Restoration Guidance for Streams with Adjacent Wetlands in Piedmont and Coastal Plain Regions

Module 2

Pre-planning and Site Identification

Planning and Site Identification

- Search and use existing information for areas in need of restoration
- Use Watershed Resources (WRR) for remote assessment use. Check for:
  - Sensitive species areas
  - Nontidal Wetlands of Special State Concern
  - Tier II watersheds
  - Targeted Ecological Areas
  - Biodiversity Conservation Network
  - Forest Interior Habitat
- Priority of area for restoration or protection.
- Give preference to restoration in more degraded areas.
- Consult with agencies.

Planning and Site Identification - Pre-design Assessment

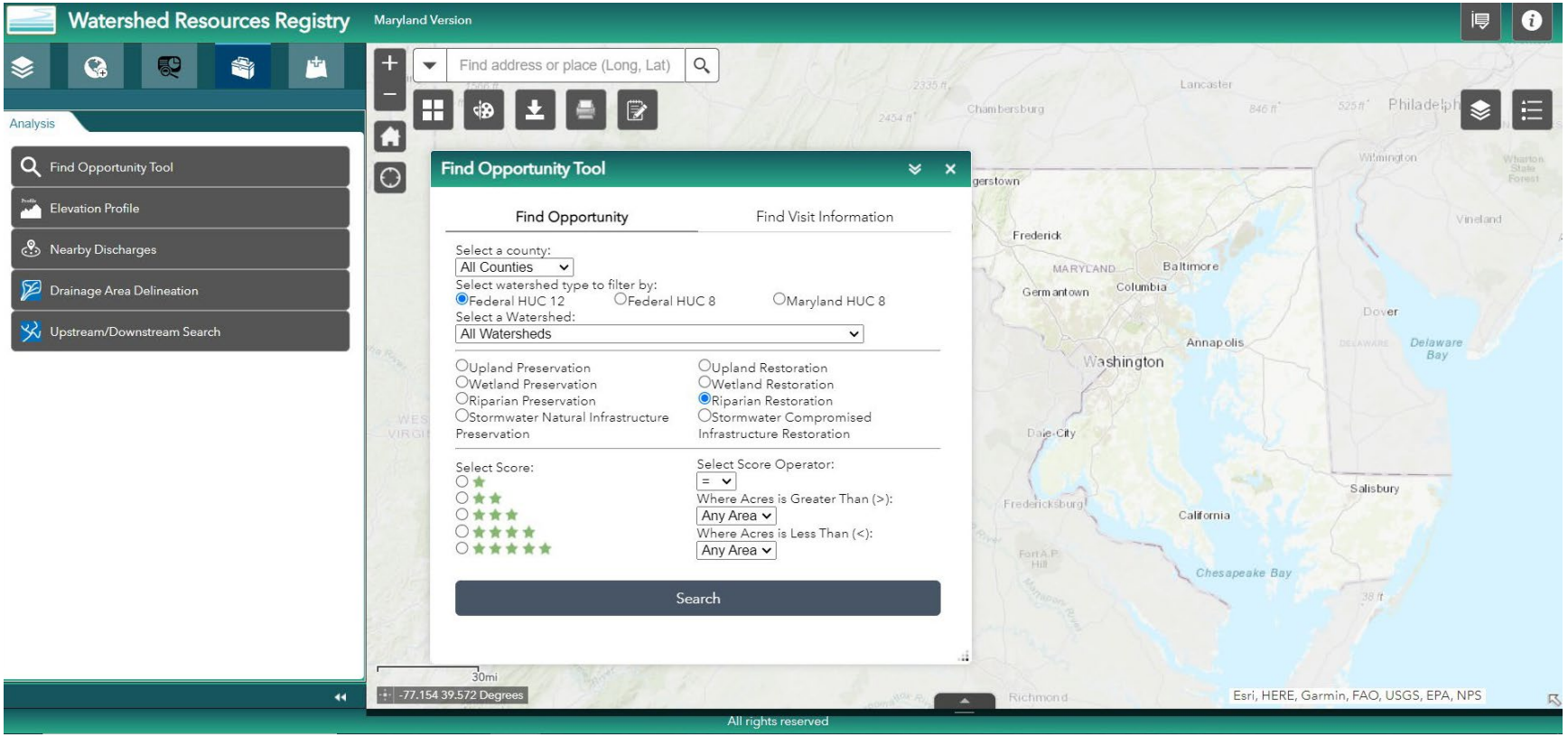
- **Check existing data sources and reports, including old maps and aerial photographs**

- **Check for the presence of high quality resources and priority restoration and protection areas. Some of this information can be found in the Watershed Resources Registry.**

https://watershedresourcesregistry.org/states/maryland.html

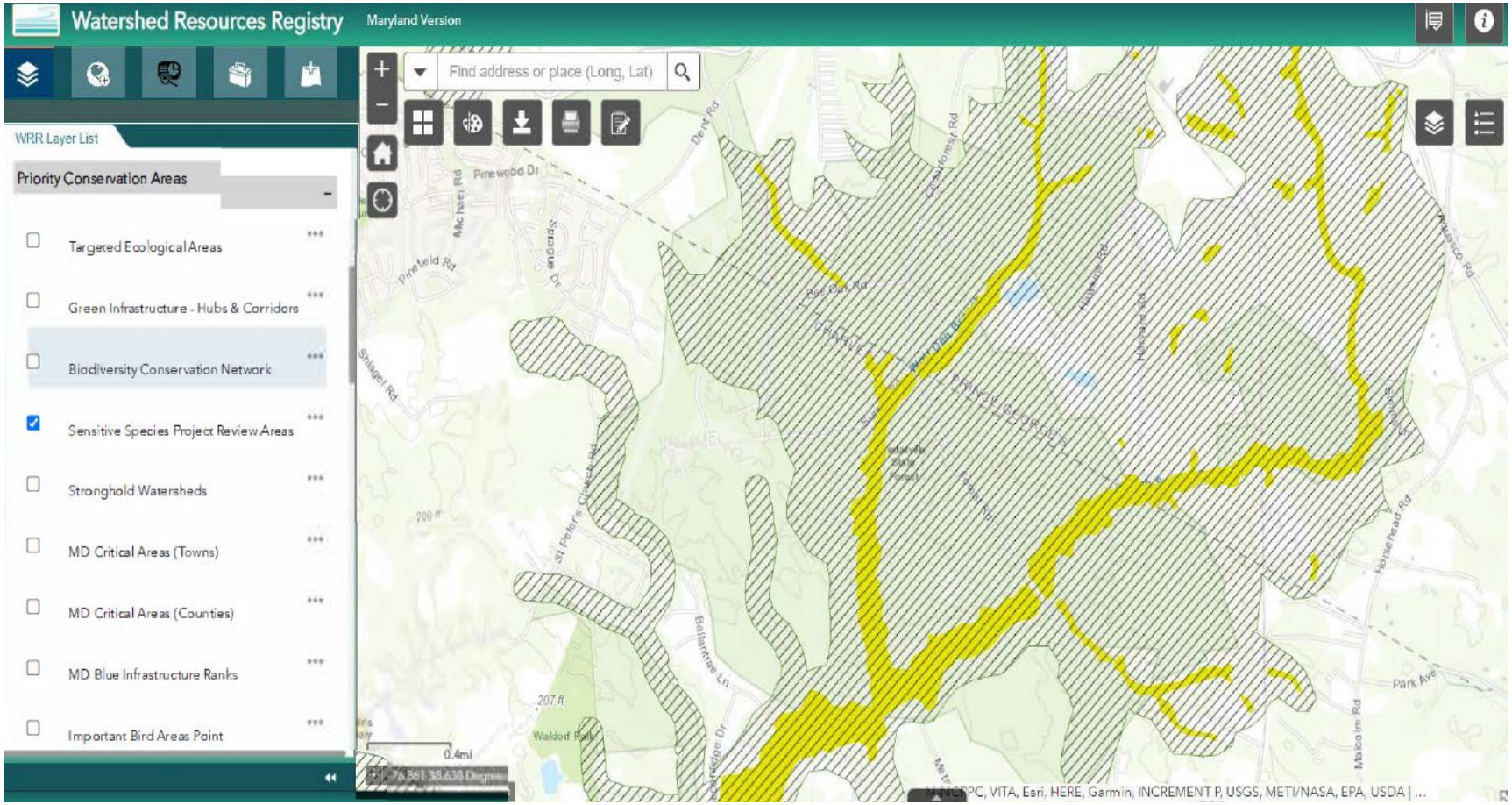
- **Consultation with DNR and MDE is recommended when considering sites with high quality or sensitive resources**

Planning and Site Identification - Pre-design Assessment



https://watershedresourcesregistry.org/map/?config=stateConfigs/maryland.json

Planning and Site Identification - Pre-design Assessment



Planning and Site Identification - Pre-design Assessment

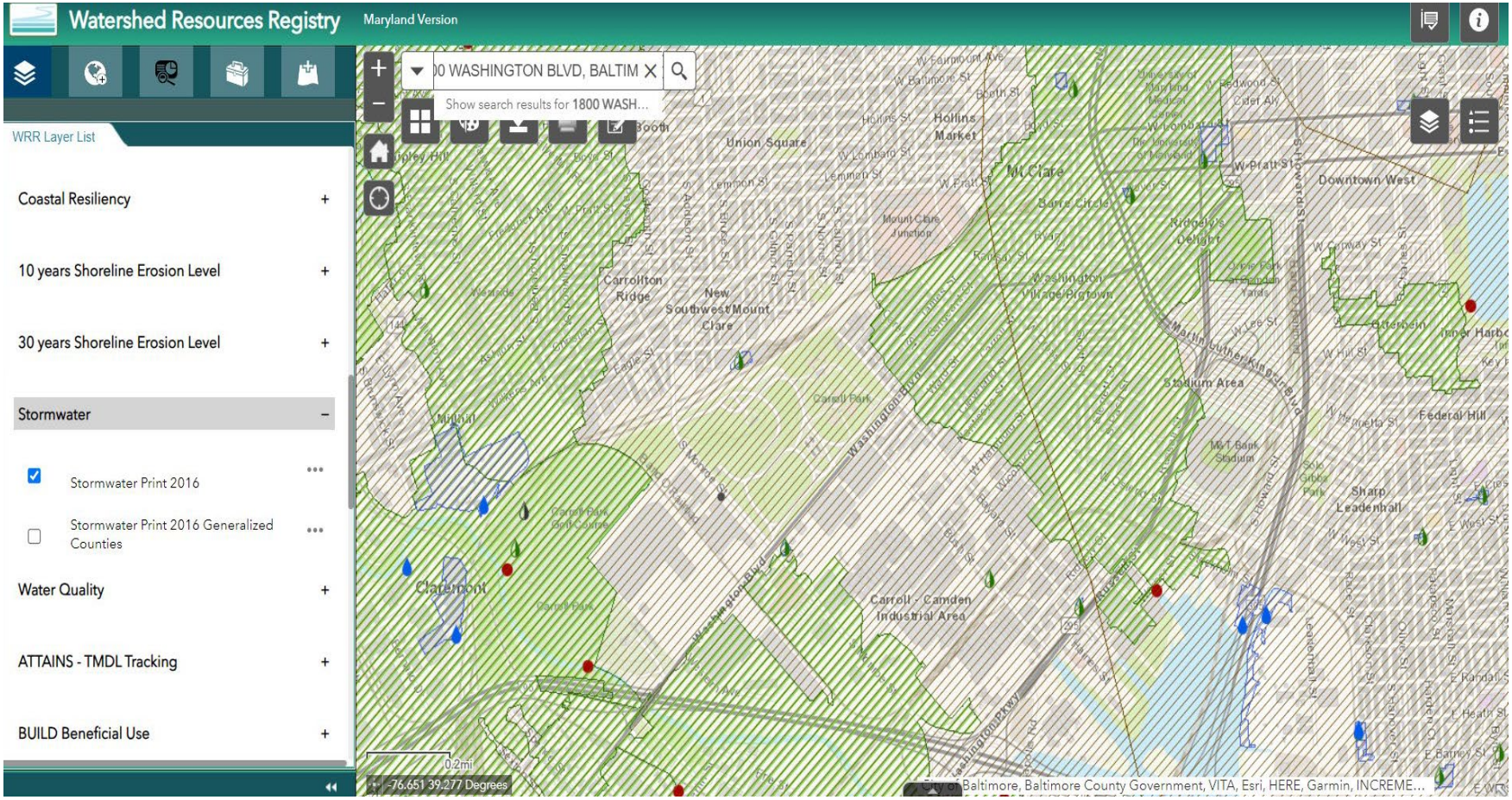
- Check for stressors such as impervious surface and stormwater outfalls.
- Information can also be found from online resources.
- Watershed Resources Registry

https://watershedresourcesregistry.org/map/?config=stateConfigs/maryland.json

- Stormwater Print

https://mde.maryland.gov/programs/Water/StormwaterManagementProgram/Pages/StormwaterPrint.aspx

Planning and Site Identification - Pre-design Assessment



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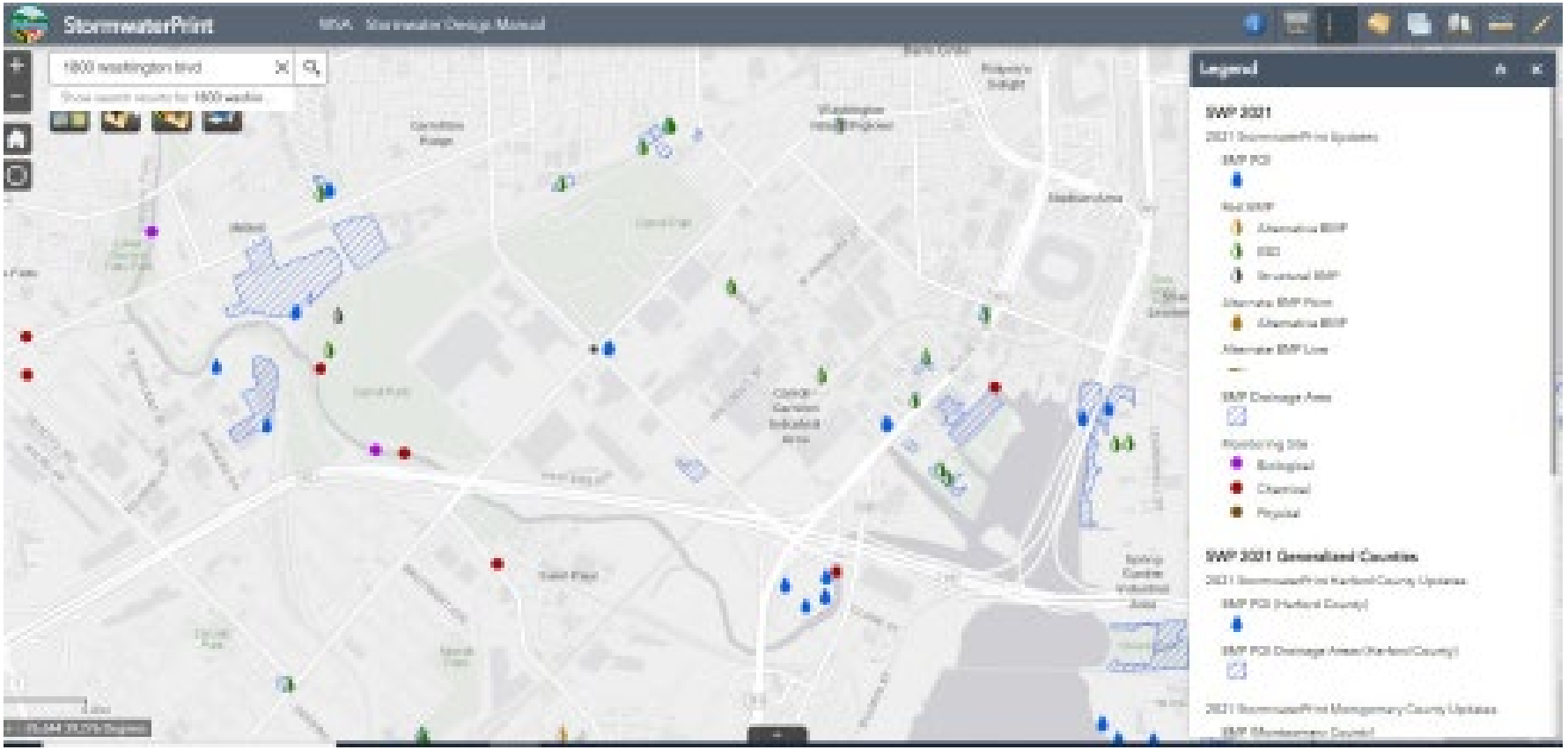
Planning and Site Identification - Pre-design Assessment



https://mde.maryland.gov/programs/Water/StormwaterManagementProgram/Pages/StormwaterPrint.aspx

Planning and Site Identification - Pre-design Assessment

Old maps may also indicate where failed dams once existed, which may be a source of excess sediment.

FR: Legacy Landscapes Dam Removal and Restoration Opportunities in the Chesapeake Bay Watershed. Pennsylvania Dept. of Environmental Protection and Water Science Institute

Planning and Site Identification - Pre-design Assessment

- Field assessments on the physical and biological characteristics of streams should be conducted. An assessment according to Maryland Biological Stream Survey protocols can be required.

- Field assessment of the riparian area, including wetlands, is also required. MDE recommends use of Ecological Integrity Assessment prepared for this project, but other methods may be proposed for MDE approval.

- Additional monitoring and assessment in karst landscapes is also needed to plan for avoiding creation of new sinkhole hazards.

Planning and Site Identification - Pre-design Assessment - Legacy Sediment Removal

- Legacy sediment refers to eroded material resulting from human disturbance.
- Maryland is a highly altered landscape, so almost of the State has legacy sediment deposits in varying degrees.
- These can range from high quality areas to sites downstream of failed dams, where several feet of excess sediment may have been deposited. Streams may have become incised and lost connection with the floodplain over time.
- Removal of legacy sediment results in extensive alterations so the practice and site must be selected with care, and typically be limited to highly degraded areas.
- Additional monitoring is typically needed, including evaluations to:

    a) Ensure there will not be adverse effects to existing resources

    b) Establish depths at which buried hydric soils or gravel layers may occur

- Consult with regulatory agencies about potential for legacy sediment removals prior to selecting this as a design approach

Planning and Site Identification - Pre-design Assessment and Monitoring: Legacy Sediment Removal

Photo showing trench with buried hydric soil and gravel layer.

Photo courtesy JMT

Planning and Site Identification - Pre-design Assessment: Conversions

- Some restoration projects propose alterations which may permanently convert flowing stream channels to other resources, such as:
    - Long-term impoundments;
    - Single thread channels to multi-thread channels; or
    - Defined channels to undefined or self-forming, potentially frequently shifting channels
- Restorations of this type can, but not always, improve habitat and aquatic life measures.
- There may be a loss and conversion of an existing water/wetland/aquatic resource type or reduction or increase in channel depth and flow which may or may not be desirable for living resources.

Planning and Site Identification - Pre-design Assessment: Conversions

Multi-thread channels often provide great diversity of aquatic habitats.

Photo: MD DNR

Planning and Site Identification - Pre-design Assessment: Conversions

Information for proposed conversions should typically include the following information, as provided to, and accepted by MDE:

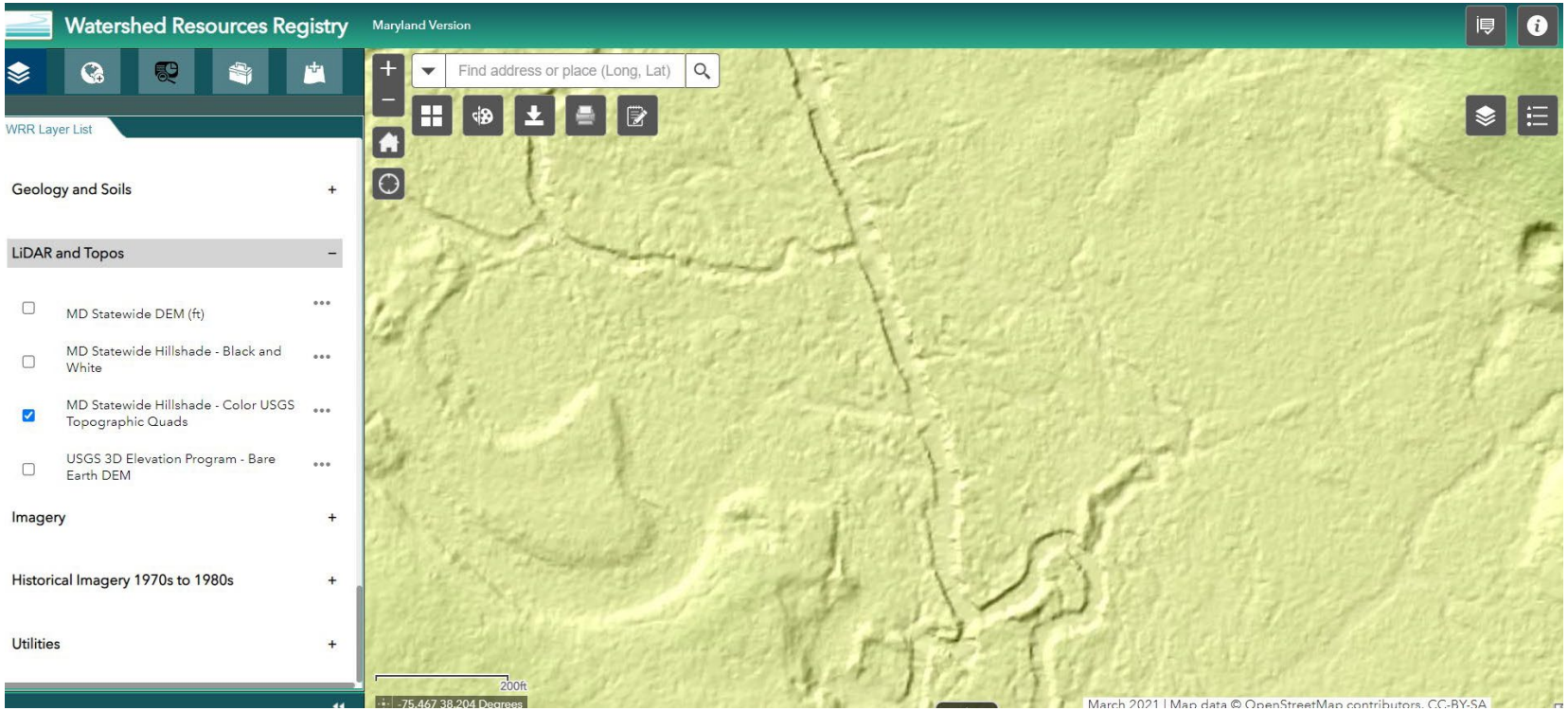
- **A pre-construction assessment for macroinvertebrate and fish communities according to DNR standards under the Maryland Biological Stream Survey;**
- **Description of potential resource tradeoffs and net anticipated benefits;**
- **Documentation that the following is not expected to occur:**
  - **Aquatic life measures do not further decline;**
  - **Perennial streams downstream and at the project site must remain perennial;**
  - **The defined channel remains downstream on adjacent property;**

Information should also be provided to demonstrate that:

- **There will not be increased risk to public safety or infrastructure from dispersing the flow;**
- **There will not be undesirable impacts to the riparian area, its wetlands or sensitive living resources;**
- **There will not be a decline in water quality downstream or at the project site; and**
- **Water quality standards will be met.**

Planning and Site Identification - Pre-design Assessment and Monitoring: Multi-thread channels

The best candidates for multi-thread systems are those where the channels previously existed. Examination of the LiDAR layers in the Watershed Resources Registry can show the extent of multi-thread channels within the riparian area.



Planning and Site Identification- Designer/Contractor Selection

- Seek experienced contractors and designers.
- Ask for experience and references on successful projects, including photographs and monitoring results, history of additional site remediation, and meeting any performance standards.
- If the project site is known or suspected to have sensitive resources, seek practitioners with experience in maintaining or improving habitat for sensitive resources.
- Seek practitioners with experience in multiple design and construction approaches.

Planning and Site Identification - Pre-application

- Contact regulatory agencies to participate in field visits at sites under consideration for restoration.
- Identify sources of degradation affecting the stream/riparian/wetland area proposed for restoration.
- Conduct assessment of the existing stream condition, such as those for IBIs or measures of stream stability and erosion. Assessments generally should be performed prior to application submission.
- Conduct riparian area assessment. MDE recommends "Maryland Wetland Ecological Integrity Assessment" for the Piedmont or Coastal Plain as applicable but other methods may be used.
- Incorporate recommendations from regulatory agencies to plan design

Planning and Site Identification - Pre-application

- Conduct inventory of non-native invasive species (NNIS). Treatment may be advised prior to restoration activities.
- Focus inventories for NNIS plants at likely introduction sites such as access points, landings, skid trails, and other areas to be disturbed during the project.

Next Steps

Recommendations Welcome for:

- **Additional Practices to Protect Wetland/Riparian Areas**
- **Format/Ease of Use of Forms**
- **Assessment**

Recommendations to be Considered for Future Revisions in 2024

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