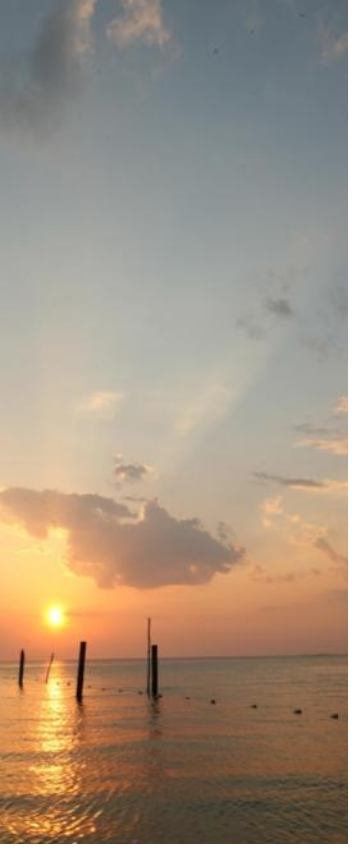

Talbot County
Ditch Restoration Partnership

Alan Girard, Erik Fisher

Chesapeake Bay Foundation

Amy Jacobs

The Nature Conservancy

5/15/2013


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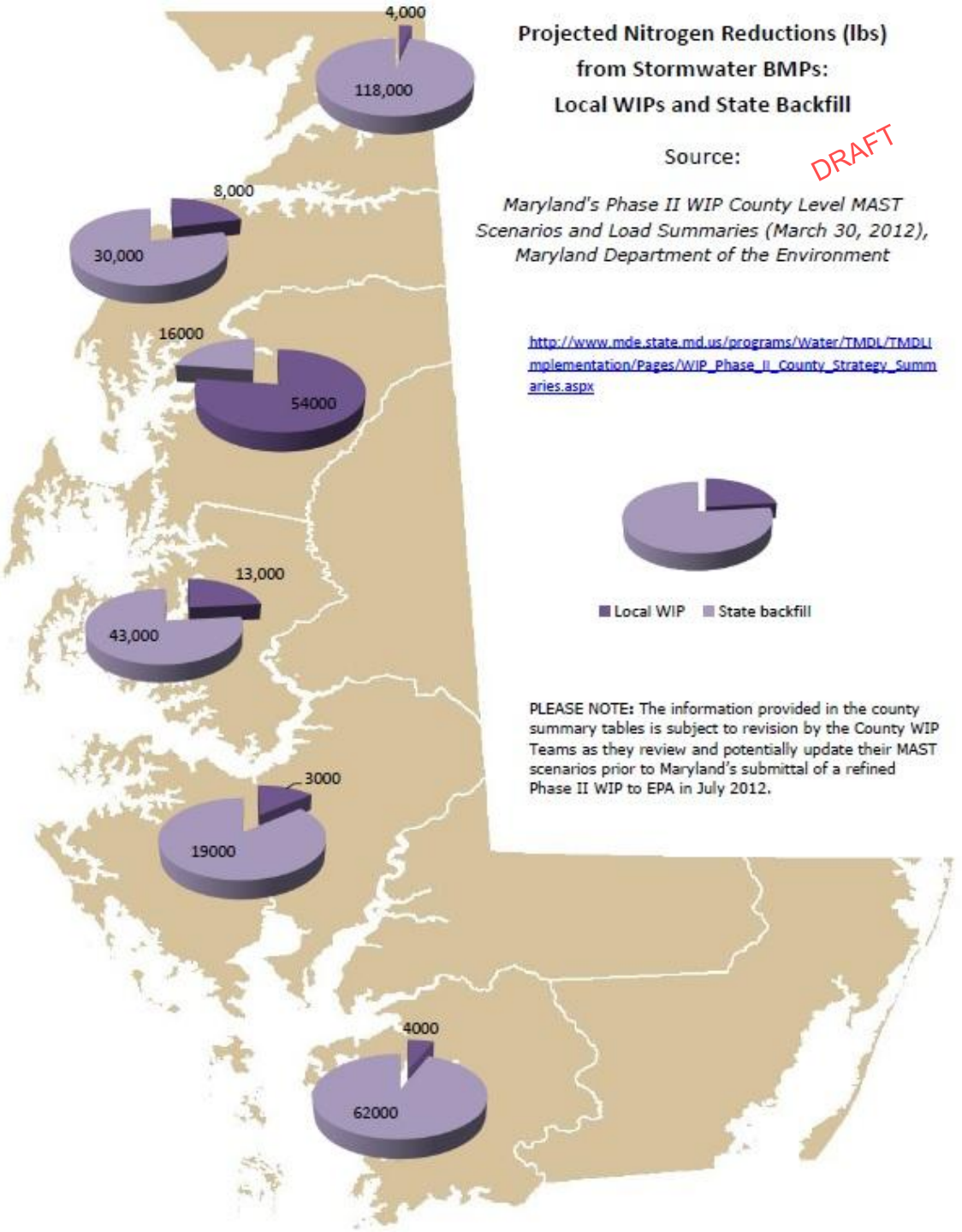


Projected Nitrogen Reductions (lbs) from Stormwater BMPs: Local WIPs and State Backfill

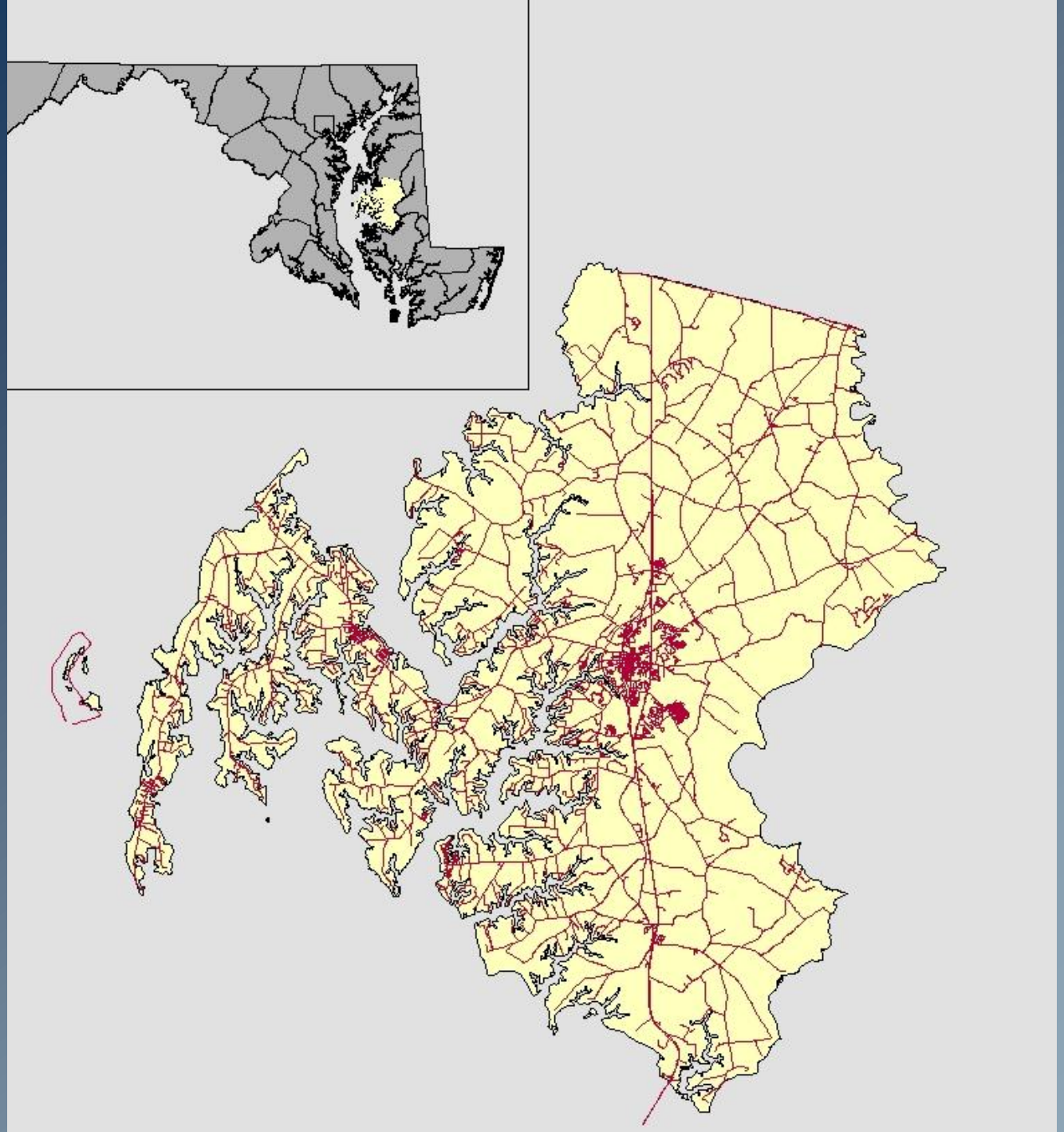
DRAFT

Source:

Maryland's Phase II WIP County Level MAST Scenarios and Load Summaries (March 30, 2012), Maryland Department of the Environment

http://www.mde.state.md.us/programs/Water/TMDL/TMDLImplementation/Pages/WIP_Phase_II_County_Strategy_Summaries.aspx

PLEASE NOTE: The information provided in the county summary tables is subject to revision by the County WIP Teams as they review and potentially update their MAST scenarios prior to Maryland's submittal of a refined Phase II WIP to EPA in July 2012.



Talbot County Milestones

10-4-11
Revised: 10-27-11; 11-18-11

Draft Two-Year TMDL Milestones
Talbot County Maryland

1. Coordinate with the state, Talbot County Departments, municipalities and private landowners the development of inventory potential sites for BMP installation. Produce a list of such sites and assess their availability and viability.
2. Continue to seek funding for and facilitate the installation of denitrification on-site septic systems.
3. Determine state and federal funding for BMP installation
4. Explore the efficacy of improving management of roadside ditches
    a. Determine the opportunity for converting roadside ditches to bioswales
    b. Determine the opportunity for converting roadside ditches to wetlands
5. Propose and seek adoption of a surface water management utility to develop a sustainable funding mechanism
6. Review MAST data for land cover. Make corrections as appropriate.
7. Review MAST TMDL strategy as new best management practices (BMPs) are added. Amend as appropriate
8. Gain detailed understanding of the MAST BMPs and their installation requirements.
9. Pursue implementation of a septic utility for inspection and pump out of on-site septic systems.
10. Establish a water and sewer plan policy giving priority to the connection of existing on-site septic systems with an order of location precedence for connection. This policy would set priorities for achieving the maximum pollution reduction.
11. Connect the Hyde Park Community to the Easton Utilities Sewer System.
12. Work with the municipalities to increase tree canopy cover requirements in urban and rural areas.
13. Develop a mechanism for urban nutrient management planning and implementation. Implement plans and policies for the municipalities and villages.
14. Develop tracking mechanism for installed BMPs and track assumed pollution reductions
15. Devise interim strategy to achieve 2017 TMDL goals
16. Determine local funding requirements and develop method for obtaining funds
17. Develop and implement institutional arrangements to achieve local TMDL through coordination with local stakeholders and especially with municipalities and the state
18. The Region II Wastewater Treatment Plant, an ENR upgraded facility, will discharge 4,000 pounds or less of Total Nitrogen for 2012, 2013 and 2014 and will discharge 400 pounds of Total Phosphorus or less during the same period. This will provide a surplus of 4040 pounds or more of TN for 2012, 2013 and 2014. As for TP, the surplus will be 203 pounds or more for each year from 2012 through the end of 2014.

Talbot County Urban BMPs

Talbot Altrnative to Back Filled State Plan 6-12-12
June 22, 2012

Urban Scenario

Target Load = 126,792

		Load	Incremental lbs Reduced	Total lbs Reduced	Lbs to TMDL	Percent of Goal Achieved	Acres Treated	Lbs Reduced Per Acre Treated/Year	Initial Marginal Cost Per Acre	Total Cost	Total Annualized Cost (1)	Initial Cost Per Lbs. of Reduction/year
1	2009 Progress load	187,806			61,014							
2												
3	**Installed BMP effect:**											
4	Bioretention/raingardens impervious developed (2)	179,610	8,196	8,196	52,818	13.43%	1,000	8.196	$ 1,000	$ 1,000,000	($67,216)	$ 122.01
5	Bioretention/raingardens pervious developed (2)	173,788	5,822	14,018	46,996	22.97%	1,000	5.822	1,000	1,000,000	($67,216)	171.77
6	Urban nutrient management pervious developed *	154,420	19,368	33,386	27,628	54.72%	20,049	0.966	50	1,002,430	($67,379)	51.76
7	Urban filtering (bag filters) impervious developed (2	151,192	3,228	36,614	24,400	60.01%	900	3.586	400	360,000	($24,198)	111.53
8	Urban filtering (bag filters) pervious developed (2)	148,734	2,458	39,072	21,942	64.04%	900	2.732	400	360,000	($24,198)	146.44
9	Vegetated swales impervious developed (2)	145,217	3,517	42,589	18,425	69.80%	1,000	3.517	1,000	1,000,000	($67,216)	284.33
10	Vegetated swales pervious developed (2)	126,779	18,438	61,027	(13)	100.02%	6,000	3.073	1,000	6,000,000	($403,294)	325.42
	Totals									$ 10,722,430	$ (720,716)	

Notes:
(1) 3% 20 years annual payment at end of period
(2) Talbot County DPW cost/acre estimate

Urban Land Summary	Acres
Unregulated impervious developed	4,582.6
Unregulated pervious developed	20,248.6
Regulated Construction	267.3
Nonregulated extractive	155.5
Regulated Industrial impervious	88.8

Talbot County Agricultural BMPs

Additional BMPs to be Implemented	Unit	2013 Milestone	2017 Goal	2025 Goal
Alternative Crops	Acres	-	-	-
Barnyard Runoff Control	Projects	1	6	10
Forest Buffers	Acres	7	30	50
Grass Buffers	Acres	80	337	562
Heavy Use Area Protection for Livestock	Acres	-	-	-
Heavy Use Poultry Area Concrete Pads	Operations	1	4	7
Horse Pasture Management	Acres	214	900	1,500
Land Retirement	Acres	22	94	156
Livestock Waste Storage Structures	Projects	-	1	1
Loss of Agricultural Land	Acres	71	300	500
Mortality Composters	Projects	1	4	6
Non Urban Stream Restoration	Linear Feet	-	-	-
Nursery and Greenhouse Runoff Capture and Reuse	Acres	14	29	48
Off Stream Watering Without Fencing	Acres	-	-	-
Phosphorus Sorbing Materials in Ag Ditches	Acres	-	-	-
Poultry Waste Storage Structures	Projects	-	-	-
Precision Intensive Rotational Grazing	Acres	-	-	-
Prescribed Grazing	Acres	36	150	250
Shoreline Erosion Control	Linear Feet	857	3,600	6,000
Stream Access Control with Fencing	Acres	9	33	62
Vegetative Environmental Buffers on Poultry Operations	Acres	12	50	83
Water Control Structures	Acres	143	600	1,000
Wetland Restoration	Acres	55	231	386

2/28/2012

Increasing Efficiency and Effectiveness

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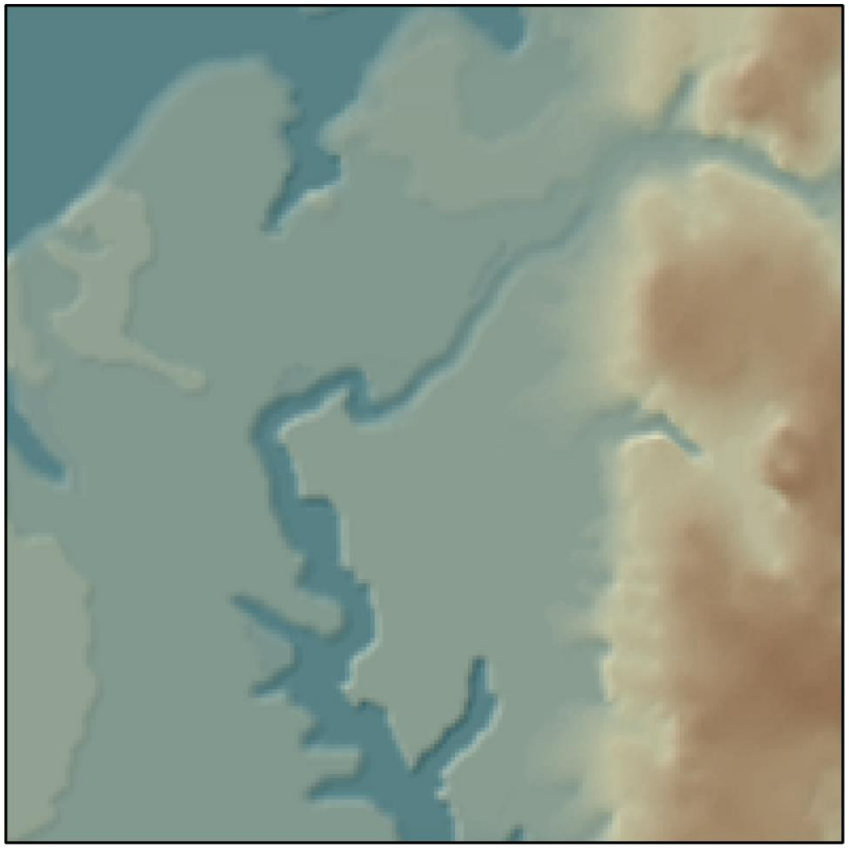
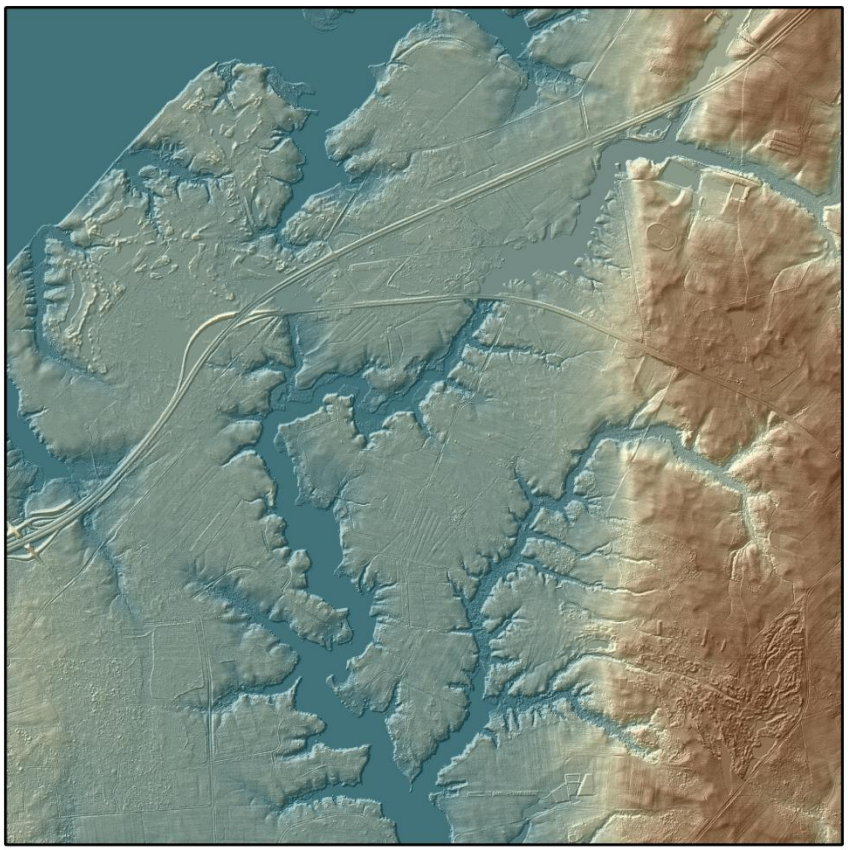
USGS 30 m DEM
(7 to 10 m vertical accuracy)



LiDAR 2m DEM
(15 cm vertical accuracy)



Kathy Boomer

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Identifying Priority Areas: Contributing Land

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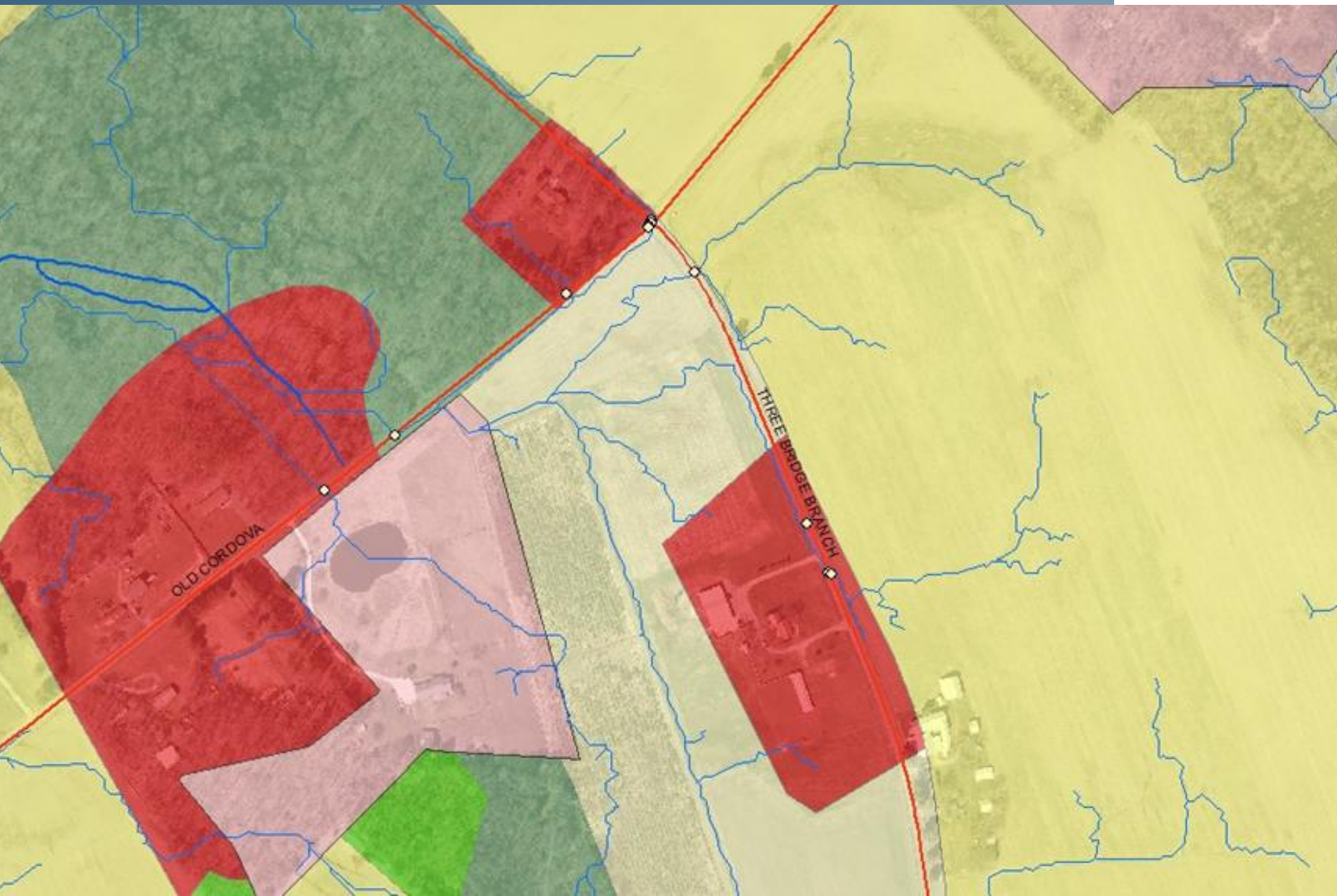

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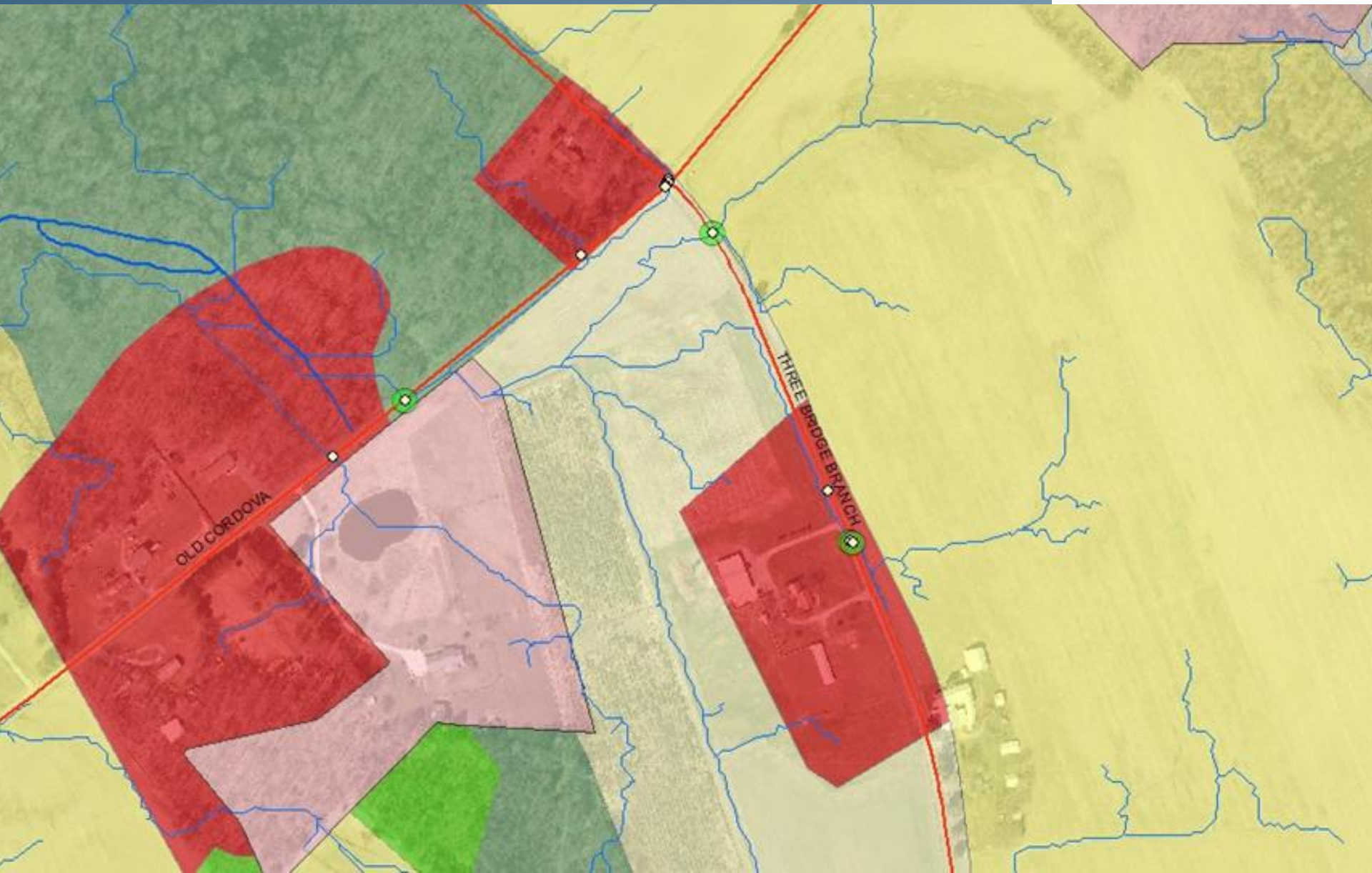

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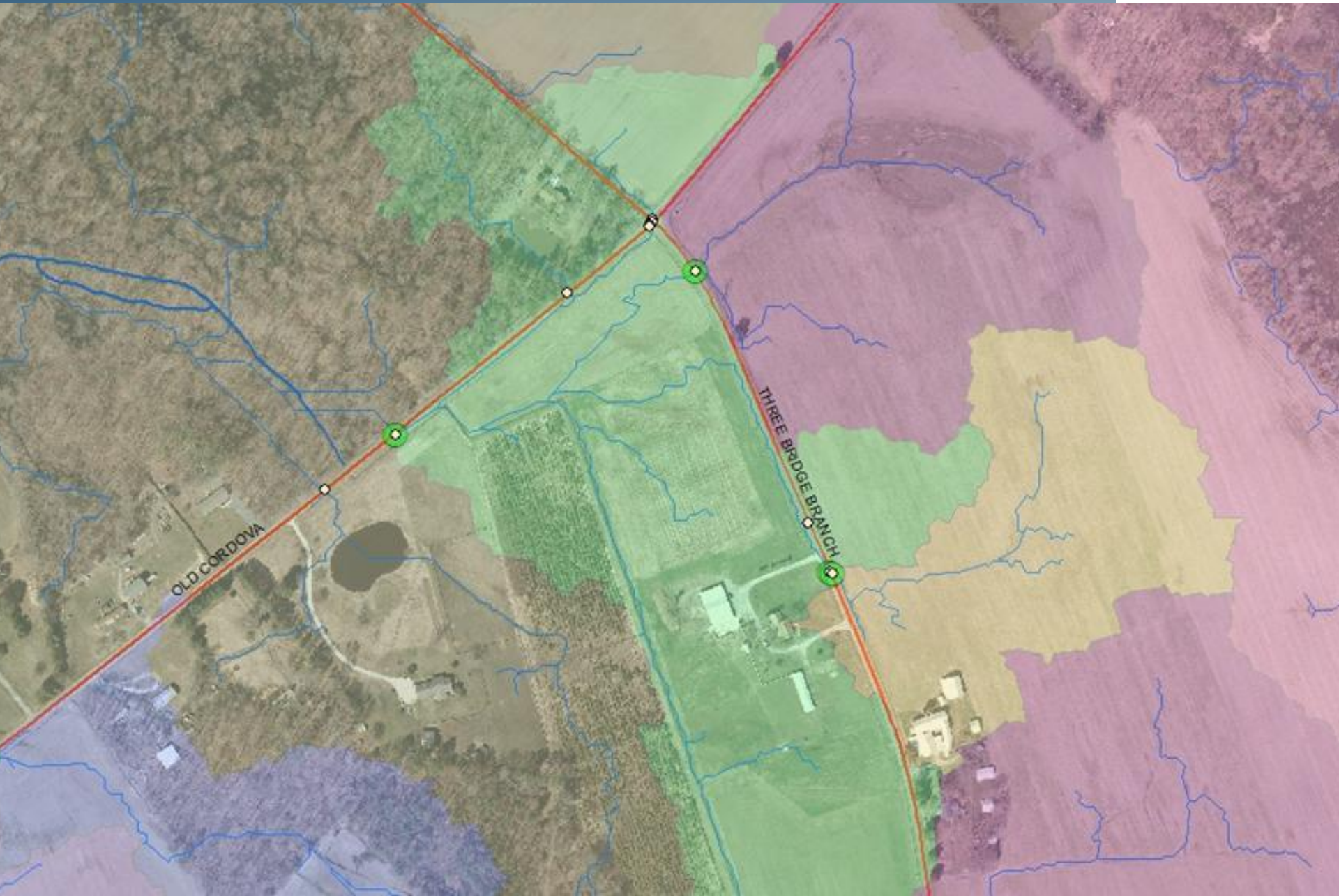

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MD Land Use	Ac.	TN Loading Rate Lb./ac/ yr	TN Load lbs/year	TP Loading Rate Lb./ac/ yr	TP Load lb/year	Sed Loading Rate Lb./ac/ yr	Sed Load lb./year
Cropland (21)*	8.9	18.19	161.89	0.714	6.355	185.4	1650.1
Forest (43)	0.4	1.41	0.56	0.046	0.018	16.1	6.4
TOTAL	9.3		162.46		6.373		1656.5

Efficiency (TN/ TP/ Sed): 25%/ 50%/ 15%

Cost/lbs. removed:
N = $110/lb.
P = $1,398/lb.
Sed = $18/ lb.
** Costs not reflective of the life of the project*

dentifying riority reas: ffici ency

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Project Comparison - costs not reflective of life of practice

Site (ac. treated)	TN ($/lb.)	TN (lbs.)	TP ($/lb.)	TP (lbs.)	Sed ($/lb.)	Sed (lbs.)	Acres Ag	%Ag in drainage
Site 1 (63 ac.)	$26	380	$184	54	$6	1,737	62	98
Site 2 (14 ac.)	$123	36	$1,539	3	$19	235	7	49
Site 3 (24 ac.)	$49	91	$614	7	$1	573	19	80
Site 4 (9 ac.)	$110	41	$1,398	3	$18	248	9	96

pportunity: Glebe Road

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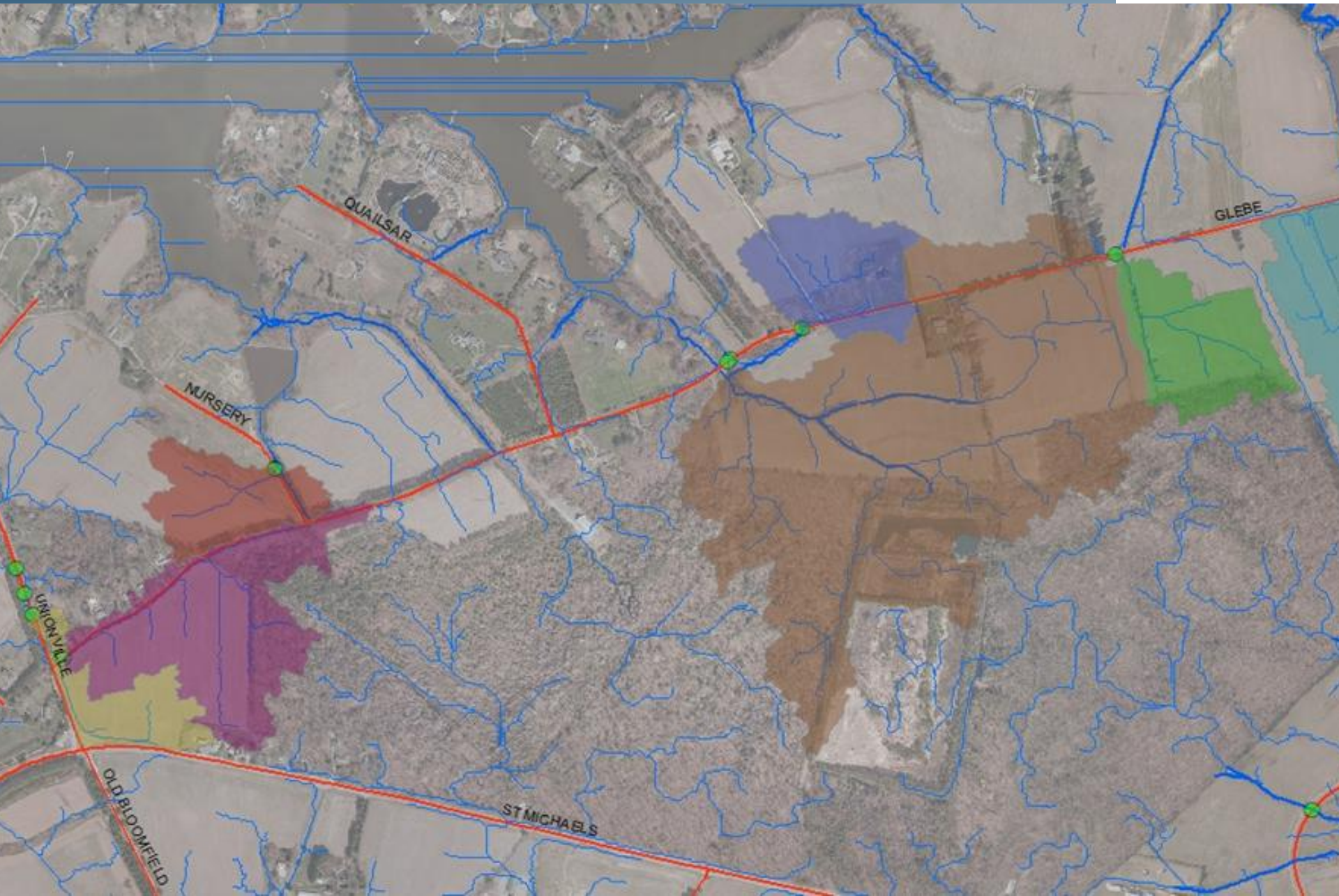


Project Flow

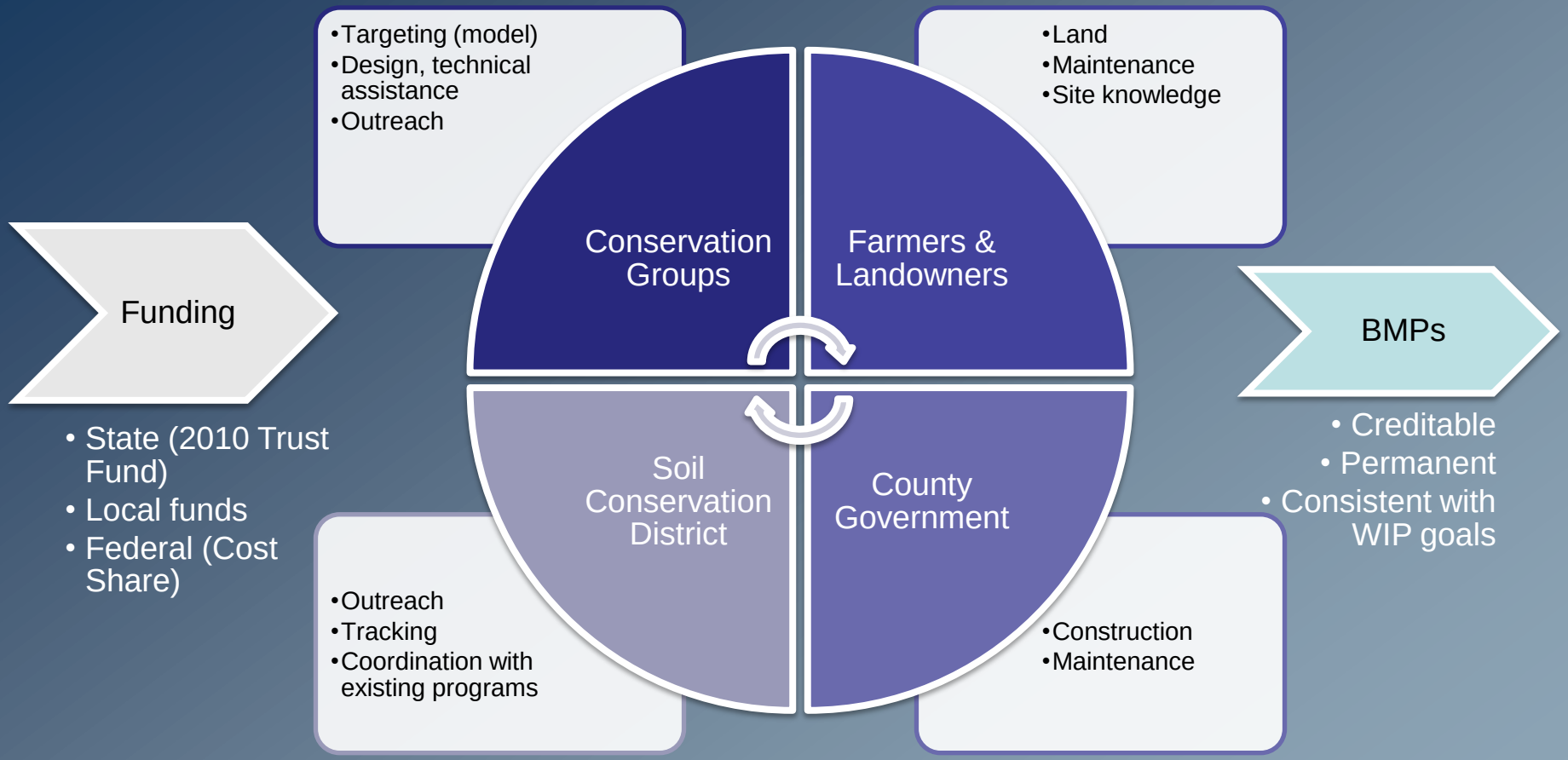
ID Priority Areas
- Pollution reduction
- Voluntary interest

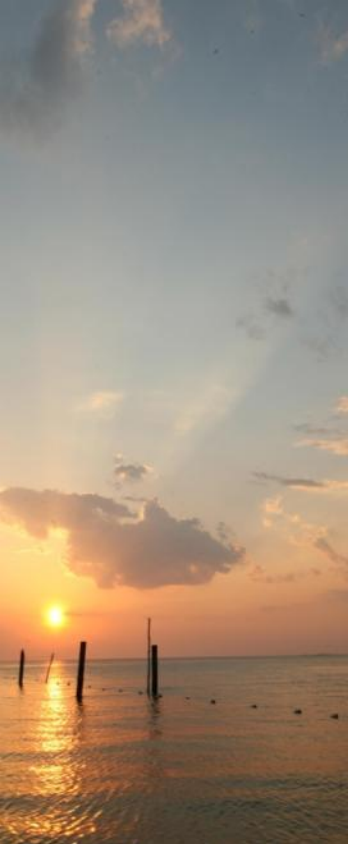
Select Projects
- Site visits
- Concept design
- Project ranking

Install BMPs
- Permits
- Construction
- Maintenance

- Monitoring
- Evaluation

Ditch Restoration Partnership

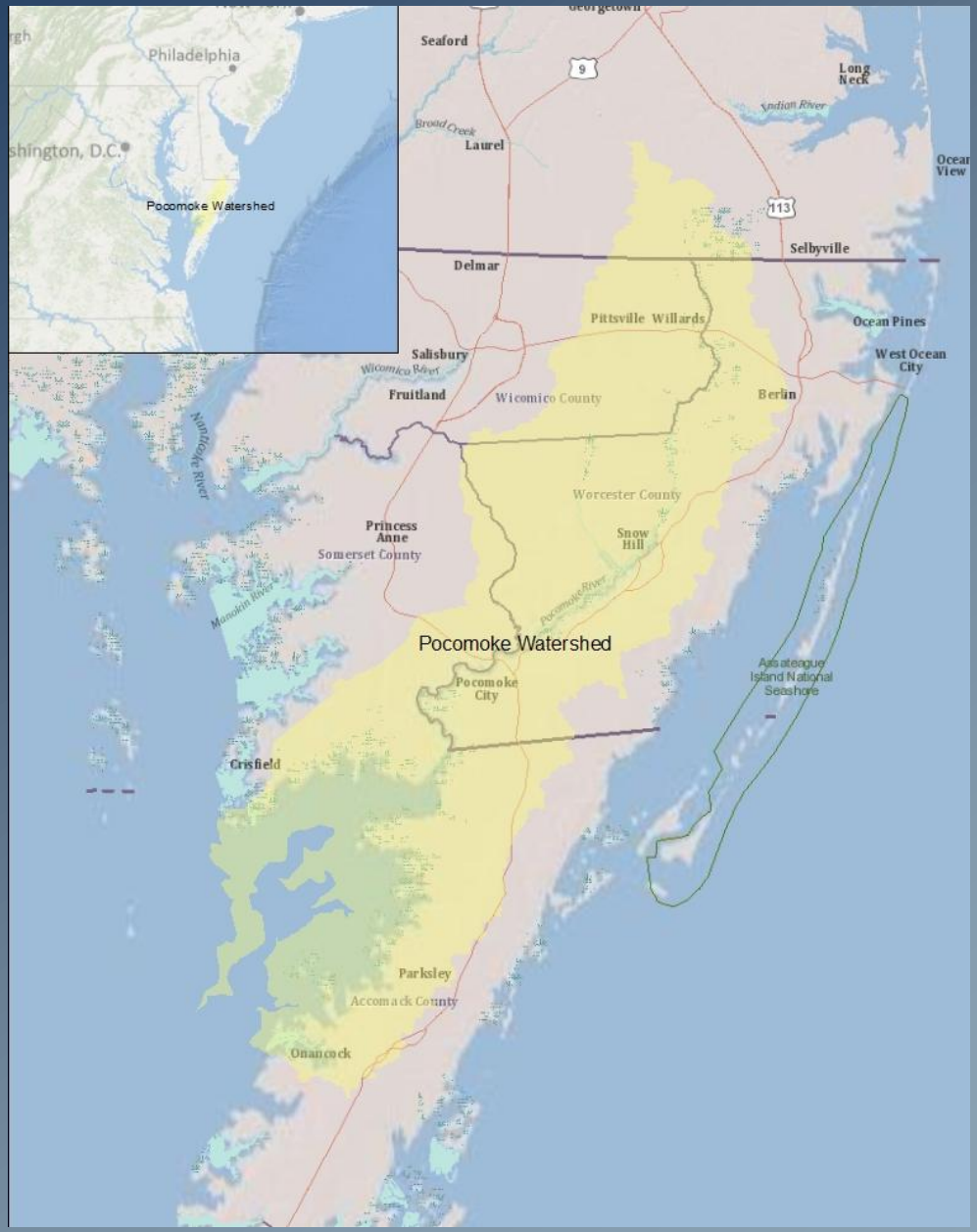




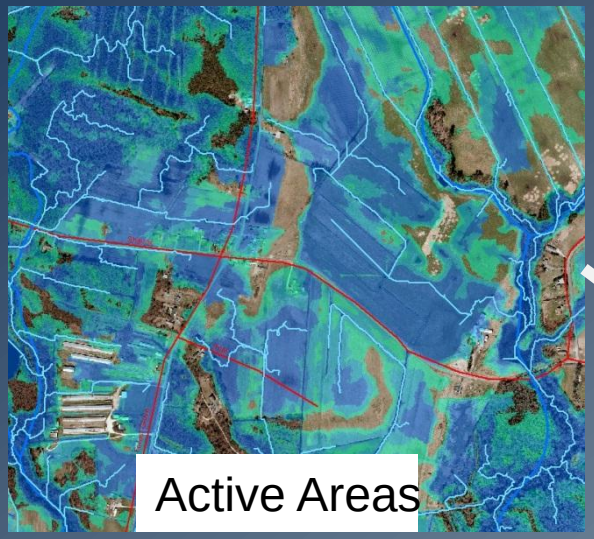
Talbot County
Ditch Restoration Partnership

- **Conservation Partners**
- **County Council**
- **Extension**
- **Farm Bureau**
- **Public Works**
- **Soil Conservation District**

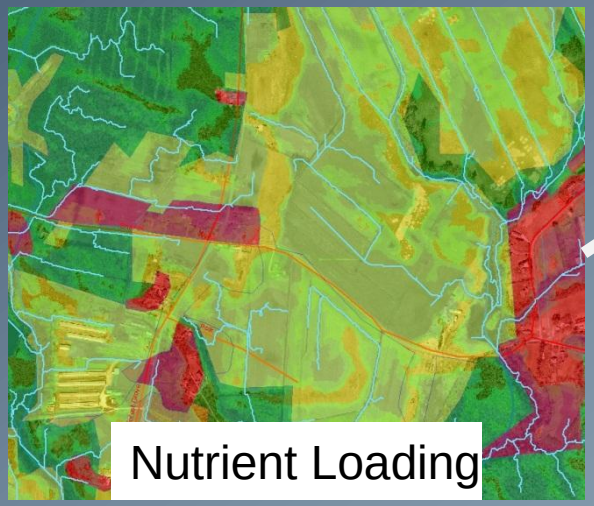
Pocomoke River Watershed



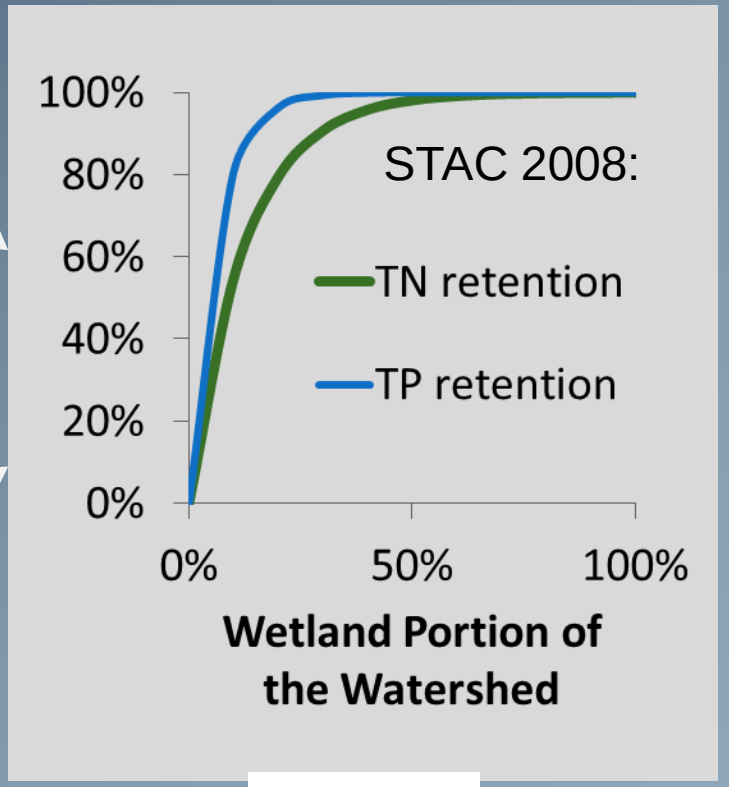
Pocomoke River Watershed



Active Areas



Nutrient Loading



Retention

Pocomoke River Watershed

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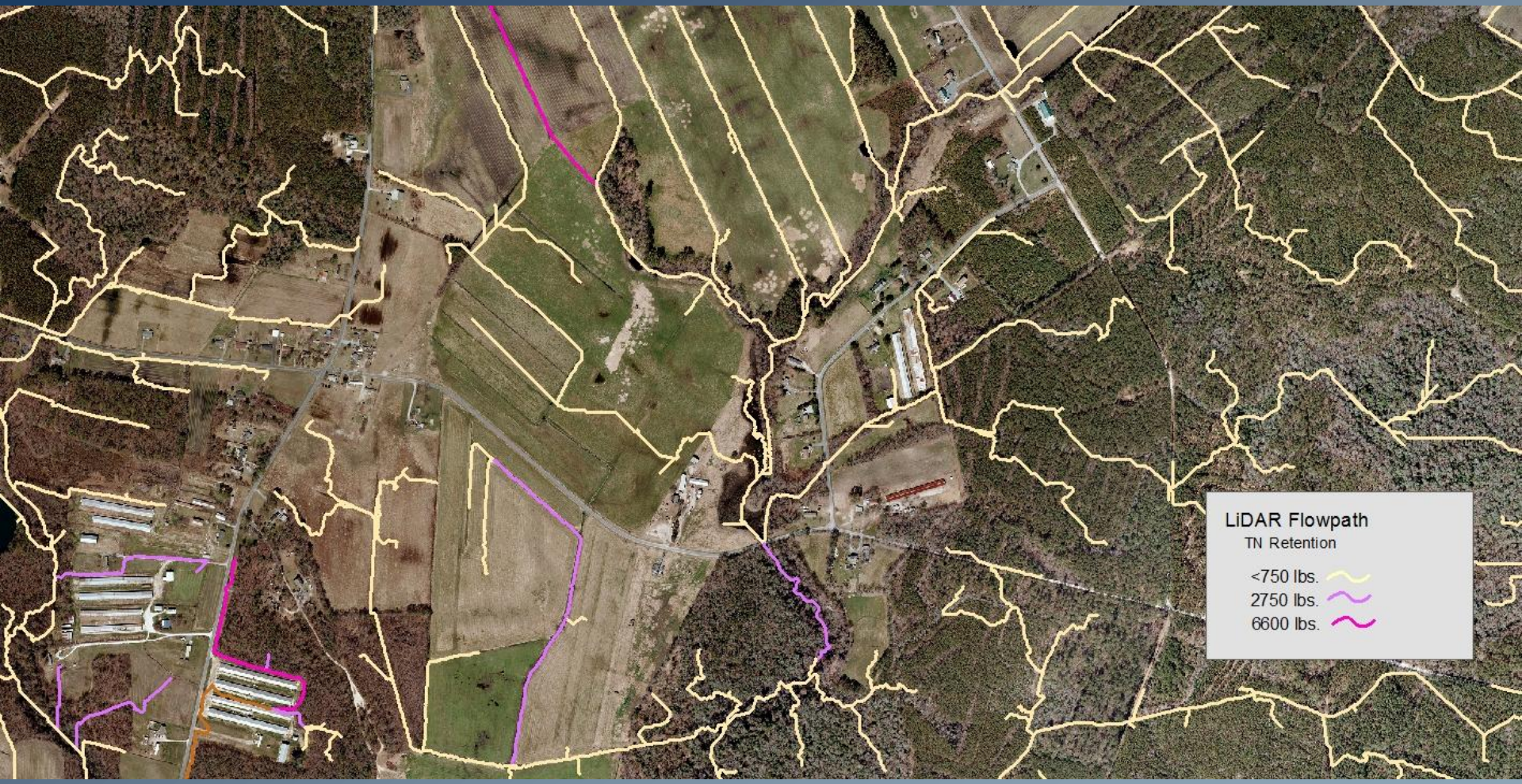

Pocomoke River Watershed