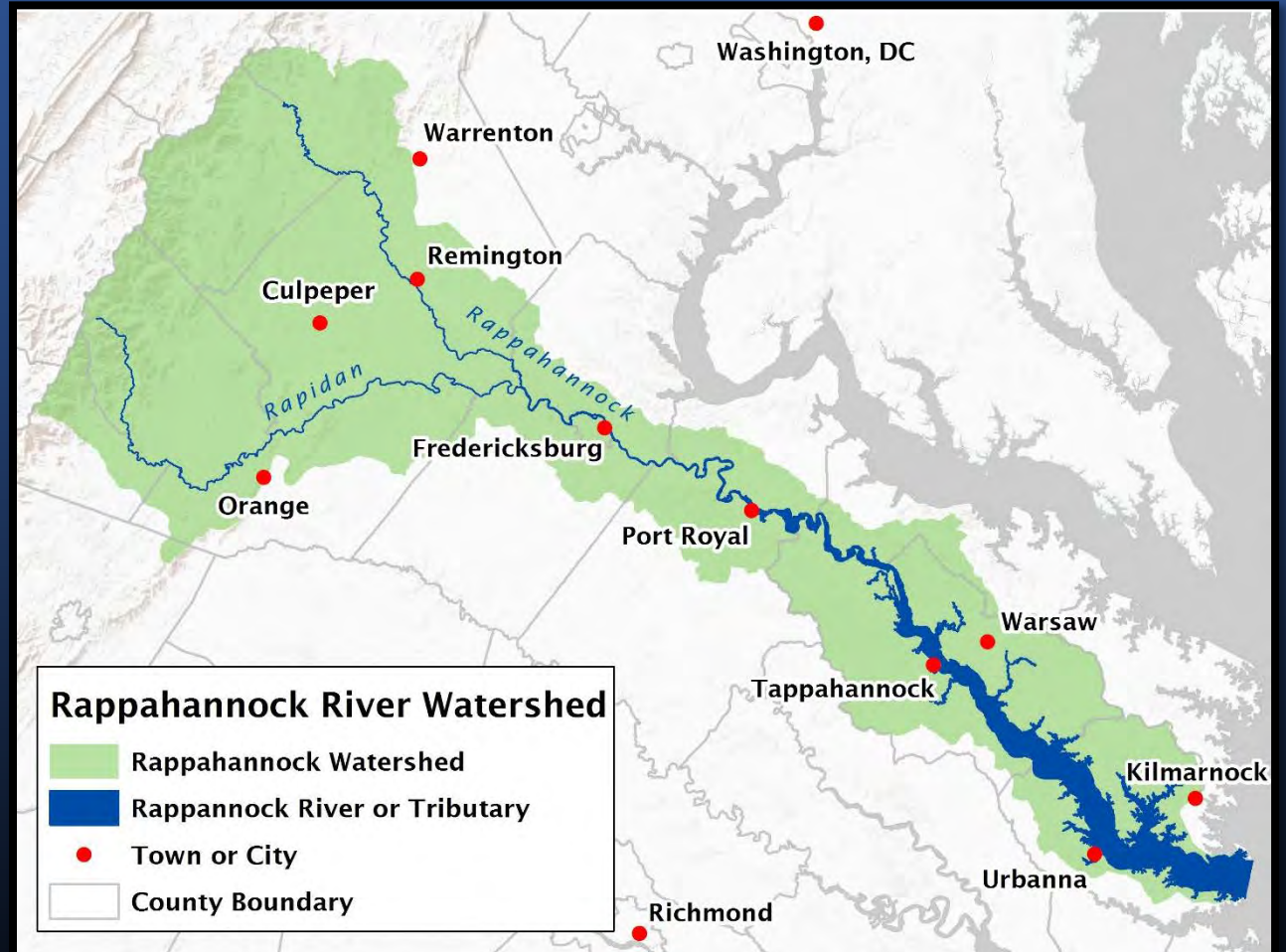
Upper Rappahannock Report Card

2019 Results

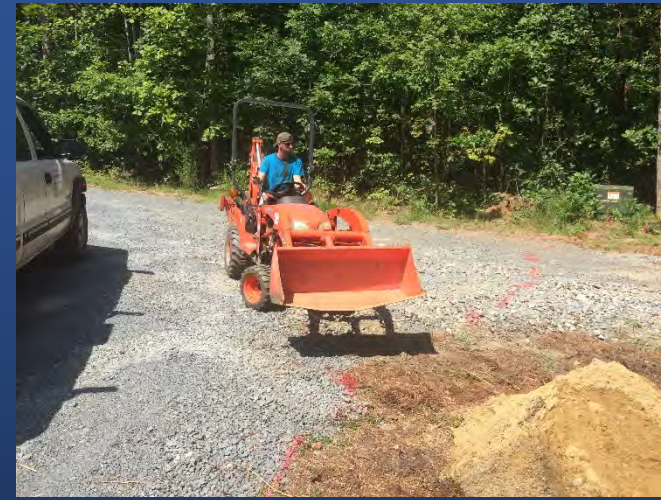
Adam Lynch
Friends of the Rappahannock

Friends of the Rappahannock

- 501c nonprofit
- Founded 1985
 - Fredericksburg
 - Tappahannock
- Advocacy
- Education
- Restoration



Friends of the Rappahannock



Adam Lynch



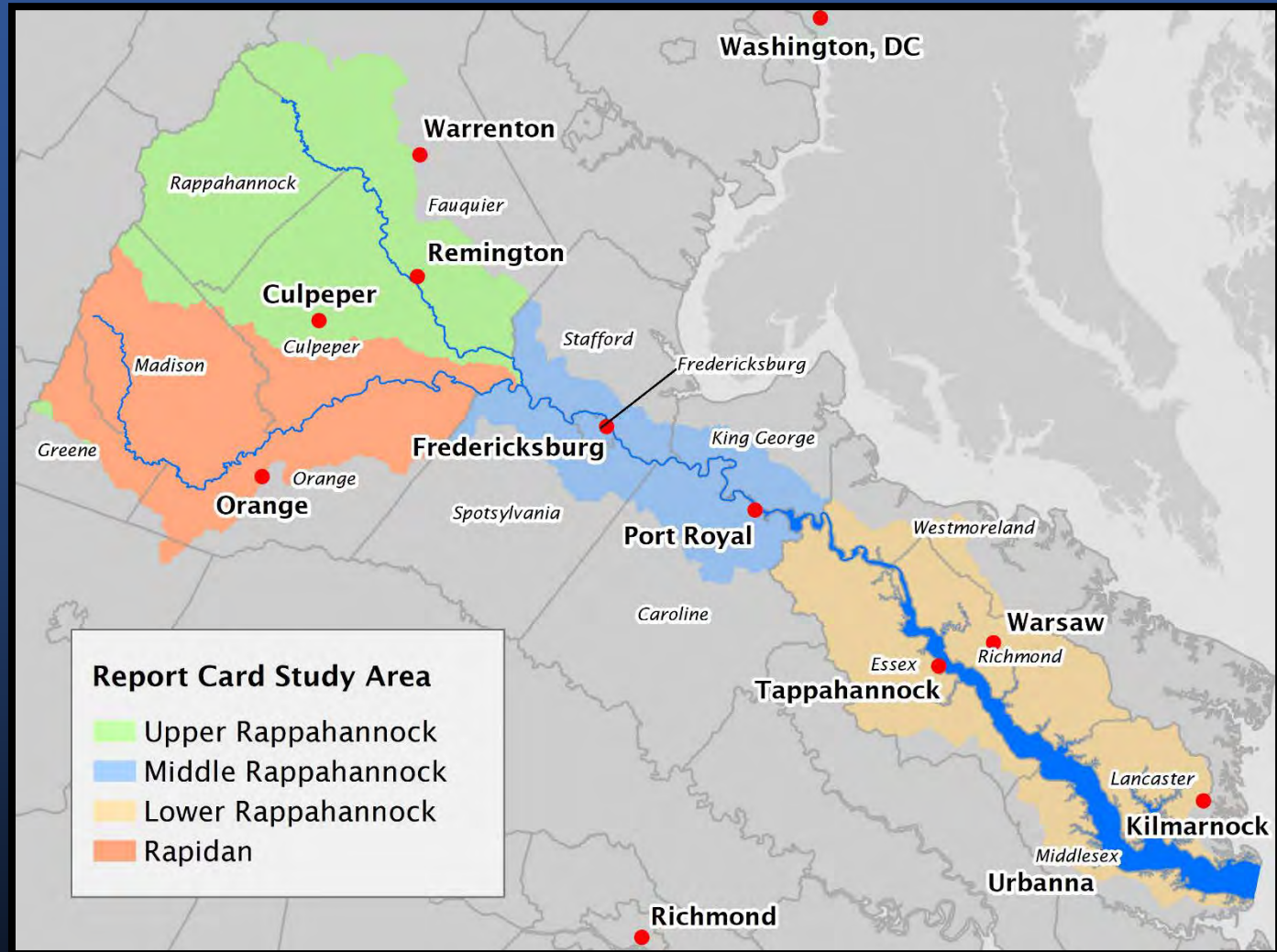
Upper Rappahannock Report Card

- Funded by the PATH Foundation and Northern Piedmont Community Foundation
- Developed between May - October 2019
- *Foundation of an ongoing program*



Study Area & Phases

- Upper Rappahannock:
 - Culpeper County
 - Fauquier County
 - Rappahannock County
- 2nd of 4 Regions
- Repeated as funding & staff resources allow



Report Card Goals

- Establish **measurable, repeatable data indicators** which will inform the community about the condition of the Rappahannock River tributaries and watershed over time
- Produce targeted **recommendations for local citizens and leaders** to improve the health and beauty of the Rappahannock River
- **Inspire action** via on-the-ground stewardship projects and collaboration between and within local communities

Outreach and Engagement

Upper Rappahannock Report Card Release Tour

- Oct 24 – Kickoff/Sperryville
- Oct 28 – Warrenton
- Oct 30 – Culpeper
- Private Presentations



With Stafford BOS
Chair Meg Bohmke

Rappahannock River Report Card

BREW TOUR

Hosted by Friends of the Rappahannock

June 11-13, 2018

	Fredericksburg City Release Party Monday June 11: Red Dragon Brewery, 6-7:30pm
	Stafford & King George County Tuesday June 12: 6 Bears & a Goat Brewery, 6-7:30pm
	Spotsylvania & Caroline County Wednesday June 13: Strangeways Brewery, 6-7:30pm

How clean are our streams and rivers? What can you do to improve the health, safety, and sustainability of your local waterway?

Find out these answers and more with the release of the **Middle Rappahannock Report Card**, hosted by Friends of the Rappahannock.

Event is FREE and appropriate for all ages

This project was made possible with generous funding from the Community Foundation of the Rappahannock River Region's 20th Anniversary Visionary Grant





With aide for Senator Tim Kaine



Middle Rappahannock
Report Card Release
Party at Red Dragon

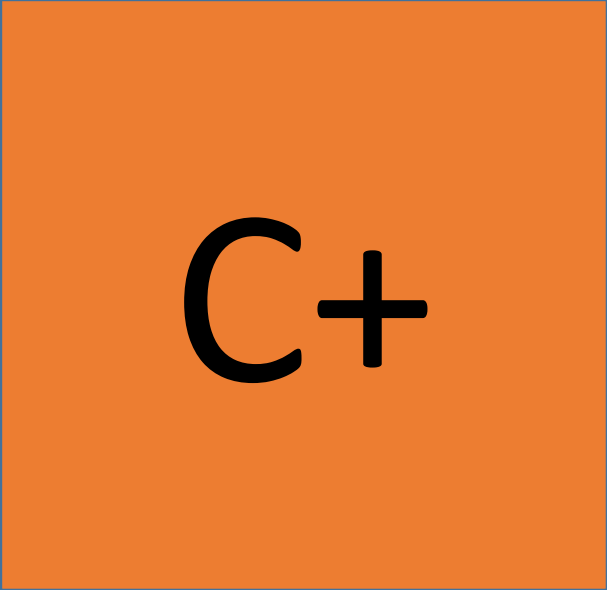
Development Process

- Chose 12 local Rappahannock River tributaries with known water quality challenges of various levels of severity
- Interviewed stakeholders including local governments and organizations
- Reviewed Potomac River Report Card, State of the James, and past watershed assessments for Stafford, Spotsylvania Counties
- Selected 16 quantitative indicators, which fed into the following subjects:
 - Human Health
 - Land Use
 - Stream Ecology
 - Community Engagement
- “Graded” each tributary on each indicator, producing Report Card results

Indicators

<u>Human Health</u>		<u>Land Use</u>		<u>Stream Ecology</u>		<u>Community Engagement</u>
Bacteria: What percent of this tributary's stream have unsafe levels of bacteria?		Forest-Impervious Ratio: How much forest is present, relative to impervious surfaces?		Aquatic Life: What percent of this tributary's stream miles have aquatic life that is heavily disturbed?		Public Access: Is there a publicly accessible park or trail adjacent to this tributary?
Fish Consumption: What percent of this tributary's stream miles have unsafe levels of chemicals in fish tissue?		Open Space Protection: What percent of undeveloped land in the watershed is protected?		Impervious Surfaces: What percent of this tributary's watershed within 300 feet are impervious?		Watershed Education: How many public school students have received watershed education?
Contaminated Sites: Does this tributary's watershed contain any active Brownfield or Superfund sites?		Agricultural BMPs: How many Ag BMPs have been installed per acre of farmland per year?		Forest Canopy: What percent of this tributary's watershed within 300 feet are impervious surface?		River Cleanups: How many river cleanups have been completed along this tributary?
Recreational Health Risk: Do any public access points have levels of bacteria unsafe for recreation?		Green Infrastructure: How many residential BMPs have been installed per capita per year?		Open Space Protection: What percent of this tributary's watershed's open spaces within 300 feet are protected?		Road Crossing Signage: What percent of road crossings on this tributary are marked with the stream name?

Results



C+

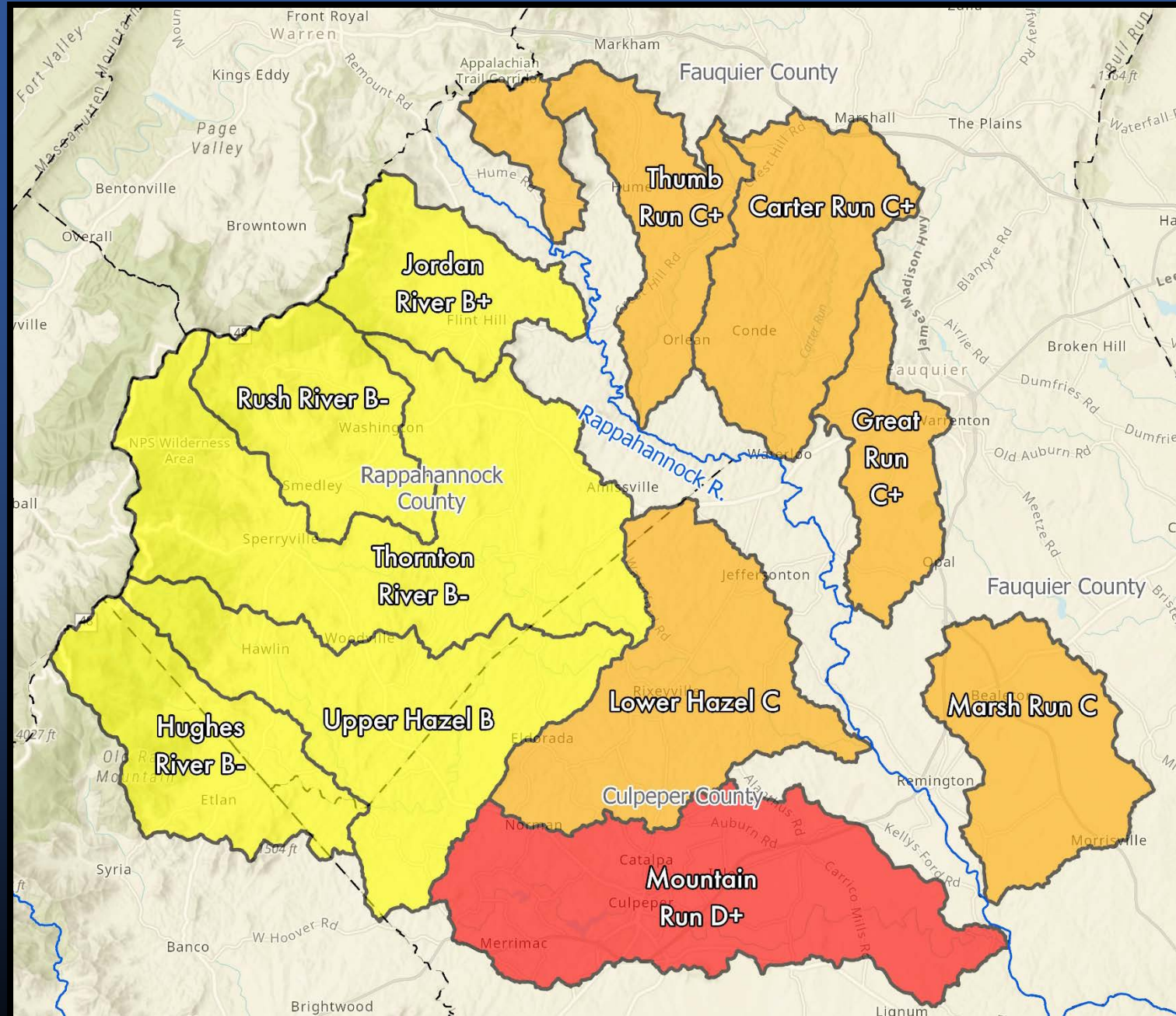
Upper Rappahannock
Report Card Grade
(2019)

Results by Watershed

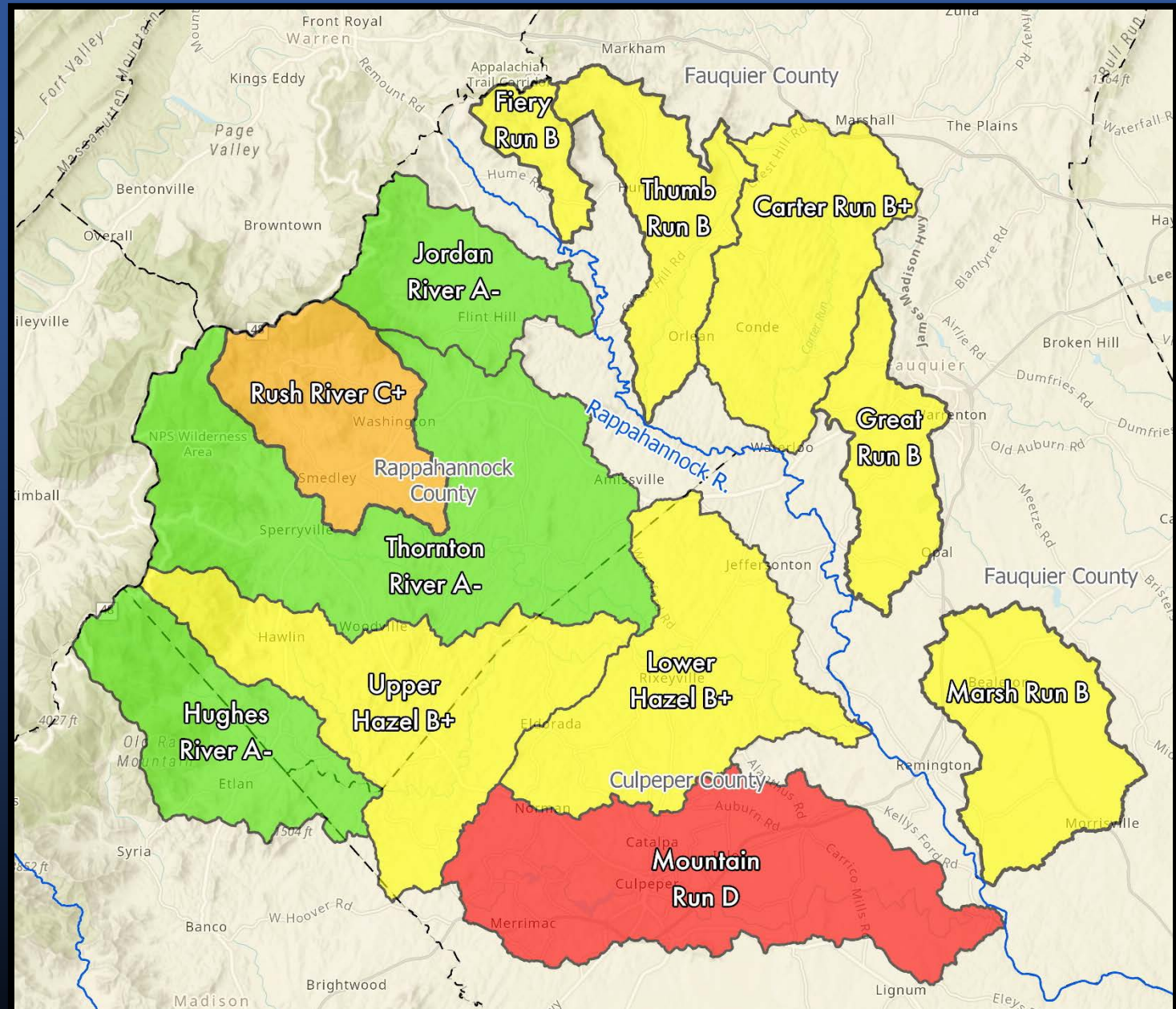
	Culpeper County				Fauquier County					Rappahannock County			
	<i>Hughes River</i>	<i>Mountain Run</i>	<i>Lower Hazel</i>	<i>Upper Hazel</i>	<i>Carter Run</i>	<i>Great Run</i>	<i>Fiery Run</i>	<i>Marsh Run</i>	<i>Thumb Run</i>	<i>Jordan River</i>	<i>Rush River</i>	<i>Thornton River</i>	
Human Health	A-	D	B+	B+	B+	B	B	B	B	A-	C+	A-	B
Land Use	B+	D+	D+	B	C+	C	C	D+	C	A-	B+	C	C+
Stream Ecology	C	D+	C	C+	B	C	B-	C	C+	B	C	C	C+
Community Engagement	C	A	F	B+	F	C	C	D+	C	B+	A	A-	C+
Overall Score	B-	D+	C	B	C+	C+	C+	C	C+	B+	B-	B-	C+ Overall

Overall Results by Watershed

Grading Scale

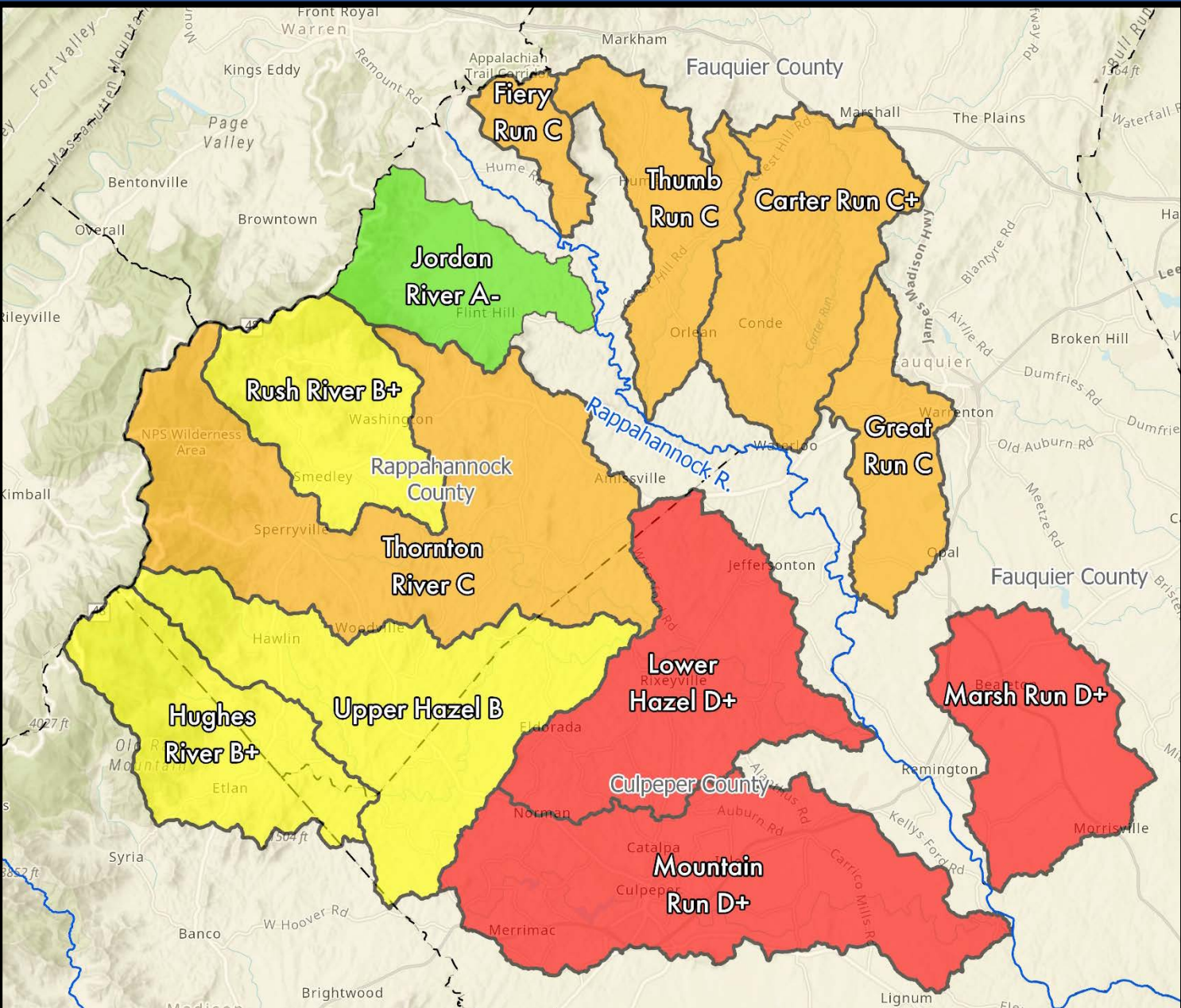


Grading Scale



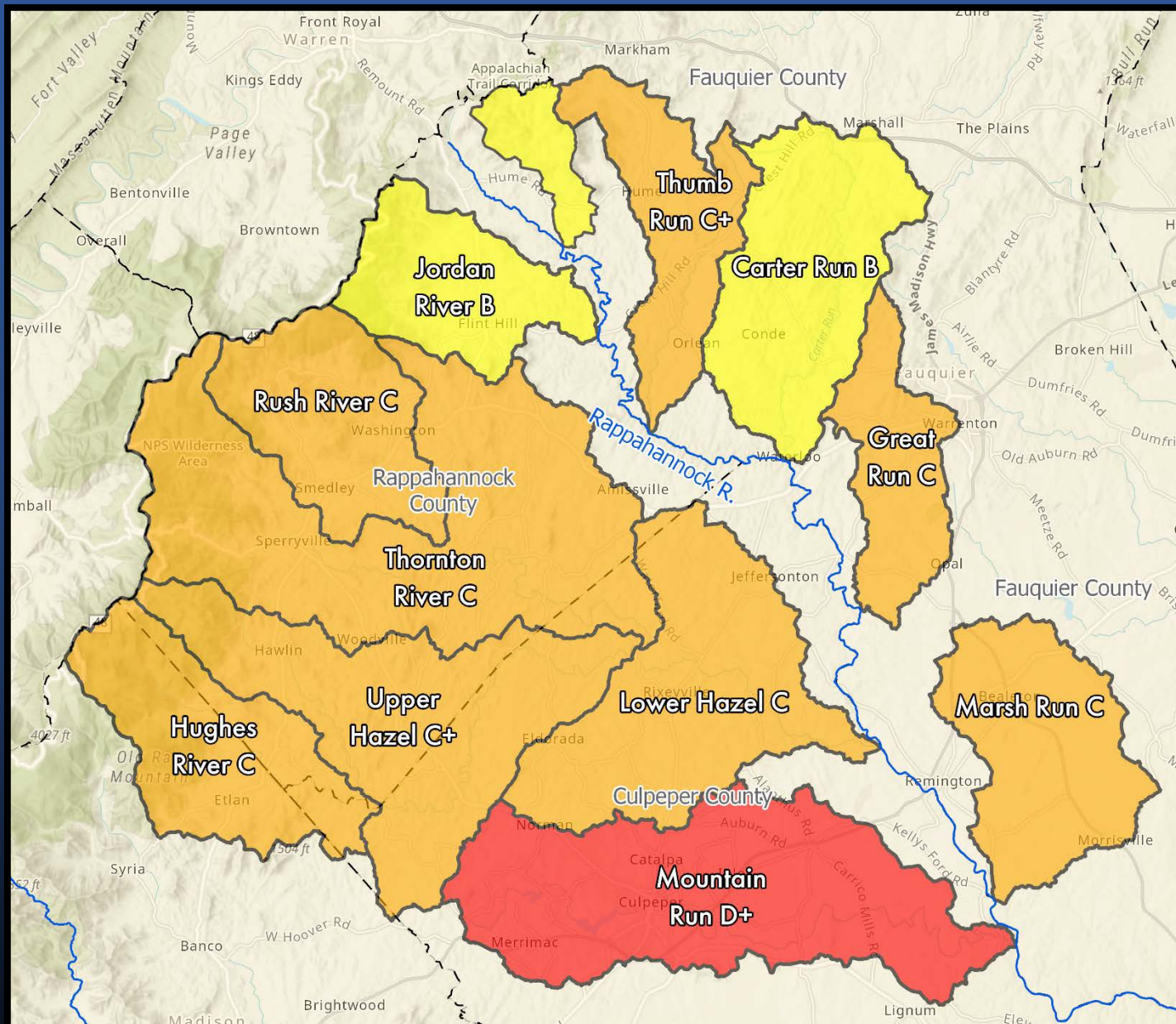
Land Use

Grading Scale



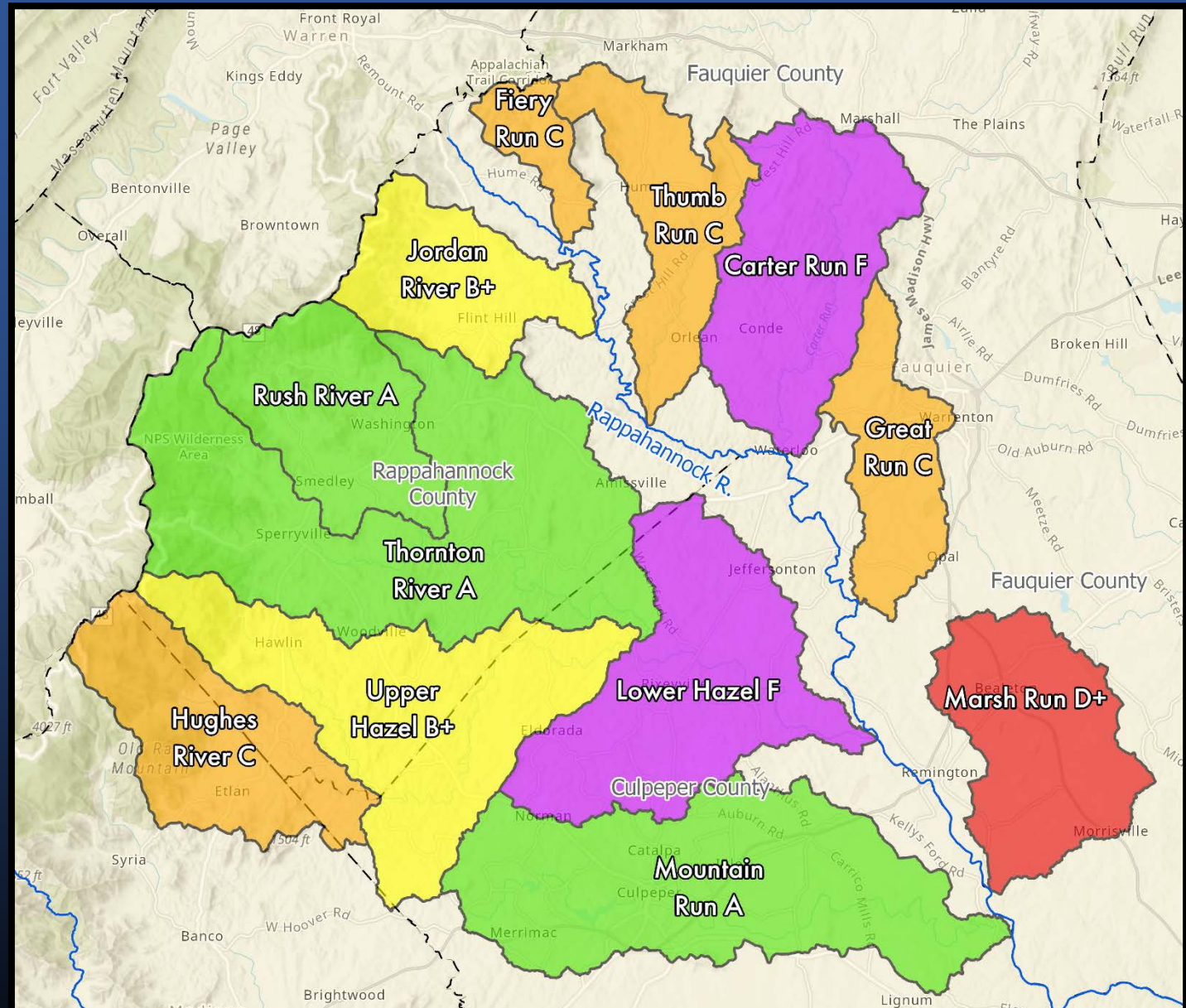
Stream Ecology

Grading Scale



Community Engagement

Grading Scale



Findings

- All 12 tributaries had sections with *bacteria levels unsafe for human contact* (VaDEQ)
 - A. Coli originates from animal waste and malfunctioning septic systems, and leaky sewer pipes
- 2 public parks had *direct access to stream with unsafe bacteria* levels
- Low levels of *impervious surfaces* in most watersheds
- 4 tributaries *lack public access* via a trail or park, which limits community engagement, education and stewardship opportunities
- Distinct geographic patterns between watersheds
 - Grades varied widely depending on proximity to *Shenandoah National Park*
 - Differences most distinct in Land Use and Community Engagement categories
- Only 1 tributary (Mountain Run) was found to be “impaired” for *fish consumption*, due to PCBs
- Poor *data availability*: esp. BMPs, environmental education river cleanups

Next Steps and Challenges

Next Steps

- Use Report Card as a guiding document to help set goals for FOR and community leaders
- Continue Report Card model in Rapidan basin and Lower Rappahannock Watershed

Past/current challenges

- Data availability
- Finding “one size fits all” indicators to compare watersheds

Future challenges

- Data availability
- Funding & resource availability for updates
- Messaging – how to connect with leaders and inspire action away from Fredericksburg area?

STREAM SUPERLATIVES

Honor Roll and Needs Improvement

The best and worst of the Upper Rappahannock Report Card

Culpeper County - Honor Roll

Mountain Run Public Access- Grade: A

- Culpeper County and the town of Culpeper contain six public parks (Yowell Meadow Park, Mountain Run Park, Rockwater Park, Lake Pelham, Wine Street Memorial Park, and Lenn Park) that access streams and lakes along Mountain Run
- Trails and parks with stream access encourage community stewardship of public spaces and create opportunities for service projects such as river cleanups

Conservation Spotlight: Rockwater Park

- Opened in 2018, Culpeper's newest park features trails adjacent to a feeder creek to Mountain Run
- Prior to the town purchasing the land, residential development was discussed for the 32-acre property



Rockwater Park (Photo by
Town of Culpeper)

Culpeper County – Needs Improvement

Mountain Run Bacterial Impairment at Yowell Meadow Park - **Grade: Fail**

- 32% of stream miles in the Mountain Run watershed are listed as impaired for recreation due to bacteria, including the section running through Yowell Meadow Park
- There is no signage to educate visitors on exposure risk or health precautions
- The primary sources of bacteria in Mountain Run are cattle farming and urban runoff

Homework: Install Riparian Forest Buffers along Mountain Run and feeder streams upstream of Yowell Meadow Park

- Riparian forest buffers intercept pollutants from runoff, reducing bacteria introduction into streams
- 100% cost-share is available for qualifying projects



Culpeper County – Needs Improvement

Lower Hazel Public Access - Grade: F

- Public access promotes water recreation, builds a sense of shared ownership and creates stewardship and education opportunities for local citizens
- No trails or parks with river access currently exist on the lower Hazel River

Homework: Consider Establishing a Public Canoe Landing on the Hazel River in Culpeper County

- The lower Hazel River is navigable by canoe and kayak
- Friends of the Rappahannock can assist with grant funding, technical assistance, and strategic guidance



Extra Credit: Develop "water trail" interpretive signage and maps to educate visitors

Fauquier County - Honor Roll

Fiery Run Agricultural BMPs - Grade: A

- Agricultural best management practices (BMPs) can capture and treat non-point source pollutants originating from pasture, cropland, and other farm operations
- Landowners in Fiery Run watershed have treated an average of 37% of BMP-eligible farmland using Ag BMPs annually since 2006 (highest of any Report Card watershed)

Conservation Spotlight: Marriott Ranch

- Historic 4,200-acre cattle ranch and bed & breakfast in Hume
- Since 2012, Marriott Ranch has worked with John Marshall Soil and Water Conservation District to install 13 miles of cattle exclusion systems, which now treat nearly 700 acres of pasture annually



Fauquier County – Needs Improvement

Thumb Run Bacteria - Grade: F

- VaDEQ lists 70.3% of perennial streams in Thumb Run watershed for high bacteria levels
- The primary sources of bacteria are agricultural runoff, septic overflows, and pet waste
- Efforts led by the John Marshall Soil and Water Conservation District and the Fauquier

County Health Department from 2006-2017 resulted in the following improvements:

- 80 livestock exclusion projects protecting 68 miles of stream
- 242 acres of riparian buffer
- 247 septic pump-outs
- 445 acres of pasture management
- 69 septic repairs

Homework: Continue Excluding Cattle from Thumb Run

- Fencing cattle out of streams reduces bacteria pollution
- Cost-shares for cattle exclusion are available from John Marshall Soil and Water Conservation District and NRCS



Forest regeneration after
excluding cattle from a stream

Fauquier County – Needs Improvement

Great Run Green Infrastructure - Grade: F

- Impervious surfaces like buildings and parking lots (including gravel) increase erosion and flooding, and introduce pollutants including bacteria and sediment
- Green infrastructure like rain gardens and cisterns treat runoff from impervious surfaces
- No green infrastructure devices have been installed in the Great Run watershed using state cost shares during the past 10 years



A rain cistern installed by volunteers

Homework: Install Green Infrastructure in Warrenton

- Warrenton is the largest city in Fauquier County and contributes urban stormwater runoff to Great Run
- Practices such as rain gardens, pervious pavers and rain cisterns are eligible for soil and water district cost-shares

Rappahannock County - Honor Roll

Jordan River Open Space Protection - Grade: A

- Clean water is downstream from land conservation
- Rappahannock County is under growing development pressure from the DC metro
- Over 60 percent of undeveloped lands in the Jordan River watershed are protected
- Land can be conserved under government ownership or private easement

Conservation Spotlight: Piedmont Environmental Council

- Piedmont Environmental Council (PEC) is a community-based nonprofit whose mission is to promote and protect the natural resources, rural economy, history and beauty of the VA Piedmont
- Since its founding in 1972, PEC has helped communities across the Piedmont to conserve over 400,000 acres of land
- To learn more, visit PEC's website at www.pecva.org



Rappahannock County - Honor Roll

Rush River Public Access - Grade: A

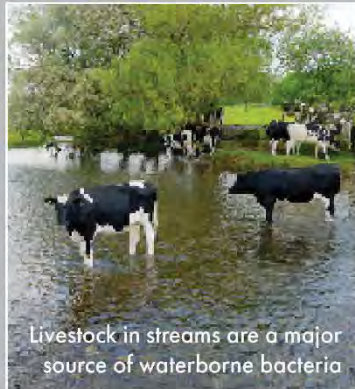
- Rappahannock County Park is a valuable local recreation site and stream access point
- Public access promotes water recreation and builds a sense of shared ownership
- Access creates stewardship and education opportunities for students and adults
- Public spaces attract tourism that helps Rappahannock County businesses



Conservation Spotlight: Shenandoah National Park

- The park contains 516 miles of trails, including 101 miles of the A.T.
- 18.6% of Rappahannock County falls within the park
- In 2017 the park attracted 1.4 million visitors, adding \$95.8 million in economic benefits and supporting 1,204 local jobs (Source: NPS)

Rappahannock County – Needs Improvement



Rush River Bacterial Impairment at Rappahannock County Park - **Grade: Fail**

- The Rush River in the park is state-listed as having unsafe levels of e. coli bacteria, potentially exposing visitors to infection or illness
- There is no signage to inform visitors of the risk or educate them on how to protect against bacteria exposure

Homework: Exclude Cattle from the Rush River and its Feeder Streams Above Route 211

- Runoff from livestock farms is the largest source of waterborne bacteria in Rappahannock County
- Fencing cattle out of streams can reduce bacteria pollution and streambank erosion
- Cost-shares for cattle exclusion are available from local soil and water districts and NRCS



Questions?

Culpeper County - Honor Roll

Hughes River Forest-Impervious Ratio - Grade: A

- The Hughes River watershed contains 91 times as much forest as impervious surface
- Forests improve water quality by promoting groundwater infiltration, controlling erosion, creating wildlife habitat and moderating water temperature
- Impervious surfaces harm water quality by concentrating stormwater flows and washing pollutants into streams

Conservation Spotlight: Groundwater

- When rainwater permeates the ground, it seeps through layers of soil and rock, which filters pollutants and contaminants, before joining surface water via springs and seeps
- Groundwater is a major water source for rural communities



Culpeper County - Honor Roll

Mountain Run Stream Crossing Signage - Grade: A

- 8 of 16 (50%) of lined road crossings over named streams in the watershed have signs indicating the stream name, including 5 of 6 crossings in the town of Culpeper
- Marking crossings increases community awareness of streams and helps citizens connect their local streams with the larger Rappahannock River watershed

Conservation Spotlight: Town of Culpeper River Cleanup

- In November 2019, the town of Culpeper is organizing a volunteer river cleanup with assistance from Friends of the Rappahannock
- The cleanup will take place at public parks along Mountain Run
- For more information or to volunteer, visit riverfriends.org/events



Culpeper County – Needs Improvement

Mountain Run Open Space Protection - Grade: F

- The report card found that only 4.4% of undeveloped lands in the Mountain Run watershed are conserved via government ownership or private easement
- Culpeper County's population grew by 9.8 percent from 2010-2018 (Census Bureau)
- Conservation easements protect natural resources including forests and wetlands

Homework: Conserve Private Land Using the Purchase of Development Rights Program

- Under Culpeper County's Purchase of Development Rights (PDR) program, landowners may sell development potential of their land to the County while holding the right to own and use the property
 - Piedmont Environmental Council (PEC) is a land trust that offers assistance for property owners considering conservation



Fauquier County - Honor Roll

Carter Run Riparian Forest Cover - Grade: B

- Riparian forests slow erosion, filter pollutants from runoff, recharge groundwater, cool water temperature, create habitat, and nourish streams with organic matter
- Over 80% of Carter Run's riparian area is covered under forest canopy, the second-highest total among all Report Card watersheds



Conservation Spotlight: John Marshall SWCD

- The John Marshall SWCD, established 1966, provides technical assistance and education in support of soil stewardship, agricultural conservation, and water quality protection
- John Marshall SWCD offers cost-shares for many kinds of Ag BMPs including riparian buffers, cattle exclusion, and cover crops

Fauquier County – Needs Improvement

Marsh Run Road Crossing Signage - Grade: F

- Marking road crossings with the stream name can increase awareness of streams
- Only crossings where a lined road crossed a named perennial stream were assessed
- 1 of 11 stream crossings in the Marsh Run watershed were marked

Homework: Install Stream Crossing Signage in Bealeton

- Bealeton is a growing suburban community with many commuters
- Installing just five new stream markers will raise this grade to an A



Fauquier County - Honor Roll

Great Run Open Space Protection - Grade: A

- Land use analysis revealed that 45 percent of open spaces in the Great Run watershed are conserved under private easement or government ownership
- This is the highest grade of any Report Card watershed away from Shenandoah NP

Conservation Spotlight: Fauquier County PDR Program

- Under Fauquier County's Purchase of Development Rights (PDR) program, landowners may sell development potential of their land to the County while holding the right to own and use the property
- As of 2017, over 12,000 acres of farmland have been conserved under the PDR program. the highest of any county in Virginia



Rappahannock County – Needs Improvement

Jordan River Riparian Forest Canopy - Grade: C

- Streams with insufficient forest cover suffer increased erosion, pollution, and aquatic habitat loss
- GIS analysis revealed that only 78 percent of riparian areas in the Jordan River watershed had forest cover; 90% earns an "A" grade

Homework: Establish Riparian Forest Buffers along the Jordan River and its Feeder Streams

- Riparian forest buffers slow erosion, filter pollutants from runoff, recharge groundwater and create habitat
- Buffers of 35 feet in width or greater are most effective
- 100% cost shares are available



Wakefield Country Day School students plant a tree in Rappahannock County

Extra Credit: Recruit volunteers from Wakefield Country Day School or Rappahannock County HS

Rappahannock County – Needs Improvement

Thornton River Green Infrastructure - Grade: F

- Impervious surfaces like buildings and parking lots (including gravel) increase erosion and flooding, and introduce pollutants including bacteria
- Green infrastructure like rain barrels and rain gardens treat runoff from impervious surfaces
- No green infrastructure devices have been installed in the Thornton River watershed using state cost shares during the past 10 years

Homework: Install Green Infrastructure in Sperryville

- Rain barrels are easy to install and can be purchased at Culpeper SWCD
- "Structural" practices such as rain gardens, pervious pavers and above-ground cisterns are eligible for soil and water district cost-shares

Extra Credit: Install signage to teach others about green infrastructure



Painted Rain Barrel

Rappahannock County - Honor Roll

Thornton River River Cleanups - Grade: A

- Chemicals and microplastics leach from discarded litter and pollute soil and water
- Volunteer cleanups are an easy and affordable way to encourage local stewardship
- You can organize your own cleanup! Friends of the Rappahannock can loan supplies and help you get set up. No crew is too small. Visit www.riverfriends.org for more info.

Conservation Spotlight: Thornton River Cleanup Day

- Thornton River Cleanup Day is an annual river cleanup in April on the Thornton River organized by downtown Sperryville businesses
- Cleanup materials and assistance have been provided by Friends of the Rappahannock , VDOT and numerous other groups

