Hat and Black Creek Clean Up Study and Implementation Plan

Community Meeting

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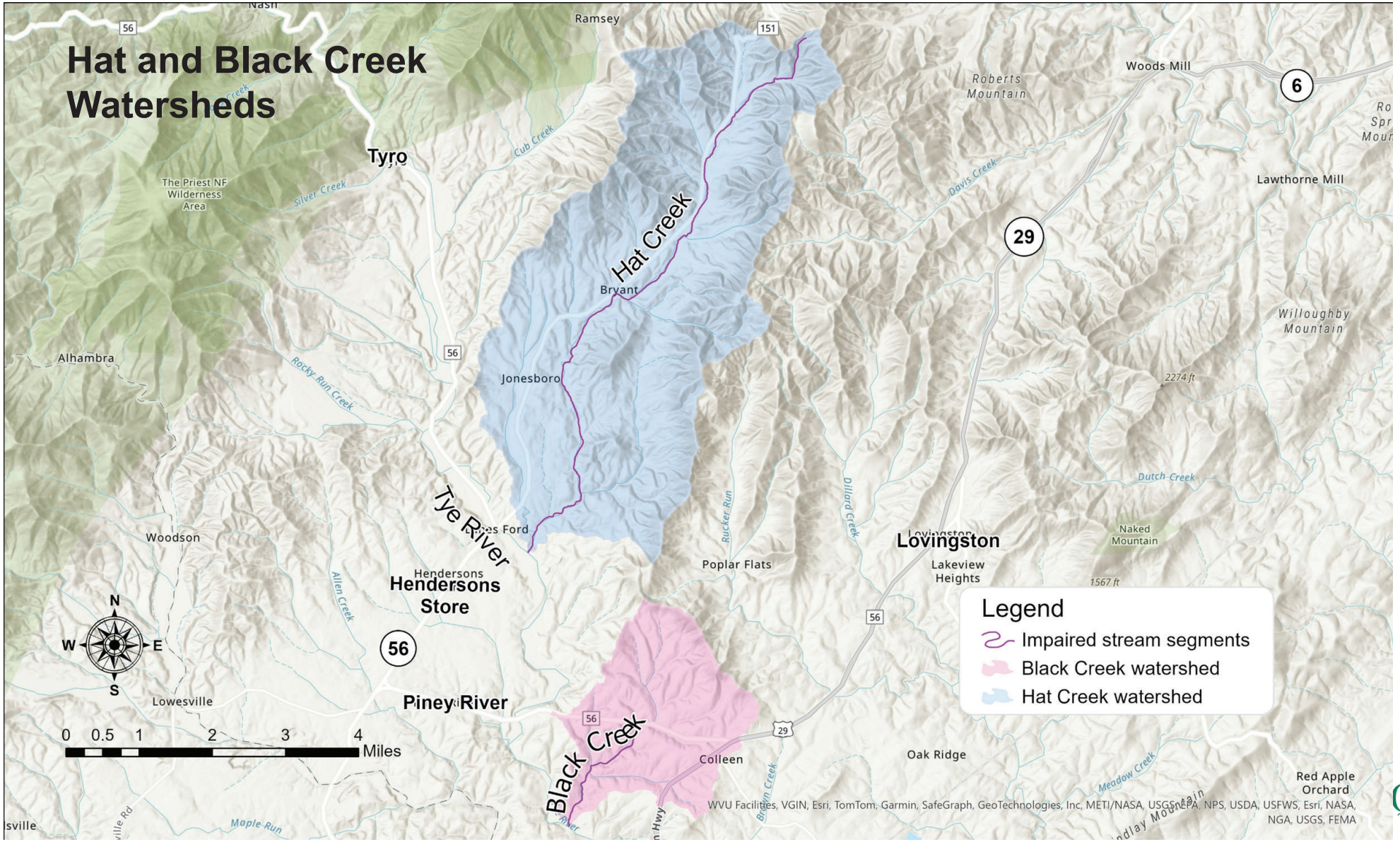
Virginia Department of Environmental Quality
March 5, 2025


Hat and Black Creek Watersheds
Ramsey
Woods Mill
Roberts Mountain
6
Tyro
Cub Creek
The Priest NF Wilderness Area
Silver Creek
Davis Creek
Lawthorne Mill
29
Hat Creek
Bryant
Willoughby Mountain
Alhambra
Rocky Run Creek
Jonesboro
2274 ft
Tye River
Dutch Creek
Woodson
Rucker Run
Dillard Creek
Naked Mountain
Lovingston
Poplar Flats
Lakeview Heights
Hendersons Store
Allen Creek
1567 ft
N
W
E
S
56
Lowesville
Piney River
Legend
Impaired stream segments
Black Creek watershed
Hat Creek watershed
0 0.5 1 2 3 4
Miles
Black Creek
Colleen
Oak Ridge
Meadow Creek
Red Apple Orchard
Maple Run
WVU Facilities, VGIN, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, USFWS, Esri, NASA, NGA, USGS, FEMA

Project timeline

- January 2020: Began collecting updated data for study of the streams
- January 2023: Kicked off stream study at the Nelson Memorial Library
- March 2023-September 2024: Clean up study completed (5 stakeholder meetings held)
- October 2024 – December 2024: Implementation plan completed (1 stakeholder meeting held)
- March 5, 2025 (TODAY!): Final community meeting

Why a study?

- Aquatic life designated use
  - All waters should support "*the propagation and growth of a balanced, indigenous population of aquatic life*"
- What does this **mean**?
  - Waters should be free of substances harmful to aquatic life
- Monitor benthic macroinvertebrates (the bugs on the stream bottom) to determine if the standard is met

Why should we care about bugs?

- Consume algae and organic matter → nutrient cycling
- Aquatic food chain
- Our “canary in the coal mine”
- Chemical monitoring = a snapshot in time
  - Long lived
  - Relatively immobile

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Determining a "biological impairment"

- DEQ biological monitoring data (spring and fall)
- VA Stream Condition Index is our barometer
  - Diversity, pollution tolerance, feeding group
  - Target score of ≥60
  - ***Hat and Black Creeks have scores below 60***

Photo: Jan Hamrsky: lifeinfreshwater.net

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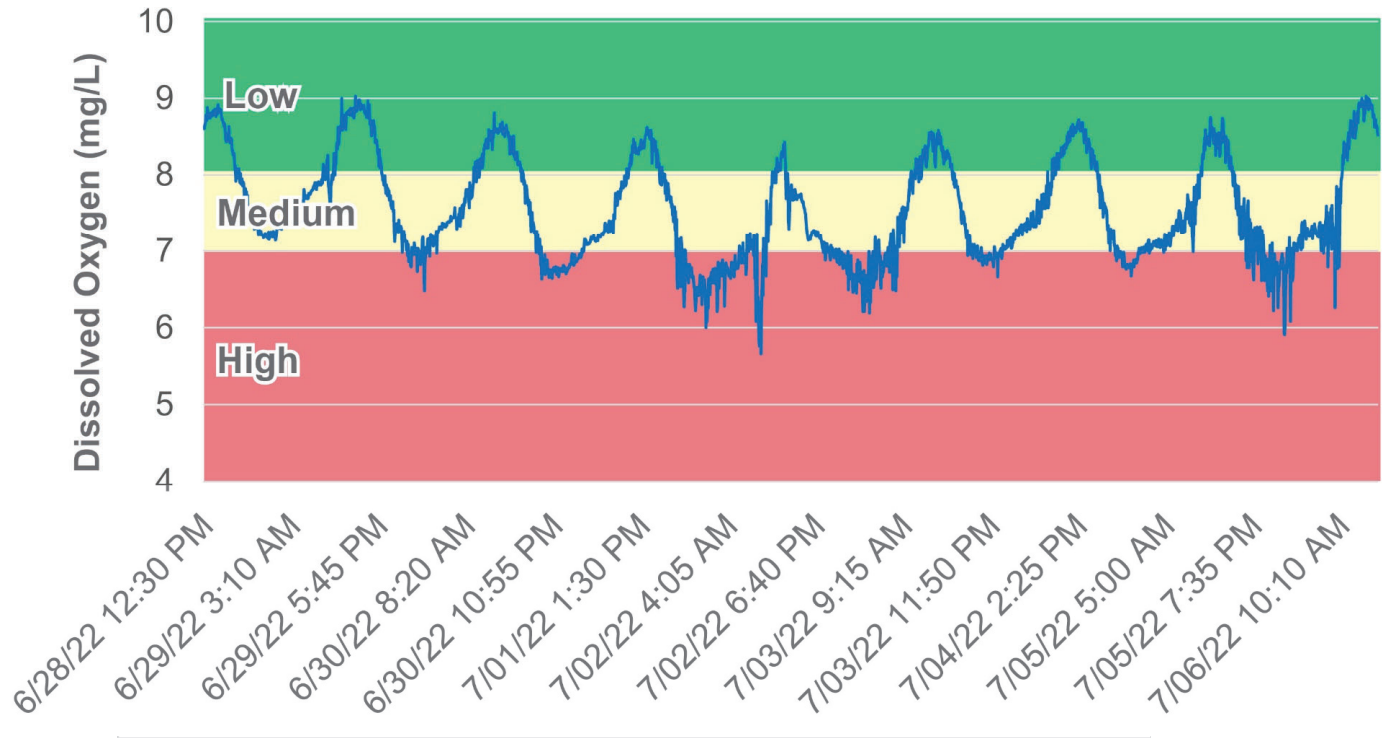
Study points to *sediment in Hat and Black Creek*

- Insects in the streams fairly tolerant of sediment
- Observed evidence of streambank erosion
- Lack of streamside vegetation (riparian buffers)
- Extent of sediment on the stream bottom

Phosphorus: An additional stressor in Black Creek

- High phosphorus concentrations
- Low dissolved oxygen concentrations
- Predominance of midge and black fly larvae (34%)



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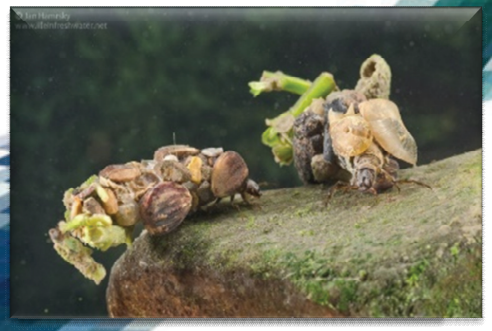
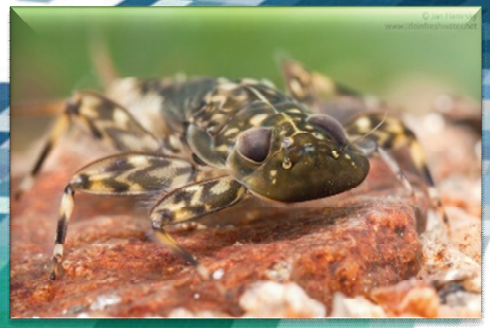
What is a TMDL?





A Total Maximum Daily Load is the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards.

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How do we develop a TMDL?

What's the magic number…

1. Identify sources of sediment and phosphorus
2. Model their path to the stream
3. Determine reductions needed from each source to restore aquatic life

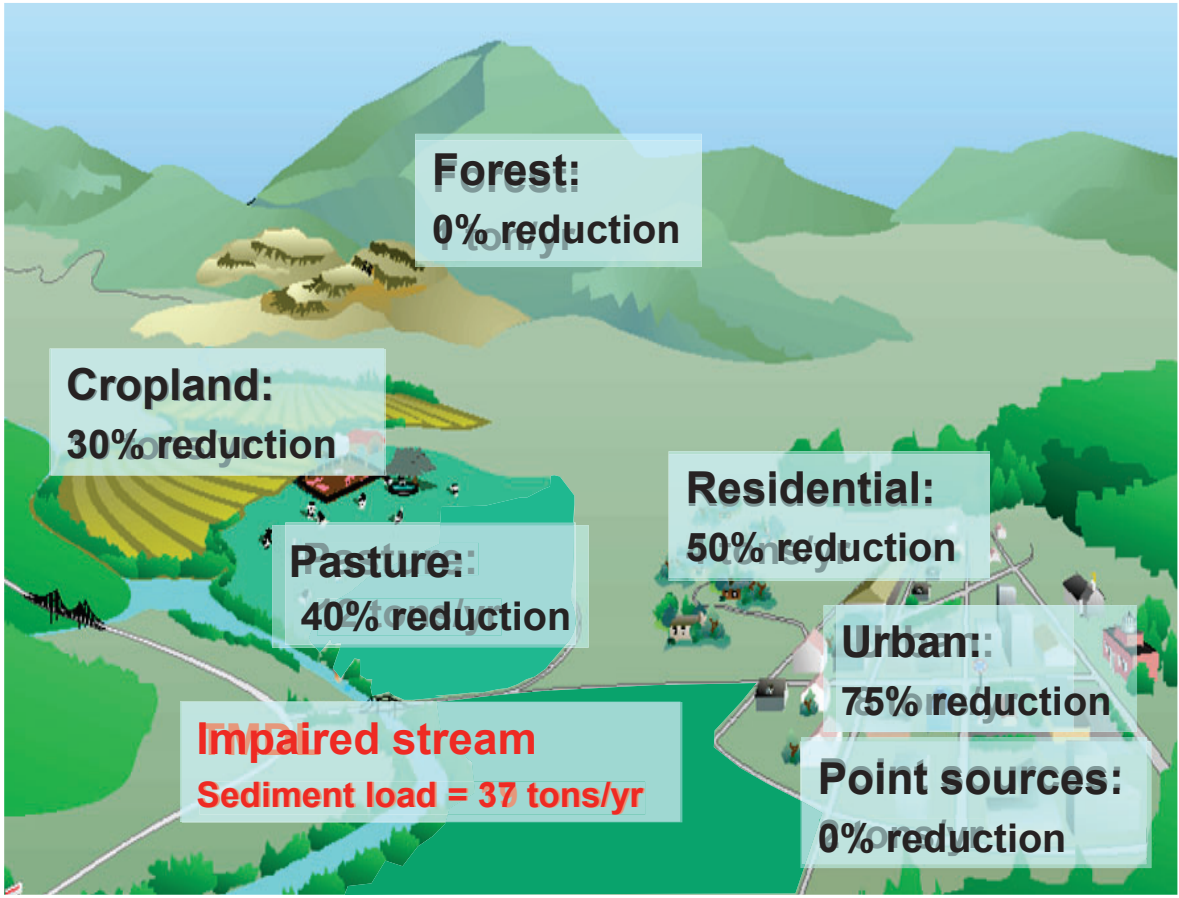
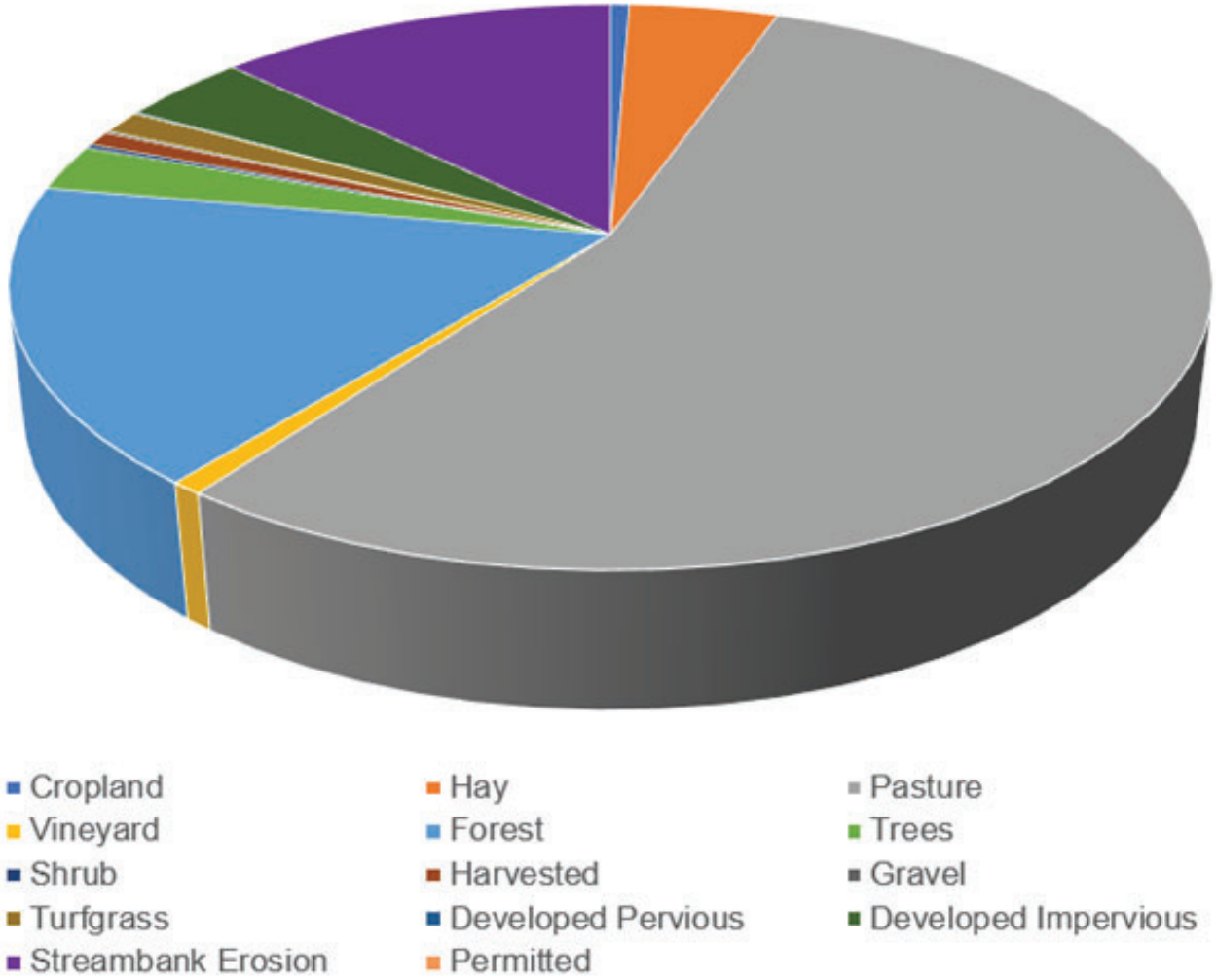


Diagram: Adapted from the Center for TMDL and Watershed Studies at Virginia Tech

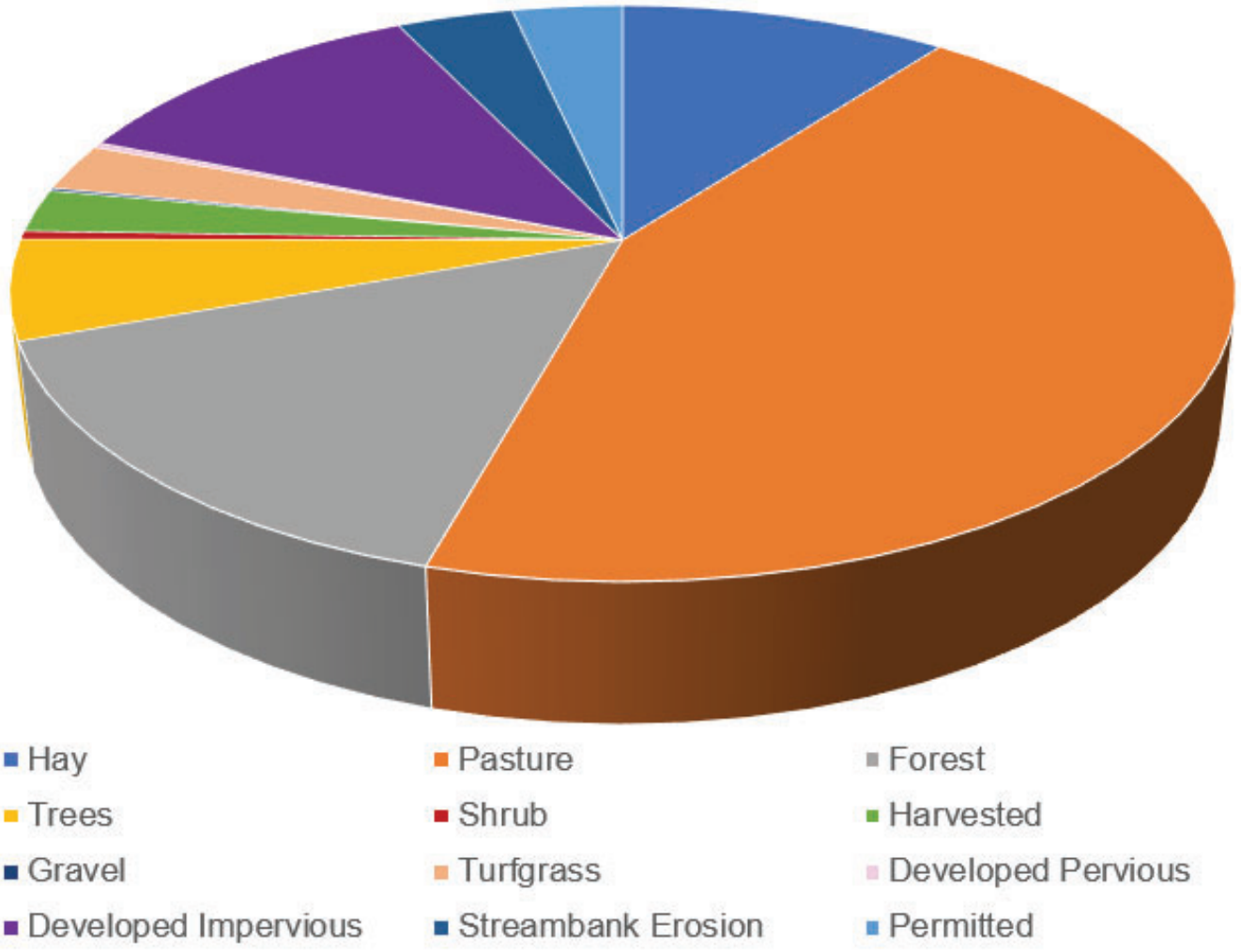
Sediment sources in Hat Creek

An estimated 7% reduction in sediment is needed to restore aquatic life in Hat Creek



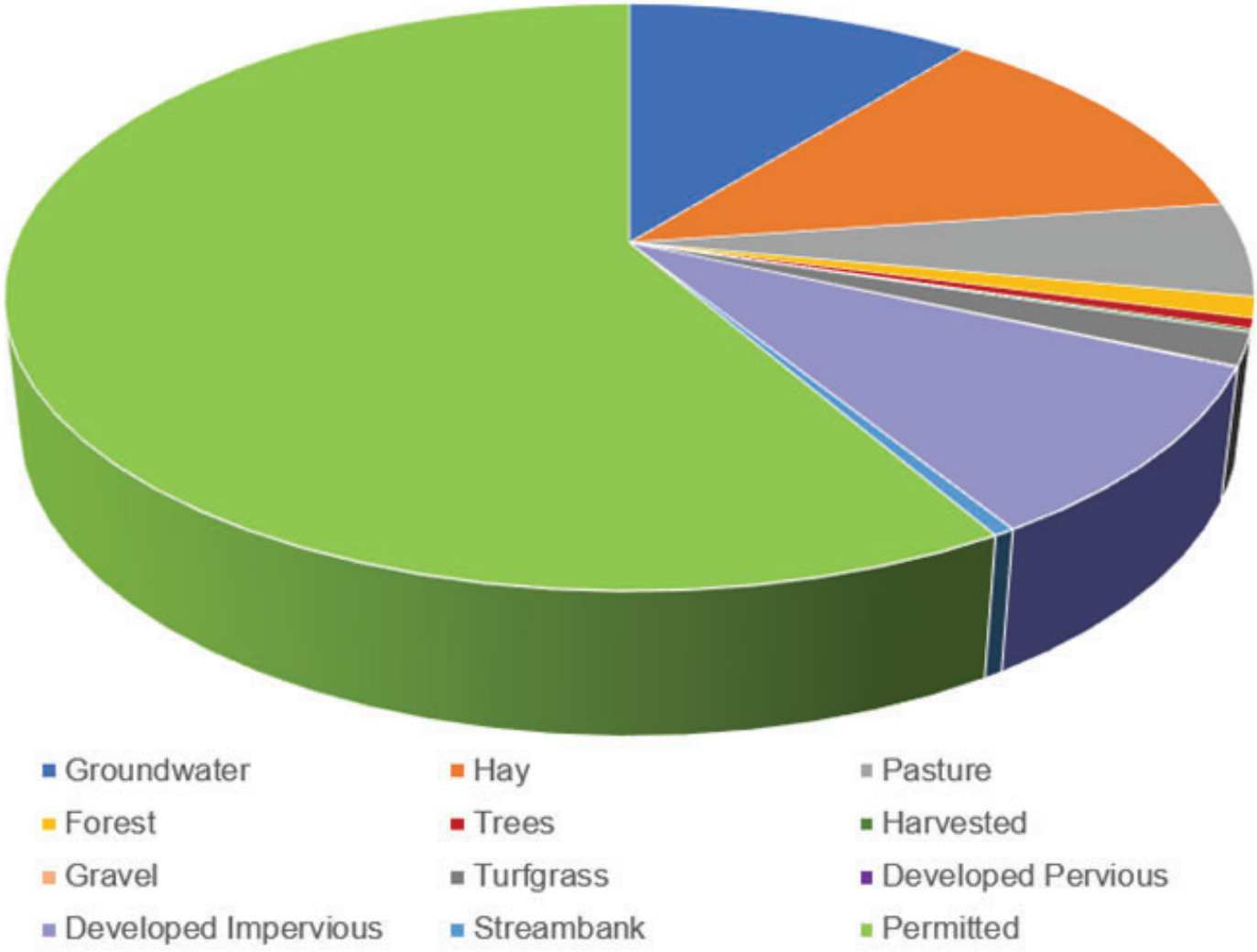
Sediment sources in Black Creek

An estimated 19% reduction in sediment is needed to restore aquatic life in Black Creek



Phosphorus sources in Black Creek

An estimated 23% reduction in phosphorus is needed to restore aquatic life in Black Creek



Where do the sediment reductions come from?

Land use category	Black Creek Sediment Reduction Needed	Hat Creek Sediment Reduction Needed
Cropland	NA	4%
Hay	14%	4%
Pasture	30%	11%
Vineyard	NA	4%
Forest, Trees, Shrubs, Harvested, Wetland	0%	0%
Gravel and Turfgrass	10%	1%
Developed Pervious	5%	1%
Developed Impervious	30%	1%
Streambank Erosion	20%	6%
Permitted	0%	0%

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Where do the phosphorus reductions come from?

Land use category	Black Creek Phosphorus Reduction Needed
Groundwater	0%
Hay, Pasture	30%
Forest, Trees, Shrubs, Harvested, Wetland	0%
Gravel and Developed Pervious	5%
Turfgrass	25%
Developed Impervious	30%
Septic Systems	0%
Streambank Erosion	25%
Permitted	22%

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What is in the clean up plan?

- What's already happening
- What else can be done and who can help do it
- How long it will take
- What kind of a difference it will make in water quality
- How we can pay for it
- How we can get the word out

Livestock Exclusion:

Goal is to exclude livestock from 30% of Hat Creek and 97% of Black Creek

Watershed	Unfenced stream next to pasture	Fencing (ft)
Black Creek	13,900	13,210
Hat Creek	98,780	29,930
TOTAL	**112,690**	**43,140**

Challenges

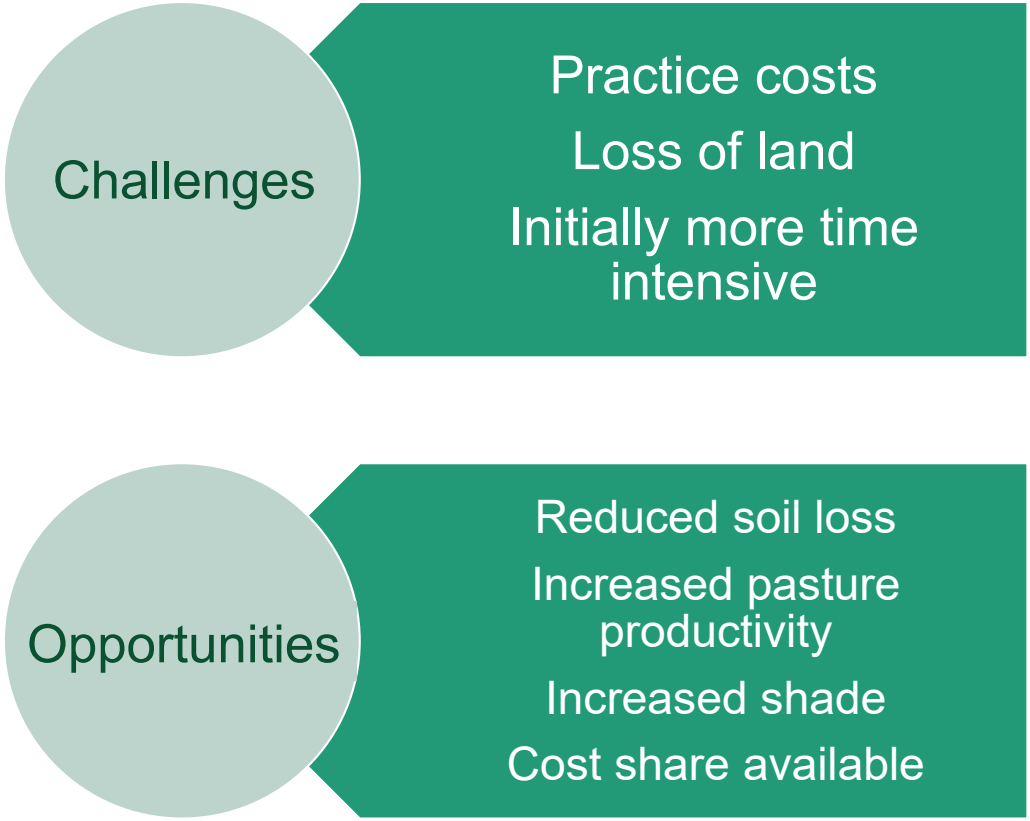
- Maintenance
- Loss of land
- Loss of shade
- Cost of fencing

Opportunities

- Clean drinking water source
- Improved herd health
- Cost share available

Pasture and Hayland practices

Practice	Hat Creek	Black Creek
Grazing land management	200 acres	125 acres
Streamside vegetative buffer	55 acres	20 acres
Vegetative cover on critical areas	0.5 acres	1 acre
Forestation of erodible pasture and hayland	25 acres	130 acres
Nutrient management plan	0 acres	350 acres



Cropland and Vineyard practices

Practice	Hat Creek	Black Creek
Continuous no-till	1 acre	NA
Cover crops	4 acres	NA
Grass filter strips	5 acres	NA
Vegetative cover on critical areas	1.5 acres	NA

Challenges

- Initially more time intensive
- Lose ability to mechanically control weeds
- Loss of productive land

Opportunities

- Reduced soil loss
- Increased soil fertility and moisture
- Fuel and labor savings
- Cost share available

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Urban/residential practices

Practice	Hat Creek	Black Creek
Tree planting	9 acres	36 acres
Bioretention filter/rain garden	2 ac treated	15 ac treated
Grass channels	-	13 ac treated
Bioswales	-	10 ac treated
Permeable pavement	-	1 project
Impervious surface removal	-	1 project
Wet ponds/wetlands	-	10 ac treated
Conservation landscaping	-	25 acres
Nutrient management plan	-	25 acres

Challenges

- Practice costs
- Maintenance

Opportunities

- Reduce flooding
- Attractive landscaping
- Create wildlife habitat
- Cost share available

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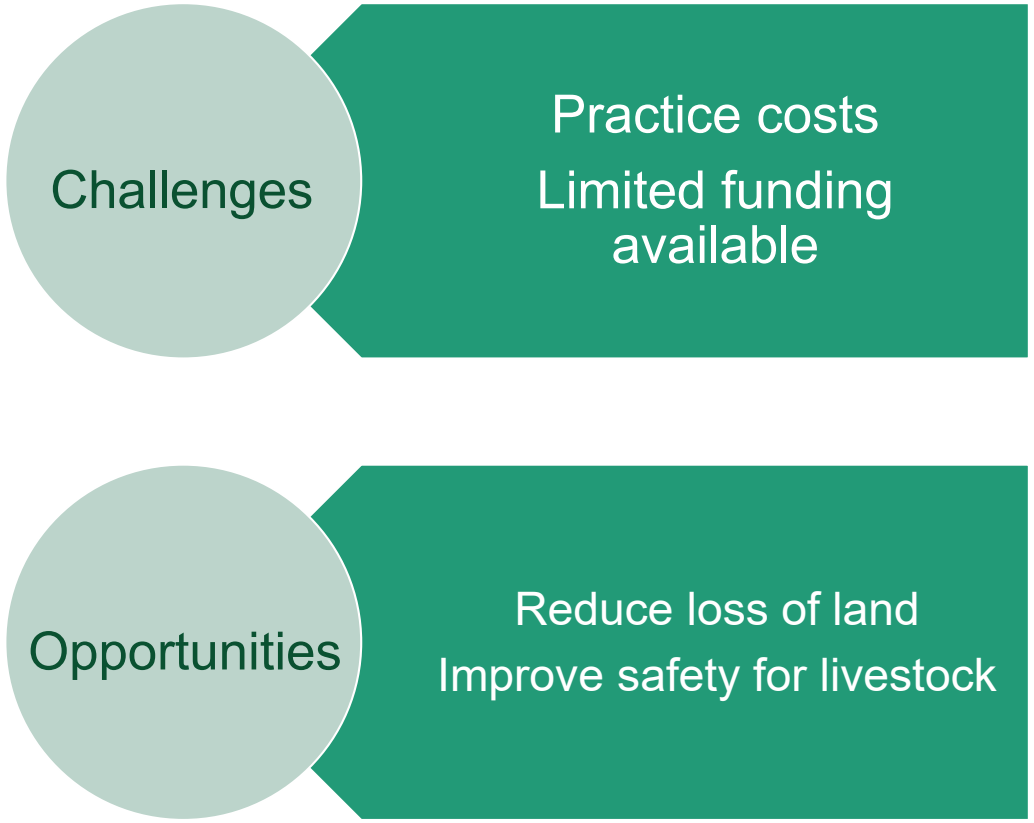
Streambank stabilization and Gravel roads

Practice	Hat Creek	Black Creek
Streambank stabilization	2,250 meters	1,775 meters
Gradebreak installation	3 projects	4 projects
Drainage outlets	3 projects	4 projects



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Little Back Creek Stream Restoration

Photos by Louise Finger, VA Dept of Wildlife Resources

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How much will this cost?

Management practice type	Hat Creek	Black Creek	Total
Agricultural	$740,000	$434,000	$1.2M
Urban/residential	$89,000	$1.6M	$1.7M
Streambank restoration	$2.3M	$1.8M	$4.0M
TOTAL	**$3.1M**	**$3.9M**	**$6.9M**

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How long will it take?

- Plan establishes a 12-year timeline
  - Two 6-year phases
    - 2026-2031
    - 2032-2037
- May take more time…may take less
- Implementation is ***voluntary***
- Progress evaluated based on biological monitoring results

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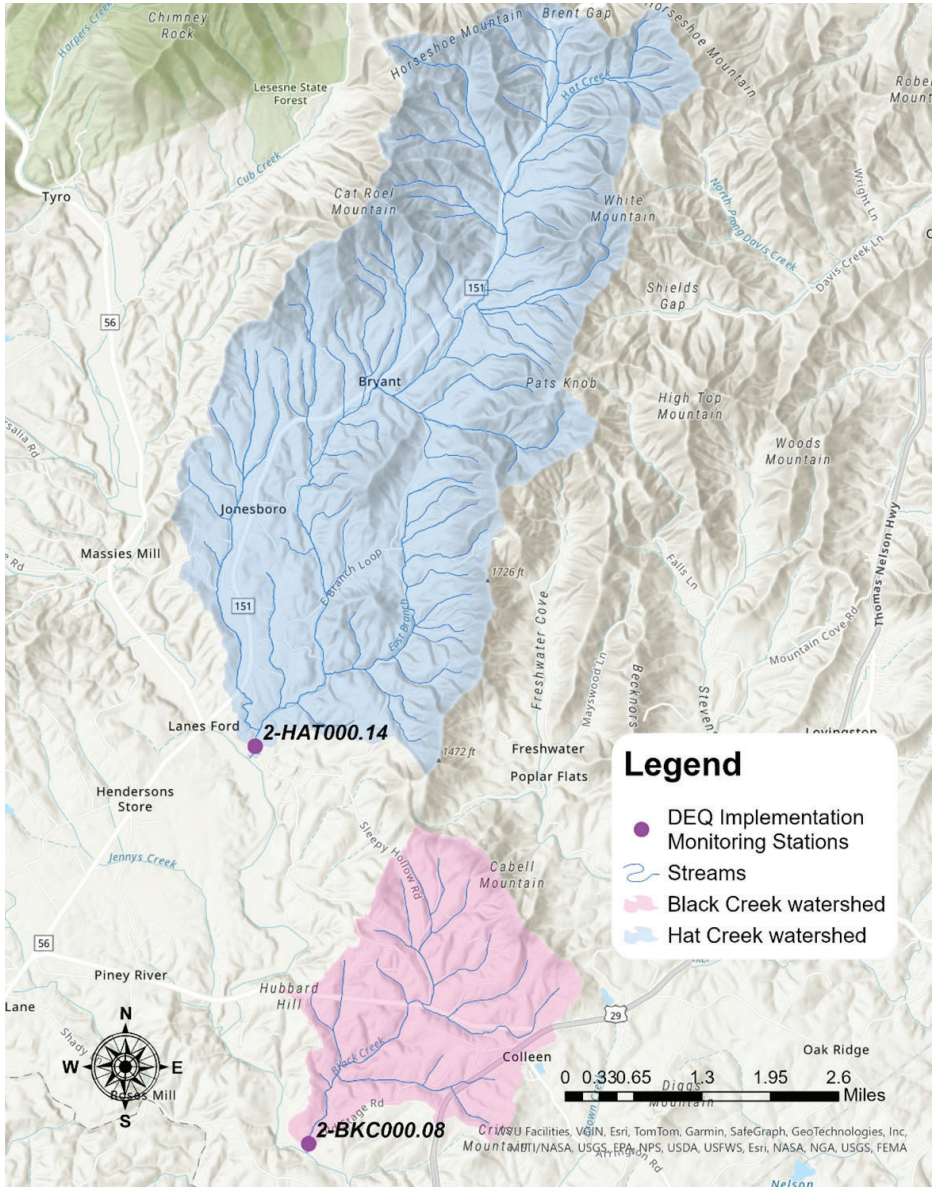
DEQ Monitoring Stations

- Spring and fall biological monitoring
- Resume after 2-3 years of implementation

Water-shed	Station ID	Description
Hat Creek	2-HAT000.14	100 yards upstream of Route 655 bridge
Black Creek	2-BKC000.08	Old Stage Rd. culvert on Piney River Farm



Potential partners

- Thomas Jefferson Soil and Water Conservation District
- Natural Resource Conservation Service
- Nelson County
- VA Cooperative Extension Service
- Nelson County Farm Bureau
- VA Department of Forestry
- Chesapeake Bay Foundation

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Funding Opportunities

- Existing programs
  - VA Agricultural BMP Cost Share Program
  - VA Conservation Assistance Program
  - NRCS/USDA cost share programs
- Grant programs
  - DEQ Implementation Program (Section 319 Funds)
  - National Fish and Wildlife Foundation Grants
  - VA Department of Forestry: Urban and Community Forestry Grants

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How can you get involved?

- Consider implementing best management practices on your property
  - Reach out to Thomas Jefferson SWCD, Natural Resource Conservation Service

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What's next?

30-day public comment period (March 5, 2025 – April 4, 2025)

Send comments to:

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Photo: Jan Hamrsky: lifeinfreshwater.net

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