

Maryland's *Draft* Forest and Tree Canopy Delineation Methodology

(GIS Processing Methods – 2012 conditions)

Overview

Maryland developed tabular estimates of forest and tree canopy cover for Chesapeake Bay Program (CBP) Phase 6 watershed model land-river segments for 2012 conditions. These methods were developed by Maryland Department of the Environment (MDE), Maryland Department of Planning, and Maryland Department of Natural Resources (DNR). University of Maryland (UMD) 1 meter resolution tree canopy cover data are the primary data source used for mapping tree canopy and forest in Maryland. Maryland DNR utilized UMD tree canopy data to delineate forest acres. MDE completed the processing of forest and tree canopy by removing the 2012 Phase 6 wetlands and impervious surface coverage from the delineations provided by UMD and DNR. MDE only processed the acres of *Forest*, *Canopy Over Impervious*, *Canopy Over Turf*, and *Canopy Over Open Space* for counties that provided impervious surface data. This document functions as technical documentation of the Geographical Information System (GIS) methods followed to standardize methods and ensure quality. This was not intended as a broad overview of the forest and tree canopy methodology.

Forest Processing

The following presents the individual steps that were used to create tabular estimates of Forest cover in Phase 6 watershed model land-river segments:

1. Erase DNR's forest delineations (areas of contiguous canopy cover > 1 acre and > 120 ft. wide) with MD's wetland acres (see wetlands methodology)

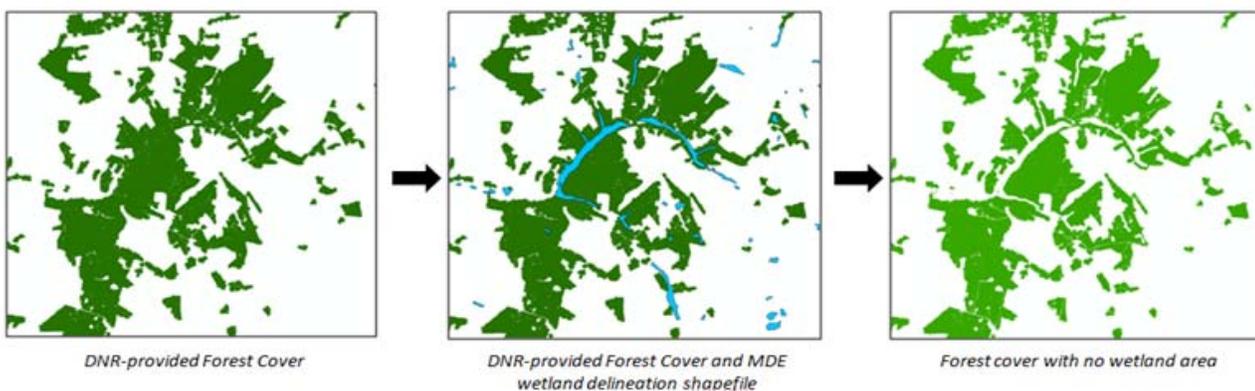


Figure 1: Removing wetland delineation from DNR Forest Cover

- From the file created in step 1, erase areas overlaid by county-provided planimetric impervious surface data.



Figure 2: Removing county-provided impervious cover data

- The resulting file (containing forest cover with no wetlands or impervious area) is converted to a raster format with a cell size of 2'x2' (approx. 1m) and acres of forest cover are tabulated by Phase 6 segment.

Tree Canopy Processing

The following presents the individual steps that were used to create tabular estimates of tree canopy over turf and tree canopy over open space cover in Phase 6 watershed model land-river segments:

- Erase areas from UMD's canopy cover file using DNR's forest delineation – the result is a file of non-forest tree canopy cover

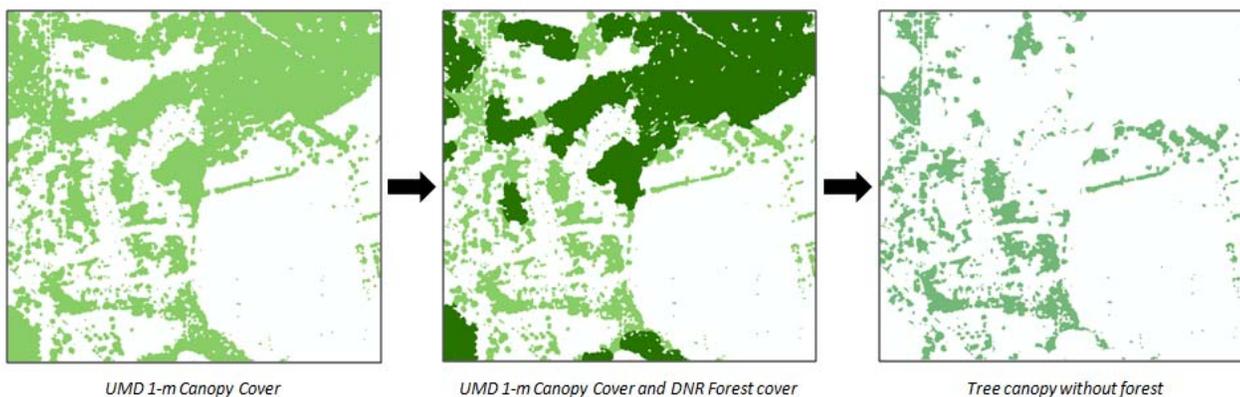


Figure 3: Remove forest cover data from UMD tree canopy cover

2. Erase the file created in Step #1 using MD's wetland delineation (see wetlands methodology)

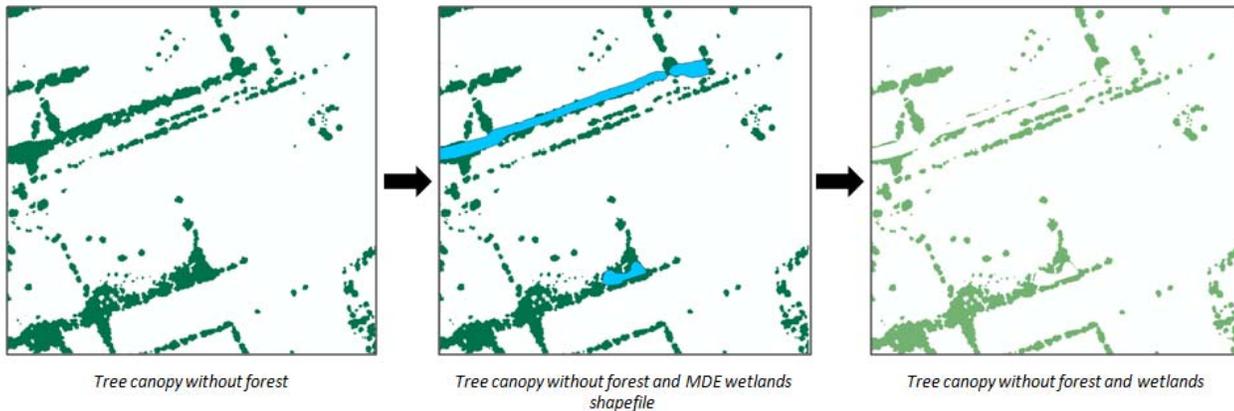


Figure 4: Remove wetland delineation from processed tree canopy data

3. Erase the file created in step #3 using the county-provided planimetric impervious surface data.

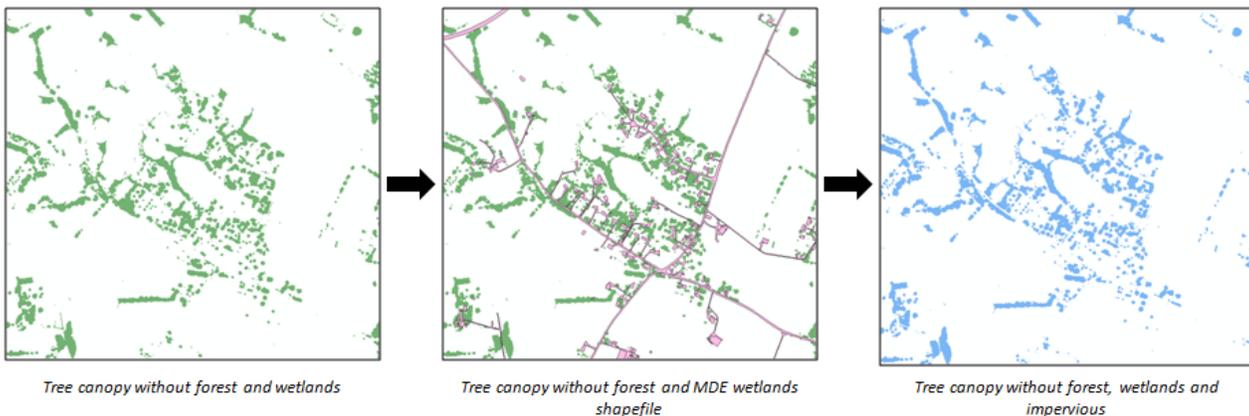


Figure 5: Remove impervious data from processed tree canopy data

4. Create a urban development mask of to delineate areas of canopy over turf, by merging together the following:
 - a. Using MDP's 2011 parcel boundaries, the parcels that meet the following query:
 - i. All LU codes except Agriculture
 - ii. All Residential code parcels < 5 acres
 - iii. All parcels with an improvement value >10,000
 - b. The Phase 5.3.2 watershed model Urban and Suburban Zones
 - c. NAVTEQ roads, buffered by 10 ft to capture road right-of-way



Figure 6: Urban development mask.

5. Erase the processed tree canopy file (without forest, wetlands, or impervious surface) using the urban development mask. All tree canopy outside the development zone is assumed to be Canopy over Open Space. This file is converted to raster format with a 2'x2' (approx. 1m) cell size and acres of Canopy over Open Space are tabulated by Phase 6 segment.

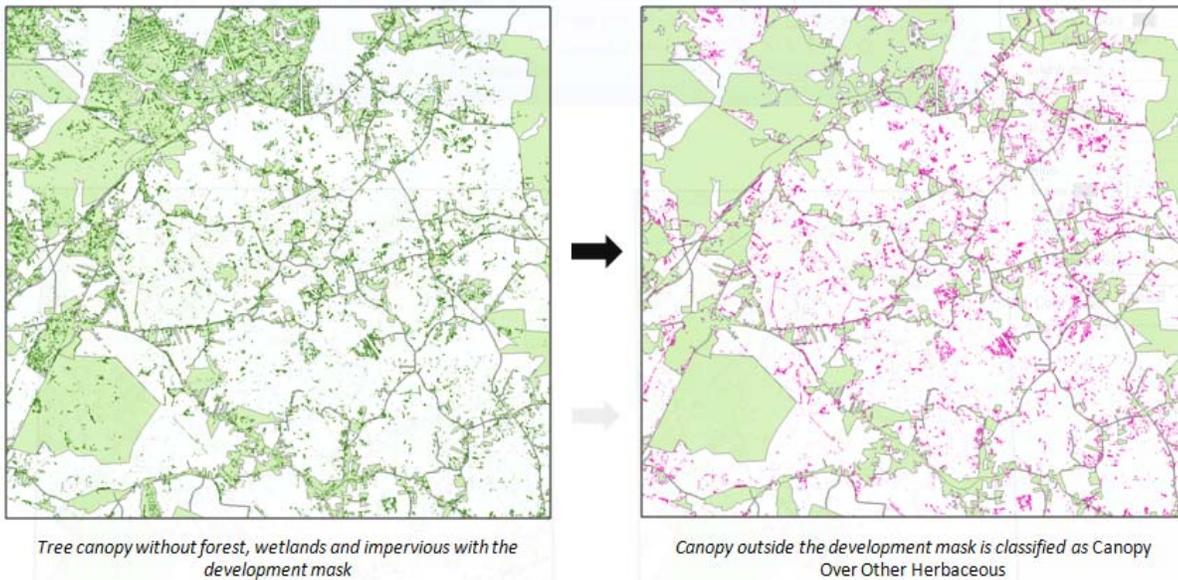


Figure 7: Canopy cover outside the urban mask (Canopy over Open Space)

6. Use the non-forest canopy file (from step 4) and intersect it with the Development mask. All canopy inside the development zone is assumed to be Canopy over Turf. This file is converted to raster format with a 2'x2' (approx. 1m) cell size and acres of Canopy over Turf tabulated by Phase 6 segment.

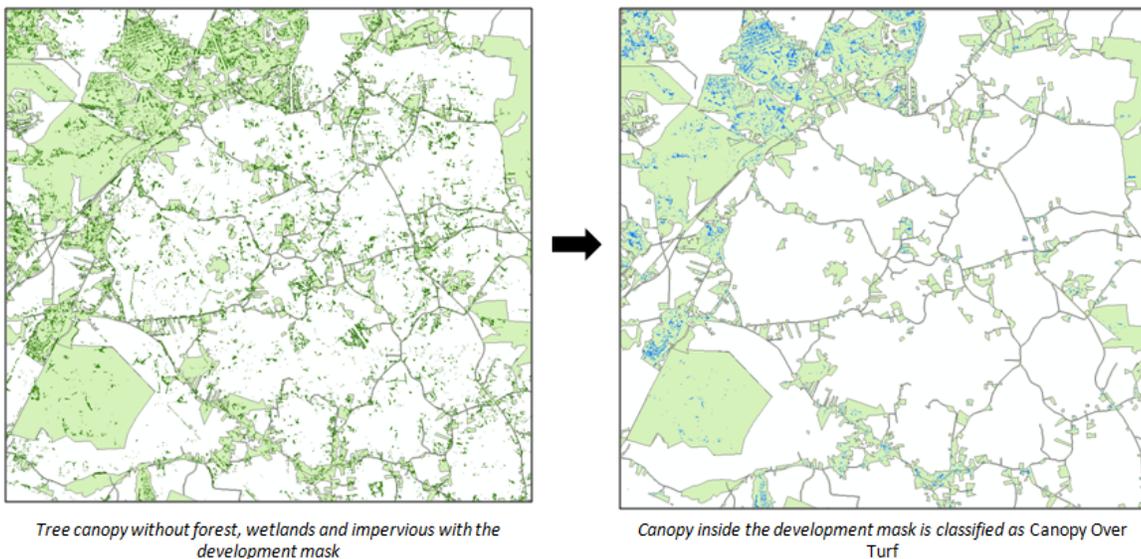


Figure 8: Canopy inside the urban mask (Canopy Over Turf)

Canopy Over Impervious Surface Processing

The following presents the individual steps that were used to create tabular estimates of Tree Canopy Over Impervious per Phase 6 watershed model land-river segment:

1. Erase the UMD 1m Canopy Cover file using MD's wetlands delineation.
2. Intersect the canopy + forest file (with wetlands area erased) with the county-provided planimetric impervious surface data.
3. The resulting file (areas where impervious and canopy cover intersect) is converted to a raster format with a cell size of 2'x2' (approx. 1m) and acres of forest cover are tabulated by Phase 6 segment.