

# watershed resources registry



*innovative technology transfer grant workshop, october 16 and 17, 2014*

## **Watershed Resources Registry 101**

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## WRR Outreach Homepage



watershed resources registry

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EPA has recently published a tool called the National Stormwater Calculator that can be used to further analyze the most cost effective BMP options within WRR opportunity sites. Consider integrating your findings from the WRR with the [Stormwater Calculator](#) to achieve more meaningful results based on landscape characteristics.



restore

### Welcome

Welcome to the Watershed Resources Registry, an interactive mapping tool to characterize and prioritize natural resource management opportunities using a Watershed Approach. Areas across Maryland have been scored on a scale of one to five stars based on their potential benefits for restoration or preservation. Users can either access the interactive mapping tool or download the data directly.

**Using the Watershed Resources Registry allows you to:**

- Identify candidate locations
- Assess and compare potential projects
- Export data and print site maps for field visits

After exploring the site or utilizing the mapping tool for watershed information, we welcome your [feedback](#).

**Training Video**



**Watershed Resources Application**



**Model Descriptions**



**Factsheet**



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Suitability Analyses

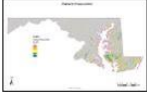
Each suitability analysis has its own set of particular criteria that were used to develop the output. The links below explain these criteria as well as provide a data sheet for field use when evaluating a site for mitigation. The analysis has a set of common criteria; shared geoprocesses were used, as appropriate, based on the specific criteria outlined for each suitability analysis.




[Upland Preservation](#)  
Map and score those areas where the natural upland ecosystem remains substantially intact and healthy.



[Upland Restoration](#)  
Map and score those areas where the natural upland ecosystem remains substantially intact and healthy.



[Wetland Preservation](#)  
Map and score those wetlands that are in great or better condition and are not already permanently preserved via public ownership, easement or deed restriction.



[Wetland Restoration](#)

GIS Layers

Downloadable from: <http://dnrweb.dnr.state.md.us/gis/data/data.asp>

Chesapeake Bay Commission Critical Area (CBCCA)

DNR wetlands

Forest Interior Dwelling Species (FIDS)

Green Infrastructure – Hubs and Corridors

Greenprint—Targeted Ecological Areas (TEA)

Non-tidal Wetlands of Special State Concern (WSSC)

NWI wetlands

Protected Lands

Sensitive Species Project Review Area (SSPRA)

Downloadable from <http://nhd.usgs.gov/>, <http://viewer.nationalmap.gov/viewer/>

National Hydrography Dataset

National Hydrography Dataset—Waterbodies

Contribute Your Feedback

Please give us your feedback concerning your use of the WRR mapping tool.

Please select one: \*

☐ I would like to report a problem/issue

☐ I have a general comment

Which aspects of the WRR are you interested in? (Select all that apply)\*

☐ WRR Application Interface

☐ Accuracy/Relevancy of the basemap/data layers

☐ Website

☐ Mapping/General site information

☐ Other (Please specify below)

Which Suitability Analysis/Ecological opportunity are you interested in? (Select all that apply)\*

☐ Upland Preservation

☐ Upland Restoration

☐ Wetland Preservation

☐ Wetland Restoration

☐ Riparian Preservation

☐ Riparian Restoration

☐ Stormwater Natural Infrastructure Preservation

☐ Stormwater Compromised Infrastructure Restoration

Please describe the issue/comment.

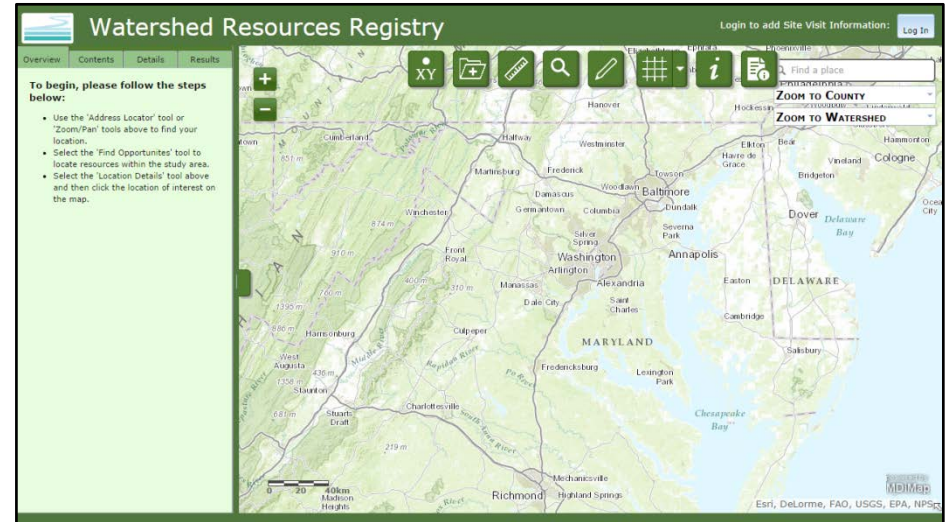
If possible, please provide the coordinates of a site that demonstrates the issue (Decimal Degree format).

Latitude:  Longitude:



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### The Watershed Resources Registry (WRR)

The (WRR), a Green Highways Partnership project, is a partnership of agencies who developed a framework for integrated watershed management. A GIS based targeting tool was developed to analyze watersheds and identify the best opportunities for the protection of high quality resources, restoration of impaired resources, resource conservation and environmental resource planning, and improvement of stormwater management. The WRR is intended to integrate the Clean Water Act (CWA) authorities by facilitating implementation of CWA Sections 319, 401, 402, and 404, TMDL implementation practices, and multiple state programs.

**Partnering Agencies**

EPA Region 3; US Army Corps of Engineers (ACE); MD State Highway Administration (SHA); US Fish and Wildlife Service (FWS); Federal Highways Administration (FHWA); Maryland Department of the Environment (MDE); Maryland Department of Natural Resources (MDNR); Maryland Environmental Service (MES); and Interstate Commission on the Potomac River Basin (ICPRB)

**Prioritizing opportunities based on the ecological needs of the watershed**

Eight (8) opportunity assessments were developed through the interagency partnership workgroup to identify the best opportunities for the following practices. Priorities were based on ecological needs as defined by water quality, habitat, and biological assessments.

- Upland Preservation
- Wetland Preservation
- Riparian Zone Preservation
- Upland Restoration
- Wetland Restoration
- Riparian Zone Restoration
- Preserving Natural Surface Hydrology for Stormwater
- Restoring/Mimicking Natural Hydrology for Stormwater

### Watershed Resources Registry

#### Factors for Wetland Preservation

Relative Factors	Absolute Factors
<ul style="list-style-type: none"> <li>In a Biodiversity Conservation Network area (BionNet 1, 2, or 3)</li> <li>In a Biodiversity Conservation Network area (BioNet 4, 5 or new FIDS get ½ point)</li> <li>In a Blue Infrastructure high priority watershed</li> <li>In Chesapeake Bay Commission Critical Area (LDA or RCA only)</li> <li>In Biological Restoration Initiative Watershed</li> <li>in a 100-year floodplain</li> <li>In a Green Infrastructure area (1 point for "hub"; ½ point for "corridor")</li> </ul>	<ul style="list-style-type: none"> <li>In a Healthy Watershed (Stronghold, spawning, cold water or Class III Trout)</li> <li>In a Wetland of Special State Concern (WSSC)</li> <li>Near (within 200') but not in protected lands</li> <li>In Potential Migration Zones for wetlands, marshes, etc.</li> <li>Near (within 200') but not in a stream or water body</li> <li>Near (200') or in a GreenPrint Target Ecological Area</li> <li>is forested</li> </ul>
<ul style="list-style-type: none"> <li>Must be a wetland</li> <li>Cannot already be protected</li> </ul>	



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## Find Sites Using X,Y Coordinates

**Watershed Resources Registry**

Overview Contents Details Results

To begin, please follow the steps below:

- Use the 'Address Locator' tool or 'Zoom/Pan' tools above to find your location.
- Select the 'Find Opportunities' tool to locate resources within the study area.
- Select the 'Location Details' tool above and then click the location of interest on the map.

**Zoom X/Y**

Latitude: 38.61881  
Ext: 39.14082

Longitude: -76.98294  
Ext: -76.85762

\*Decimal Degrees

Zoom

Find a place

ZOOM TO COUNTY

ZOOM TO WATERSHED

powered by MDIMap

Esri, DeLorme, FAO, USGS, EPA, NPS



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## Selecting a Basemap

The screenshot displays the Watershed Resources Registry web application. The interface includes a header with the title "Watershed Resources Registry" and a "Login to add Site Visit Information: Log In" button. Below the header is a navigation bar with tabs for "Overview", "Contents", "Details", and "Results". A sidebar on the left contains instructions: "To begin, please follow the steps below:" followed by three bullet points: "Use the 'Address Locator' tool or 'Zoom/Pan' tools above to find your location.", "Select the 'Find Opportunities' tool to locate resources within the study area.", and "Select the 'Location Details' tool above and then click the location of interest on the map." The main map area shows an aerial view of a landscape with a green dot labeled "Bennsville". Above the map is a toolbar with icons for "XY", "Address Locator", "Zoom/Pan", "Find", "Edit", "Grid", "Layers", "Info", and a search bar labeled "Find a place". A basemap selection menu is open on the right, showing various map styles: "Imagery", "Imagery with Labels" (highlighted with a red border), "Streets", "Topographic", "Terrain with Labels", "Light Gray Canvas", "National Geographic", "Oceans", "OpenStreetMap", and "NOAA Charts". The bottom right corner of the map area includes the text "powered by MDIMap" and a list of data providers: "DigitalGlobe, GeoEye, Microsoft | Esri, HERE, DeLorme, TomTom..."

Watershed Resources Registry

Login to add Site Visit Information: Log In

Overview Contents Details Results

To begin, please follow the steps below:

- Use the 'Address Locator' tool or 'Zoom/Pan' tools above to find your location.
- Select the 'Find Opportunities' tool to locate resources within the study area.
- Select the 'Location Details' tool above and then click the location of interest on the map.

Find a place

Imagery Imagery with Labels Streets

Topographic Terrain with Labels Light Gray Canvas

National Geographic Oceans OpenStreetMap

NOAA Charts

Bennsville

powered by MDIMap

DigitalGlobe, GeoEye, Microsoft | Esri, HERE, DeLorme, TomTom...




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## Selecting a Basemap



### Watershed Resources Registry

Overview Contents Details Results

**To begin, please follow the steps below:**

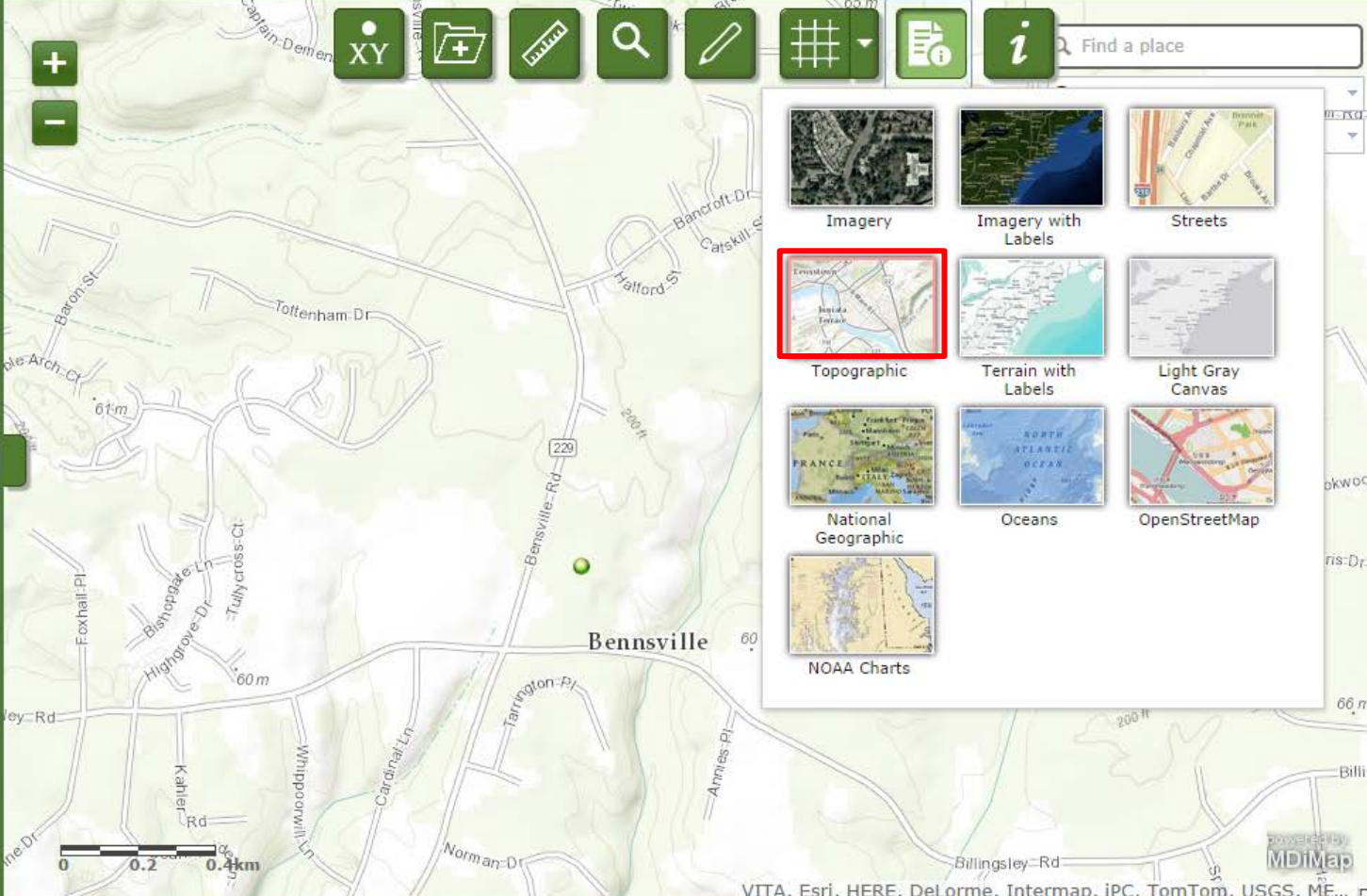
- Use the 'Address Locator' tool or 'Zoom/Pan' tools above to find your location.
- Select the 'Find Opportunities' tool to locate resources within the study area.
- Select the 'Location Details' tool above and then click the location of interest on the map.

Login to add Site Visit Information: [Log In](#)

Find a place

**Basemap Selection Panel:**

- Imagery
- Imagery with Labels
- Streets
- Topographic**
- Terrain with Labels
- Light Gray Canvas
- National Geographic
- Oceans
- OpenStreetMap
- NOAA Charts



Bannsville

0 0.2 0.4 km

VITA, Esri, HERE, DeLorme, Intermap, iPC, TomTom, USGS, ME...



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## Uploading Data to the Map

The screenshot displays the Watershed Resources Registry web application. The interface includes a top navigation bar with the title "Watershed Resources Registry" and a "Log In" button. Below the navigation bar, there are tabs for "Overview", "Contents", "Details", and "Results". The main map area shows a topographic map of a region including Bannsville, St Charles, and Waldorf. A "Data Interoperability" dialog box is open, prompting the user to "Add a zipped shapefile to the map." and providing a "Choose File" button and a text input field for the "Layer Name:". The dialog also includes a link to "About Shapefiles" and a "Visit the" link. The map interface includes various tools such as "XY", "Add", "Measure", "Search", "Edit", "Grid", "Info", and "Layers". A search bar on the right side of the map contains the text "Find a place" and "CHARLES". Below the search bar, there are dropdown menus for "CHARLES" and "ZOOM TO WATERSHED". A scale bar at the bottom left indicates a distance of 0 to 2 km. The bottom right corner of the map area shows the text "powered by MDI Map" and "VITA, Esri, HERE, DeLorme, USGS, METI/NASA".

**Watershed Resources Registry**

Overview Contents Details Results

To begin, please follow the steps below:

- Use the 'Address Locator' tool or 'Zoom/Pan' tools above to find your location.
- Select the 'Find Opportunities' tool to locate resources within the study area.
- Select the 'Location Details' tool above and then click the location of interest on the map.

**Data Interoperability**

Add a zipped shapefile to the map.

Visit the [About Shapefiles](#) help topic for information and limitations.

Layer Name:

workshop\_alt\_3.zip

Find a place

CHARLES

ZOOM TO WATERSHED

0 1 2km

powered by MDI Map

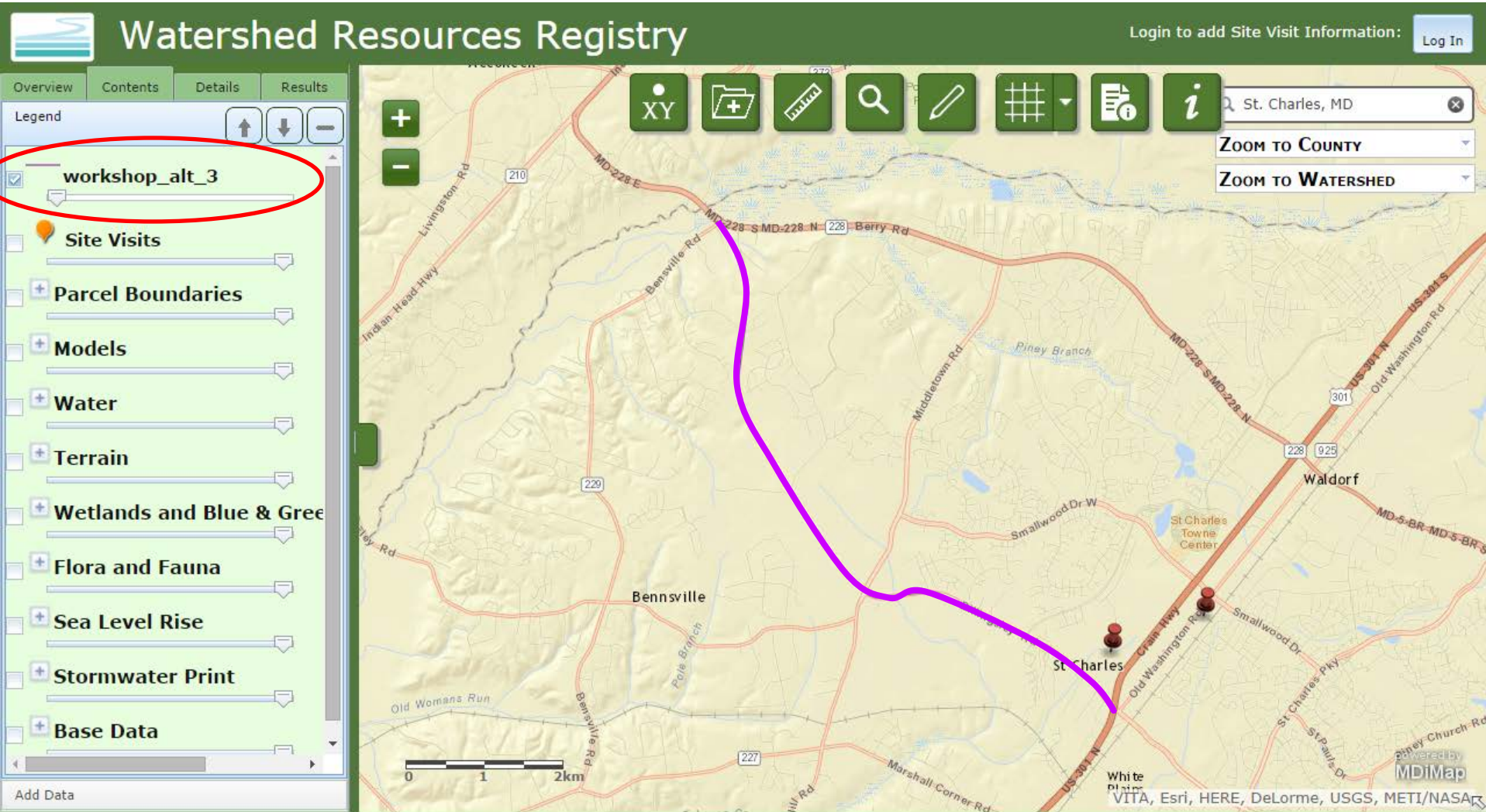
VITA, Esri, HERE, DeLorme, USGS, METI/NASA



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## Uploaded Alignment Alternative





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## Locating Previous Site Visits

The screenshot displays the Watershed Resources Registry web application. The interface includes a top navigation bar with 'Overview', 'Contents', and 'Details' tabs. A 'Legend' panel on the left lists various data layers, with 'Site Visits' highlighted by a red circle. The main map area shows a topographic view of a watershed with roads, water bodies, and a red circle highlighting a specific site visit location near 'Woods Run'. A scale bar at the bottom left indicates distances up to 2km. The bottom right corner credits the data sources: VITA, Esri, HERE, DeLorme, USGS, METI/NASA.

Watershed Resources Registry

Legend

- Site Visits
- Parcel Boundaries
- Models
- Watershed Resources Imp
- Water
- Terrain
- Wetlands and Blue & Green
- Flora and Fauna
- Sea Level Rise
- Stormwater Print
- Base Data

Find a place

ZOOM TO COUNTY

ZOOM TO WATERSHED

0 1 2km

VITA, Esri, HERE, DeLorme, USGS, METI/NASA



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## Registered Site Information

The screenshot displays the Watershed Resources Registry web application. The interface includes a top navigation bar with 'Overview', 'Contents', and 'Details' tabs. A left sidebar contains a 'Legend' with expandable categories: Site Visits, Parcel Boundaries, Models, Watershed Resources Imp, Water, Terrain, Wetlands and Blue & Green, Flora and Fauna, Sea Level Rise, Stormwater Print, and Base Data. The main area features a map of a watershed with a red line indicating a site visit. A 'Site Visit Information' pop-up window is open, displaying details for a site visit by Kelly Neff on 3/20/2010. The window also includes a 'Consent to having contact information being made public?' checkbox and a list of opportunities for which the site is being registered. A 'Landscape Characteristics' section is also visible, with checkboxes for Land Use and Land Type. A 'Zoom to County' button is located in the top right corner. A 'Print' button is at the bottom right of the pop-up window.

**Watershed Resources Registry**

Login to add Site Visit Information: [Log In](#)

Find a place

ZOOM TO COUNTY

**Site Visit Information**

First Name: Kelly  
Date of Site Visit: 3/20/2010  
Entity:  
Project Name:  
Email: kelly.neff@maryland.gov  
Site Description:

Last Name: Neff  
Approximate Size of Site:  
Organization: MDE  
Phone: 410-537-4018

Consent to having contact information being made public? ☒

Looking for the following opportunities:

- ☐ Upland Preservation
- ☐ Wetland Preservation
- ☐ Riparian Preservation
- ☐ Stormwater Natural Infrastructure Preservation
- ☐ Upland Restoration
- ☒ Wetland Restoration
- ☐ Riparian Restoration
- ☐ Stormwater Compromised Infrastructure Restoration

**Landscape Characteristics**

**Land Use:**

- ☐ Commercial
- ☐ Medium Density Residential
- ☐ Industrial
- ☐ Open Space
- ☐ Low Density Residential
- ☐ High Density Residential
- ☒ Agricultural

**Land Type:**

Print Close

Upland Preservation:020700110101

Join_Count	1
TARGET_FID	461.295
HUC_12	020700110101
Join_Cou_1	1
TARGET_F_1	461.296
ID	461.296.00
GRIDCODE	3.00
County	Charles
ACRES	7.40
CODE_ACRES	3 - 7.40 acres

Zoom to

0 1 2km

VITA, Esri, HERE, DeLorme, USGS, METI/NASA



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## Using the Measure Tool

The screenshot displays the Watershed Resources Registry web application interface. On the left, a sidebar contains a 'To begin, please follow the steps below:' section with three bullet points: 'Use the 'Address Locator' tool or 'Zoom/Pan' tools above to find your location.', 'Select the 'Find Opportunities' tool to locate resources within the study area.', and 'Select the 'Location Details' tool above and then click the location of interest on the map.' The main map area shows a topographic map of a region including towns like Bannsville, St Charles, and Waldorf. A purple line is drawn on the map, indicating a measurement. A 'Measurement' pop-up window is centered over the map, showing a 'Miles' dropdown menu and a 'Measurement Result' field. The top of the interface features a 'Watershed Resources Registry' header, a 'Login to add Site Visit Information: Log In' button, and a search bar with the text 'Find a place'. Below the search bar are two dropdown menus: 'Zoom to COUNTY' and 'Zoom to WATERSHED'. The bottom of the map includes a scale bar (0 to 2km) and a copyright notice: 'VITA, Esri, HERE, DeLorme, USGS, METI/NASA'.

**Watershed Resources Registry**

Login to add Site Visit Information: [Log In](#)

Find a place

Zoom to COUNTY

Zoom to WATERSHED

**To begin, please follow the steps below:**

- Use the 'Address Locator' tool or 'Zoom/Pan' tools above to find your location.
- Select the 'Find Opportunities' tool to locate resources within the study area.
- Select the 'Location Details' tool above and then click the location of interest on the map.

**Measurement**

Miles

Measurement Result

0 1 2km

VITA, Esri, HERE, DeLorme, USGS, METI/NASA



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## Measuring Length of Alignment

The screenshot displays the Watershed Resources Registry web application. On the left, a sidebar contains navigation tabs for Overview, Contents, and Details. Below these, a text box instructs users to follow steps for using the Address Locator, Find Opportunities, and Location Details tools. The main map area shows a topographic map with a blue alignment line drawn across it. A 'Measurement' pop-up window is open, showing a red circle around the '5.5 Miles' result. The window also includes a 'Miles' unit selector and a 'Measurement Result' label. The map interface includes various tool icons at the top, a search bar on the right, and zoom controls. The map shows roads, water bodies, and place names like Accokeek, Bennsville, and Waldorf.

**Watershed Resources Registry**

Log in to add Site Visit Information: [Log In](#)

Find a place

ZOOM TO COUNTY

ZOOM TO WATERSHED

To begin, please follow the steps below:

- Use the 'Address Locator' tool or 'Zoom/Pan' tools above to find your location.
- Select the 'Find Opportunities' tool to locate resources within the study area.
- Select the 'Location Details' tool above and then click the location of interest on the map.

**Measurement**

Measurement Result

5.5 Miles

MDMap

VITA, Esri, HERE, DeLorme, USGS, METI/NASA



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## Turning Map Contents On/Off

The screenshot displays the Watershed Resources Registry web application. The interface includes a top navigation bar with tabs for Overview, Contents, Details, and Results. A legend panel on the left lists various map layers, with the 'Water' category highlighted by a red circle. The main map area shows a satellite view of a coastal region with a pink line tracing a path. Map controls at the top right include a search bar, zoom in/out buttons, and a scale bar. The bottom of the screen shows the map's data sources and a scale bar.

**Watershed Resources Registry**

Overview Contents Details Results

Legend

- ☒ **Water**
- ☒ **Watershed Characteristics**
  - ☐ Federal Hydrologic Unit Co
  - ☐ Maryland 12 Digit Watersh
  - ☐ Maryland 8 Digit Watershe
  - ☐ Stronghold Watershed
  - ☒ Tier II High Quality Stream
- ☒ **Waters/Streams**
  - ☒ Stream
  - ☒ Floodplain
  - ☐ Water Body
  - ☐ Water Quality Impairments
- ☐ **Terrain**
- ☐ **Wetlands and Blue & Gree**
- ☐ **Flora and Fauna**

St. Charles, MD

ZOOM TO COUNTY

ZOOM TO WATERSHED

Bennsville

Pinney Branch

St Charles Town Center

Waldorf

White

Old Womens Run

powered by MDIMap

CNES/Airbus DS, Earthstar Geographics | Esri, HERE, DeLorme, ...



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## Adjusting Map Layers

The screenshot displays the Watershed Resources Registry web application interface. The top navigation bar includes tabs for Overview, Contents, Details, and Results. A search bar on the right shows "St. Charles, MD" with buttons for "ZOOM TO COUNTY" and "ZOOM TO WATERSHED". A "Login to add Site Visit Information" button is also present.

The left sidebar contains a "Legend" section with a "Water" category highlighted by a red circle. Below it, the "Watershed Characteristics" section includes checkboxes for "Federal Hydrologic Unit Co", "Maryland 12 Digit Watersh", "Maryland 8 Digit Watershe", "Stronghold Watershed", and "Tier II High Quality Stream". The "Waters/Streams" section includes checkboxes for "Stream", "Floodplain", "Water Body", and "Water Quality Impairments". Other categories like "Terrain", "Wetlands and Blue & Gree", and "Flora and Fauna" are also listed.

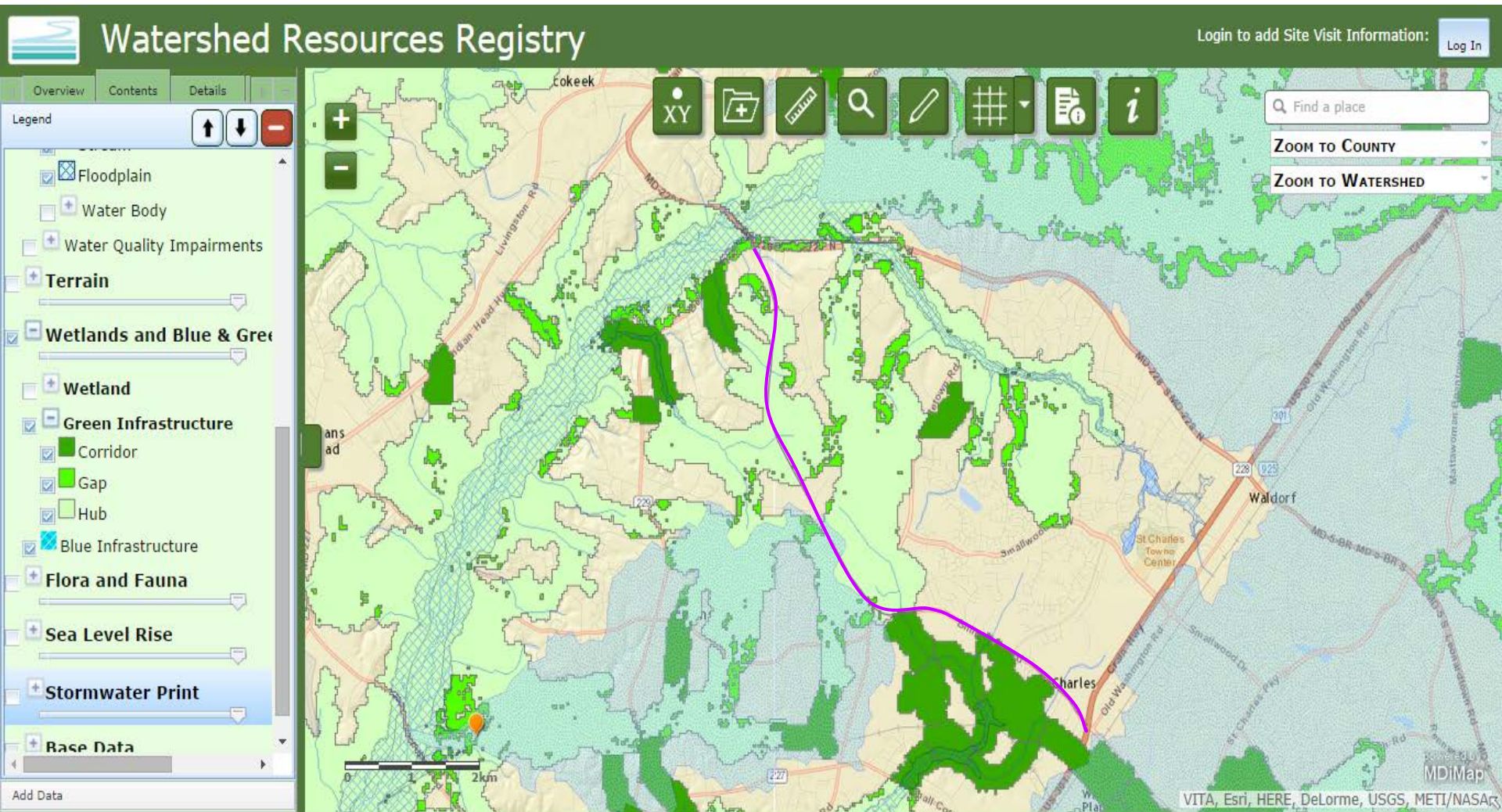
The main map area shows a satellite view of St. Charles, MD, with a pink line tracing a path through the landscape. Labels on the map include "Bennsville", "Piney Branch", "St Charles Towne Center", "Waldorf", "St Charles", "White", "Pott Branch", and "Old Womans Run". The bottom right corner indicates the map is "powered by MDIMap" and lists data sources: "CNES/Airbus DS, Earthstar Geographics | Esri, HERE, DeLorme, ...".



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## Overlays

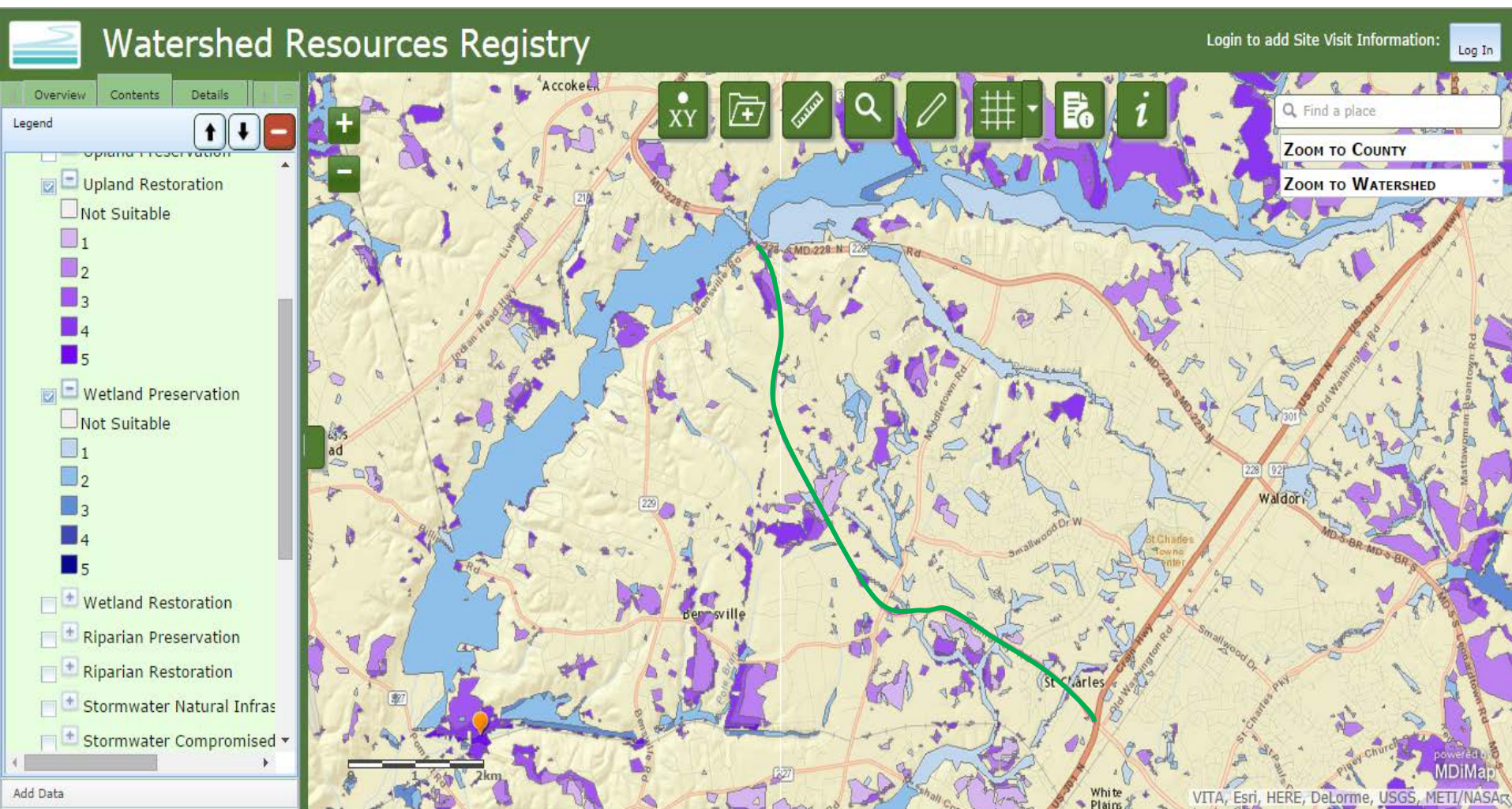




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## Suitability Analysis Layers

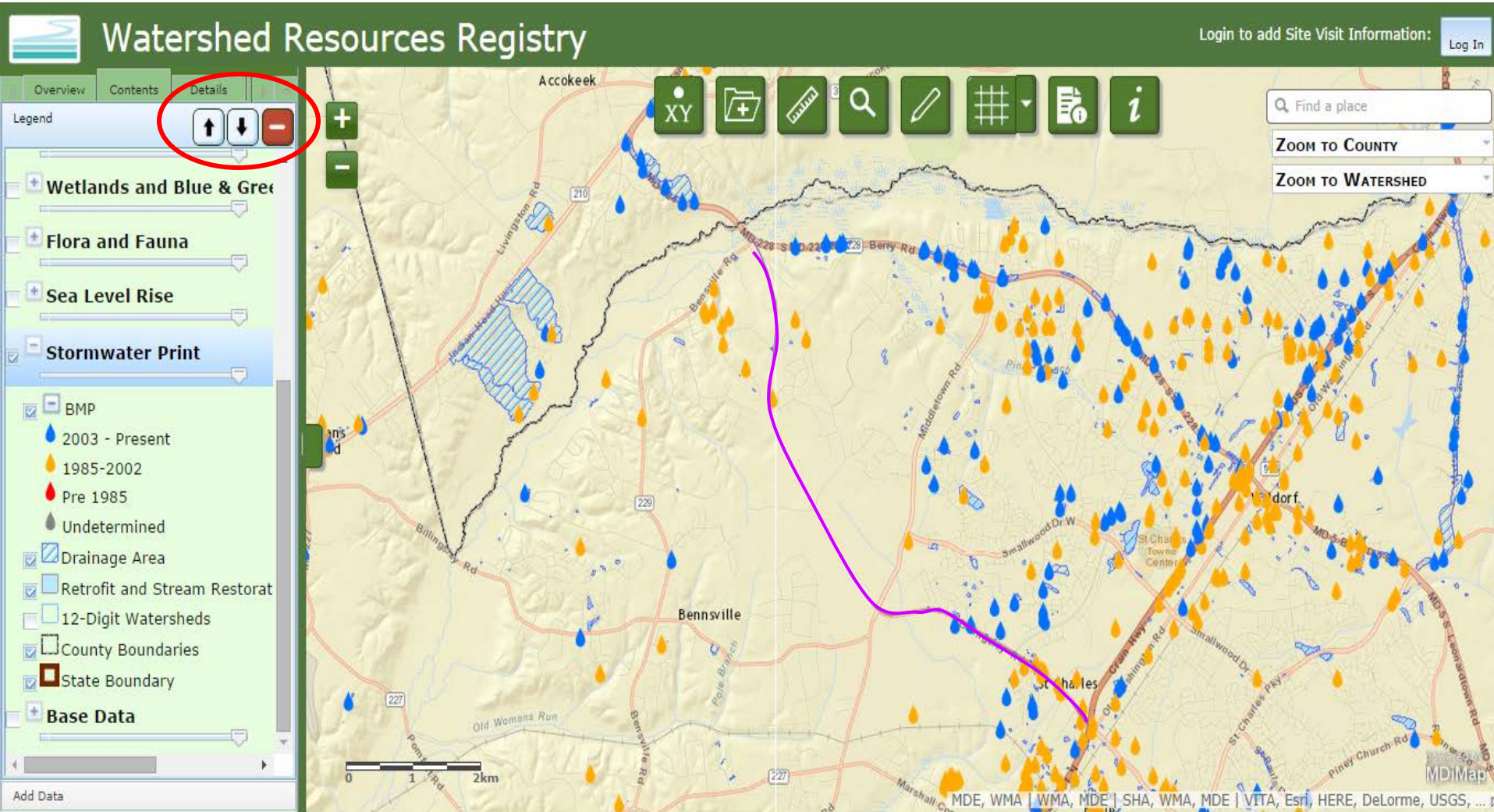




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## Adjusting Data Layer Order

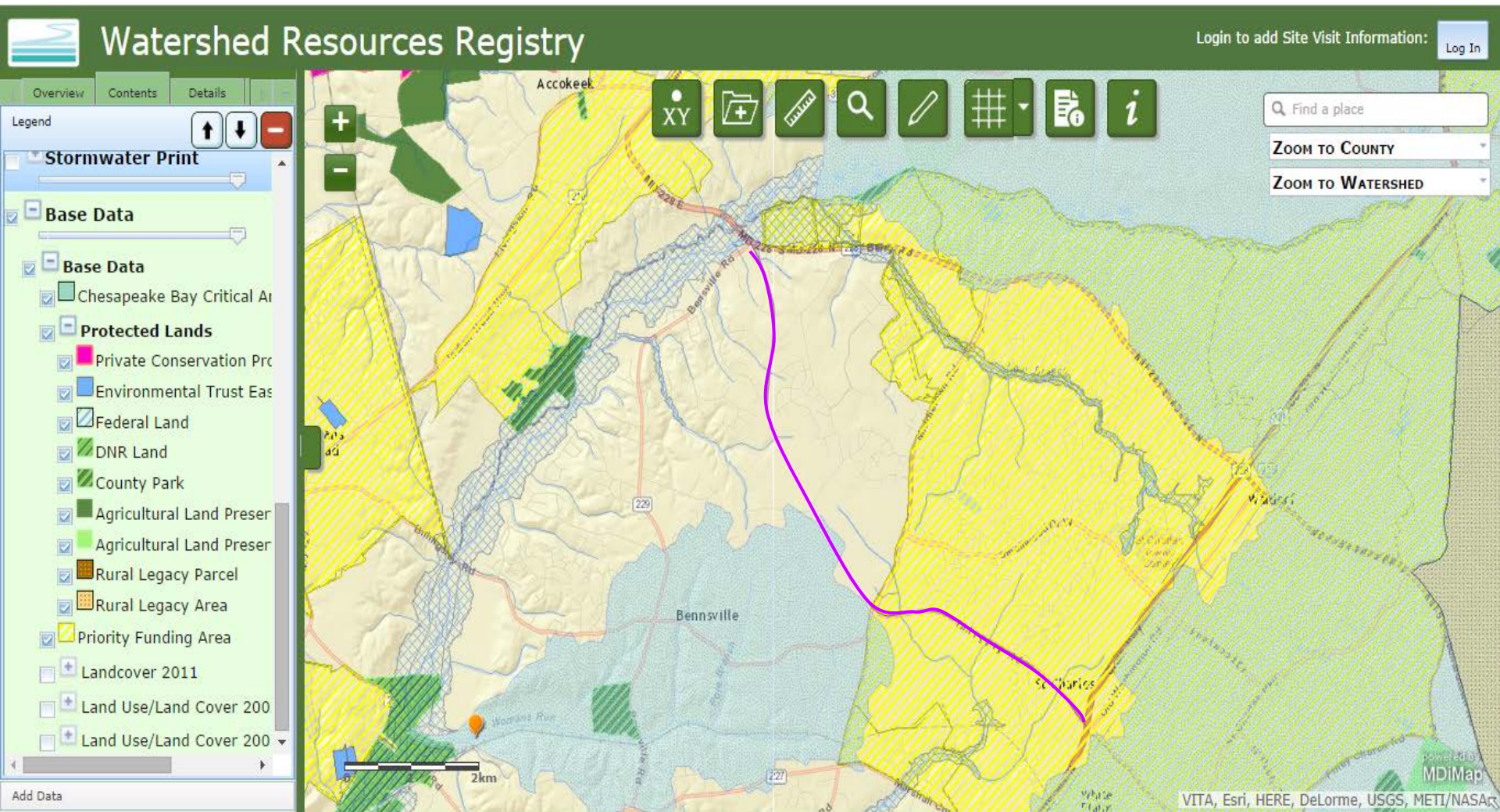




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## Base Data: Protected Lands





## Potential Federal Uses

### Regulatory & Non-regulatory

---

- U.S. Environmental Protection Agency
  - integrate Clean Water Act authorities
  - NEPA requirements
  - CWA 404 Avoidance & minimization
  - TMDL implementation assistance
- U.S. Fish & Wildlife Services (non-regulatory)
  - habitat restoration/protection that provide critical linkages for FWS priority species
    - threatened/endangered species
    - migratory bird species





Thank You