

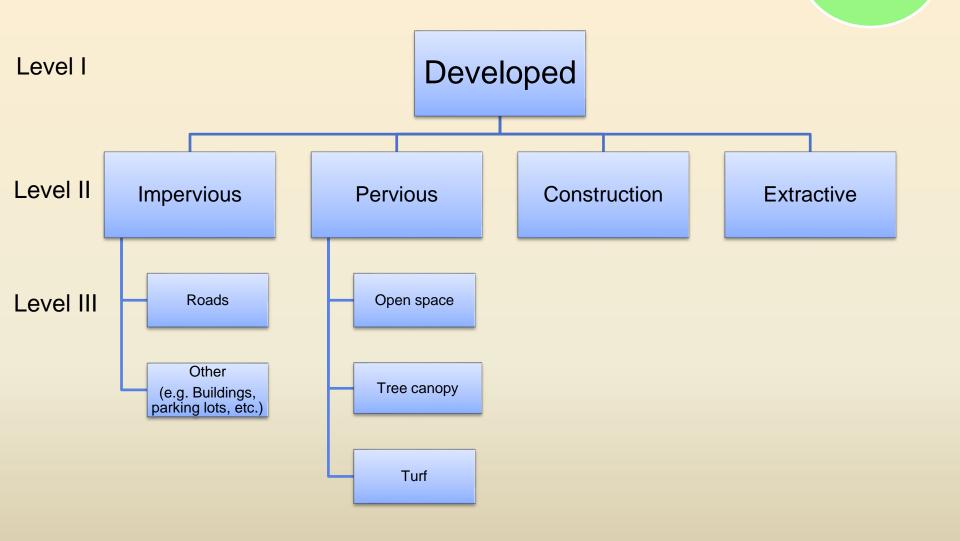


P6 Developed

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Proposed Developed Phase 6 Land Uses

Developed





Impervious Data Sources & Issues

- 1. Planimetric data (i.e., structures, roads, parking lots, etc.)
 - A. Most accurate depiction of impervious cover
 - B. But may be:
 - Out-of-date
 - Missing some types of impervious cover (e.g., driveways, sidewalks)
- 2. High-res land cover data (i.e., impervious, tree canopy, herbaceous)
 - A. Very accurate if mapped leaf-off imagery and LiDAR
 - B. But may be:
 - Out-of-date
 - Mapped with leaf-on imagery; canopy obscures roads and structures.
- 3. Moderate-res (30m) sub-pixel impervious cover
 - A. Captures most large patches (> ½ acre) of impervious cover; available for 2001 and 2010.
 - B. But:
 - Misses small & narrow structures and those obscured by canopy including rural roads, low-density residential areas and farmsteads are missed.



Pervious = developed

Pervious ≠ forest, wetland, water, or impervious surfaces

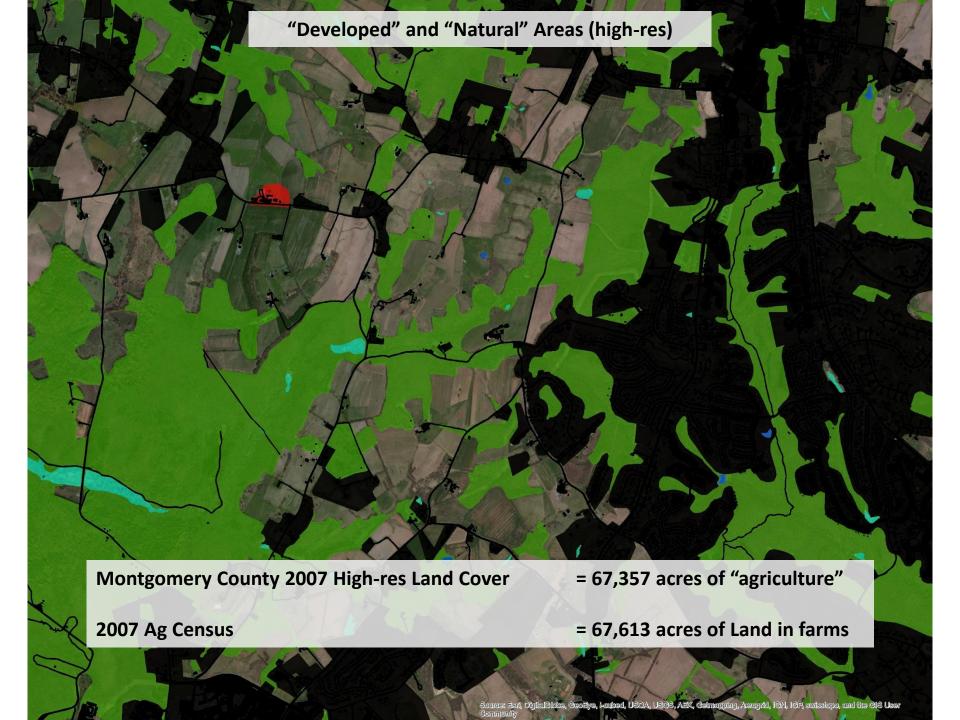
Pervious Data Sources:

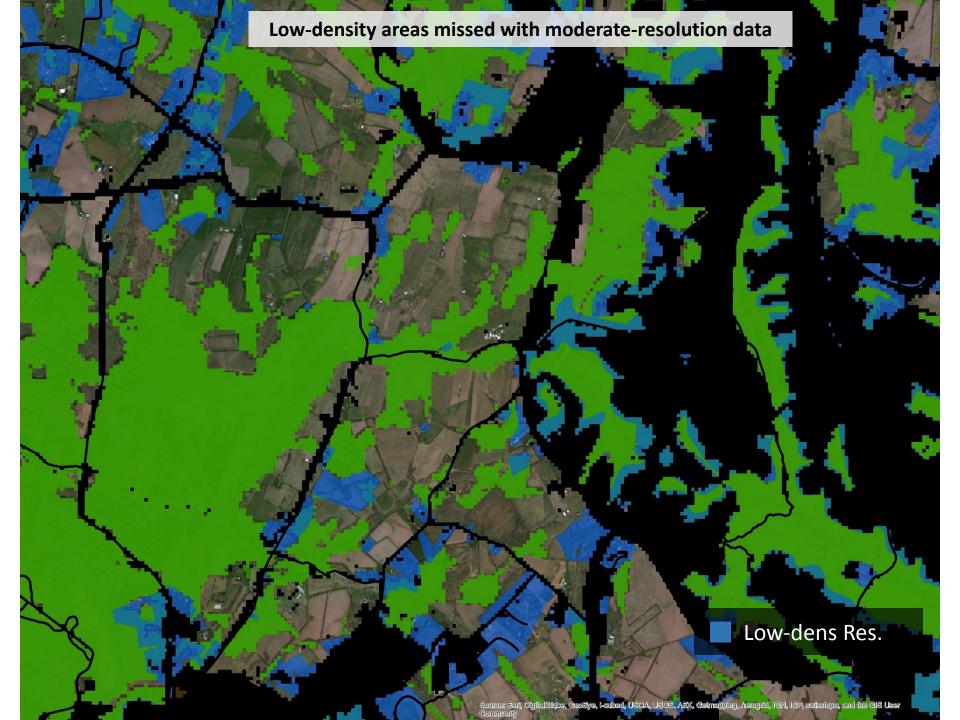
- 1. Local Land Use i.e., residential, commercial, industrial, institutional, other developed
- 2. High-res land cover data i.e., forest, water, and impervious surfaces
- 3. Census Blocks (housing density)
- 4. Road density
- 5. Ancillary data on institutions, golf courses, etc.
- 6. NWI wetlands, NHD-H streams and waterbodies

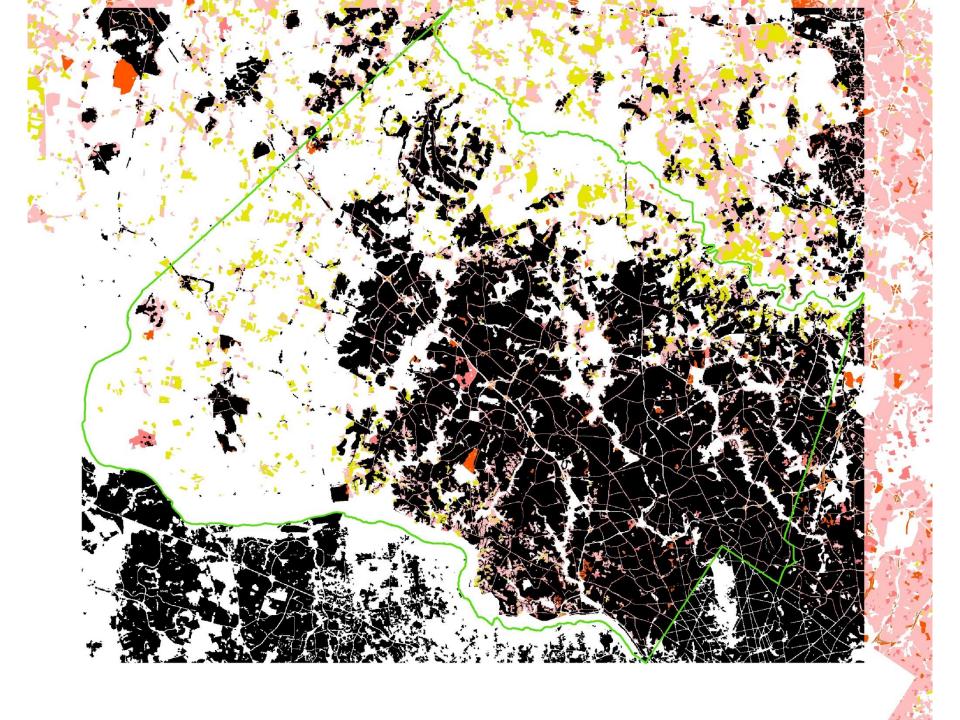












Proposed Phase 6 Definitions of "Forests" and "Urban Tree Canopy"

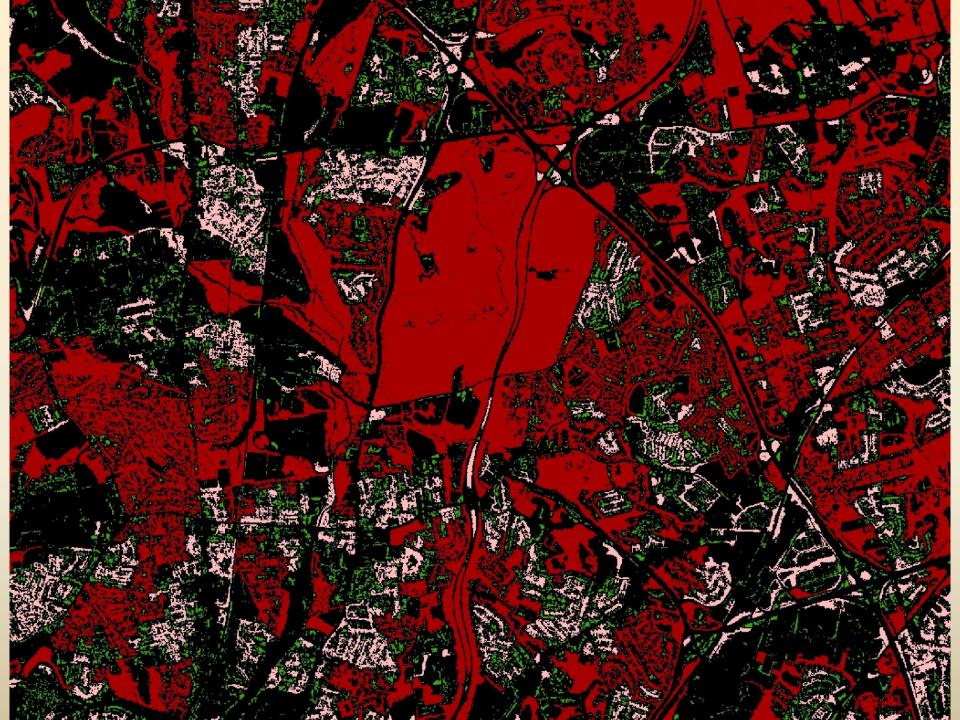
1. Forests

- A. Developed areas
 - Un-fragmented patches of trees >= 1 acre
- B. Rural areas
 - All trees

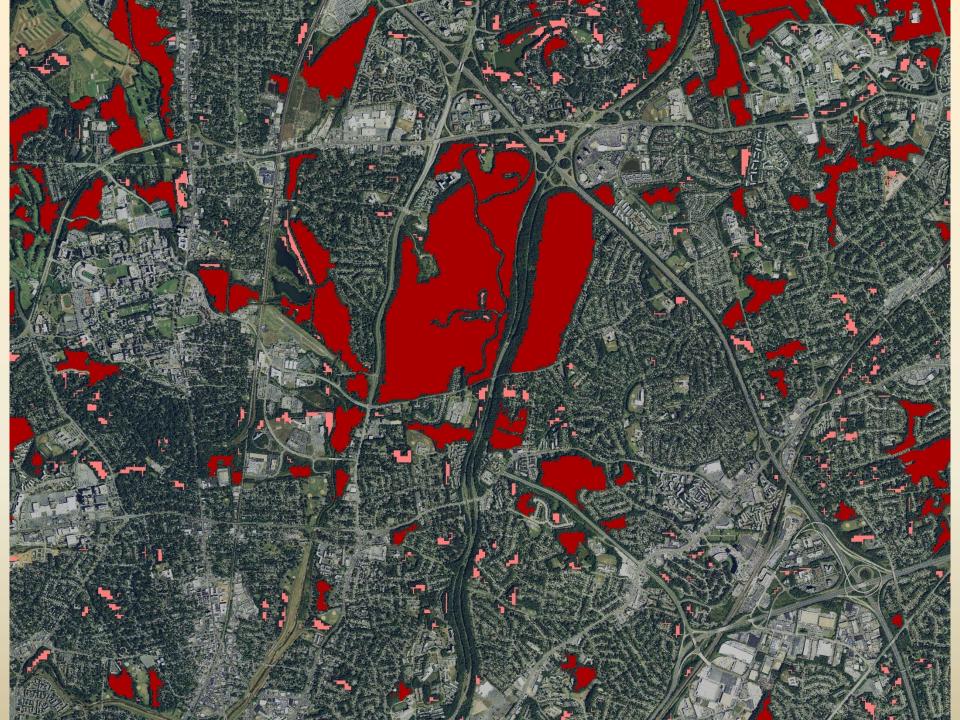
2. Tree canopy

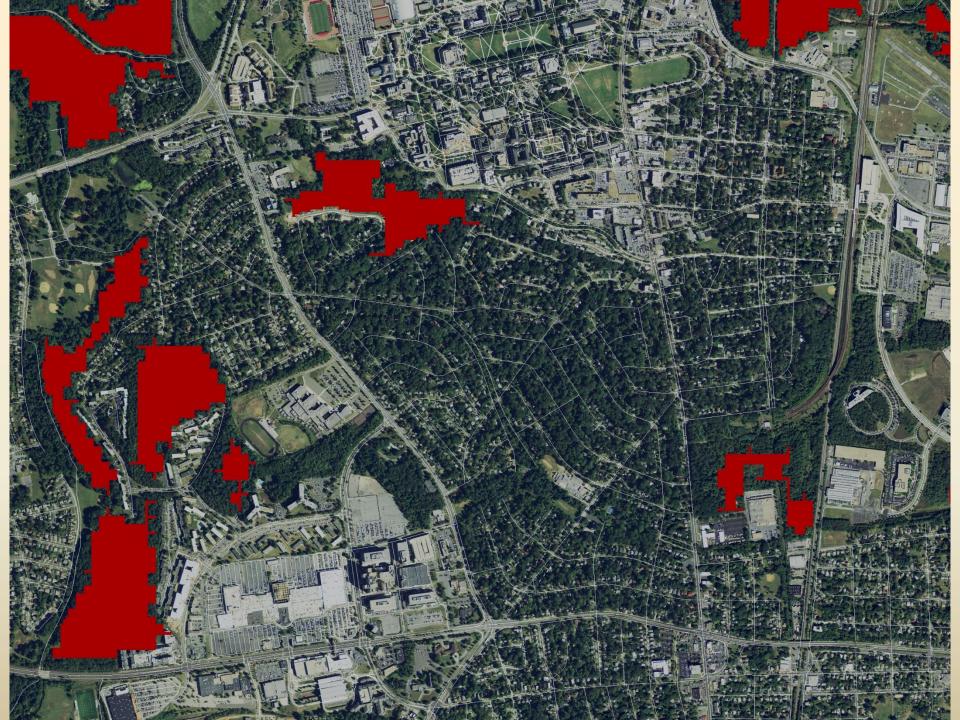
In patches < 1 acre within developed areas













Improving Sediment Delivery Factors in Phase 6

Phase 5.3.2 Approach

For each river segment, land use sediment delivery factors are based on the average Euclidean distance of each land use class to the simulated reach.

"approximately two-thirds of the load (from developed lands) was the result of channel erosion", Langland and Cronin (2003).

Issues with this approach:

- 1. Stream banks and floodplains are ignored as potential sources and sinks for sediment.
- 2. Runoff from the land is routed through a complex network of gullies and streams that effectively shorten or lengthen the travel time compared to Euclidean distances (as the crow flies).
- 3. The fluvial geomorphic characteristics of stream corridors greatly influence the rates and sources of sediment yield.

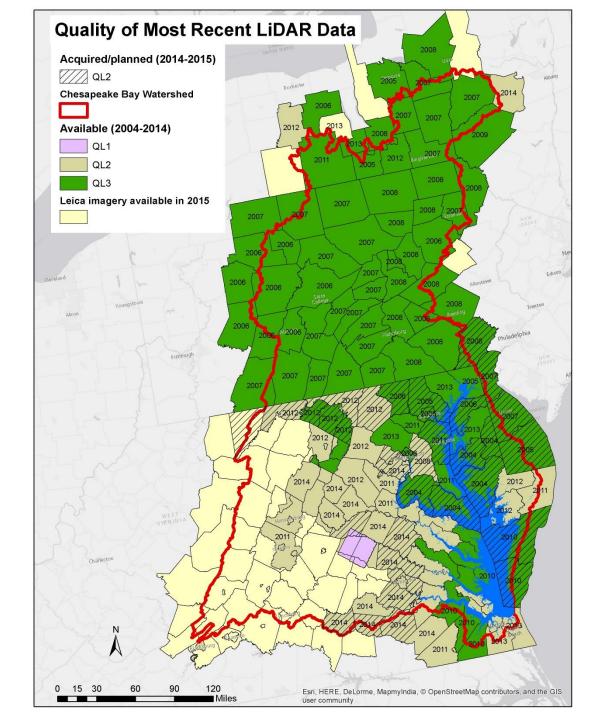


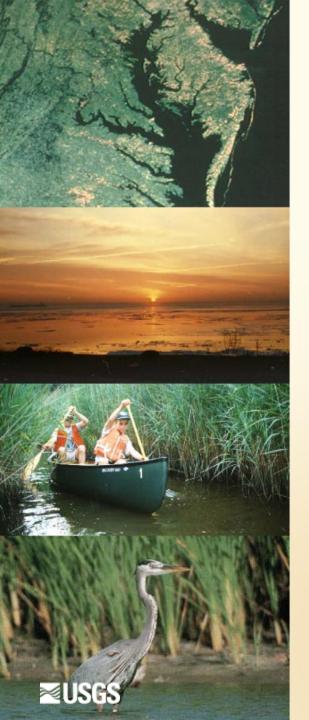
Improving Sediment Delivery Factors in Phase 6:

Develop relative sediment budgets based on fluvial geomorphic characteristics

- 1. Develop stream reach statistics (e.g., means and ratios) on:
 - a. Bank height
 - b. Bank angle
 - c. Channel width
 - d. Channel profile slope
 - e. Floodplain width (extracted from floodplain maps)
 - f. Floodplain profile slope
 - g. Drainage area
- 2. Compare results against field data.
- 3. Develop related geomorphic metrics using topographic indices.
- 4. Develop regression models of these variables against field observations of sediment deposition and erosion for the Piedmont, Ridge and Valley, and Coastal Plain.
- 5. Summarize stream reach statistics by NHD+ catchment and run through the SPARROW sediment model to evaluate regional-scale significance.
- 6. Develop stream sediment source ratios for urban streams based on ratio of observed sediment concentrations in outfalls vs streams.









Phase 6 Land Use

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