The UNIVERSITY of VERMONT

RUBENSTEIN SCHOOL
OF ENVIRONMENT AND NATURAL RESOURCES

March 27, 2018

I have been asked to give my expert opinion on how the suitability of the latest tree canopy assessment for the purposes of tracking tree canopy change for the City of Arlington, Virginia. Estimating tree canopy change over time from remotely sensed data (imagery and LiDAR) requires that the amount of change fall outside of the margin of error. For example, if the two tree canopy estimates, produced at differing times have a margin of error of +/- 2%, one cannot conclude that there is a 2% increase. The accuracy of the mapped tree canopy data in Arlington's latest tree canopy assessment is approximately 94%. This accuracy too low to draw conclusions about changes in tree canopy. Furthermore, comparisons to the previous study, which used different source data and differing methods, are problematic.

The imagery used for the latest Arlington tree canopy assessment came from the National Agricultural Imagery Program (NAIP). NAIP is a desirable dataset to use for tree canopy mapping because it is leaf-on and high-resolution, with a pixel size of 1-meter. One of the chief limitations associate with NAIP is its positional accuracy. Tall features in NAIP have lean associated with them, making it difficult to determine if changes in tree canopy from one time period to the next are due to actual gains and losses, or these positional difference.

While there is no perfect way to map tree canopy change, my recommendation is that the City of Arlington follow the US Forest Service's approach to tree canopy change, which is currently being used by Fairfax County. This approach to tree canopy change analysis involves mapping change at the tree canopy scale in three classes: gains, loss, and no change. This methodology minimizes error and maximizes the ability to draw conclusions about the actual change in tree canopy from one time period to the next.

Sincerely,

Jarlath O'Neil-Dunne
Director, Spatial Analysis Laboratory