Objective 1: Land Cover and Land Use Updates

April 3rd, 2019 : Forestry Work Group

Rachel Soobitsky

Our Mission

CONSERVATION INNOVATION CENTER
CHESAPEAKE CONSERVANCY

Precision Conservation

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“Getting the right practices, in the right places,
at the right scale, and
making sure they are working”

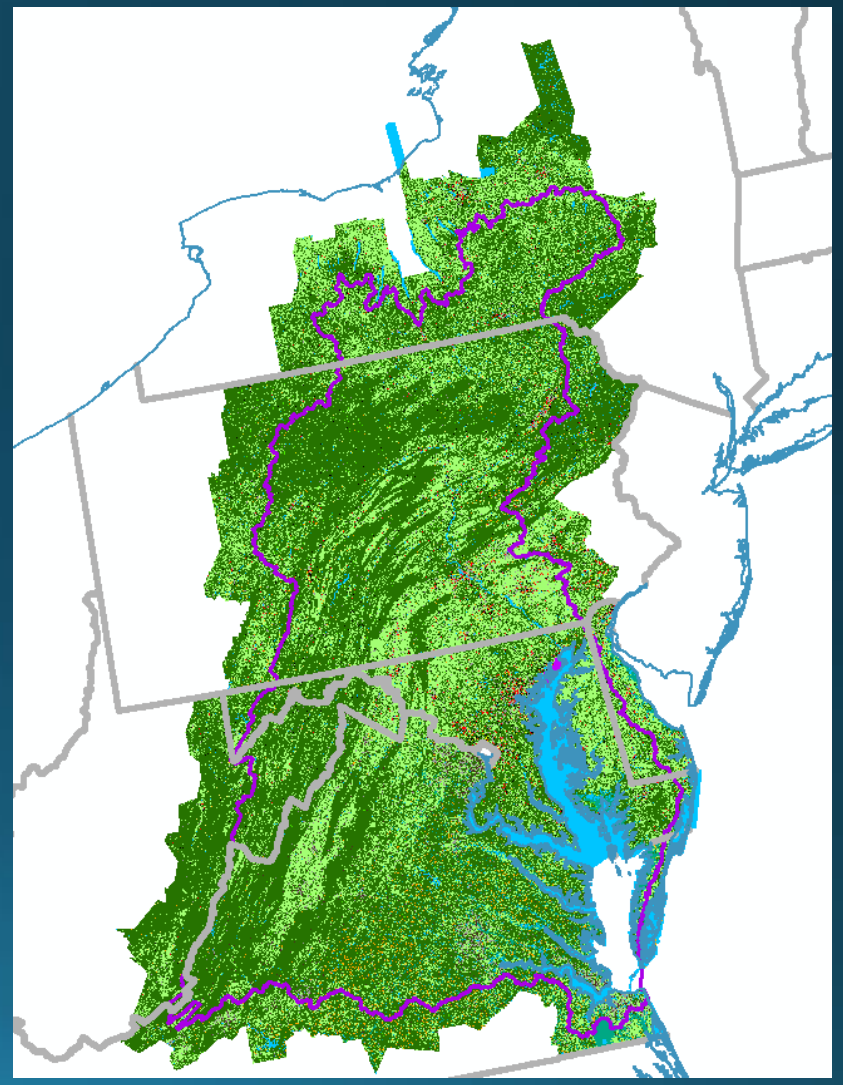
CBP Proposal

Objective 1: Land Cover Updates
- Partnering with University of Vermont

Objective 2: Hydrology & Ditches
- Partnering with UMBC

Objective 3: BMP Mapping & Tracking
- Partnering with Chesapeake Commons and Drexel University

Objective 4: General Geospatial Support



Partnership- Objective 1

Chesapeake Bay Program

Science. Restoration. Partnership.

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University of Vermont

Spatial Analysis Lab

Data Motivation

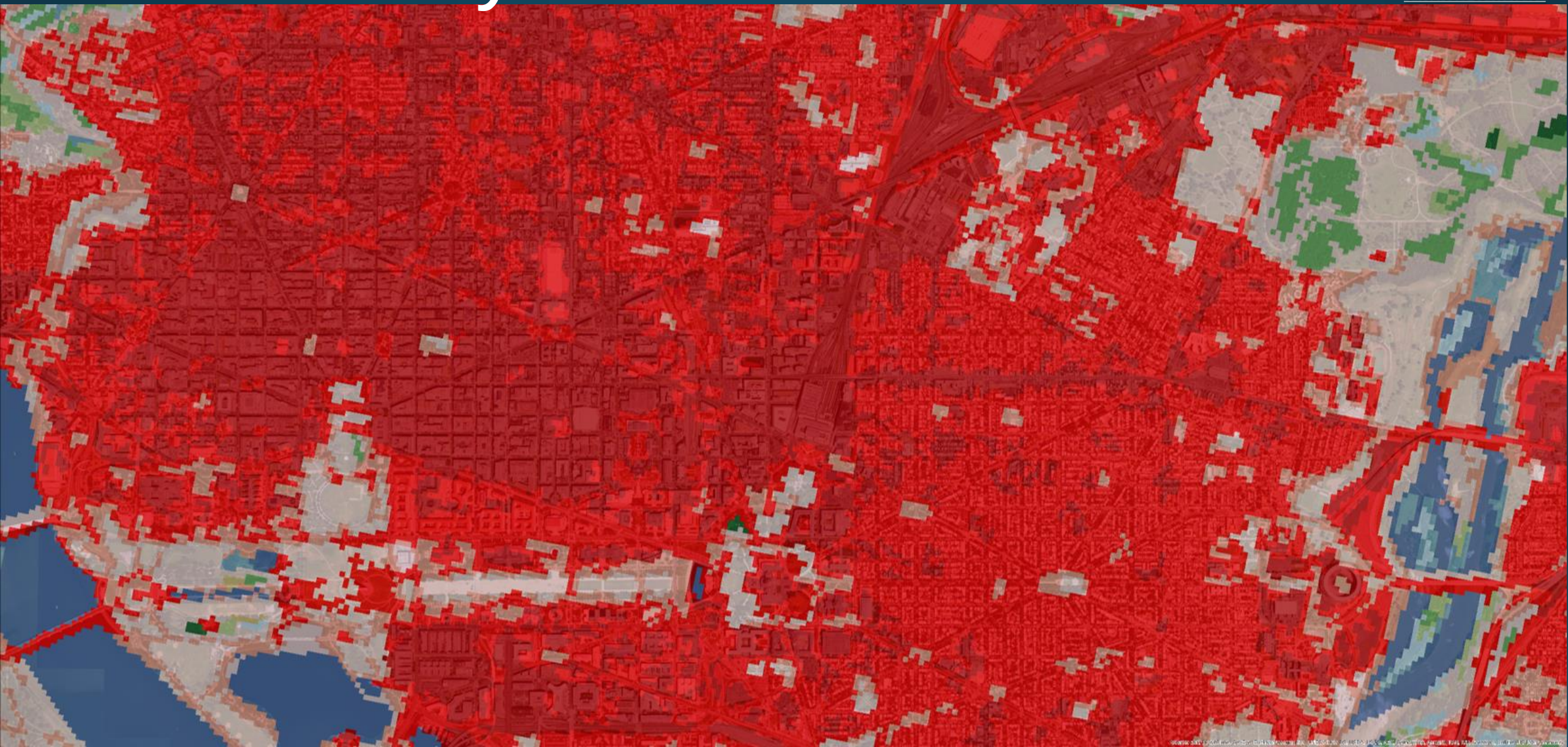
TMDL- 2025 Pollution Reduction Goals

- Maryland
- Washington D.C.
- New York
- West Virginia
- Delaware
- Pennsylvania
- Virginia

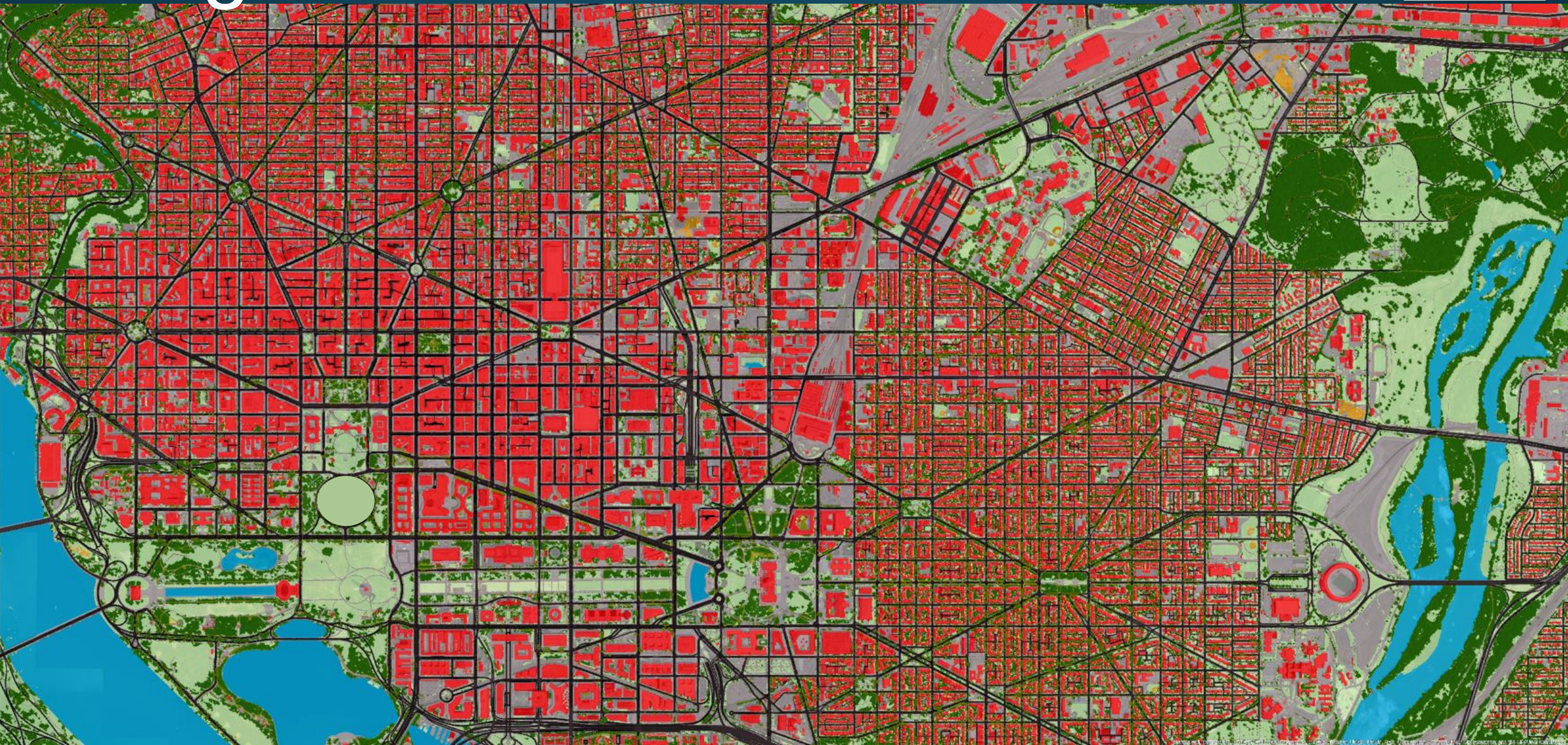

NASA Satellite Imagery


York County Planning Commission

Previously Available Data



High-resolution Data



High-resolution Data

Planning at the Parcel Scale

Change Detection

University of Vermont
Spatial Analysis Lab

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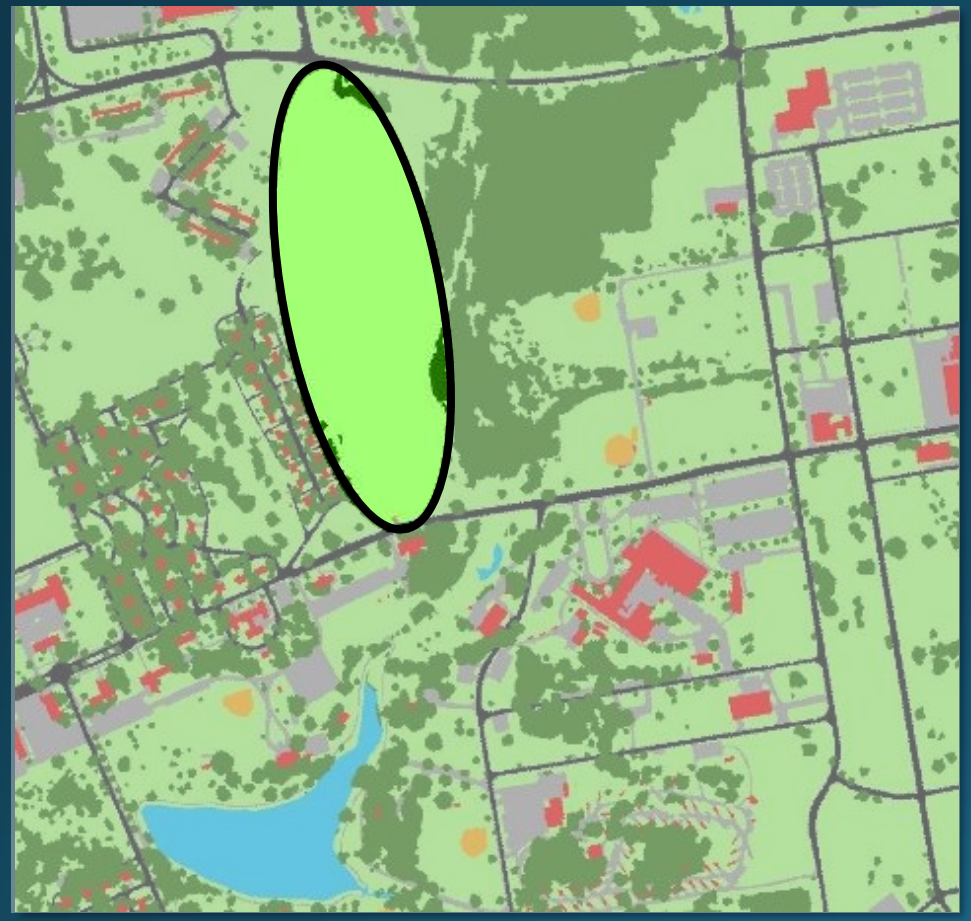
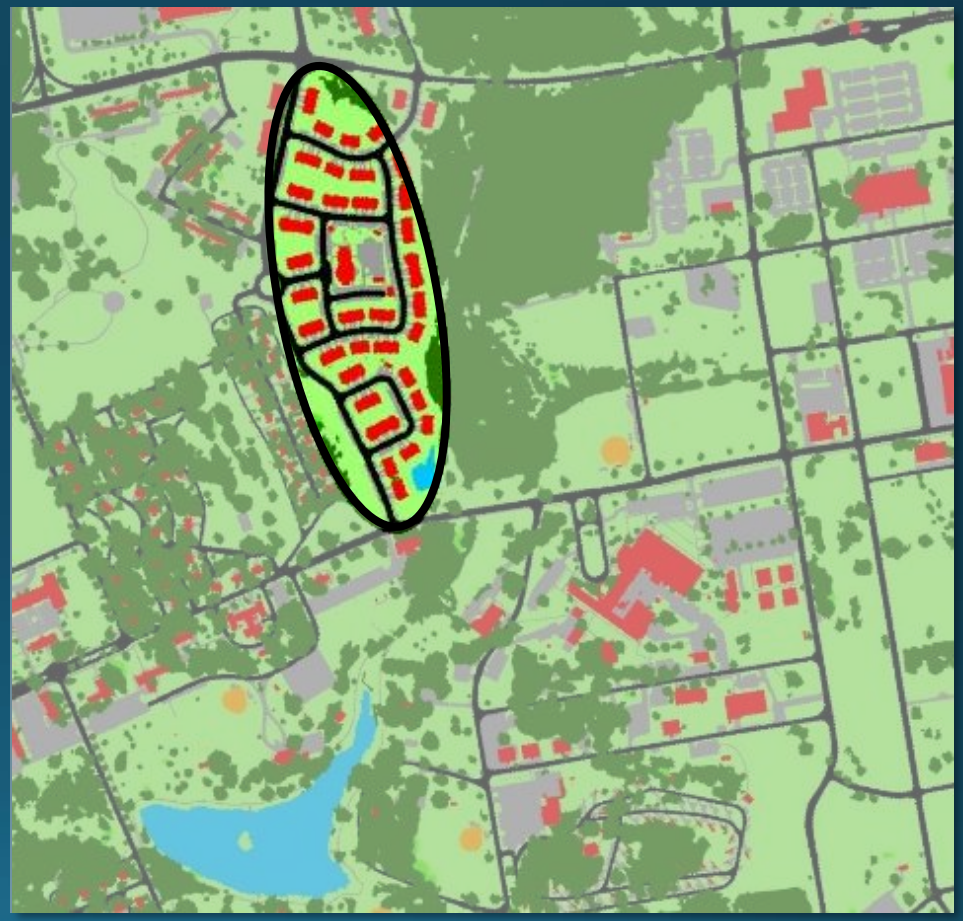


2007



2013

Land Cover Update

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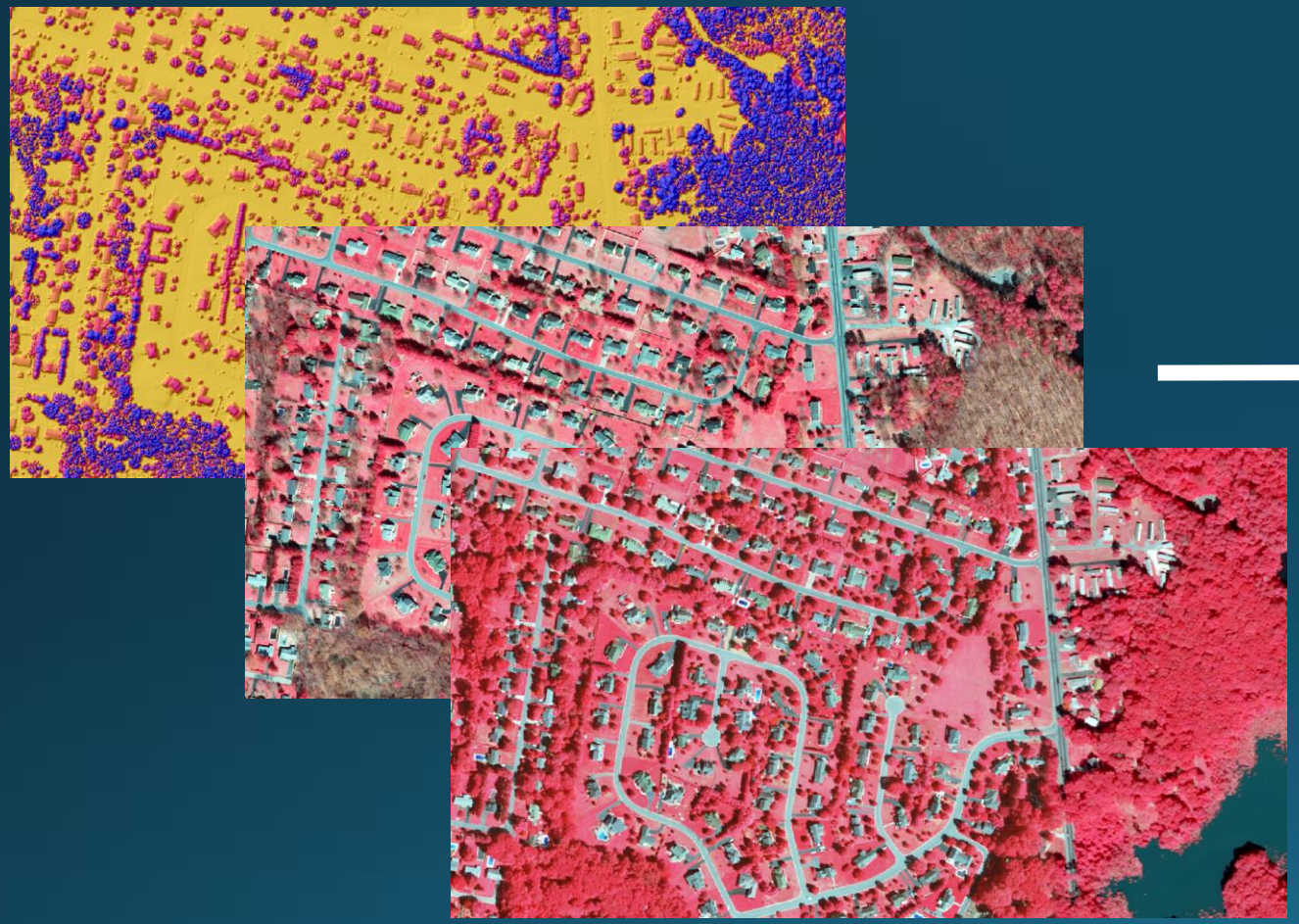

- Background
- Barren
- Low Vegetation
- Other Impervious
- Roads
- Scrub-Shrub
- Structures
- Tree Canopy
- Tree Canopy Over Other Impervious
- Tree Canopy Over Roads
- Tree Canopy Over Structures
- Water
- Wetlands (emergent)

Land Use Conversion

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2013 NAIP Imagery

2013 Land Cover

- Water
- Wetlands
- Forest
- Shrubland
- Herbaceous Vegetation
- Barren
- Structures
- Impervious
- Roads
- Tree Canopy over Structures
- Tree Canopy over Impervious Surfaces
- Tree Canopy over Impervious Roads

2013 Land Use

- Impervious, Road
- Impervious, Non-Road
- Tree Canopy over Impervious
- Water
- Tidal Wetlands
- Floodplain Wetlands
- Other Wetlands
- Forest
- Tree Canopy over Turf
- Mixed Open
- Fractional Turf (small)
- Fractional Turf (med)
- Fractional Turf (large)
- Fractional Impervious
- Turf Grass
- Agriculture

Why planimetric enhancement?

Purple: Most updated county buildings dataset
Red: Buildings classified from our remote sensing techniques

Outreach

- Emailed counties/municipalities in Chesapeake Bay watershed (as of 3/29/19):
  - MD - 24/24 counties responded
  - DC – datasets online
  - DE – 3/3 counties responded
  - WV – 10/14 counties responded
  - VA – 70/98 counties/municipalities
  - PA – 33/43 counties responded
  - NY – 13/20 counties responded

Research into Secondary Classes

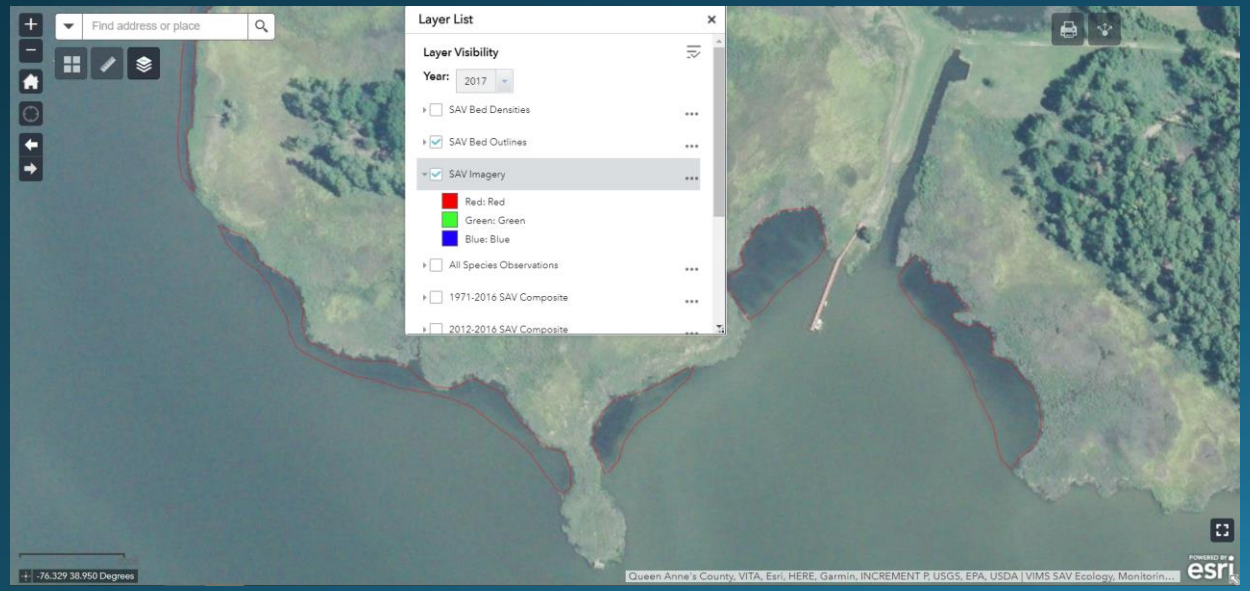
High confidence to map the following:

- Chicken operations using CIC's Community Analyst methodology
- Center-Pivot Irrigation using MSFT's AI models
- Deciduous vs. Evergreen using UVM's methodology where there is leaf-off imagery
- Nurseries, Vineyards, Orchards using CIC's Community Analyst methodology
- Solar Fields using MSFT's AI model
- Tidal vs. Non-Tidal/Forested wetlands using MSFT's AI model or UVM methodology
- Vegetation height using height data derived by UVM

Research into Secondary Classes

Lower confidence to map the following:

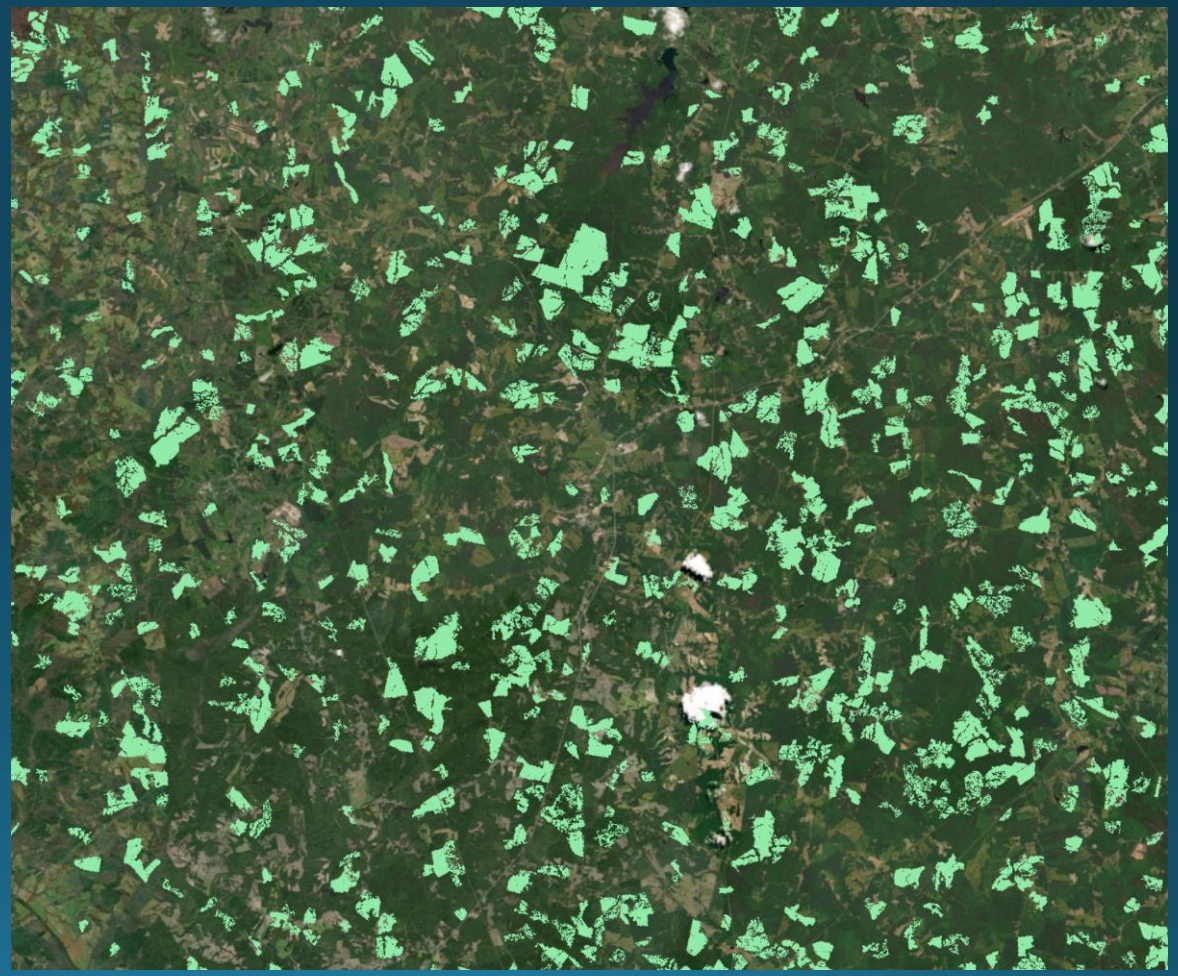
- Aquaculture
- Cattle operations
- Cover-crop
- Cropland vs. Pasture
- Greenhouses
- Submerged Aquatic Vegetation



2016 NAIP

Research into Secondary Classes

- Silviculture
  - LCMAP (cleaned up)



Questions?

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