Maryland's Ecosystem Enhancement Program

ME ^{2}

An Innovative Approach to Restoring, Preserving, and Enhancing Maryland's Natural Resources

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Metropolitan Washington Council of Governments
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Overview

- Program Goals
- Using Ecological Targeting for Mitigation
- Building Partnerships across State Agencies

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Program Goals

- Better, Faster, Cheaper
- Mitigation in Advance of Impacts
- Targeted to Provide Most Ecological Benefit

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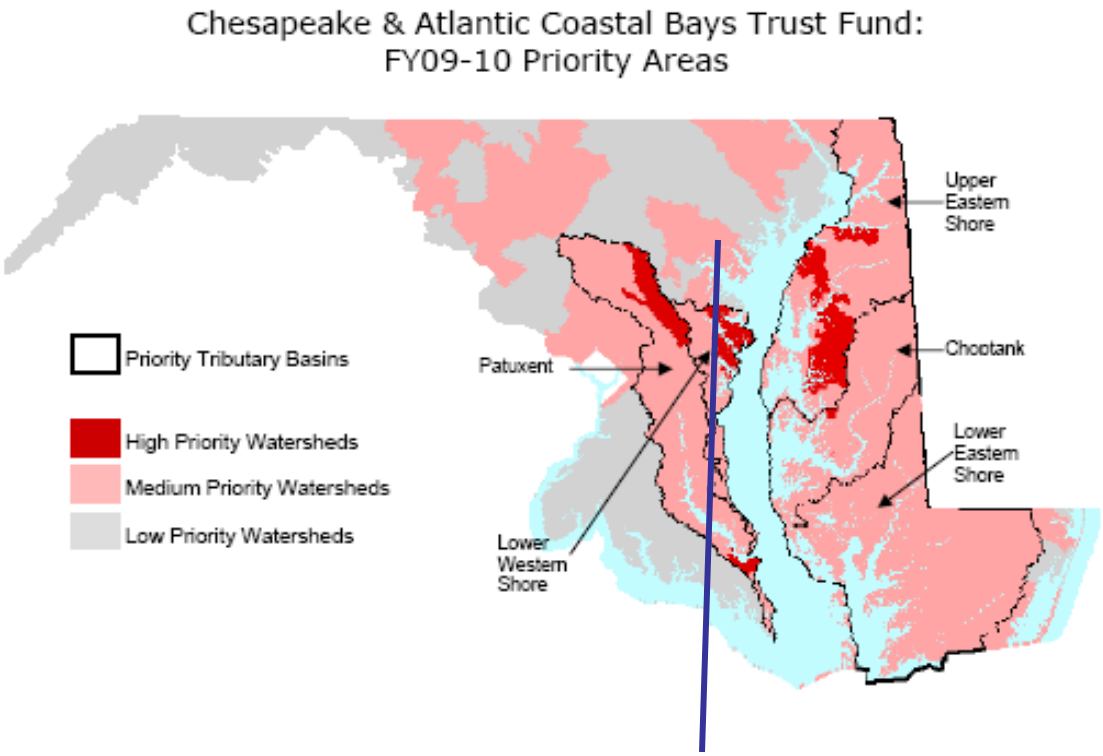
- The future of restoration is priority based targeting (2010 Trust Fund):
  - Geographically (areas of greatest nutrient loading)
  - Programmatically (areas with greatest potential to remove nutrients through BMP's)



Under 2010 model Patapsco River (including Baltimore City) is a "medium priority watershed"

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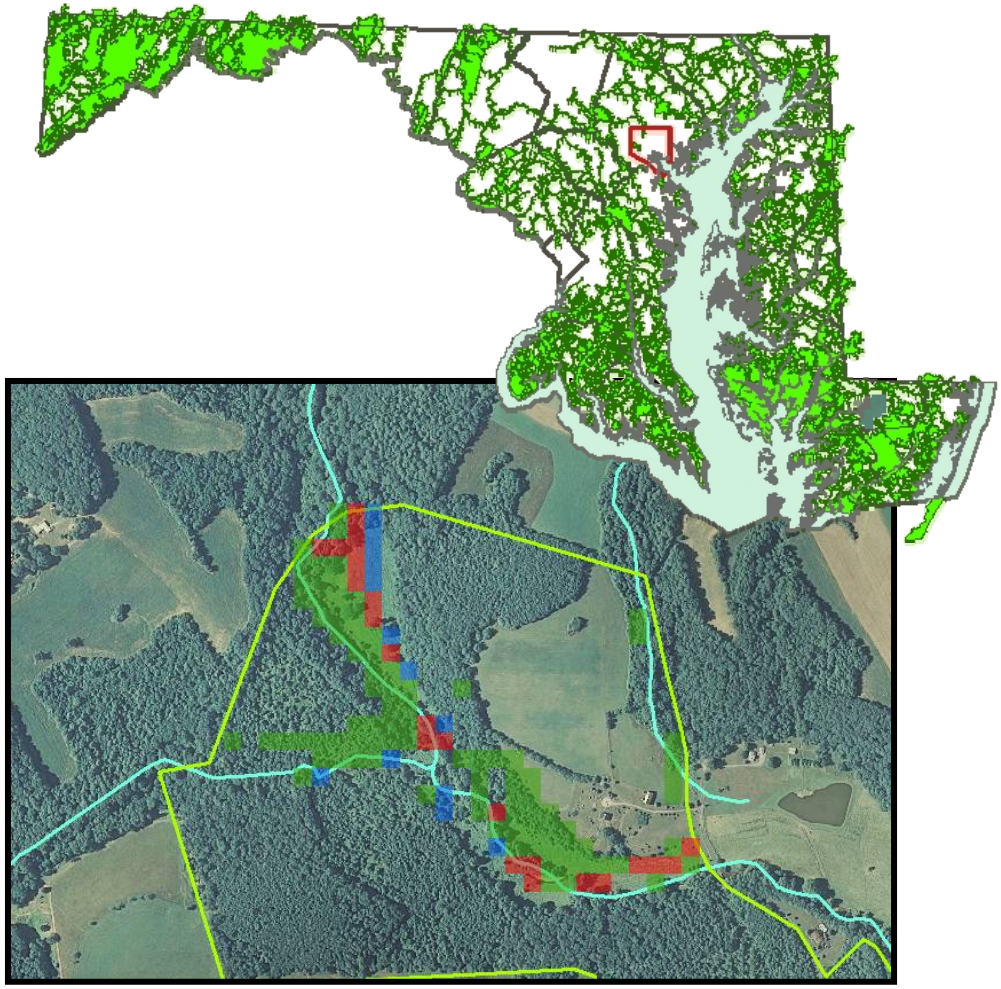
- Use a priority-based targeting approach to choose mitigation sites that **yield the highest ecological return** for the State's dollar:
  - Geographically (within the watershed)
  - Programmatically (areas that will restore the greatest ecological function)



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Practice	Unit	Unit Costs			Nitrogen Reduction Rate
		Capital	Annual O&M	Lifespan	lb/ac/yr
Agricultural BMP's					
Soil Conservation & WQ plans	acres	$280	$0	10	0.93
Cover Crops	acres	$0	$40	1	9.48
Small Grain Commodity	acres	$0	$20	1	6.31
Alternative Crops	acres	$0	$25	1	12.48
AWMS - Livestock	systems	$63,533	$2,541	15	531
AWMS - Poultry	systems	$26,627	$1,065	15	210
Runoff Control	systems	$7,058	$282	15	69
Stream Protection	systems	$1,000	$40	10	6.79
Retirement HEL	acres	$120	$5	10	9.55
Buffers Forested	**acres**	**$1,000**	**$40**	**25**	**27.28**
Buffers Grassed	**acres**	**$140**	**$6**	**10**	**16.92**
Wetlands	**acres**	**$3,500**	**$140**	**30**	**27.28**
Tree Planting, Ag	acres	$615	$25	25	13.67
Precision Agriculture	acres	$28	$0	8	4.04
Horse Pasture Management	systems	$4,317	$173	15	11
Urban BMP's					
Stormwater Management	acres	$3,500	$175	20	2.82
Erosion & Sediment Control	acres	$0	$5,800	20	3
Urban Nutrient Management	**acres**	**$6**	**$0**	**3**	**1.36**
***Buffers Forested, Urban**	**acres**	**$1,200**	**$48**	**25**	**9.69**
Urban Tree Planting	acres	$4,356	$174	25	5.76
Stream Restoration, Urban	feet	$224	$9	25	0.01
Sprawl and Septics					
Enhanced Septic Denitrification	systems	$7,500	$300	20	5.25
Septic Connections	systems	$17,500	$0	20	10.51

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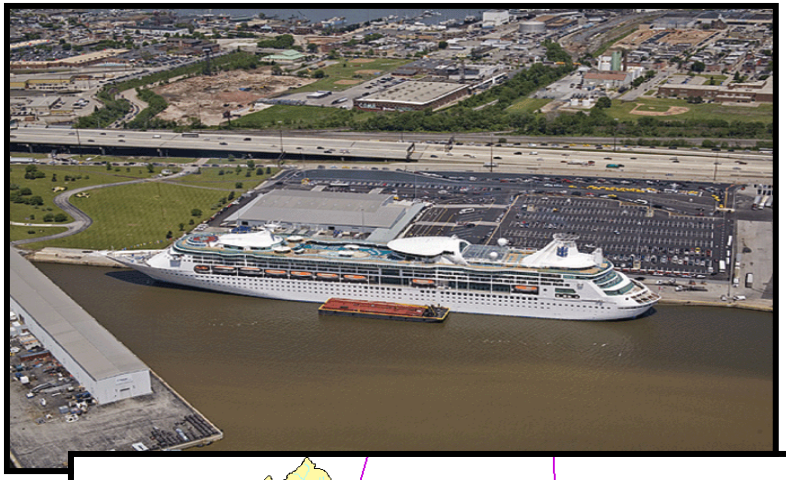
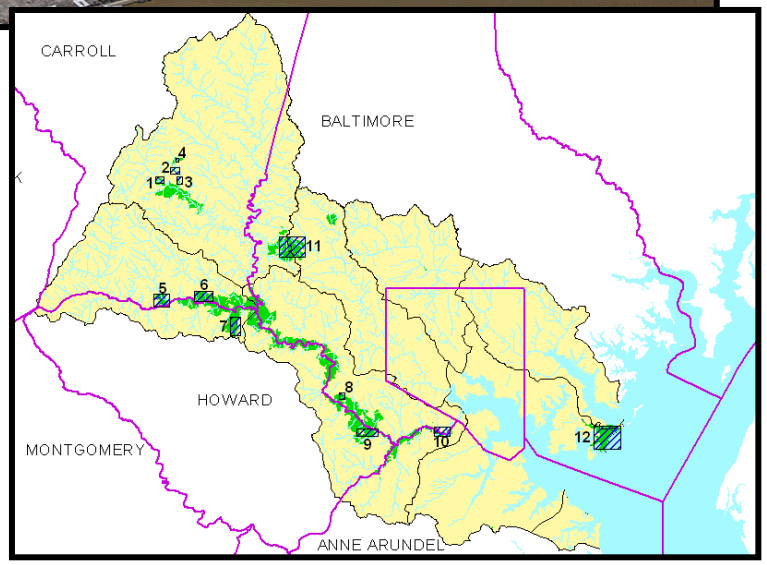
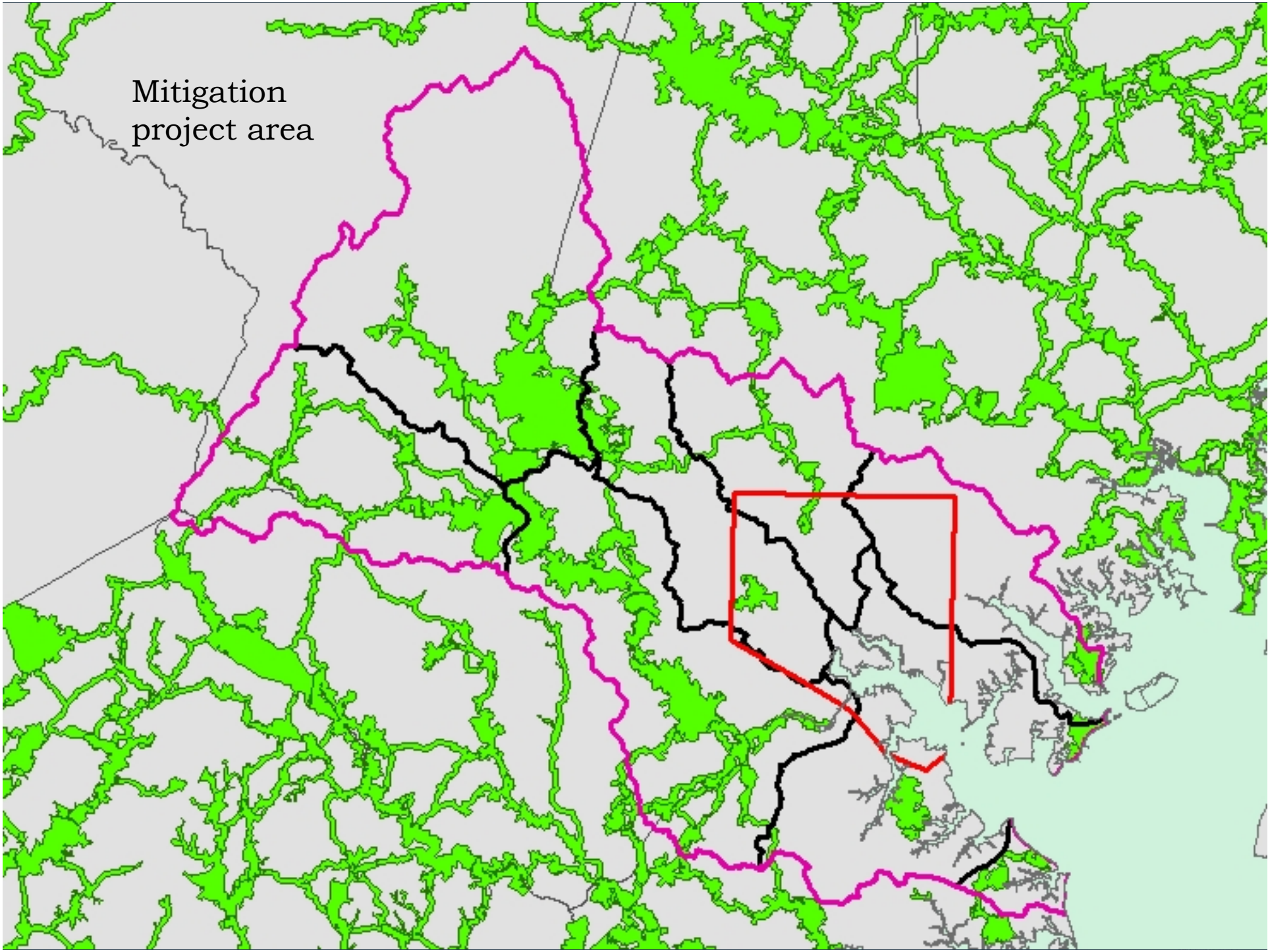
- Partnership between MDOT and MDNR – Proposed PILOT project with the Maryland Port Administration
- Mitigation sites will meet the following criteria:
  - Within the Patapsco River watershed
  - Within State owned (DNR) land
  - Within areas providing the greatest natural resource benefit – Focus on forest and riparian buffers






Mitigation
project area

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"Actual" land cover in same area – smaller buffer area, not adjacent to stream, adjacent to residential areas with stormwater sewers

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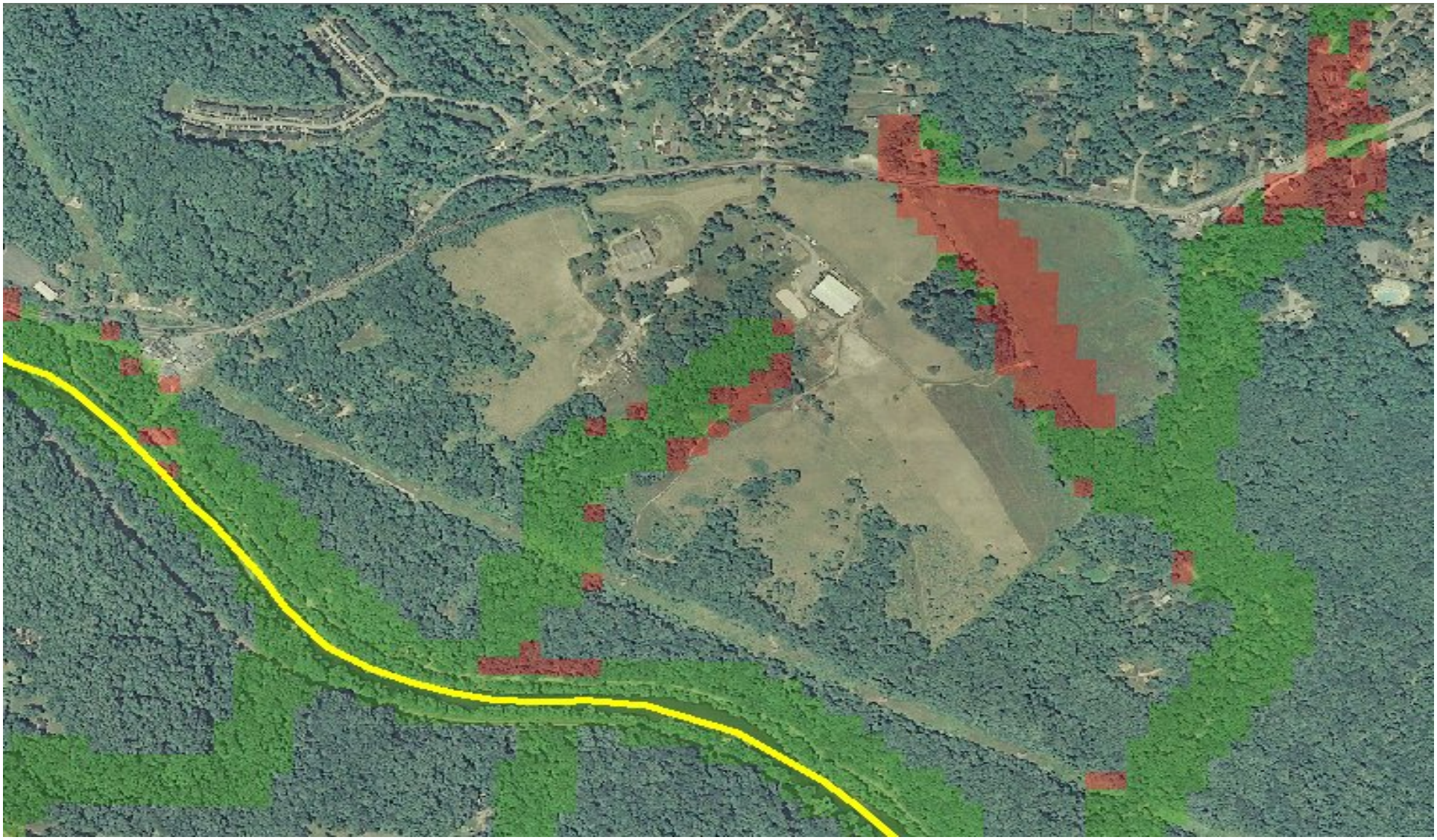

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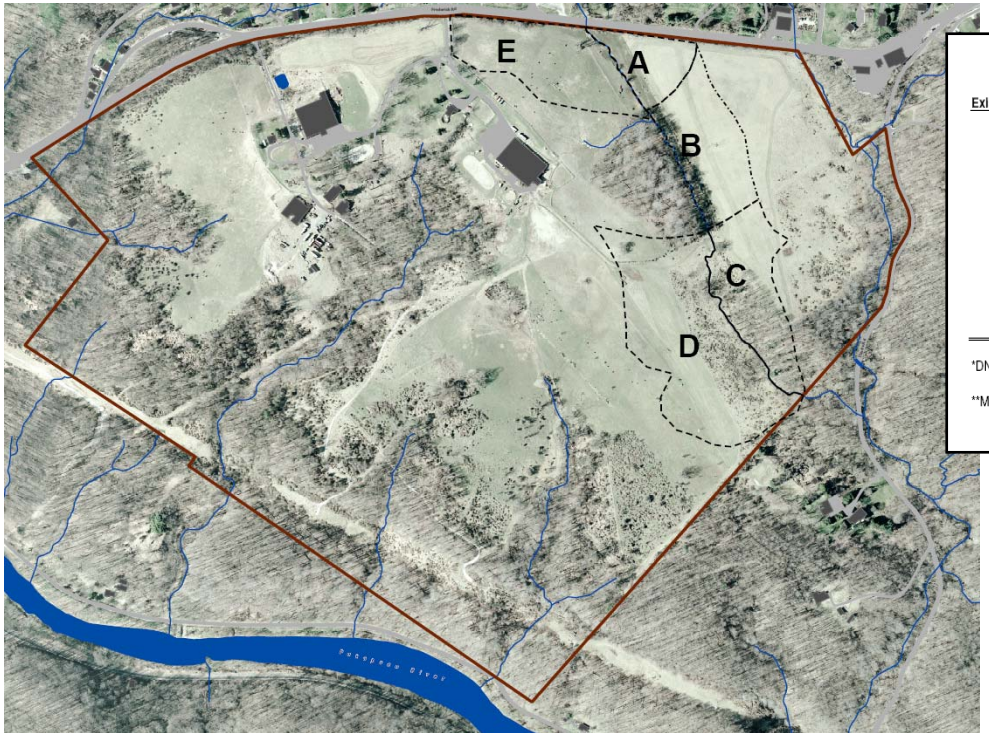


Site E

Existing Conditions:		
Drainage Area	6.11	ac
Length of Stream Frontage	598	ft
Avg Existing Buffer Width (if applicable)		
Forested	0	ft
Grass	0	ft
Land Uses:		
Agriculture - Row Crops	0	ac
Agriculture - Pasture	6.11	ac
Forested	0	ac
Open Space - Grass	0	ac
Impervious Surface	0	ac

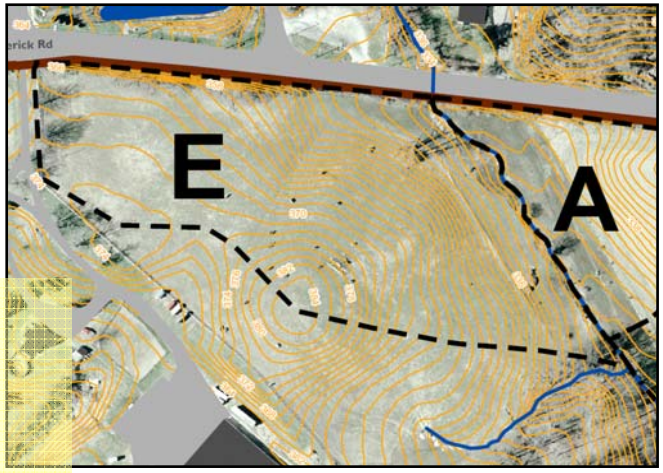
Proposed Conditions:

Phosphorus (P) Reduction (lb/ac/yr):

Proposed Action:	per/ac	DNR Method* buffer acreage 0-100'	DNR Method* buffer acreage 101-200'	Removal lb/yr	MDE Equivalent** Impervious Treated (ac)
Create 200' Forest Buffer	2.15	1.37	1.37	4.43	
		Total =		4.43	4.76

*DNR Method: Refer to the DNR - BMP Nutrient Reductions chart for reduction amounts, 100% reduction credit applied for first 100' from stream, 50% reduction credit applied for buffer between 101' to 200' from stream

**MDE - Equivalent Impervious Treatment amount calculated using a rate of 0.93 lb/ac/yr of P removed by an MDE approved BMP. Refer to the MDOT Alternative Migitation Metrics Concepts Powerpoint presentation for detailed calculations.



- **Simplest section – no existing buffer**
- **Only include DA that sheet flows to main channel (2.74 ac. total buffer creation)**

(1.0 x 1.37 ac) + (0.5 x 1.37 ac)] x 2.15lb/ac /yr
= 4.43 lb/yr P removal

4.43 lb/yr / 0.93 lb/ac/yr = 4.76 ac. MDE equivalent

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