



## Streamlining Project Development through the Watershed Resources Registry

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# Development of WRR

## Watershed Resources Registry initiated in 2007

- Comprehensive web based GIS mapping tool that assists with improving the regulatory process efficiency on a watershed scale.
- Intended to integrate the Clean Water Act (CWA) Sections 319, 401, 402, and 404, TMDL implementation practices, and multiple state programs.
- Collaborative approach with EPA Region III, U.S. Army Corps of Engineers, MDE, DNR, USFWS and MES.



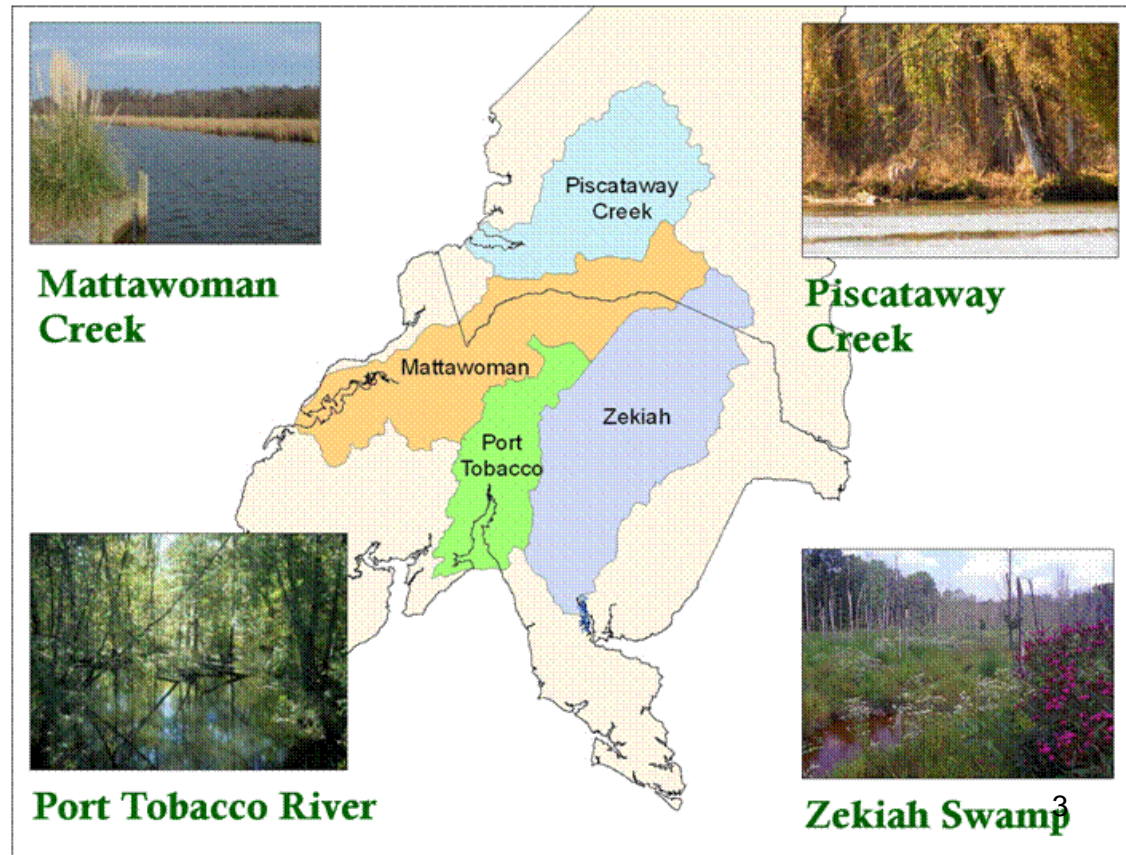
US Army Corps of Engineers



# Why Did SHA Develop WRR?

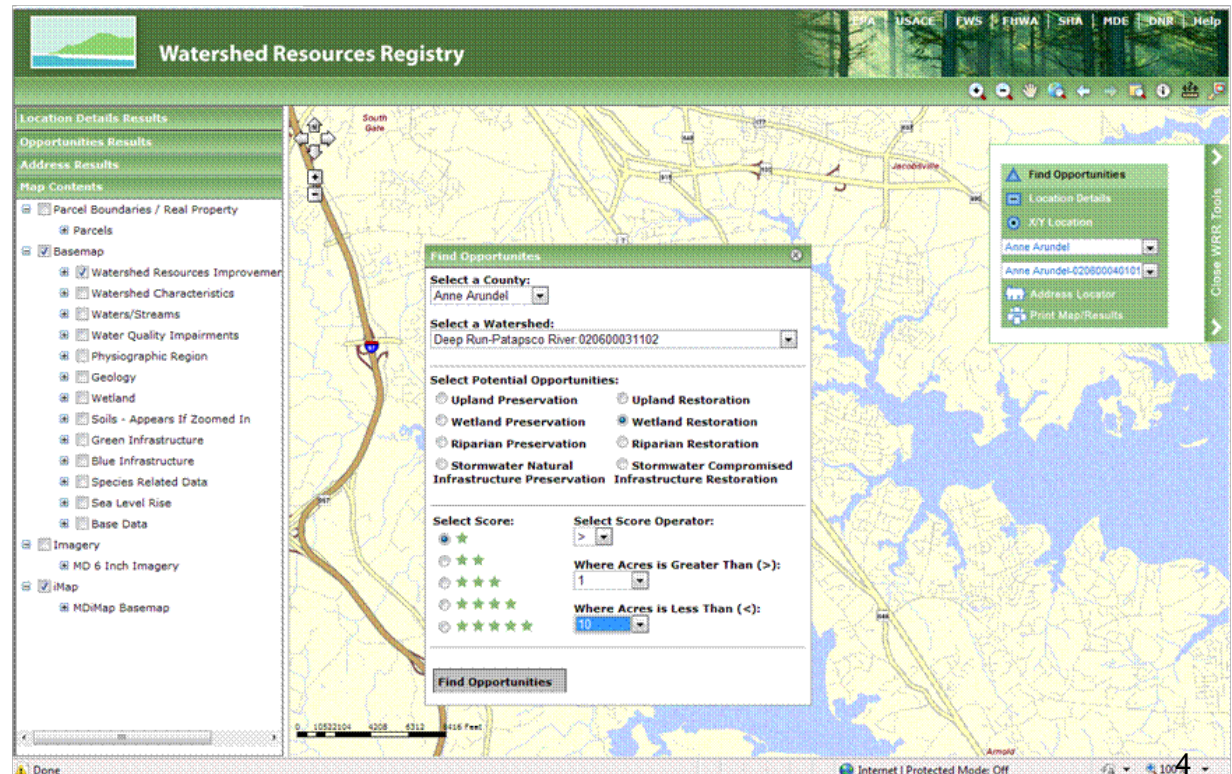
- Resolve agency conflicts on by-pass project that had significant wetland and forest impacts

- Models developed to evaluate alternative options and environmental stewardship opportunities



# What is WRR?

- Interactive Geographic Information System (GIS)-based screening tool that:
- Contains natural resource data that can be queried real time.
- Data web based and shared outside DOT
- Can be applied to large or small projects



# WRR is Transferable

- Readily available, public domain datasets
- State datasets can be incorporated
- Reflects shared federal/state priorities

<b>National Datasets</b>	<b>Maryland Datasets</b>
USFWS NWI wetlands	Green Infrastructure
NRCS soils	Blue Infrastructure
USGS land use/land cover	GreenPrint
USGS streams, rivers, lakes, estuaries, etc.	Wetlands of Special State Concern
USGS Watershed boundaries	Tier II Waters
EPA impaired watersheds	
and more...	

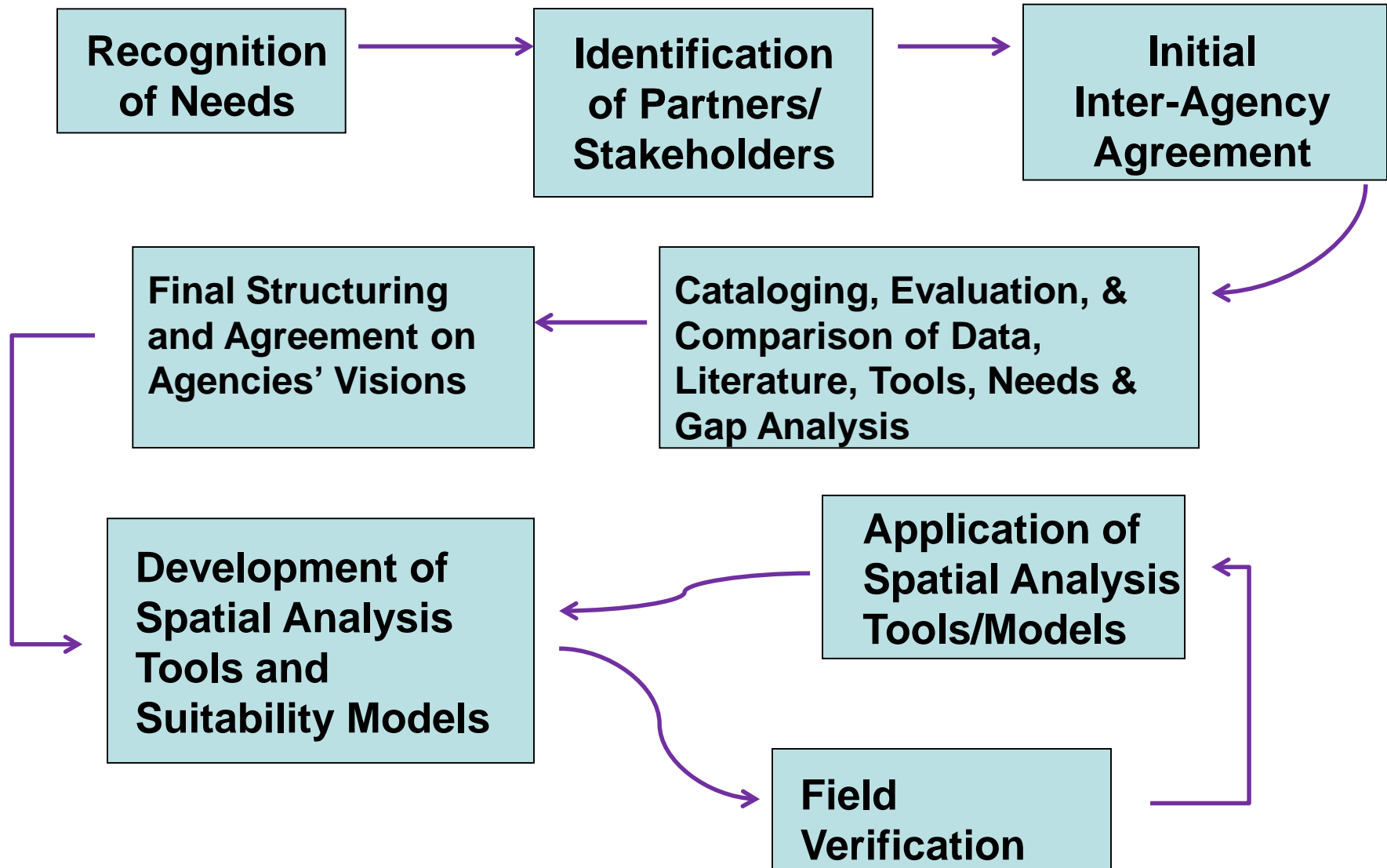


# Benefits to WRR



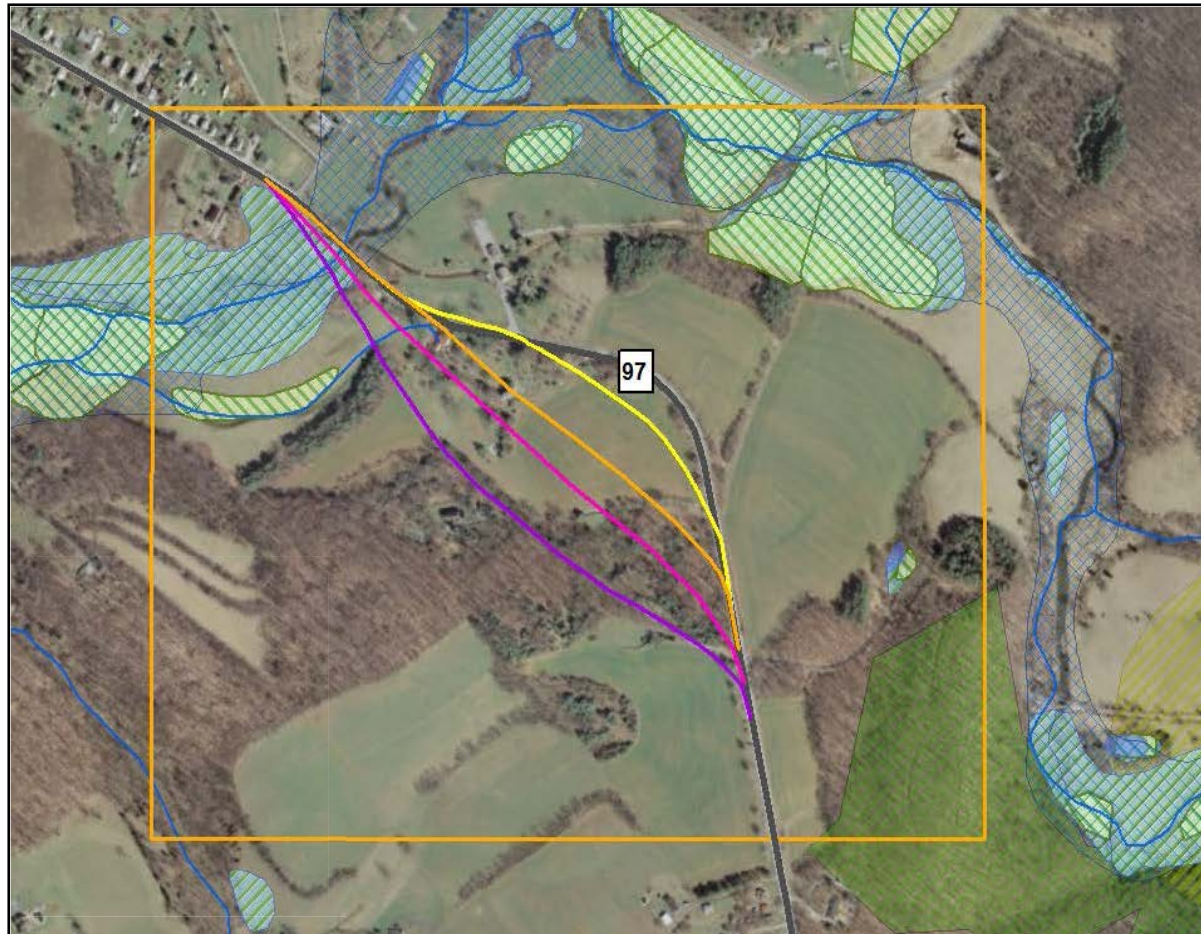
- Reduces schedules and costs
- Less review/site assessment/coordination time
- Maximize avoidance and minimization efforts and identify mitigation opportunities that optimize ecological outcomes
- More informed and integrated decision making among multiple users
- Provides access to updated, consistent, and defensible data
- Is transparent, predictable, and reliable
- Because of its success, other agencies are also using it for their projects

# WRR Development Framework





# Avoid and Minimize Using the WRR



## Considerations for Potential Alignments:

- Wetlands
- Streams
- Floodplains
- Green/Blue Infrastructure
- Land Use/Land Cover
- Forest Interior Dwelling Species
- Targeted Ecological Areas
- Sensitive Species Area
- Chesapeake Bay Critical Area
- Property Owner Information



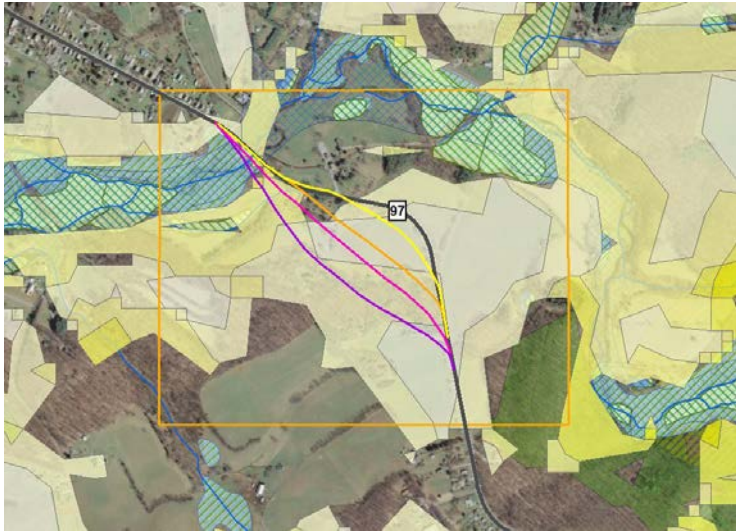
# Avoidance and Minimization Results

Impact Types	No-Build Alternative	Alternative 1	Alternative 2	Alternative 3	Alternative 3A
<b>Community Impacts</b>					
Residential Displacements	0	1	1	2	0
Residential Properties Impacted	0	7	9	9	6
<b>Range of Natural Environmental Impacts</b>					
100-Year Floodplain Affected (acres)	0	1.64	1.78	1.77	0
Wetlands Affected (acres)	0	1.35	1.36	0.56	0
Streams (lf)	0	289.3	409	113.7	11.1
Woodlands Affected (acres)	0	7.6	3.8	4.1	1.1
<b>WRR Preservation Opportunity Impacts</b>					
Wetland Preservation (acres)	0	1.77	10.6	0.6	0
Upland Preservation (acres)	0	15.4	11.45	11.29	8.5
Riparian Preservation (acres)	0	8.9	6.6	5.09	3.02
<b>TOTAL ACRES</b>	<b>0</b>	<b>26.07</b>	<b>28.65</b>	<b>16.98</b>	<b>11.52</b>

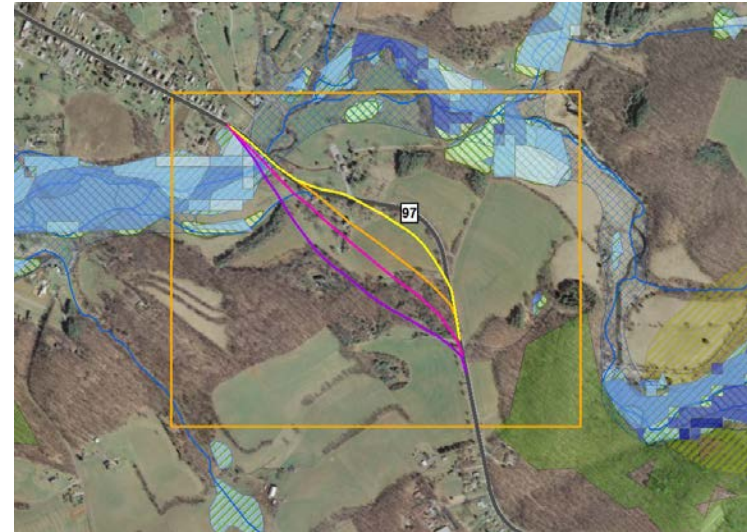


Typical PACM Matrix  
Using the WRR  
Results

# Potential Preservation Impacts



**Upland Preservation**



**Wetland Preservation**



**Riparian Preservation**



**Stormwater Preservation**

# Using the WRR to Identify Mitigation Sites

**Watershed Resources Registry**

EPA USACE FWS FHWA SHA MDE DNR Help

**Location Details Results**

**Watershed Resources Improvement Opportunities**

[Upland Preservation](#): Not Suitable  
[Upland Restoration](#): 3  
[Wetland Preservation](#): Not Suitable  
[Wetland Restoration](#): 2  
[Riparian Preservation](#): Not Suitable  
[Riparian Restoration](#): 2  
[Stormwater Natural Infrastructure Preservation](#): Not Suitable  
[Stormwater Compromised Infrastructure Restoration](#): 4

**Watershed Characteristics:**

[View Watershed Profile](#)  
HUC: 020700090404  
HUC Name: Upper Big Pipe Creek  
Maryland 8 Digit Watershed: 02140304  
Maryland 12 Digit Watershed: 021403040283

Metadata: [HUC](#) | [MD Watershed](#) | [Stronghold](#)

**Waterways**

Nearest Stream: Unnamed Tributary to Big Pipe Creek  
Stream Use Designation: IV-P  
Distance: 347 ft.  
Water Body Distance: 347 ft.

Metadata: [Stream Use Designations](#) | [Water Body](#)

**Water Quality Impairments**

[Metadata](#)  
Impairments: Biological, Nutrients, Sediments

**Physiographic Region**

[Metadata](#)  
Province: Piedmont Plateau Province

**Geology**

[Metadata](#)  
Name: Marburg Schist

**Wetlands**

Wetlands of Special State Concern: None within: 500 #

**Opportunities Results**

**Address Results**

**Map Contents**

- Stormwater Restoration
- Upland Restoration

**Find Opportunities**

**Select a County:**  
Carroll

**Select a Watershed:**  
Upper Big Pipe Creek: 020700090404

**Select Potential Opportunities:**

Upland Preservation  Upland Restoration  
 Wetland Preservation  Wetland Restoration  
 Riparian Preservation  Riparian Restoration  
 Stormwater Natural Infrastructure Preservation  Stormwater Compromised Infrastructure Restoration

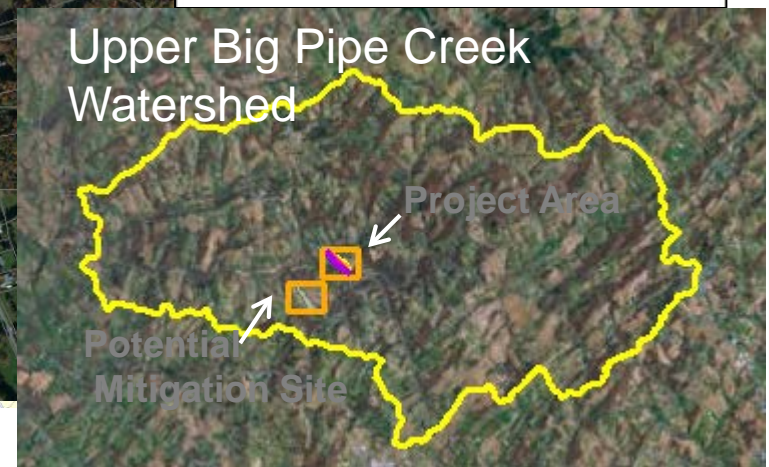
**Select Score:**  
 ★  
 ★★  
 ★★★  
 ★★★★  
 ★★★★★

**Select Score Operator:**  
>=

**Where Acres is Greater Than (>):**  
Any Area

**Where Acres is Less Than (<):**  
Any Area

**Find Opportunities**



# Capital Program Savings

	Costs	Time	Cost Savings with WRR	Time Savings with WRR
Site Search	\$50,000	4 months	\$37,500	3 months
Design	\$210,000	18 months	\$60,000	6 months
Agency Coordination/ Regulatory Review	\$10,000	12 months	\$2,500	3 months
Total	\$270,000	2.8 years	<u>\$100,000</u>	<u>1 year</u>

*\*Cost/time savings would be post Location Approval and includes only mitigation tasks.*

# Chesapeake Bay TMDL – WRR Strategies

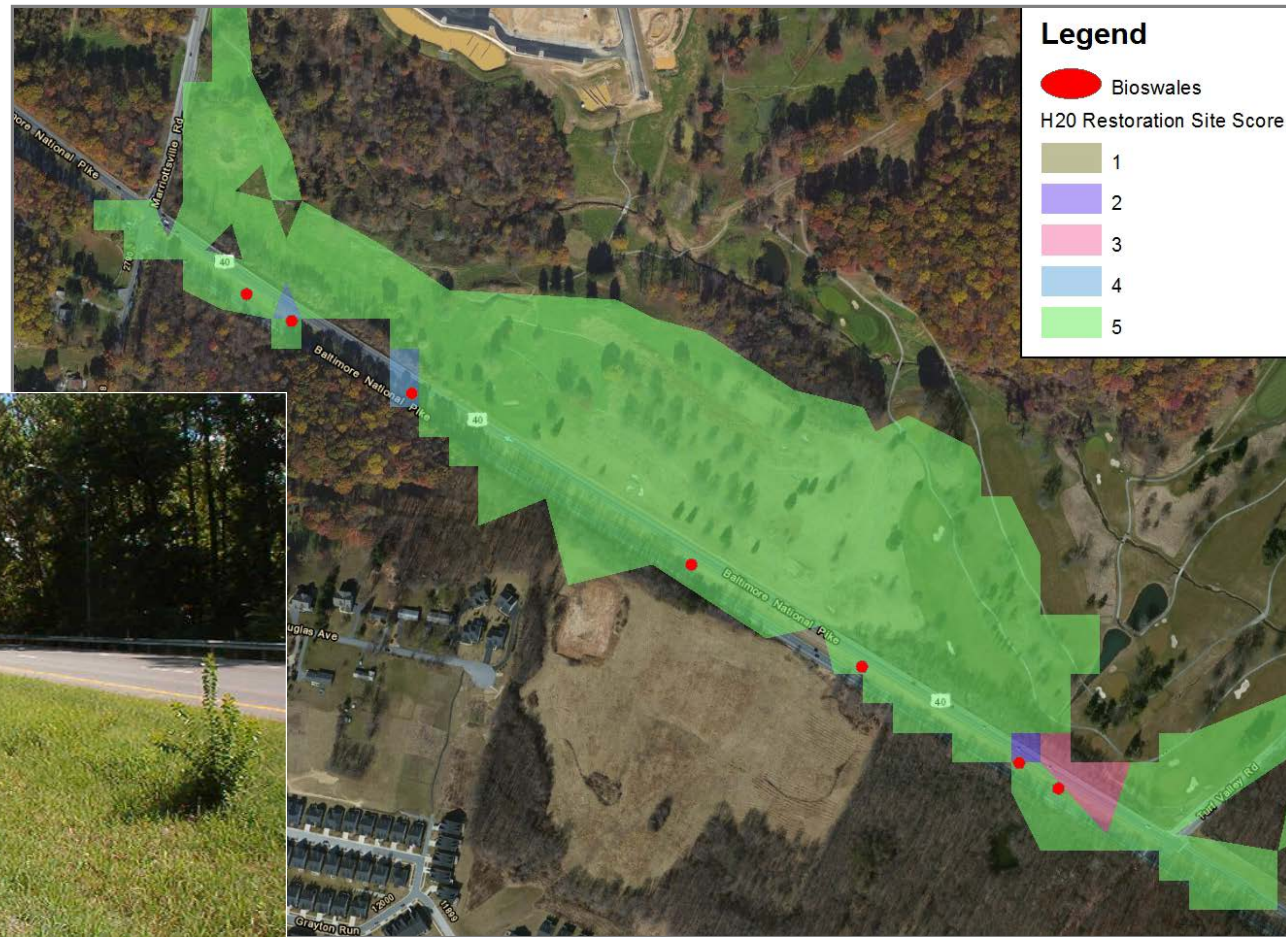
SWM  
Restoration/Preservation  
Wetland Restoration  
Upland  
Restoration/Preservation  
Riparian  
Restoration/Preservation  
Stream Restoration - Future

The screenshot shows a web application window titled "Find Opportunities". It contains several sections for user input:

- Select a County:** A dropdown menu with "Montgomery" selected.
- Select a Watershed:** A dropdown menu with "All Watersheds" selected.
- Select Potential Opportunities:** A grid of radio buttons for selecting preservation or restoration options:
  - Upland Preservation
  - Upland Restoration
  - Wetland Preservation
  - Wetland Restoration
  - Riparian Preservation
  - Riparian Restoration
  - Stormwater Natural Infrastructure Preservation
  - Stormwater Compromised Infrastructure Restoration
- Select Score:** A row of radio buttons next to star ratings from 1 to 6. The 3-star option is selected.
- Select Score Operator:** A dropdown menu with "=" selected.
- Where Acres is Greater Than (>):** A dropdown menu with "Any Area" selected.
- Where Acres is Less Than (<):** A dropdown menu with "Any Area" selected.

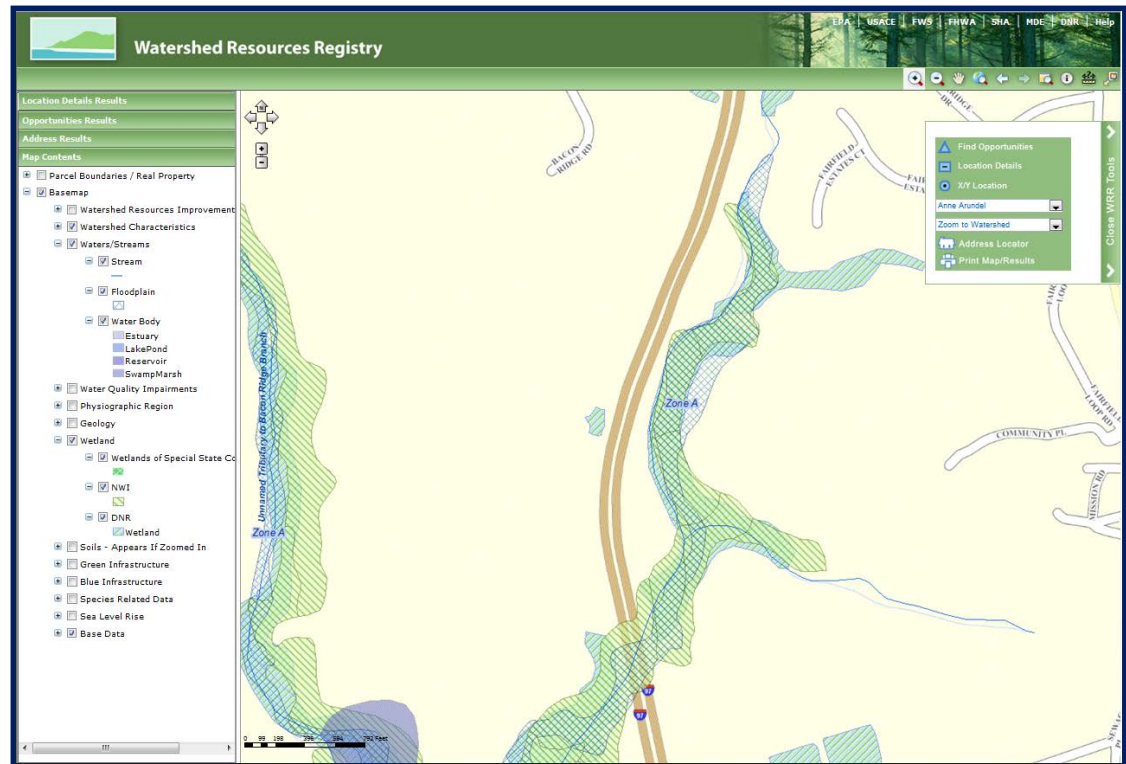
A "Find Opportunities" button is located at the bottom of the form.

# Stormwater Facilities



# Roadway Maintenance

- Identification of sensitive resources areas in close proximity to our maintained ROW areas
- Allows crews to avoid impacts in sensitive areas
- Avoidance/modification of work in sensitive areas
- Reduced potential for non-compliance
- Opportunity to further the benefit of WRR through Operations





# Summary Case Study Findings



- Ensures a holistic approach to transportation planning – Better Decision Making
- Process supports a balanced approach to project implementation that moves closer to meeting both the transportation and natural resource needs.
- Integrated approach (saves time/money)
- Improved stakeholder relationships





# WRR Works Beyond SHA



- Web based tools allows use by other agencies
- Resource agencies validate data and analysis
- Charles County recommends it to development applicants
- MDE recommends it to consultants for use on their projects (mitigation site identification)
- Collaborating to ensure clean water in the Chesapeake Bay for all



# Similarities to Eco-Logical



- SHA has developed and implemented new procedures, policies and tools for more effectively integrating ecological resource values into the transportation project-development process.
- Utilization of the WRR is expected to improve review times and add a layer of consistency in the process.

# Contact Us

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Website:

<http://watershedresourcesregistry.com/>



The screenshot shows the website's header with a logo of a blue wave and the text "watershed resources registry". To the right of the header are social media icons for Twitter, Facebook, YouTube, and LinkedIn. A vertical navigation menu on the left contains the following items: Home, About Us, History, Suitability Analyses, GIS Layers, Feedback, and FAQs. The main content area features a landscape photograph of a stream flowing through a green field with trees in the background. The word "sustain" is overlaid in white text at the bottom of the image.