Tools and Approaches to Focus Effective “WIP” Implementation

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Virginia Major Basin Planning Targets

Geography	Planning Target (M pounds)	
Major Basin	**Nitrogen**	**Phosphorus**
Eastern Shore	1.43	0.164
James (Does not include ChlA)	25.92	2.731
Potomac	16.00	1.892
Rappahannock	6.85	0.849
York	5.52	0.556
VA	55.73	6.192

Reductions from 2017 Progress to Planning Targets (all sources)

Geography	Remaining Reductions (M pounds from 2017)	
Major Basin	**Nitrogen**	**Phosphorus**
Eastern Shore	0.87	0.01
James (Does not include ChlA)	-1.50	-0.23
Potomac	1.10	0.08
Rappahannock	1.24	0.06
York	0.71	0.003
VA	2.41	-0.070

Reductions from 2017 Progress to Planning Targets (all sources)

Geography	Remaining Reductions (percent from 2017)	
Major Basin	**Nitrogen**	**Phosphorus**
Eastern Shore	38%	6%
James (Does not include ChlA)	-6%	-9%
Potomac	6%	4%
Rappahannock	15%	7%
York	11%	0%

Approximate Basin Exchange Factors (James-6, York-3, Rappahannock-2, Potomac-1, Eastern Shore-1)

Agricultural Reductions 2017 to LAPG

Row Labels	2025 % of Bay Ag Acres	WIP 2 Ag Reductions	WIP3 Ag Reductions
Culpeper Soil Conservation District	10.17%	8.48%	14.79%
Lord Fairfax Soil Conservation District	9.87%	8.99%	5.65%
Shenandoah Valley Soil Conservation District	8.89%	16.51%	11.01%
Thomas Jefferson Soil Conservation District	7.95%	3.57%	1.89%
Headwaters Soil Conservation District	7.94%	6.11%	4.17%
John Marshall Soil Conservation District	5.42%	2.98%	2.85%
Northern Neck Soil Conservation District	4.44%	8.42%	10.28%
Three Rivers Soil Conservation District	4.36%	7.51%	9.89%
Hanover-Caroline Soil Conservation District	4.08%	4.51%	3.36%
Piedmont Soil Conservation District	3.90%	2.24%	1.44%
Loudoun Soil Conservation District	3.79%	2.46%	0.41%
Mountain Soil Conservation District	3.57%	1.32%	1.05%
Natural Bridge Soil Conservation District	3.54%	1.78%	2.70%
Peter Francisco Soil Conservation District	3.15%	1.79%	1.81%
Robert E. Lee Soil Conservation District	2.71%	1.77%	4.41%
Eastern Shore Soil Conservation District	2.60%	8.71%	7.16%
Mountain Castles Soil Conservation District	2.26%	1.24%	2.45%
Peanut Soil Conservation District	2.24%	2.01%	1.25%
Monacan Soil Conservation District	1.94%	1.56%	2.13%
Tri-County/City Soil Conservation District	1.93%	1.69%	2.85%
Tidewater Soil Conservation District	1.39%	2.17%	0.84%
Colonial Soil Conservation District	1.37%	1.69%	2.18%
Prince William Soil Conservation District	0.91%	0.44%	1.13%
James River Soil Conservation District	0.67%	0.85%	1.61%
Henricopolis Soil Conservation District	0.25%	0.54%	2.12%
Appomattox River Soil Conservation District	0.23%	0.15%	0.26%
Virginia Dare Soil Conservation District	0.16%	0.33%	0.32%
Blue Ridge Soil Conservation District	0.14%	0.04%	0.03%
Peaks of Otter Soil Conservation District	0.12%	0.13%	-0.08%
Northern Virginia Soil Conservation District	0.01%	0.02%	0.03%
Skyline Soil Conservation District	0.01%	0.00%	0.01%
Grand Total	**100.00%**	**100.00%**	**100.00%**

WIP III Planning Process

- Local WIP III Planning Process Inputs
  - 2017 Progress BMPs
  - WIP II Planned BMPs
  - BMP Cost Effectiveness data
  - BMP Co-Benefits data

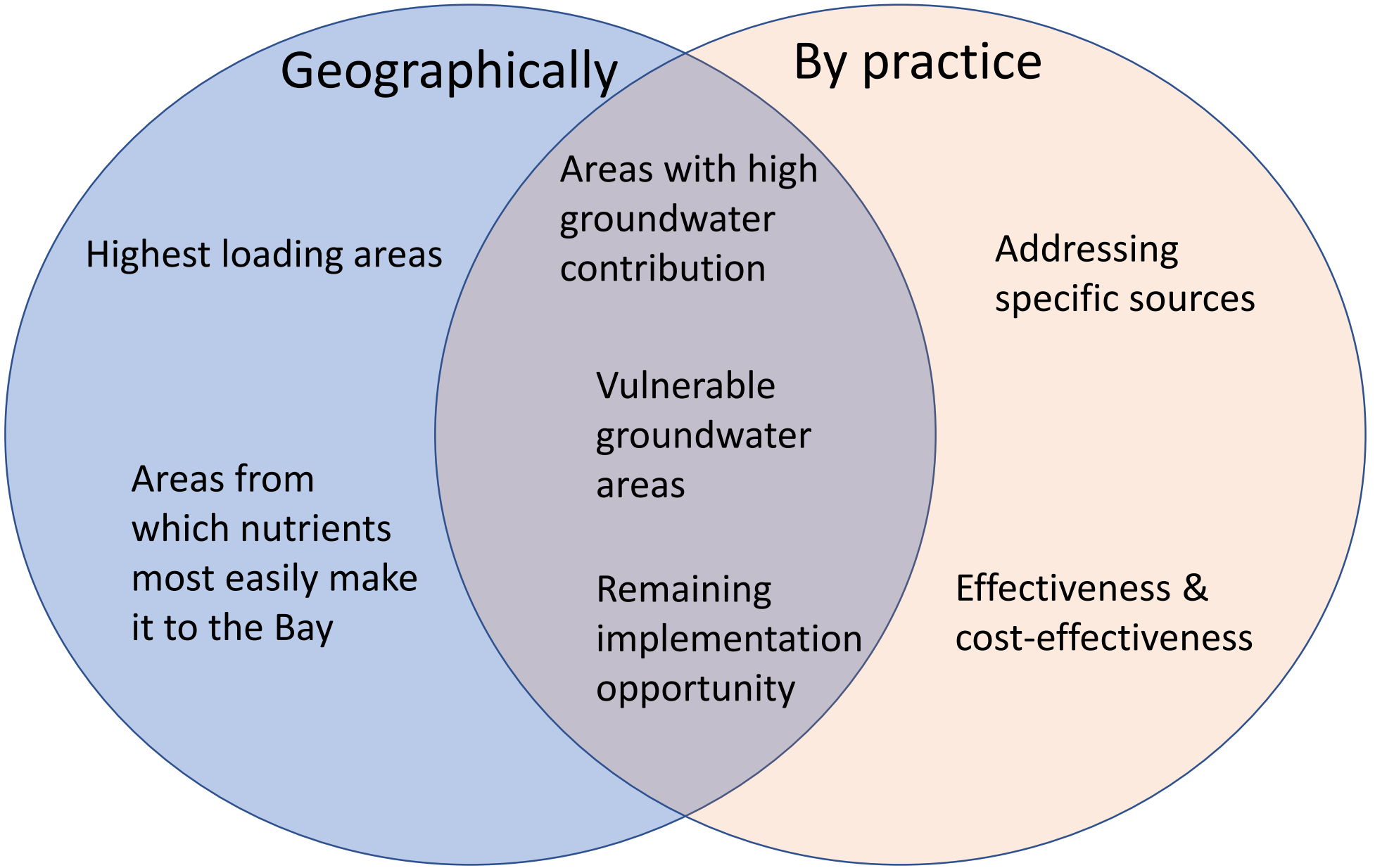
- Resulting Programmatic Actions
  - Will answer the question WHO? Federal, State and Local partners.
  - Will answer the question HOW? Identified programs, funding and authorities.
- Resulting WIP III BMP Scenario
  - Will answer the question WHEN? No later than 2025
  - Will answer the question WHAT? The right mix of BMPs.
  - Will answer the question HOW MUCH? The level of BMP implementation

What’s Left

What's Left

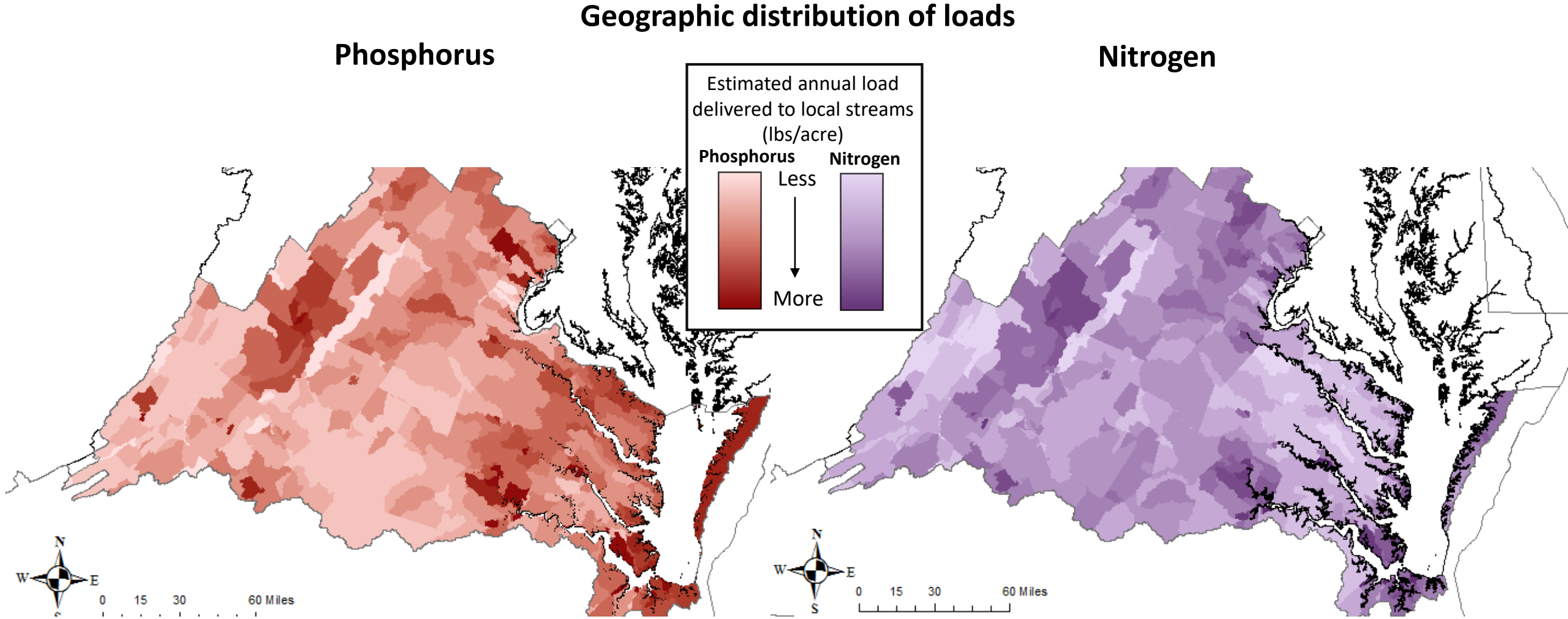
Where???

Examples of ways to target BMP implementation



Targeting geographically: high loading areas

- Implementing in the highest loading areas can give the most bang for your buck

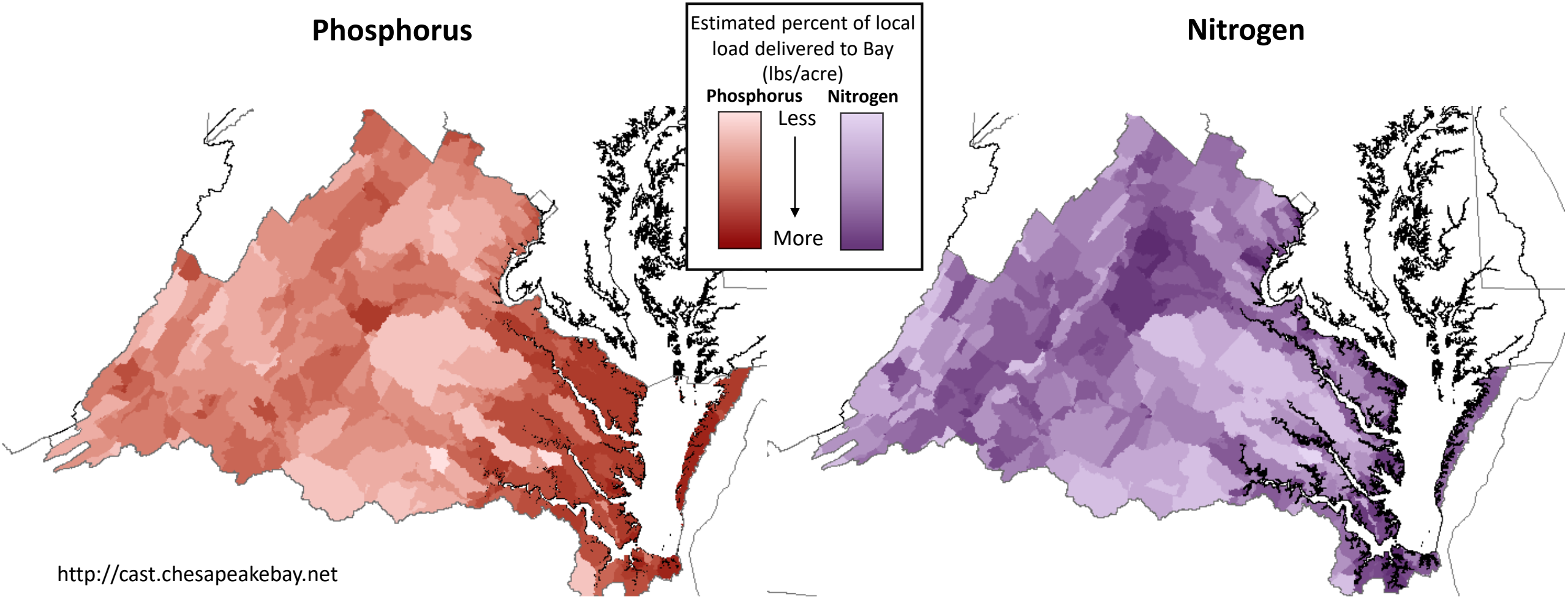


http://cast.chesapeakebay.net

Targeting geographically: high ratios of delivered nutrients to Bay

- Implementing in high loading areas that also have high delivery ratios can have the highest impact on nutrients making it to the Bay

Estimated delivery ratios to Bay



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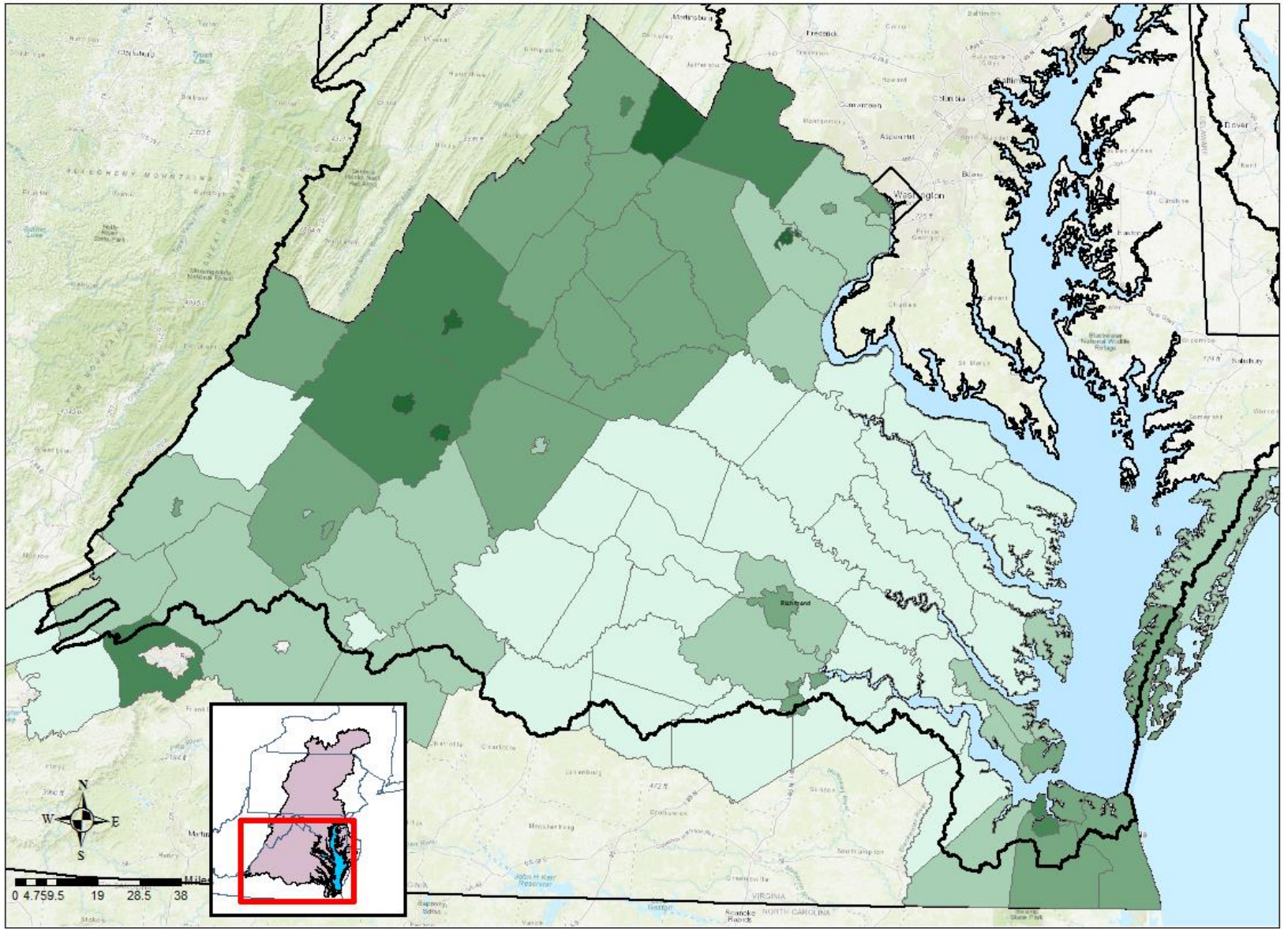
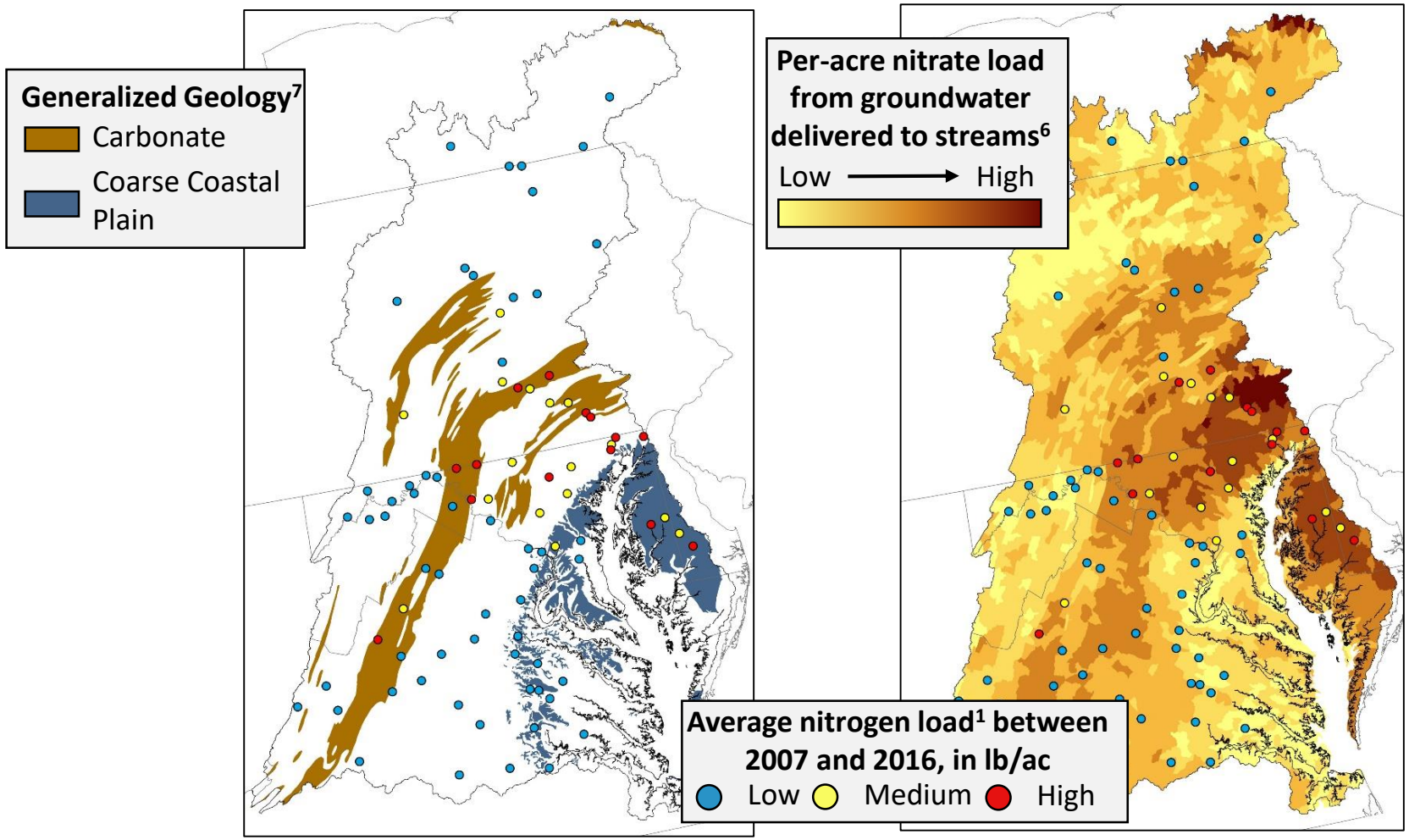
Targeting geographically & by practice: remaining opportunities

- For any BMP we can identify the remaining acres or units of opportunity that exist in every county for implementation
- The Bay Program has also developed a buffer analysis tool that uses high-resolution land-cover to identify exactly where riparian buffer opportunities exist



Targeting geographically & by practice: groundwater issues

- The geology and land use of some areas of the watershed make them more vulnerable to groundwater contamination by nitrogen
- Groundwater contributes more nitrogen to streams in some areas
- These are good places to implement practices that mitigate nitrogen in groundwater



[1]Moyer and others, 2017 [6]Terziotti and others, 2018 [7]King and Biekman, 1974

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WIP Data Dashboard: water quality monitoring data

Watershed Implementation Plan Data Dashboard

Chesapeake Bay Program

Start Here! | Water Quality of Streams | Tidal Water Quality | Targeting Restoration Efforts | Management Practice Implementation | Planning for Change | Build A Storyline

Get started here...

Streams & Rivers Water Quality

Comparing Watersheds

Use the Dashboard at the right to explore **the average amount of nutrients and sediment accounting for watershed size** at the 115 monitored sites throughout the Chesapeake Bay watershed.

Follow the instructions on the page to interact with the map graphs for each station. You may need to scroll the page horizontally and vertically to view all content.

Click here to open this section separately in its own window.

What can you do in this module?

Learn the status of nutrient and sediment levels in streams and rivers in your area of interest.

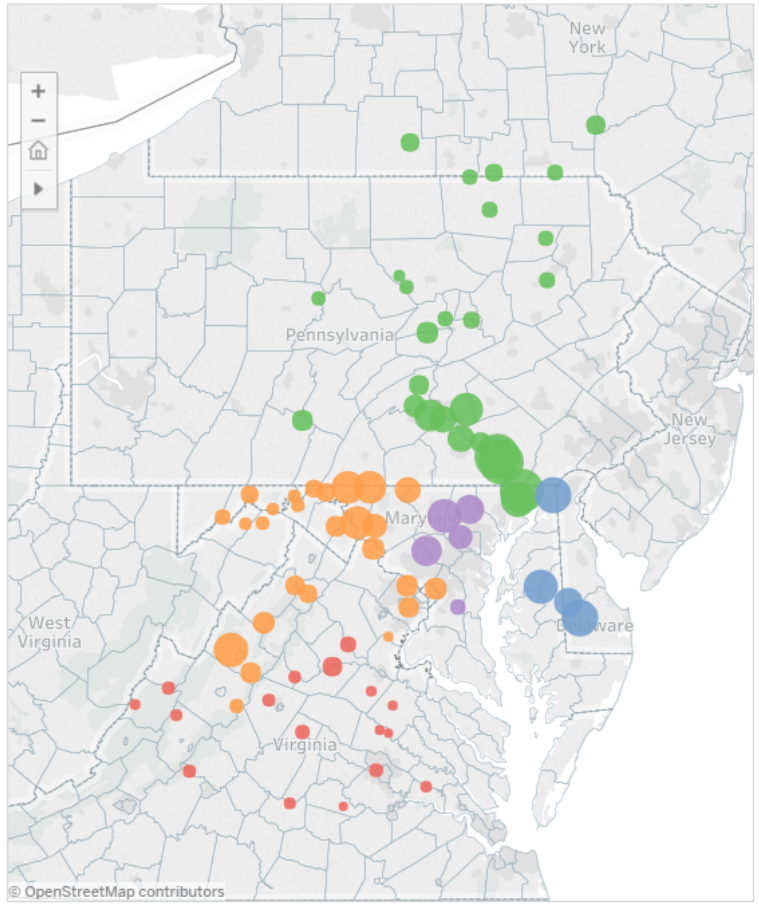
Compare the amount of nutrients and sediment between streams and rivers across the region or within subregions and

River Contributions to Tidal Waters

Additional Resources

Comparing Watersheds

Average Load in Lbs per Acre



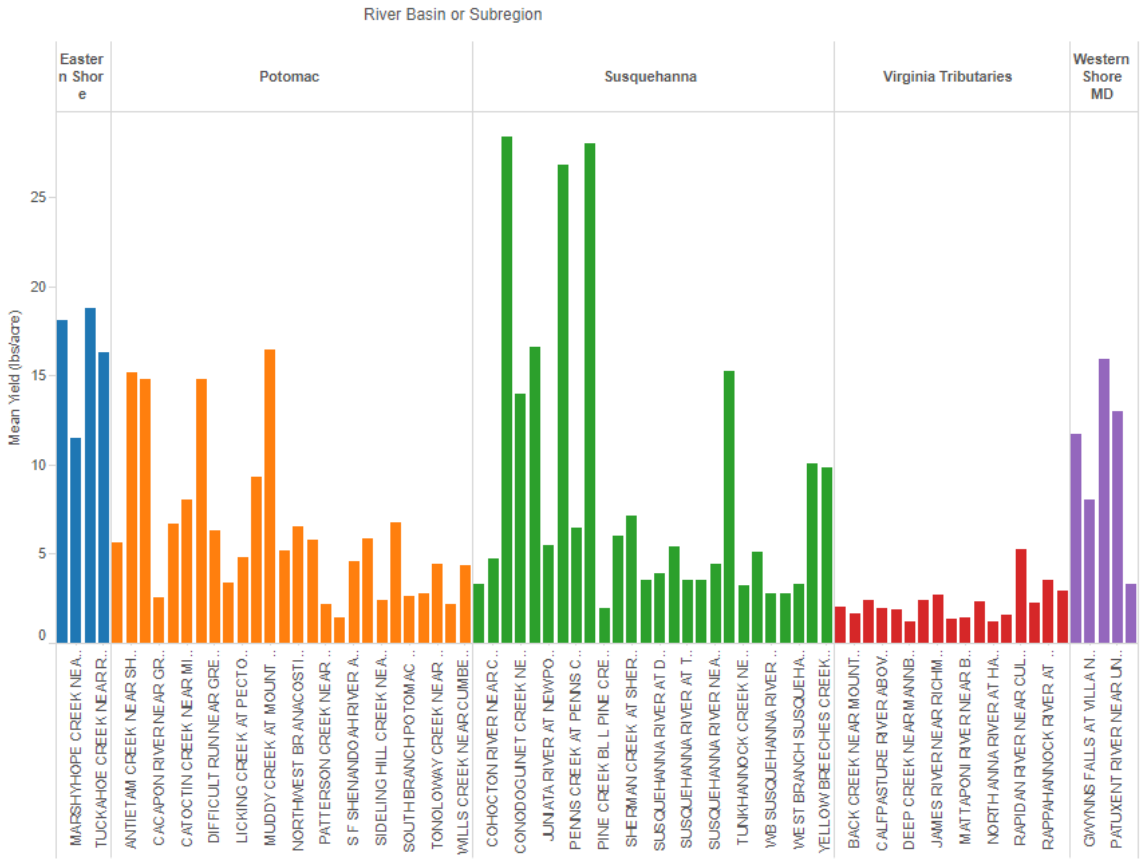
Mean Yield (lbs/acre)

1.20 10.00 20.00 28.38

Parameter: Total nitrogen

Time Period: 5 Years

Hover over the bars on the chart below to view the Station names.



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WIP Data Dashboard: tidal water quality standards attainment

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Water Quality Standards Attainment & Trends

Use the Dashboard at the right to explore whether or not different parts of the Chesapeake Bay are currently meeting their **water quality standards** meant to protect aquatic life, as well as **changes over time** in meeting these standards.

Follow the instructions on the page to interact with the map and populate graphs and tables with information for each station. You may need to scroll the page horizontally and vertically to view all content.

What can you do in this module?

Learn the status of your area of interest in meeting its water quality standards.

Identify changes over time (trends) in the attainment of water quality standards.

Assess progress by determining which areas of the Bay are meeting their water quality standards, which are improving, and which are degrading.

Target or prioritize areas for restoration efforts. Partners may choose to prioritize areas of the Bay for restoration based on how close the areas are to achieving water quality standards (attainment deficit) or the areas' trends in attainment over time.

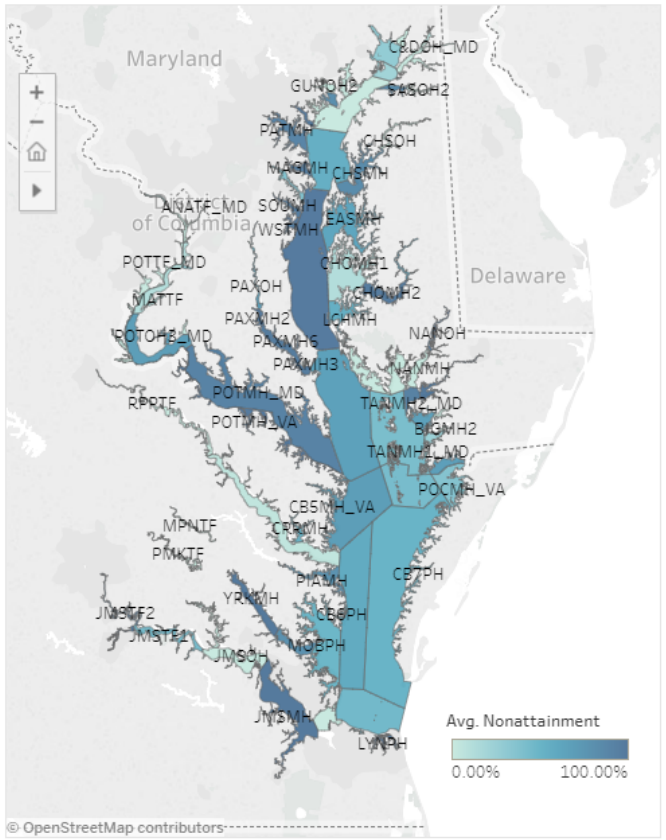
Tidal Water Quality Monitoring

Water Quality Monitoring Segment - Percent Nonattainment

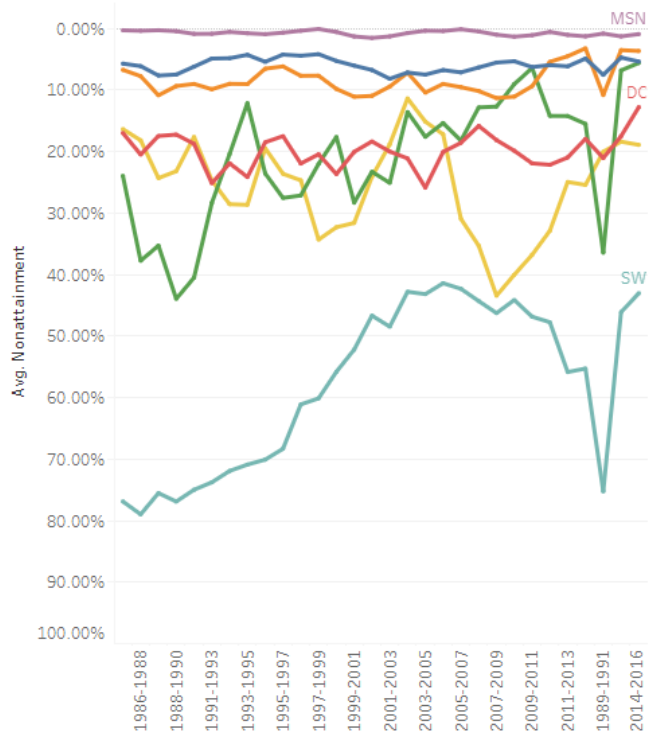
3 Year Period: 2014-2016 | Designated Use: SW | Segment Selector: (All)

Designated Use Key: OW, DW, DC, SW, CHLAspr, CHLAsum, MSN

Tidal Segments



Attainment Deficit (percent)



Note: Zero means the water quality criterion is met

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WIP Data Dashboard: nutrient and sediment sources

Watershed Implementation Plan Data Dashboard

Chesapeake Bay Program

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Understanding Sources

Use the Dashboard at the right to explore **land use** and the estimated **sources of nitrogen, phosphorus and sediment** across the Chesapeake Bay watershed.

Follow the instructions on the page to interact with the map and populate graphs and tables with information for each station. You may need to scroll the page horizontally and vertically to view all content.

What can you do in this module?

Identify important local sources of nutrients and sediment by sector and land use (load source) that reach local streams or the Bay.

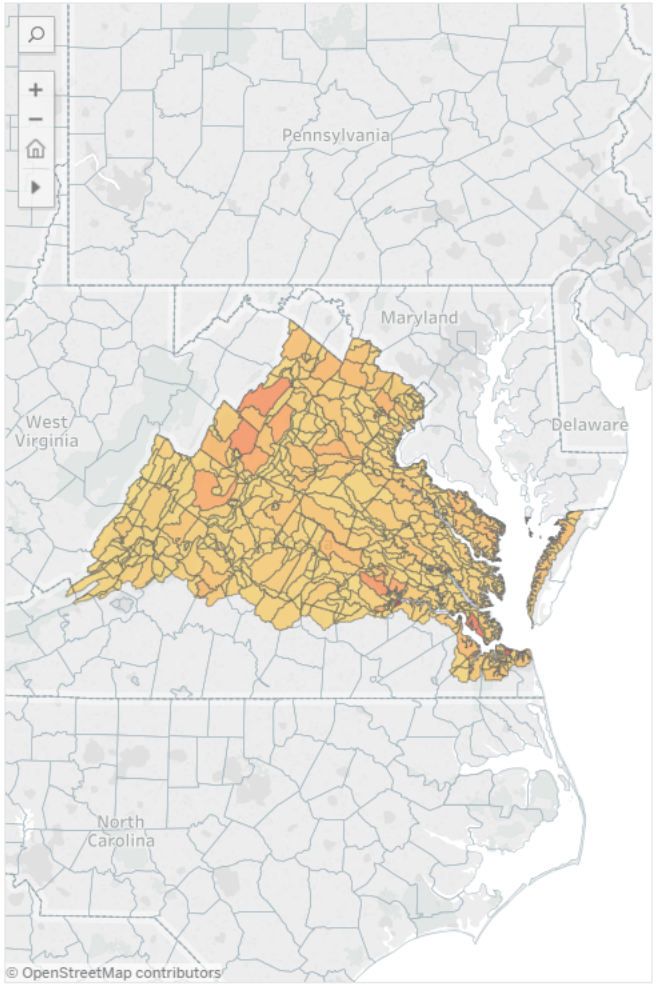
Understand important drivers of water quality such as land cover/land use and sector.

Learn the status of nutrient and sediment loads entering local streams and the Bay.

Target or prioritize watersheds for restoration efforts.

DID YOU KNOW? Watersheds with more developed, agricultural, and urban land tend to have higher nutrients and sediment levels in streams than more natural or forested watersheds.

Nutrient Application Management



Load
65 2,208,103

Breakdown of Land Use

Total Acres: 14,155,527

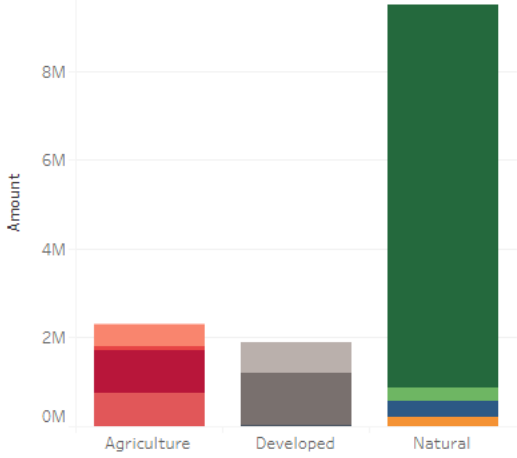
Sector
Agriculture Developed Natural

Breakdown of Loads

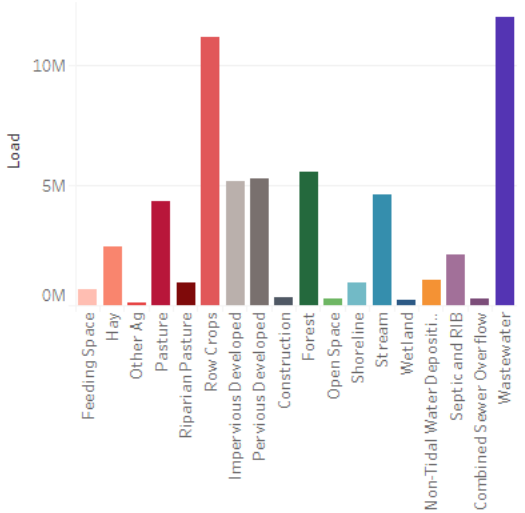
Total Load: 57,720,421

Load Source Minor
Feeding Space, Hay, Other Ag, Pasture, Riparian Pasture, Row Crops, Impervious De..., Pervious Devel..., Construction, Forest, Open Space, Shoreline, Stream, Wetland, Non-Tidal Wate..., Septic and RIB, Combined Sew..., Wastewater

Land Use Acres



Load Source Minor



Tidal Segment: (All)
River: (All)
Major River Basin: (All)
County Name: (All)
State: VA
Load Source Minor: (All)
NPS: Nitrogen / Phosphorous / Sediment
EOTS: Delivered to the Bay

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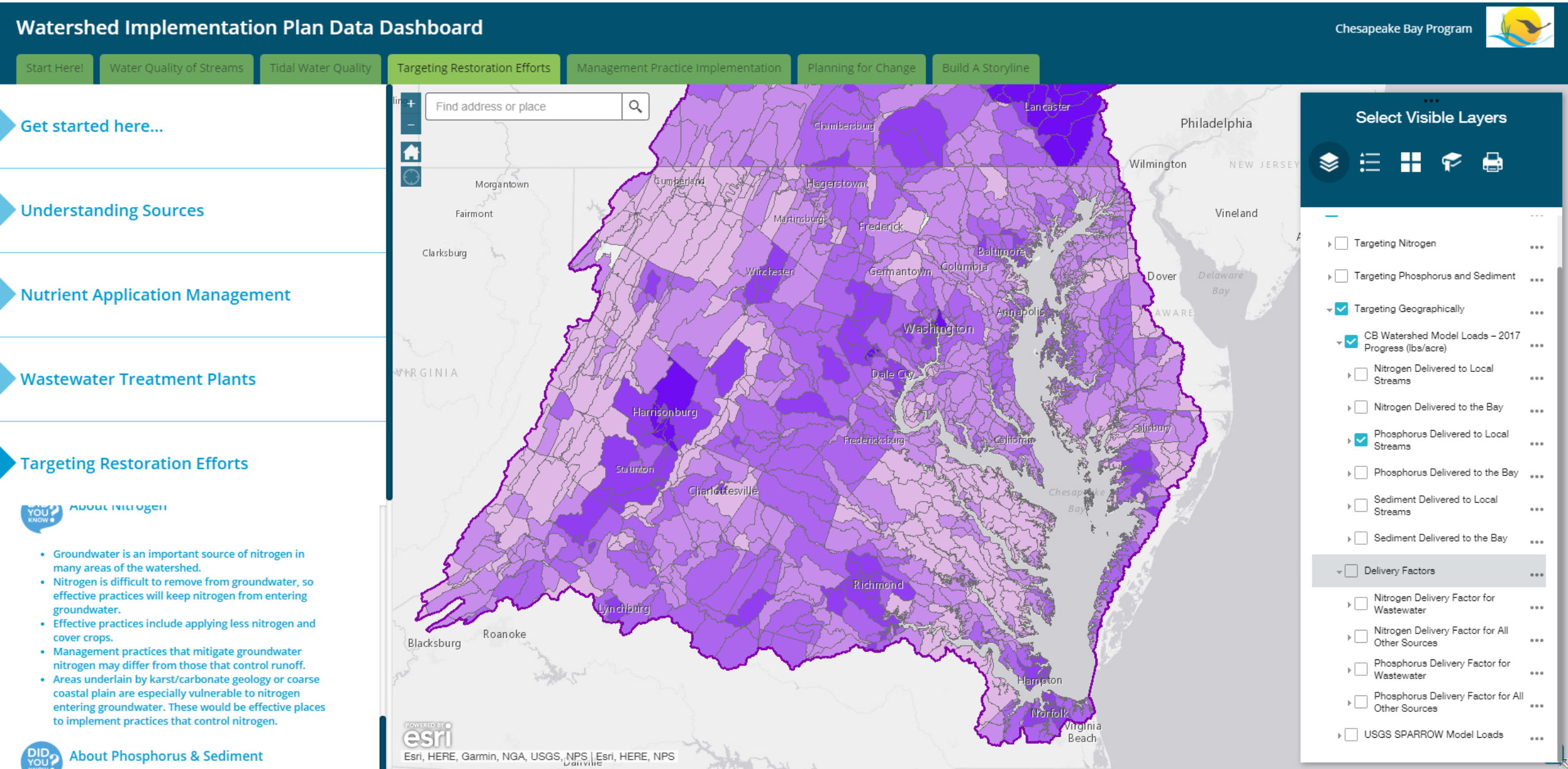
WIP Data Dashboard: targeting geographically



Questions and Discussion

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