Best Management Practices Mapping and Tracking

CBP Citizens Advisory Committee Meeting

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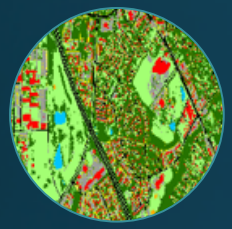
Chesapeake Conservancy
EXPLORE. CONSERVE. INNOVATE.

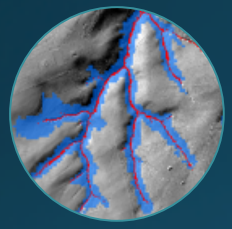
CONSERVATION INNOVATION CENTER
CHESAPEAKE CONSERVANCY

Precision Conservation

Geospatial Support: CBP



(1) 1m Land Cover and Land Use data (2017 and 2021); change products (2013-2021)

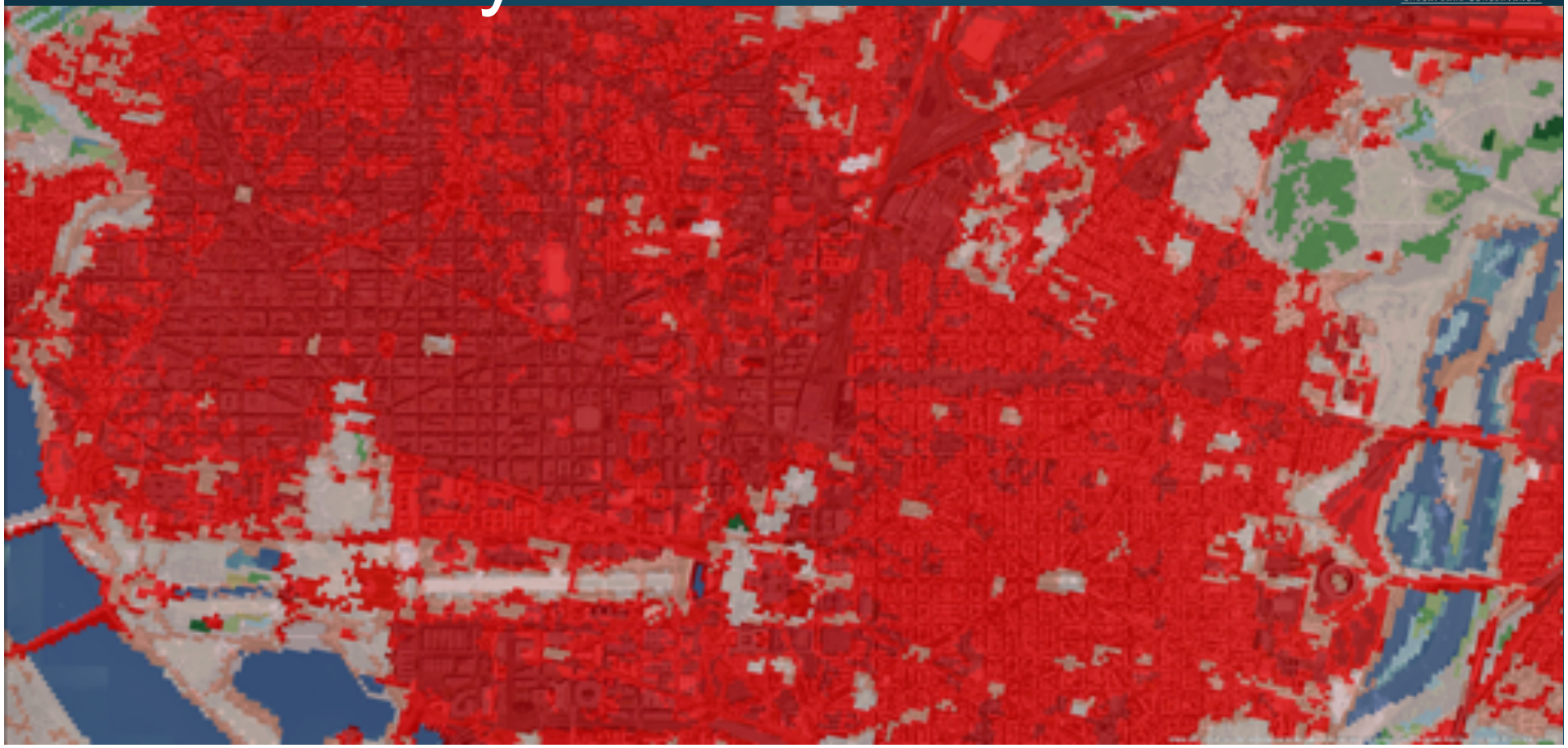


(2) LiDAR derived hydrography and ditch delineation

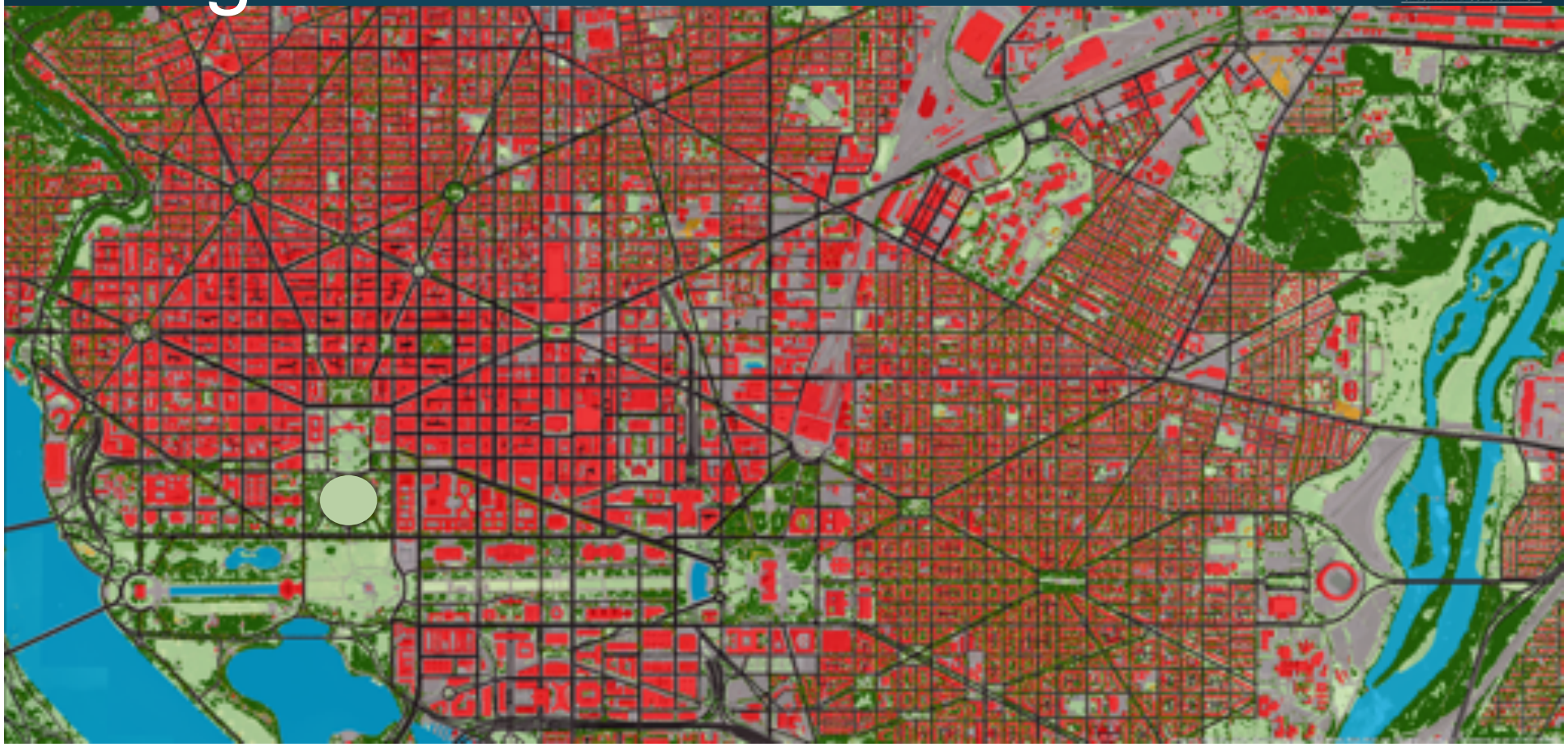
(3) Best Management Practices (BMP) opportunity mapping, tracking, and reporting

(4) Synthesizing geospatial data and integration opportunities

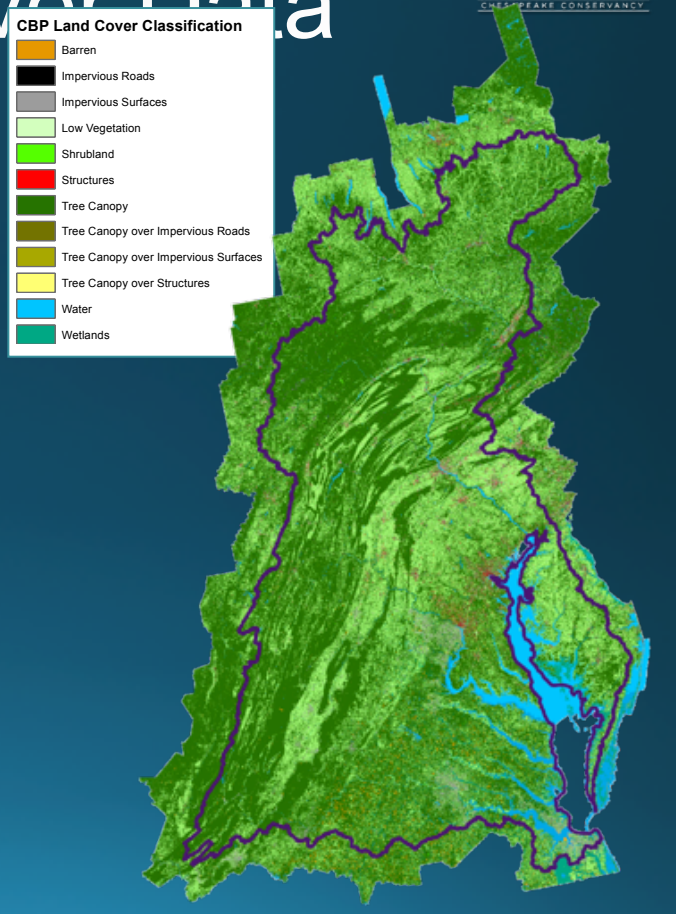
Previously Available Data



High-resolution Data



High Resolution Land Cover Data



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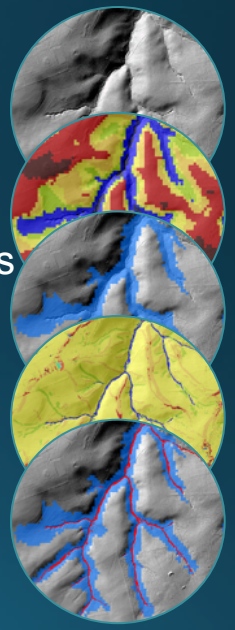
Previously available hydrography data

High Resolution Hydrography Data

1. High-Resolution LiDAR
2. Classify Terrain (10m)
3. Delineate Stream Valleys
4. Classify Terrain (1m)
5. Extract Channels
6. Manual Corrections



Objective 3: BMP Mapping & Tracking

Partnering with Chesapeake Commons and Drexel University

Main Goal: To analyze the landscape for potential BMP implementation opportunities for the entire Chesapeake Bay watershed; and designing a streamlined platform for project identification, prioritization, tracking, and standardized reporting.

Agricultural BMPs in the Chesapeake

Water and Sediment Control Basins

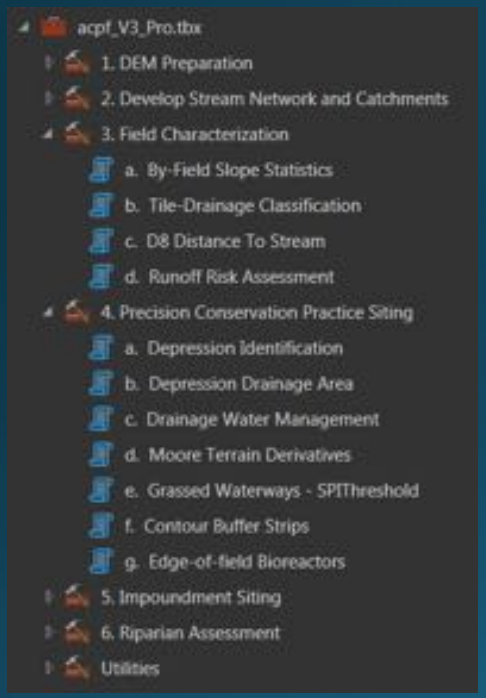
Nutrient Removal Wetlands

Forested Buffers

Contour Buffer Strips

Grassed Waterways

BMP Identification and Mapping with ACPF: Agricultural Conservation Planning Framework (USDA)



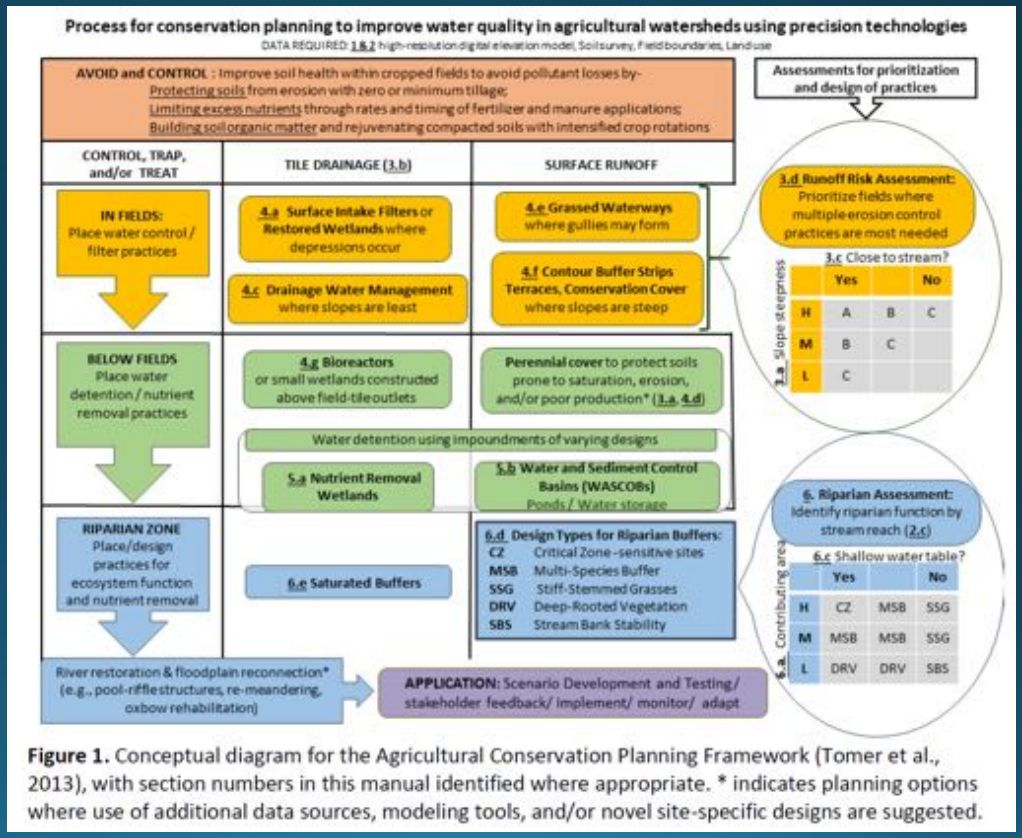
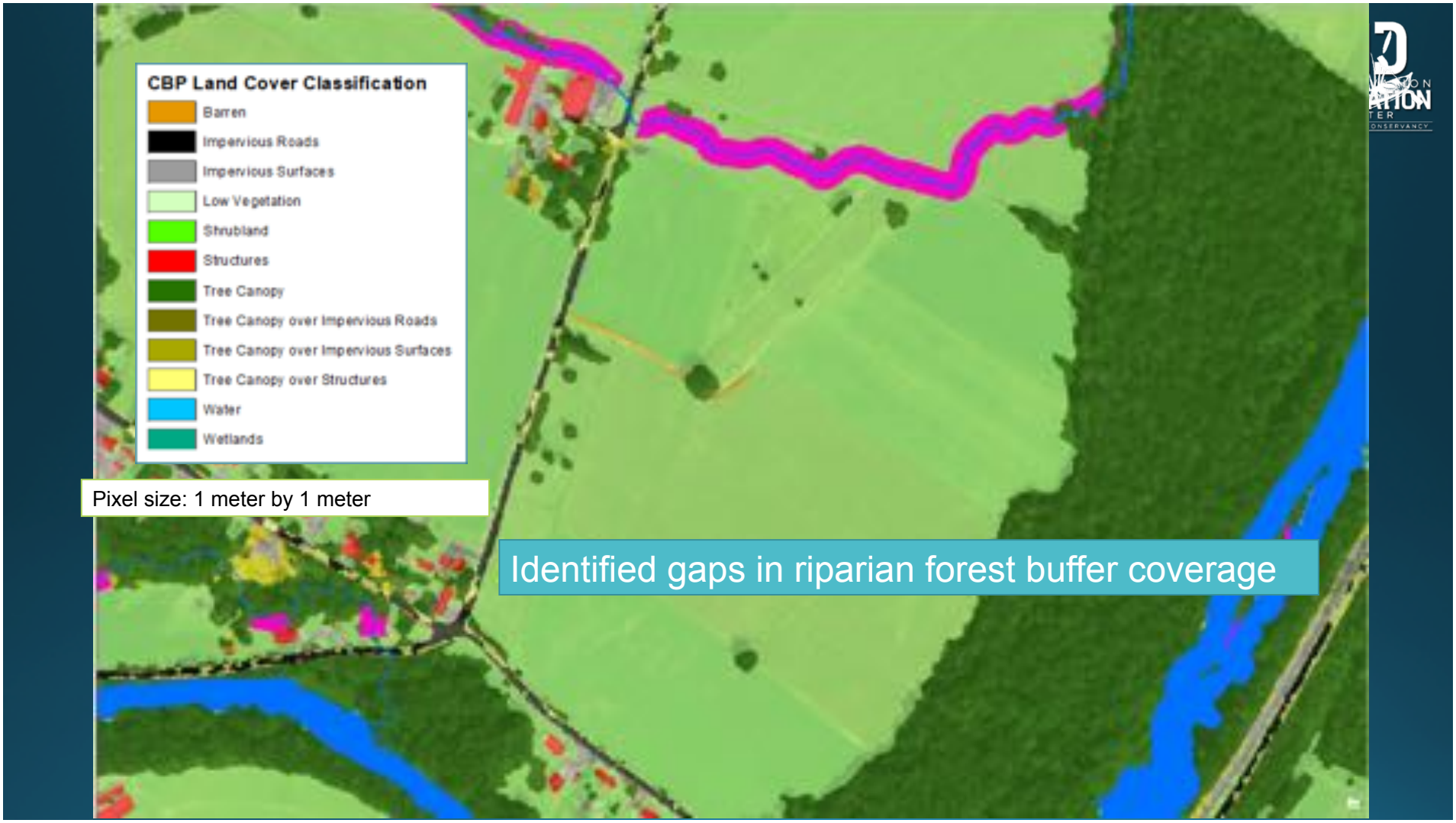


Figure 1. Conceptual diagram for the Agricultural Conservation Planning Framework (Tomer et al., 2013), with section numbers in this manual identified where appropriate. * indicates planning options where use of additional data sources, modeling tools, and/or novel site-specific designs are suggested.


CBP Land Cover Classification
Barren
Impervious Roads
Impervious Surfaces
Low Vegetation
Shrubland
Structures
Tree Canopy
Tree Canopy over Impervious Roads
Tree Canopy over Impervious Surfaces
Tree Canopy over Structures
Water
Wetlands
Pixel size: 1 meter by 1 meter
High Resolution Land Cover Dataset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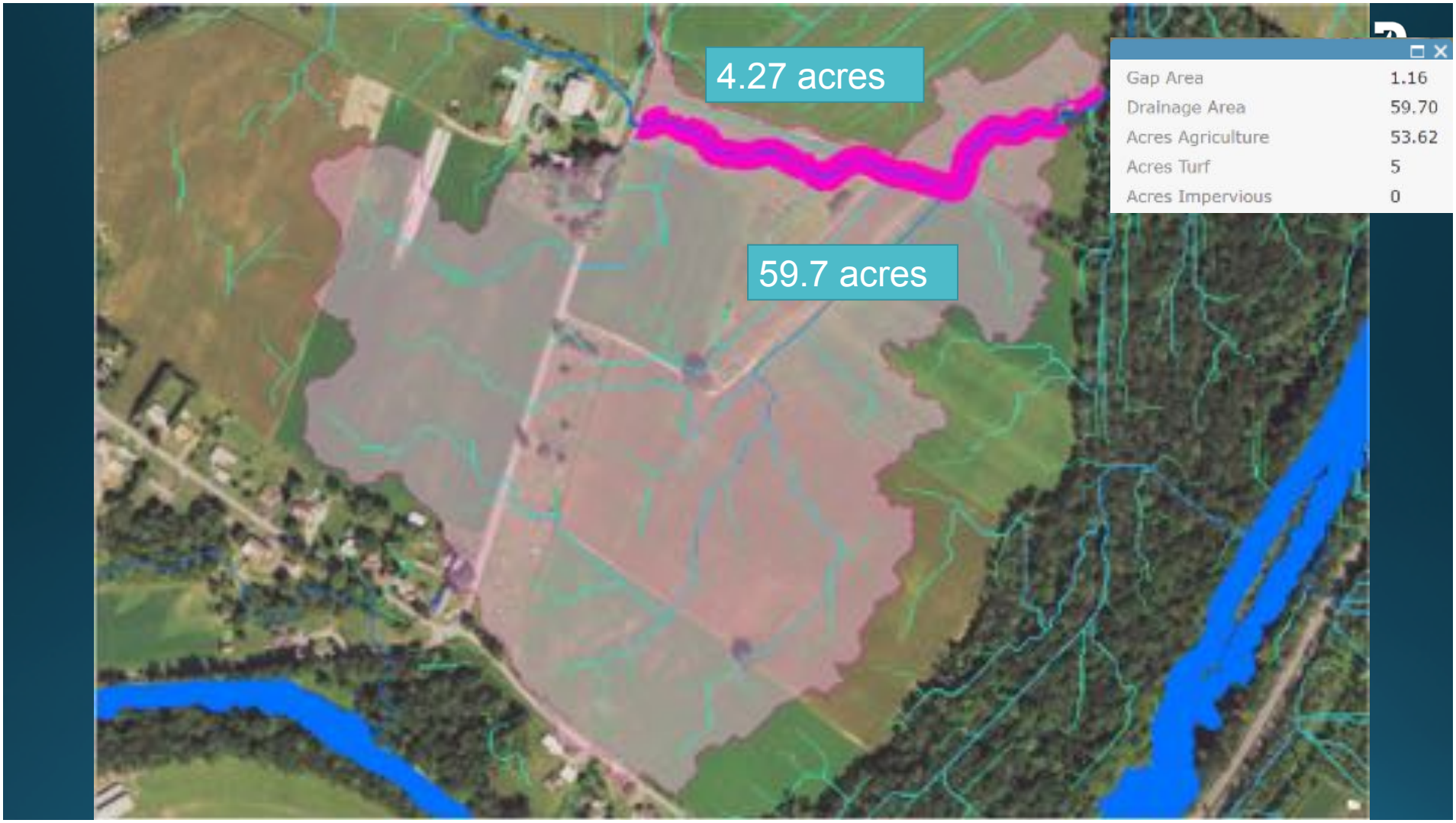
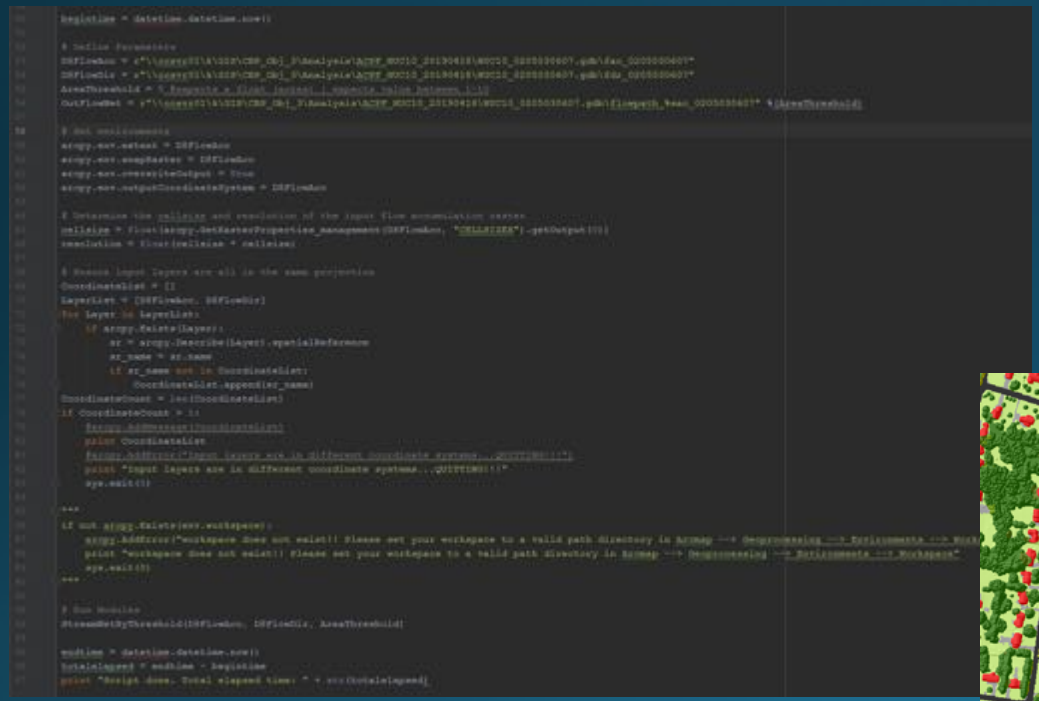
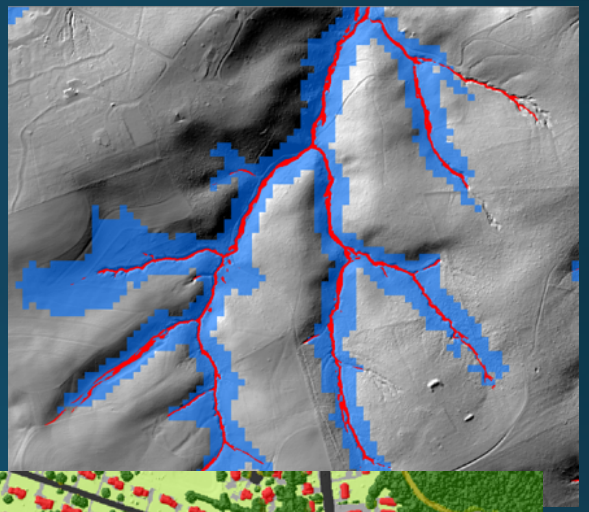
Identified gaps in riparian forest buffer coverage


4.27 acres
59.7 acres
Gap Area 1.16
Drainage Area 59.70
Acres Agriculture 53.62
Acres Turf 5
Acres Impervious 0

BMP Identification & Mapping

Integrating high-resolution datasets from Objectives 1 and 2

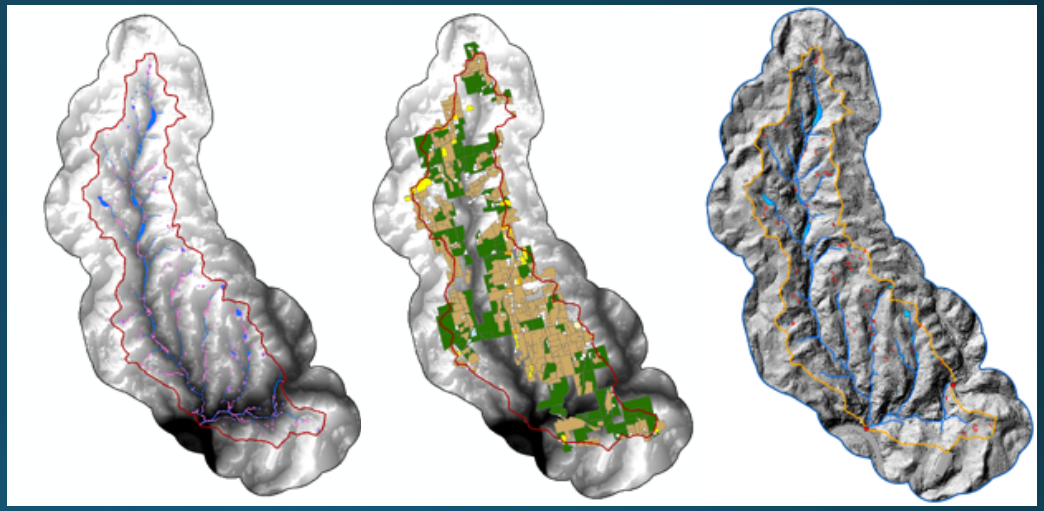




Integrating additional R&D

Pilot region

- BMP opportunity analysis by October 2019
- 73 HUC12s covering York and Lancaster counties, PA
- Technical advisory group
  - Validation
  - Informing tool parameters



Urban Stormwater BMP Opportunity Mapping

- Upcoming research over the next few years
  - Working with Drexel ANS
  - Modeling surface flow of water
  - Utilizing stormwater infrastructure GIS data
- Top counties with greatest potential to achieve pollution reductions from stormwater practices?
- Potential urban BMPs of most interest for mapping?
  - Ponds
  - Infiltration/filtering practices
  - Runoff reduction/stormwater treatment
  - Nutrient management
  - Stream restoration
  - Erosion/sediment control
  - Forest buffers/tree planting

https://commons.wikimedia.org/wiki/File:Prefabricated_culverts_under_country_road_in_Rocklea,_Queensland,_Australia.jpg

https://www.flickr.com/photos/taestell/15013858234

More Information

- CIC
  http://conservationinnovationcenter.org
- Chesapeake Bay Program Cooperative Agreement
  https://chesapeakeconservancy.org/conservation-innovation-center/precision-conservation/chesapeake-bay-program/

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