Land Use Workgroup Call

July 23, 2015

CBP Land Use Workgroup

Annapolis, Maryland

U.S. Department of the Interior
U.S. Geological Survey

Land Use vs. Land Cover

- Low-density Residential
- Transportation
- Agriculture
- Rural conservation

- Impervious surfaces
- Tree canopy
- Herbaceous
- Barren

Phase 6 Land Uses
- Impervious-Roads
- Forests
- Turf Grass
- Open Space

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P6 Land Use Database Versions

Version 1 (July 2015)

- Based exclusively on national/regional data

Version 2 (October 2015)

- Incorporates local land use/cover data
- Includes multiple wetland classes
- Initial estimates of new sediment delivery factors in the Piedmont and Valley & Ridge provinces
- Marginally reviewed by local governments and federal agencies
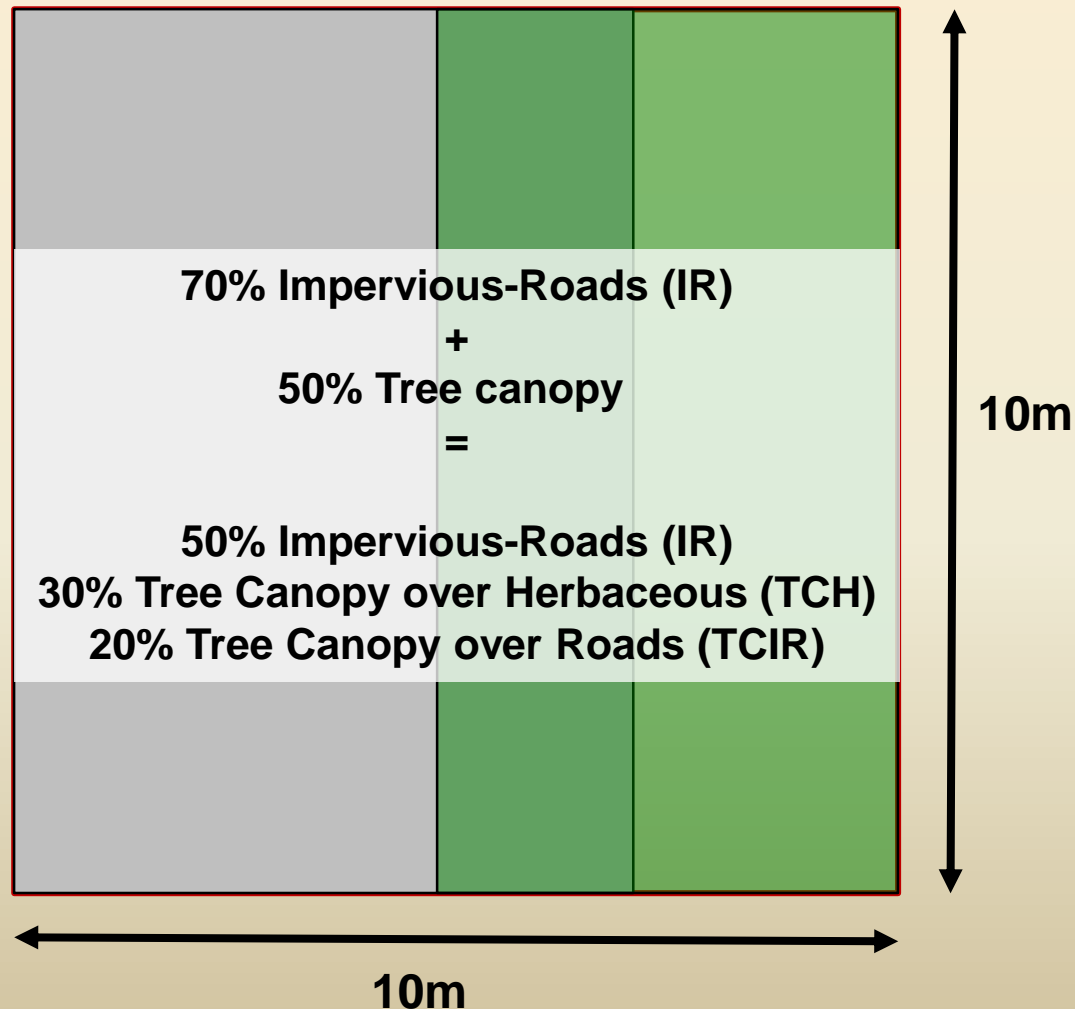
Version 3 (August 2016)

- Incorporates local land use/cover data
- Incorporates high-resolution land cover, everywhere
- Includes Tree Canopy over Roads and Tree Canopy over Impervious (other)
- Includes new sediment delivery factors
- Includes wetland efficiencies
- Extensively reviewed

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Suburbs of Richmond, VA (I-64 W of Dumbarton)

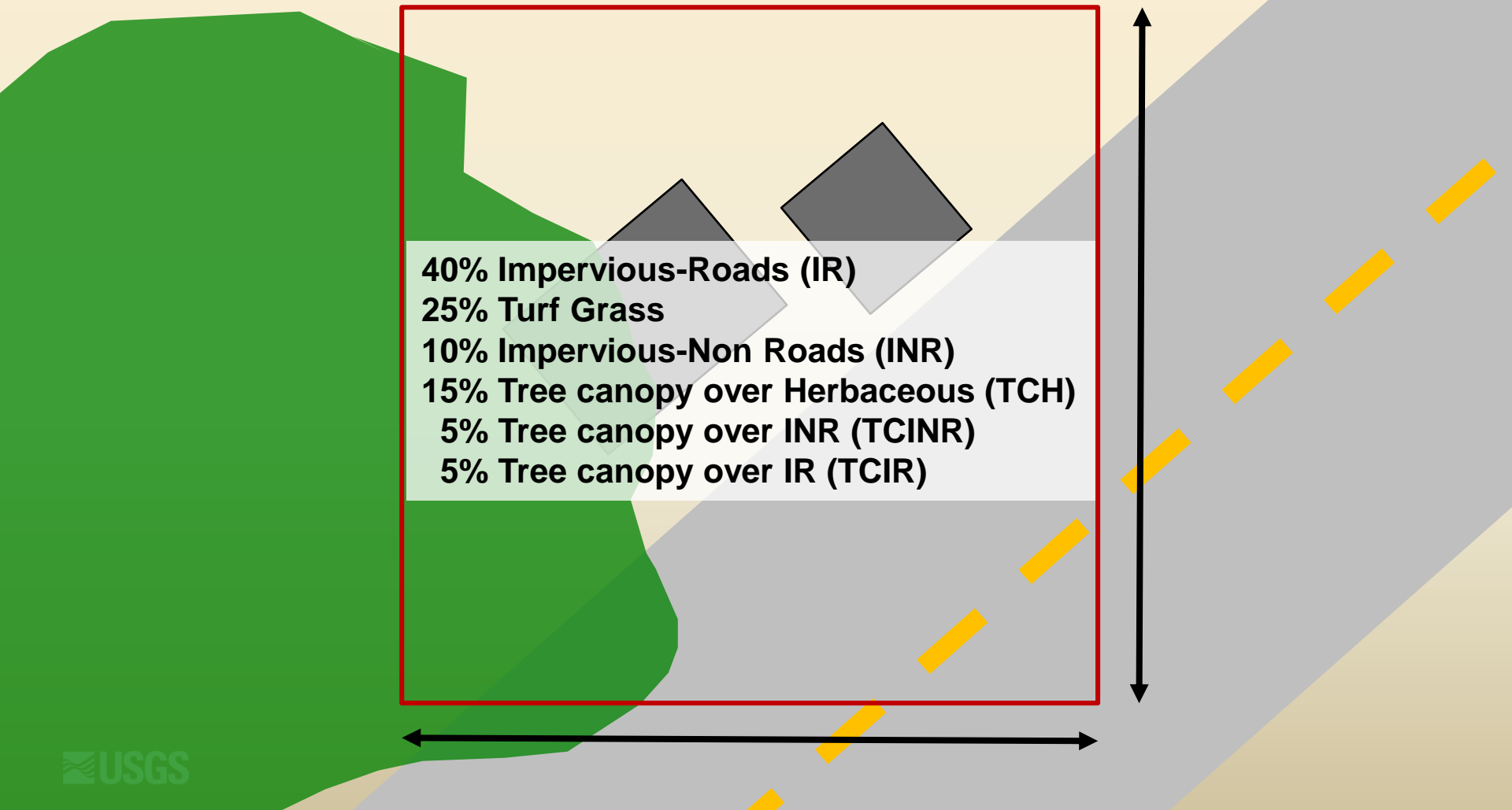WAT + WET + FOR + OS + IR + INR + TG + TCH

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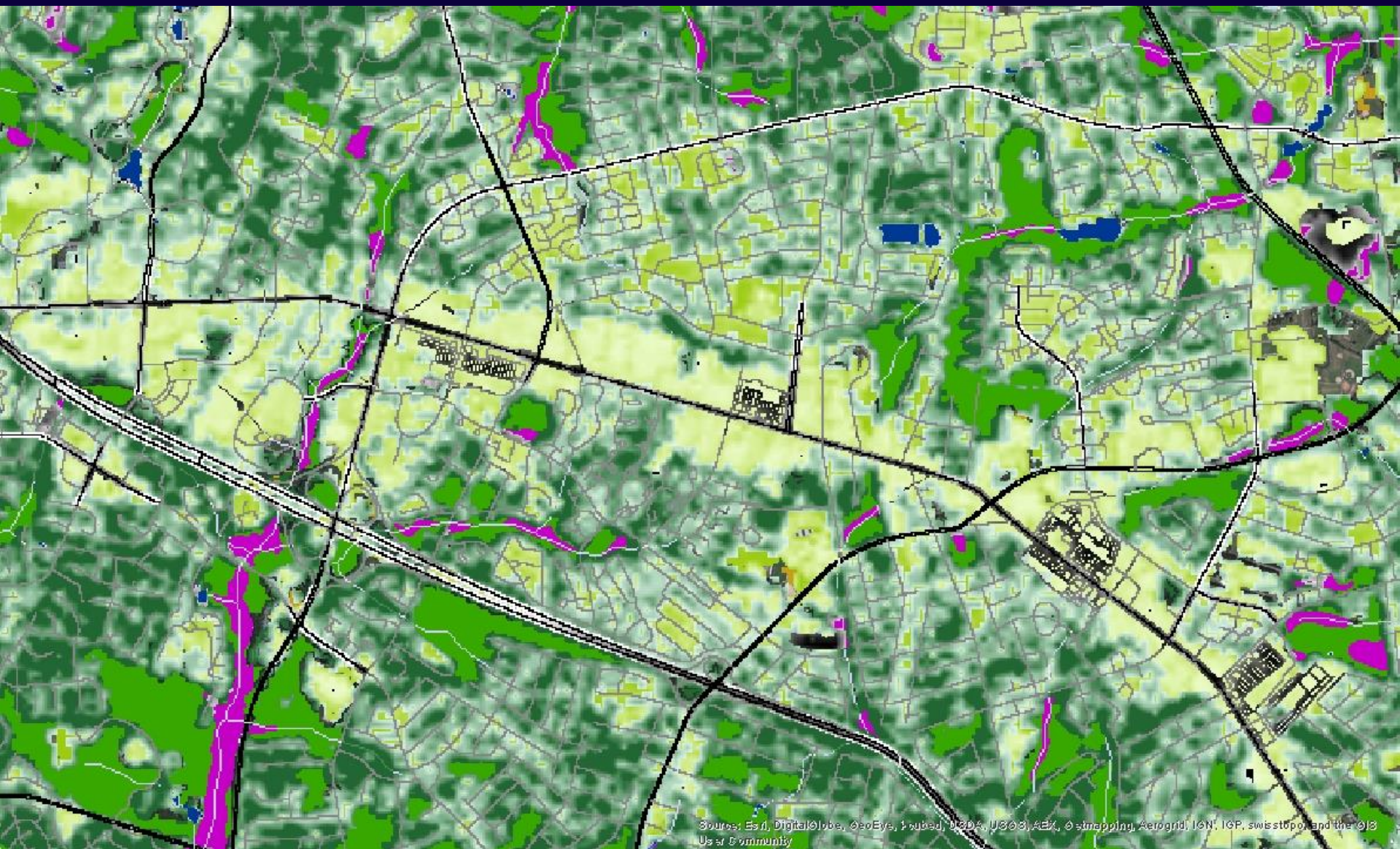
Phase 6 Land Use Database – from national data

- Assume minimal overlap among tree canopy, turf grass, and impervious surfaces within the same pixel.

70% Impervious-Roads (IR)
+
50% Tree canopy
=

50% Impervious-Roads (IR)
30% Tree Canopy over Herbaceous (TCH)
20% Tree Canopy over Roads (TCIR)

10m

10m

Phase 6 Land Use Database – from local data

- Fourteen different 10m resolution raster datasets
- Most with fractional and continuous pixel values

40% Impervious-Roads (IR)
25% Turf Grass
10% Impervious-Non Roads (INR)
15% Tree canopy over Herbaceous (TCH)
5% Tree canopy over INR (TCINR)
5% Tree canopy over IR (TCIR)

How do LUWG members want to review P6 Regional and Local Methods & Data?
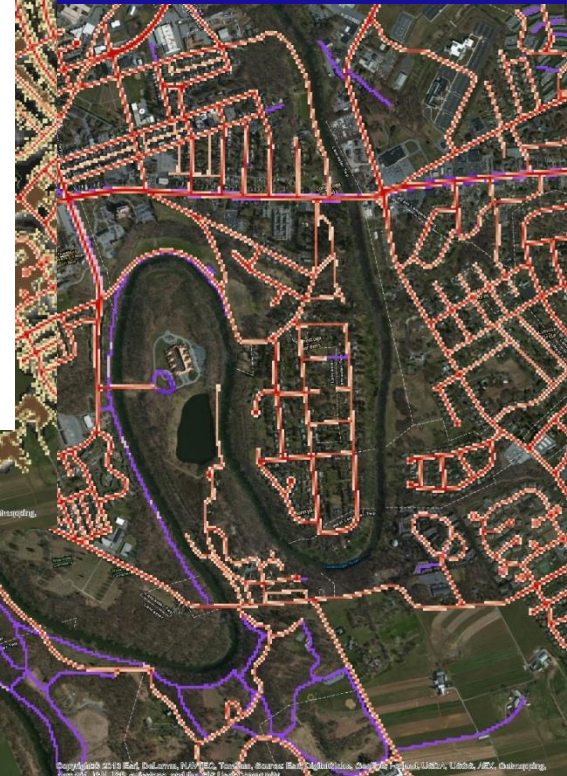
- including sewer vs septic

- including backcast assumptions to 1984

Phase 6 Land Use WebViewer (for jurisdictional review)
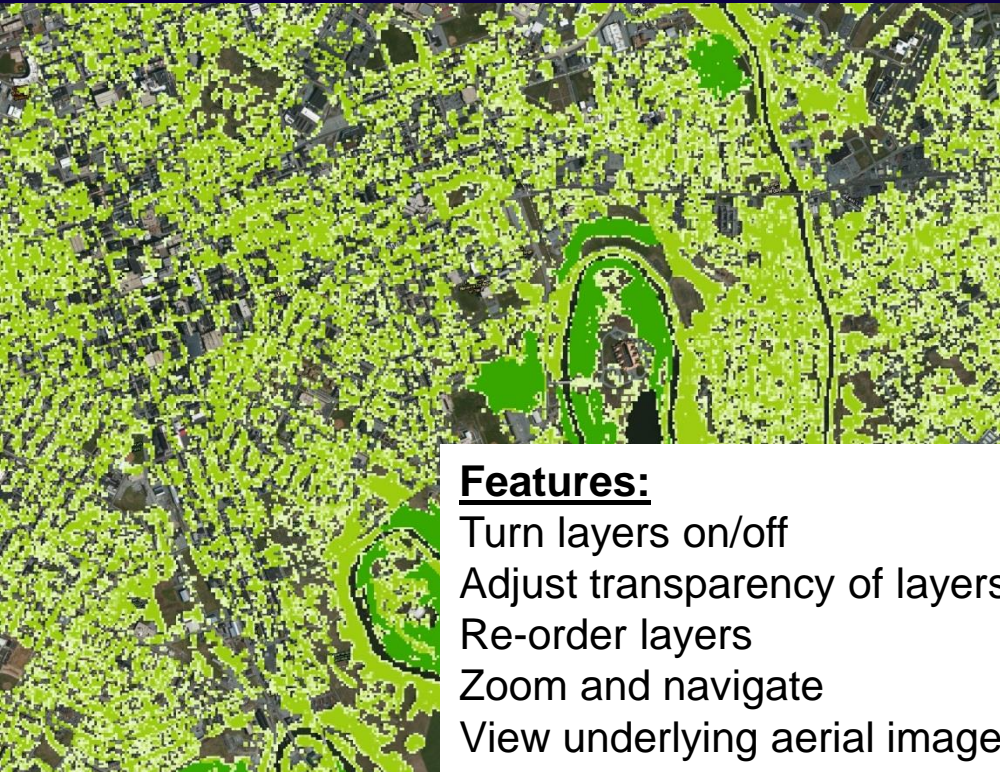
Features:
Turn layers on/off
Adjust transparency of layers
Re-order layers
Zoom and navigate
View underlying aerial imagery
View metadata
Download data in by county or viewer extent.
Comment (email sent to CBPO)

Federal Land Uses

840 Unique Instances of Agency + LRSEG

11 Agency Codes
1. ARS
2. USFS
3. USDA
4. NPS
5. FWS
6. DOI
7. DOD
8. SI
9. GSA
10. NASA
11. Other

Federal Land Uses

Same methodology used for P6 Regional Land Use v1

Except:

- **Federal land uses estimated for 2011.**
  - **Hold constant through time (1984 – 2025)?**
  - **Vary in proportion to changes in land cover at the LRSEG scale?**

- **Assume all federal lands on sewer and accounted for via NPDES permit data.**
  - **Thoughts?**
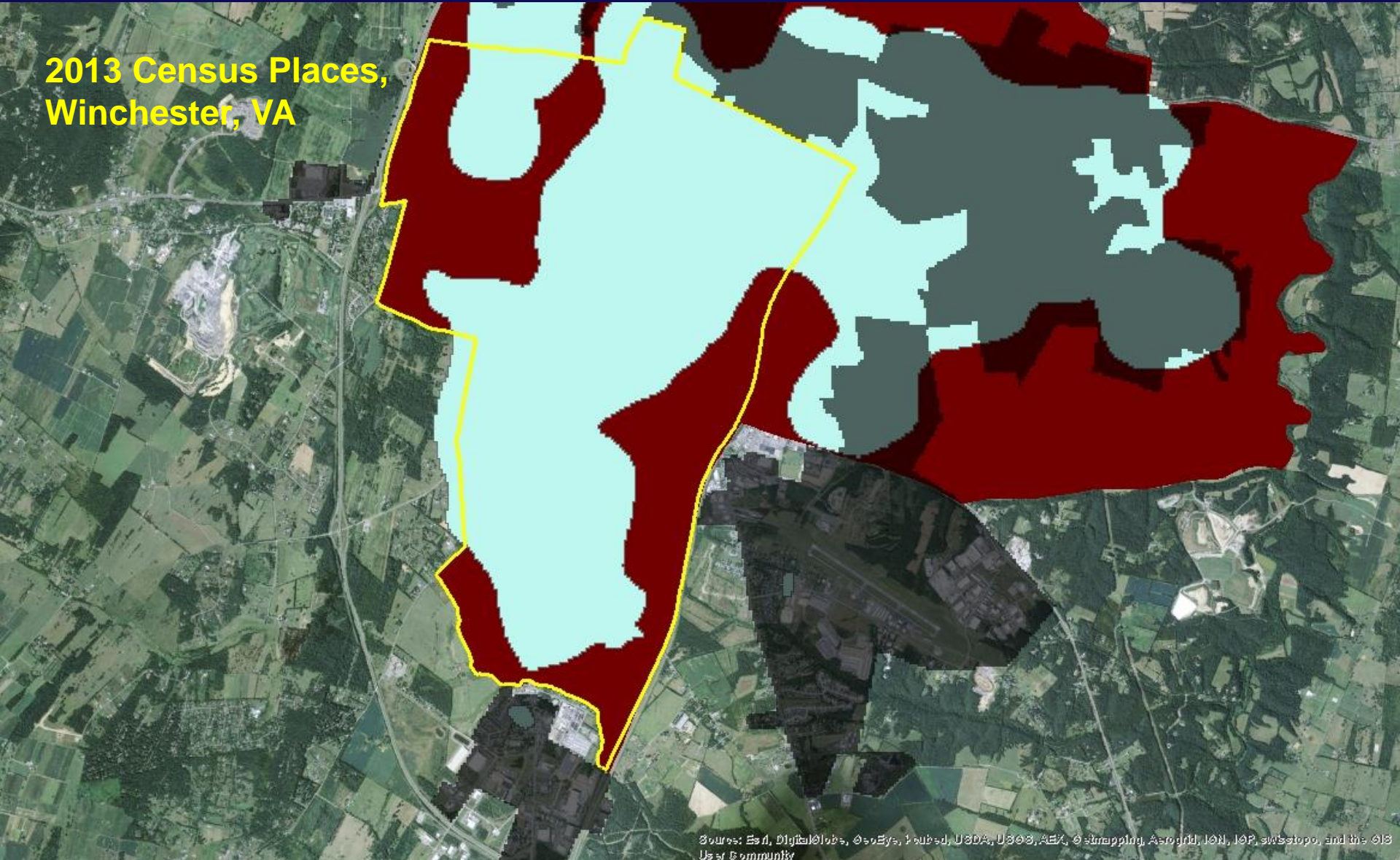
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Sewer vs. Septic

Same methods used in Phase 5.3.2

Updated inputs:

- **Sewer service areas expanded based on weight of evidence approach**
- **% of population growth due to migration**
  (was 2000-2010, now 2004-2014)
- **Maximum % Growth on Sewer**
  (was based on Development from 1984 – 2006, now Development from 2001 – 2011)
- **Ratio of Single-detached to total housing units**
  (was based on ACS 2008-2012, now based on ACS 2009-2013)

Mapping Sewer Service Areas using Weight-of-Evidence Approach

2013 Census Places, Winchester, VA

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

High-res Land Cover Data Update

Chesapeake Conservancy mapping WV, MD, and NY

University of Vermont Spatial Analysis Lab mapping: DE and PA

WorldView Solutions Inc. mapping: VA

All using image segmentation software for classification:

CC using ENVI, UVM using eCognition, and WSI using Feature Analyst

All guarantee 85-95% accuracy for individual classes (except wetlands).

Impervious surfaces and tree canopy targeted for highest accuracies (95%)

All will map the following classes:

- **Water**
- **Wetlands (emergent only with lower accuracy)**
- **Tree canopy**
- **Scrub/shrub**
- **Herbaceous/grass**
- **Barren**
- **Impervious Roads**
- **Impervious Structures etc.**

High-res Land Cover Data Update

WSI not agreed to map Tree Canopy over Impervious Surfaces!

Need to clarify

UTC Expert Panel estimates a 17% reduction in nutrient loads for TC over impervious and a 7% reduction in loads for TC over pervious. Panel will decide on this in August and elevate to WQGIT.

CC and UVM need county point of contacts for reviewing their draft land cover maps!

CC needs LiDAR Digital Surface Model for Garrett County, MD and for most counties in NY! Points of contact?

CC needs leaf-off orthoimagery for MD, WV, and NY! Points of contact?

P6 Land Use Development and Review Schedule

May 2015	Complete regional land use dataset using nationally available data: Phase 6 Land Use Database v1 (P6LU_v1).
Aug - Sep 2015	Rolling jurisdictional <u>proof-of-concept</u> review of how CBP is using their data.
Sep 1, 2015	Deadline to incorporate local land use/cover data. Submit P6LU_v2 to CBP Modeling Team.
Sep 15 – May 16	Incorporate additional local data and high-res land cover into P6 Land Use Database (P6LU_v3).
Jan – Jul 2016	Rolling jurisdictional review of P6LU_v3 and CBPO response to comments.
Aug 2016	Finalization of P6LU_v3 database (1985 – 2014)
Sep 1, 2016	Submit P6LU_v3 database to CBP Modeling Team

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