Overview

Comments were solicited by the Chesapeake Conservancy (CC) from each Chesapeake Bay Watershed county in New York, West Virginia, Maryland, and from Washington D.C. Points of contact were designated by the Chesapeake Bay Program Office (CBPO), and had precipitated from CBPO's contact with county GIS departments in an effort to collect local data for Phase 6 land use modeling. If CC encountered difficulty in reaching an individual in the CBPO list and the county office could not provide an alternate contact, CC reached out to statewide GIS contacts to ask for recommendations for alternate individuals. With that process, emails were delivered to a current, working address.

The University of Vermont solicited comments from counties in Pennsylvania and Delaware. A brief summary of the comments they received is included at the end of this document.

Maryland

Primary statewide contact: MD Department of the Environment (Jeff White and Stephanie Martins)

Stakeholders were very engaged in the comment process. Some counties, mostly those without quality vector data, found the land cover to be quite helpful. Garrett County said "The data really looks great (even at a very large scale). I think it is great (for us) that you covered the entire county!" Caroline County was similarly satisfied, their reviewer left a comment in the web app viewer that read: "THIS THING IS AWESOME!!! Thank you for all of your work." Other counties, especially those with high quality planimetrics and recent high resolution land cover, found the data to be less useful. Based on discussions with these counties, CC has changed its initial methodology to incorporate local data—including water, impervious surface, and tree canopy maps—where it exists.

Concerns with CC's land cover spanned systematic issues with the remote sensing approach and errors with the non-automated corrections process. On the remote sensing side, counties were unhappy with the often non-geometric edges of impervious features, such as houses, roadside edges, and parking lots, which were produced in the image segmentation process (example provided by MDE):

Another source of remote sensing error came from temporal mismatch in the component data. This generated issues in new neighborhood or shopping developments, which were captured in imagery but not in LiDAR or county vector information. Furthermore, sparse LiDAR caused problems with interpolating a digital surface model (DSM). Edges of features, such as houses, were not defined sharply, and resulted in house or tree segments that extend past the actual boundary of the features. Manual corrections omissions contributed further to errors. Tree canopy overclassification was a problem in shadows, particularly of houses and forests. Corrections also missed many small ponds and fine impervious features like sidewalks and driveways; these instead were classified as low vegetation.

Additionally, counties commented on more general characteristics of the land cover project. One source of discontent was the data being distributed in a raster rather than vector format. Raster data in USGS's standard projection (USA_Contiguous_Albers_Equal_Area_Conic_USGS_version) had a much more pixelated appearance than vector data, and in combination with many counties being unfamiliar with raster data, compounded concerns about data accuracy. Prince George's county's reviewer described it in a memo as "excessive pixelization and feature shape distortions." Another topic of contention was the use of 2013 instead of 2015 NAIP. Reviewers felt that the most up-to-date imagery should have been classified. Occasionally, CBP's land cover definitions also contrasted with local designations. For example, CBP definitions classify docks as impervious, while some local definitions call them water, and classify electrical towers as impervious, rather than as CBP's designation of structures. Similarly, CBP's modeling allows for some confusion between compacted dirt, which ideally would be classified as barren, and gravel in roads, construction sites, and mining operations. Counties preferred a less flexible categorization. Further along those lines, CBP's goal was to establish baseline conditions by categorizing the 2013 NAIP and county orthoimagery. In some cases, stream and river banks that are intermittently covered with water were exposed—and classified—as barren land. Counties often did not care for this approach. A final, major source of questions was the mapping of wetlands. CBP project scope limited it to tidal emergent wetlands, but this was unsatisfactory to Maryland stakeholders.

Across the board, impervious surface accounting was the most significant topic of discussion. As mentioned above, based on discussions with stakeholders, CC discovered that counties preferred to have their planimetric data burned into the land cover. Washington County summarized: "We reserve the right to have our local data included in the Bay Model, as agreed upon by MDE. We are in the process of working with MDE in verifying our review of the data and comparing our local planimetric data against your data to determine which is the most accurate, similar to the way Prince Georges County did. I think it is clear that our local calculations of impervious surface area is very close to what MDE has estimated." This request was met, with some modifications to erroneous or out-of-date planimetrics where necessary.

New York

Primary statewide contact: NY GIS Clearinghouse (Jeff Langella)

New York stakeholders exhibited limited engagement in the review process. Generally, counties that responded were enthusiastic about the utility of the data in local planning efforts. Tompkins commented, "This looks really great and will be fantastic for calculating impervious surfaces." Similarly, Madison County remarked, "In general, I found this dataset to be extremely detailed and a vast improvement over other landcover data that I have seen[…] All in all, I think the data looks great and I'm

glad to learn some more accurate landcover information will be used in this iteration of the Chesapeake bay model."

Those who submitted critiques were most concerned with streams that had not been captured in the classification. Delaware County summarized by saying "Overall, the data looks good. No large area errors were noted. The one thing that stood out was the discontinuity of streams, due to overhanging tree cover on both large and small water bodies." There was concern too about how empty stream beds would be treated, as they were mapped based on their conditions in the 2013 NAIP. Delaware continued: "Sections of our stream bed, banks and floodplains still show the scars of flood scour from events of 2006, '10 and '11. Some of these areas are categorized as barren land, yet if our streams were photographed during late summer they would mostly appear as barren land. I know that remote sensors see whatever they see, but this is both a natural and transient condition." Others pointed out errors with the classification, including some missed dirt roads, as well as confusion between barren, impervious, and low vegetation.

West Virginia

Primary statewide contact: WV GIS Technical Center, West Virginia University (Kurt Donaldson)

Most West Virginia counties were limited in their engagement with the comment process. Other stakeholders participated, including Frank Rodgers, Executive Director of the Cacapon Institute, who summarized: "WV GIS operators are excited about the land cover that will be coming out. It will be a new layer that most counties do not have, only Jefferson has a complete high resolution land cover. This is going to revolutionize their data inventory." Two sources of concern among reviewers were headwater stream classification as low vegetation or tree canopy, and sections of sparsely vegetated strip mines having been classified as low vegetation or tree canopy instead of water. Other reviewers critiqued manual corrections errors, including small ponds, walking paths, sidewalks, and driveways having been grouped with low vegetation.

Washington D.C.

Primary statewide contact: Department of Energy & Environment (Martin Hurd)

Washington D.C.'s reviewer was satisfied with the data: "I've been able to pull the data into ArcMap and compare it to our impervious and land cover layers and it looks like a great improvement to me." He was interested in using the tabular form of the data to do impervious surface calculations, and was provided with that information.

Pennsylvania – produced by the University of Vermont

Various county contacts

Issue	Location	Cause	Solution
Certain impervious features missing	PA	ArcGIS Online symbology error.	Not a problem with the actual data. New web map will be released integrating DRB and CBW data sets.
Rocks, exposed soil or other bright non-impervious features in rural, agricultural areas falsely assigned to one of the impervious classes.	PA	The automated approach did include a rule that assess impervious features based on their proximity to urbanized features such as buildings and roads. These false impervious are near these buildings and roads causing the automated approach to fail. Their small size means that they were missed during manual edits.	Would require another round of manual edits.
Driveways missing from the impervious class.	PA	The problematic driveways tend to be small, narrowly configured, and often partially obscured by tree canopy. They do appear in the leaf-off imagery, but as that imagery contains no NIR band. The driveways do not show up in the intensity data.	Would require extensive manual editing. The leaf-off imagery contains no NIR band, making it unsuitable for automated driveway mapping.
False buildings	PA	Dark trees, typical conifers, with lidar point cloud profiles similar to buildings.	These are isolated cases, would require additional manual editing.
Wetland extent incorrect	PA	The main source for wetland detection was the topographic index layers. These are not perfect and contributed to classification errors.	Wetlands should be improved in the release of the separate PA wetlands product.
Small gaps or misclassified pixels in linear configurations	PA	The land cover data were processed in sections and these are areas along the borders of those sections in which the mosaic process caused anomalies.	Corrected in the final release of the data set.

Delaware – produced by the University of Vermont

Various county contacts

Issue	Location	Cause	Solution
Overestimation of shrubs	DE	Some trees and grass included in the shrubs.	Possibly could be addressed through an automated approach.