

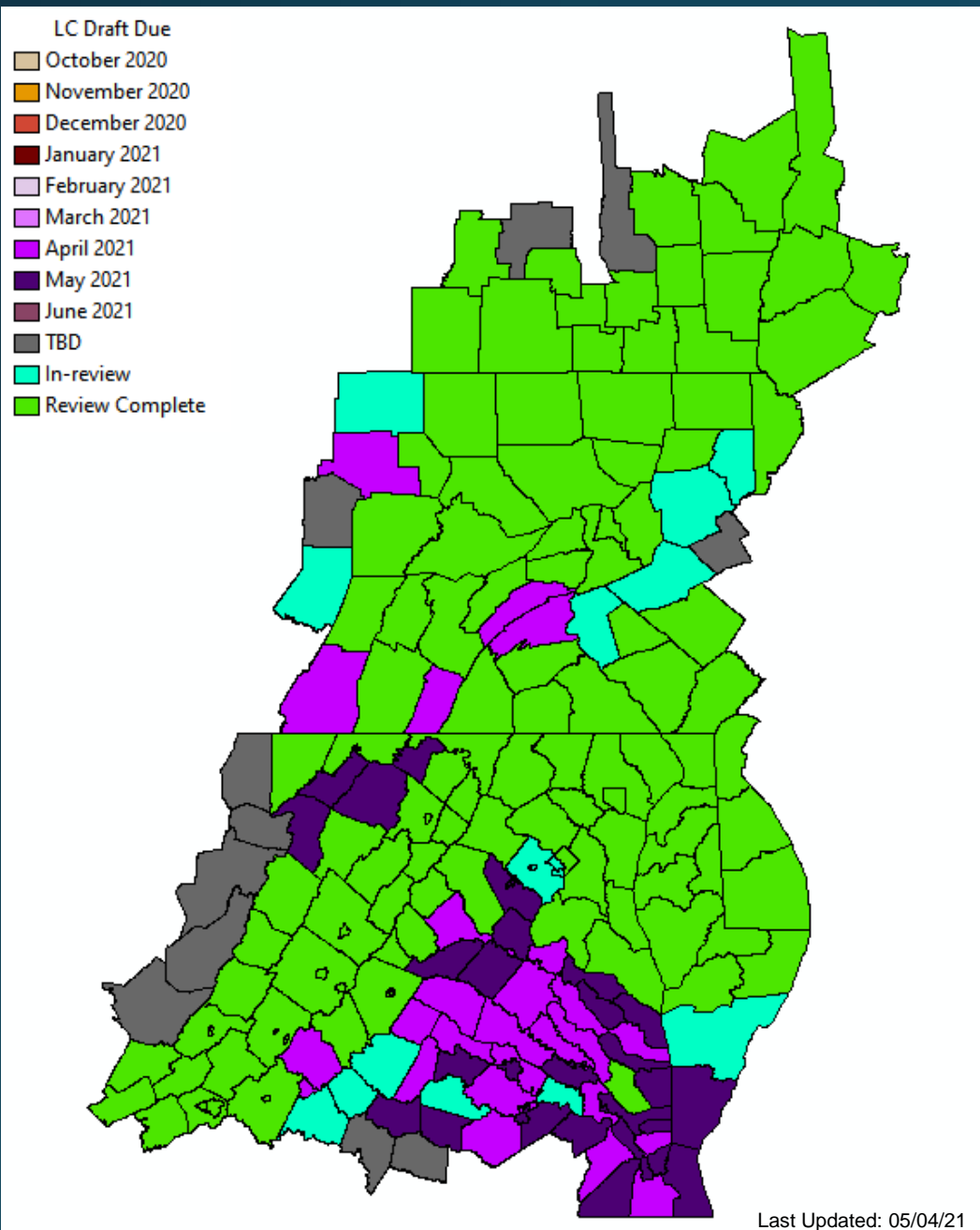
Objective 1: Land Cover and Land Use Updates

May 4, 2021: LUWG

Rachel Soobitsky

rsoobitsky@chesapeakeconservancy.org

Quick Land Cover Production Update



Draft Land Cover:

134 out of 206 counties have draft LC and/or gone through local review*

*not every locality ended up providing feedback, but every one was contacted

- PA has 7 counties remaining for review, with 2 of those mostly outside the watershed
- WV has 9 counties remaining for review, with 5 of those mostly outside the watershed
- VA has 54 remaining, with 3 of those mostly outside of the watershed
- NY has 2 remaining, both mostly outside of the watershed

When UVM creates **2017/18 LC (time period 2)**, they create a **Land Cover Change** product from 2013/14-2017/18.

Therefore any **draft or V1 of LC** also means there is also a **Land Cover Change and 2013/14 (time period 1)** of LC.

While doing QAQC, it is possible UVM finds errors tracing back to 2013/14, therefore they correct that dataset. This means **2013/14 LC (time period 1)** has possibly **CHANGED** from the original 2013/14 dataset that is published. We will **update this dataset** when we publish the time period 2 and change datasets.

Version 1 Delivery for Land Use Ingestion:

48 counties delivered to date. About 25-35 delivered every Friday

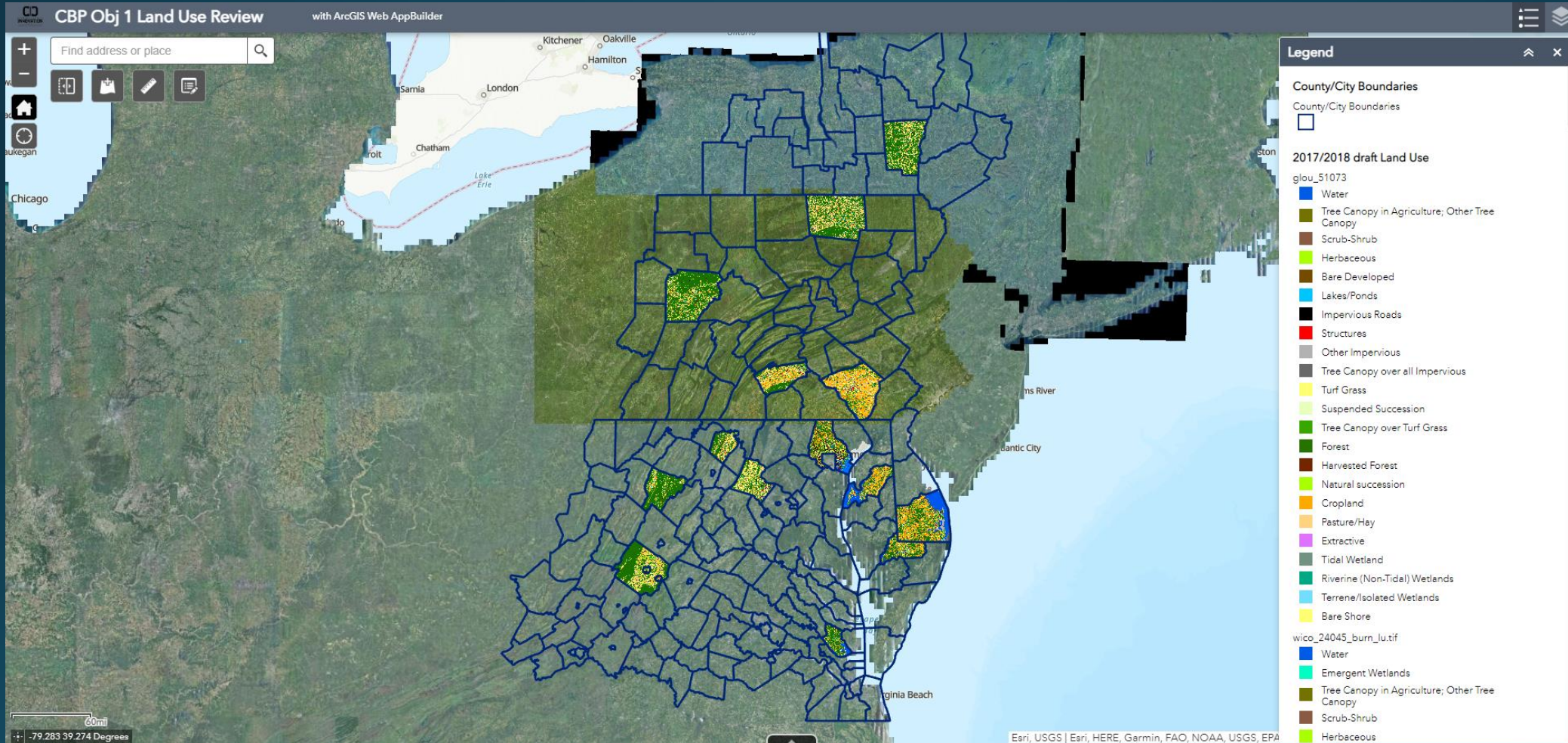
Collected Feedback from Workgroups and Counties

- Overclassification of:
 - Agriculture
 - Turf Grass
 - TC in Agriculture
 - TC over Turf Grass
- Underclassification of
 - Natural Succession
 - Harvested Forest
 - Wetlands
 - Bare Shore
 - Suspended Succession
 - Forest

Revision 1 added on original Web Application for Clearfield, Loudoun, and Wicomico!

<https://tinyurl.com/DraftLandUse20172018>

Username: LU_Reviewer
Password: LU_Reviewer2021



While making changes to LU model for Revision 1, the code accidentally called a lot of cropland in Clearfield Orchards/Vineyards. Please ignore these situations. This will be fixed in the next revision/final product.

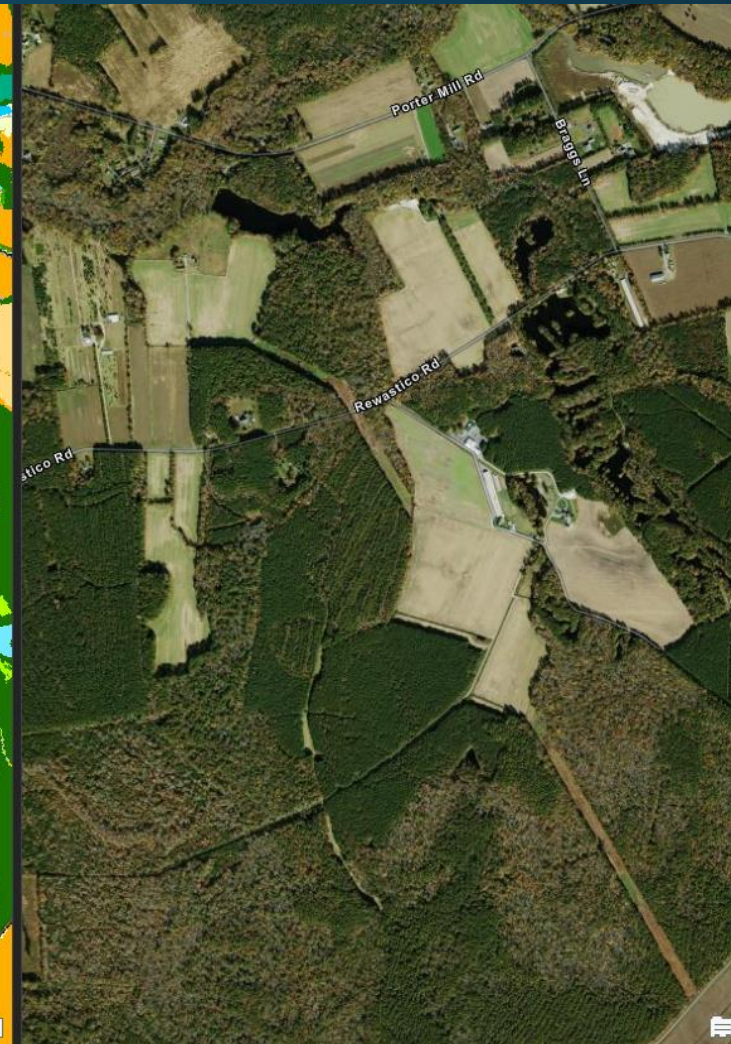
Revision 1 LU: Fixed incorporation of Wetlands

Draft LU

Revision 1 LU

2017/2018 NAIP

- LandUse
- Water
 - Emergent Wetlands
 - Tree Canopy
 - Scrub-Shrub
 - Herbaceous
 - Bare Developed
 - Other Impervious
 - Impervious Roads
 - Lakes/Ponds
 - Structures
 - Tree Canopy over Roads
 - Tree Canopy over Structures
 - Tree Canopy over Other Impervious
 - Turf Grass
 - Suspended Succession- Barren
 - Suspended Succession- Herbaceous
 - Suspended Succession- Scrub/shrub
 - Tree Canopy over Turf Grass
 - Forest
 - Tree Canopy in Agriculture
 - Harvested Forest- Herbaceous
 - Natural Succession- Barren
 - Natural Succession- Herbaceous
 - Natural Succession- Scrub/shrub
 - Cropland- Barren
 - Cropland- Herbaceous
 - Cropland- Scrub/shrub
 - Orchard/Vineyard- Herbaceous
 - Pasture/Hay- Herbaceous
 - Solar- Herbaceous
 - Wetland
 - Tidal Wetlands- Barren
 - Tidal Wetlands- Herbaceous
 - Tidal Wetlands- Scrub/shrub
 - Tidal Wetlands- Forest
 - Riverine (Non-Tidal) Wetlands- Barren
 - Riverine (Non-Tidal) Wetlands- Herbaceous
 - Riverine (Non-Tidal) Wetlands- Scrub/shrub
 - Riverine (Non-Tidal) Wetlands- Forest
 - Terrene/Isolated Wetlands- Barren
 - Terrene/Isolated Wetlands- Herbaceous
 - Terrene/Isolated Wetlands- Forest
 - Bare Shore



Revision 1 LU: Fixed omission of suspended succession under transmission lines

- LandUse
- Water
 - Emergent Wetlands
 - Tree Canopy
 - Scrub-Shrub
 - Herbaceous
 - Bare Developed
 - Other Impervious
 - Impervious Roads
 - Lakes/Ponds
 - Structures
 - Tree Canopy over Roads
 - Tree Canopy over Structures
 - Tree Canopy over Other Impervious
 - Turf Grass
 - Suspended Succession- Barren
 - Suspended Succession- Herbaceous
 - Suspended Succession- Scrub/shrub
 - Tree Canopy over Turf Grass
 - Forest
 - Tree Canopy in Agriculture
 - Harvested Forest- Herbaceous
 - Natural Succession- Barren
 - Natural Succession- Herbaceous
 - Natural Succession- Scrub/shrub
 - Cropland- Barren
 - Cropland- Herbaceous
 - Cropland- Scrub/shrub
 - Orchard/Vineyard- Herbaceous
 - Pasture/Hay- Herbaceous
 - Solar- Herbaceous
 - Wetland
 - Tidal Wetlands- Barren
 - Tidal Wetlands- Herbaceous
 - Tidal Wetlands- Scrub/shrub
 - Tidal Wetlands- Forest
 - Riverine (Non-Tidal) Wetlands- Barren
 - Riverine (Non-Tidal) Wetlands- Herbaceous
 - Riverine (Non-Tidal) Wetlands- Scrub/shrub
 - Riverine (Non-Tidal) Wetlands- Forest
 - Terrene/Isolated Wetlands- Barren
 - Terrene/Isolated Wetlands- Herbaceous
 - Terrene/Isolated Wetlands- Forest
 - Bare Shore

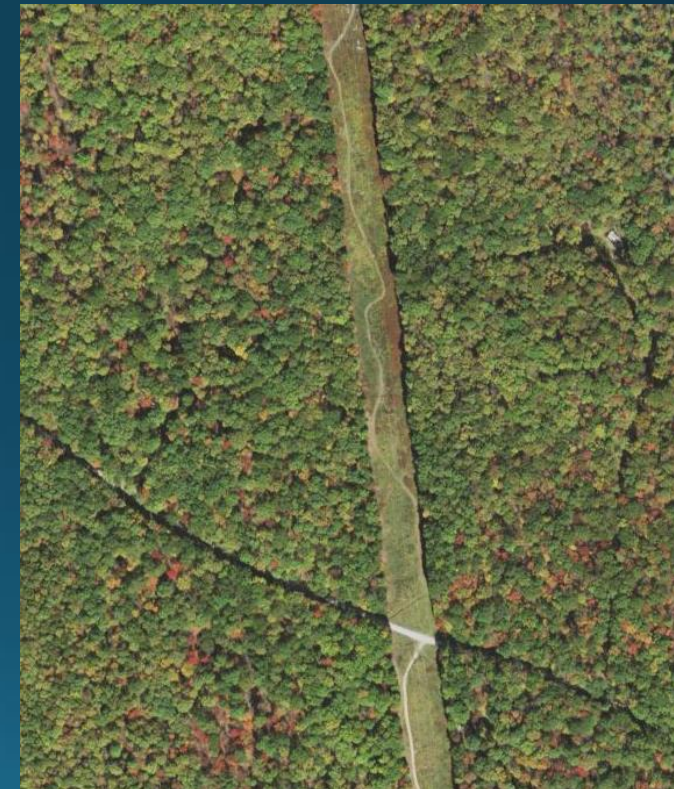
Draft LU



Revision 1 LU



2017/2018 NAIP



 Suspended Succession Highlighted in Pink

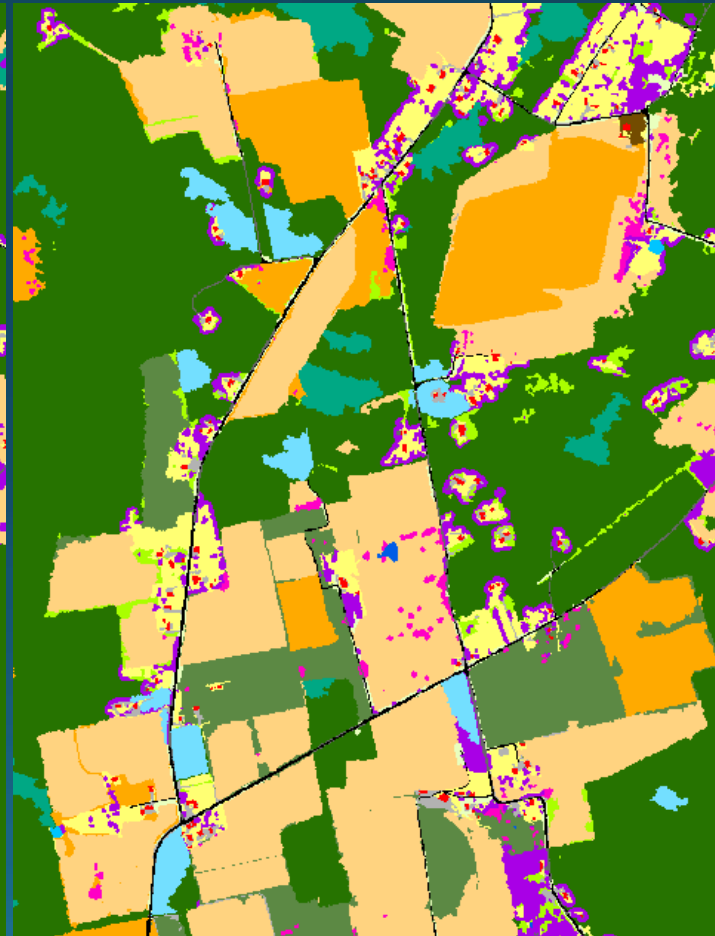
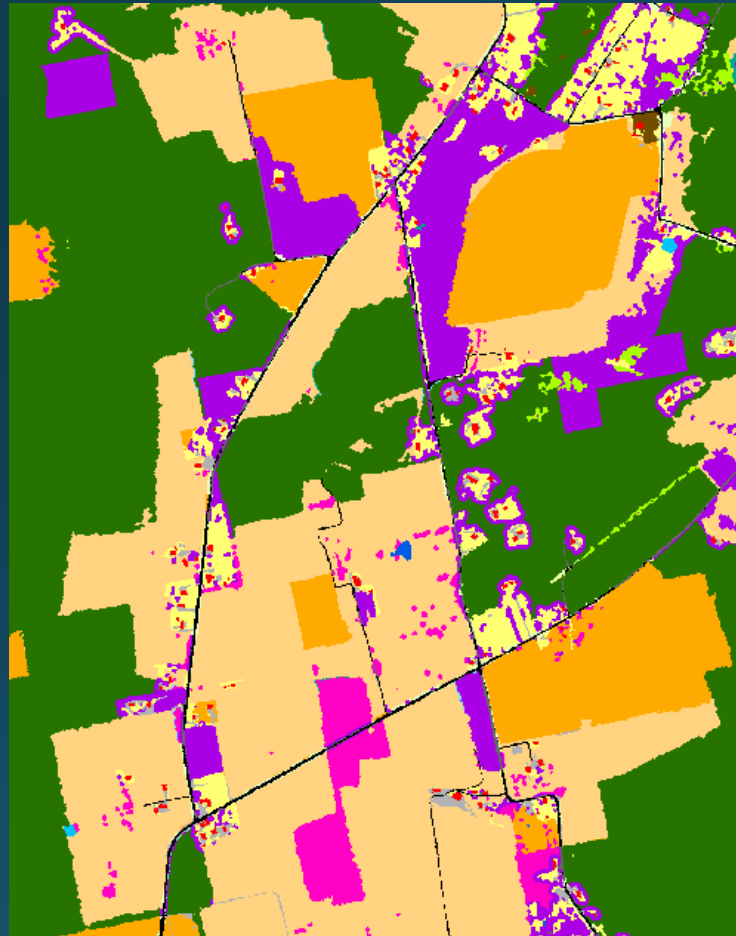
Revision 1 LU: Fixed commission of TC in Ag + TC over Turf

Draft LU

Revision 1 LU

2017/2018 NAIP

- LandUse
- Water
 - Emergent Wetlands
 - Tree Canopy
 - Scrub-Shrub
 - Herbaceous
 - Bare Developed
 - Other Impervious
 - Impervious Roads
 - Lakes/Ponds
 - Structures
 - Tree Canopy over Roads
 - Tree Canopy over Structures
 - Tree Canopy over Other Impervious
 - Turf Grass
 - Suspended Succession- Barren
 - Suspended Succession- Herbaceous
 - Suspended Succession- Scrub/shrub
 - Tree Canopy over Turf Grass
 - Forest
 - Tree Canopy in Agriculture
 - Harvested Forest- Herbaceous
 - Natural Succession- Barren
 - Natural Succession- Herbaceous
 - Natural Succession- Scrub/shrub
 - Cropland- Barren
 - Cropland- Herbaceous
 - Cropland- Scrub/shrub
 - Orchard/Vineyard- Herbaceous
 - Pasture/Hay- Herbaceous
 - Solar- Herbaceous
 - Wetland
 - Tidal Wetlands- Barren
 - Tidal Wetlands- Herbaceous
 - Tidal Wetlands- Scrub/shrub
 - Tidal Wetlands- Forest
 - Riverine (Non-Tidal) Wetlands- Barren
 - Riverine (Non-Tidal) Wetlands- Herbaceous
 - Riverine (Non-Tidal) Wetlands- Scrub/shrub
 - Riverine (Non-Tidal) Wetlands- Forest
 - Terrene/Isolated Wetlands- Barren
 - Terrene/Isolated Wetlands- Herbaceous
 - Terrene/Isolated Wetlands- Forest
 - Bare Shore



■ TC over Turf Grass Highlighted in Purple

■ TC in Agriculture Highlighted in Pink

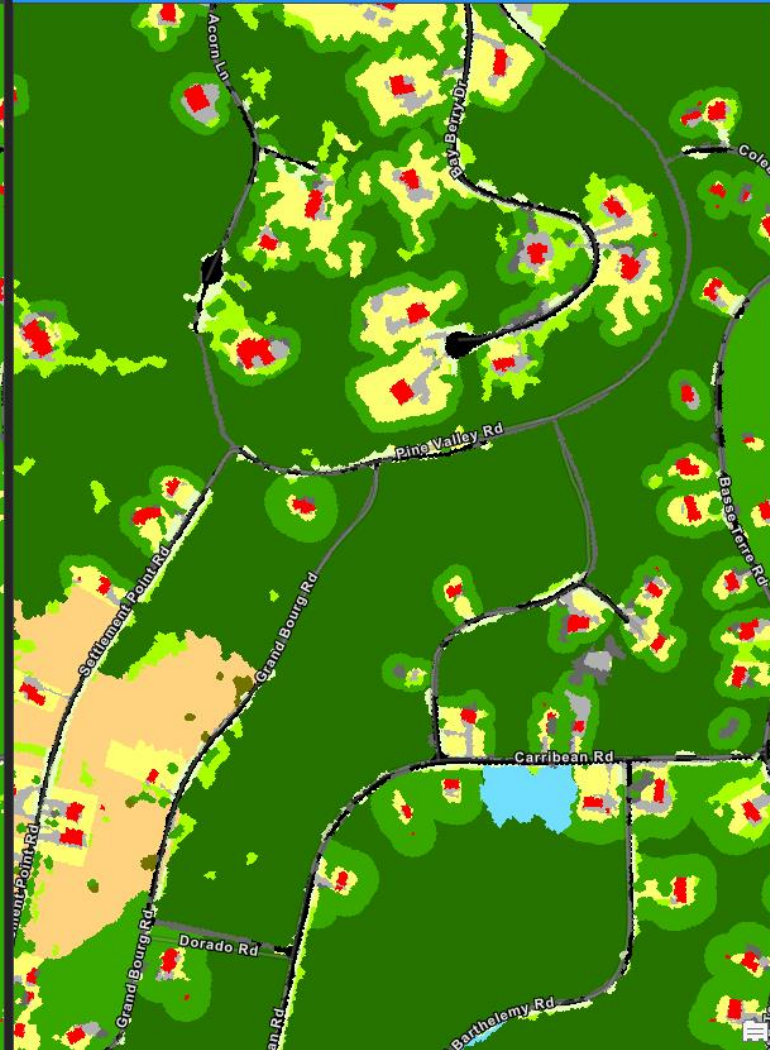
Revision 1 LU: Fixed Tree Canopy over Turf Grass and Forest Model

- LandUse**
- Water
 - Emergent Wetlands
 - Tree Canopy
 - Scrub-Shrub
 - Herbaceous
 - Bare Developed
 - Other Impervious
 - Impervious Roads
 - Lakes/Ponds
 - Structures
 - Tree Canopy over Roads
 - Tree Canopy over Structures
 - Tree Canopy over Other Impervious
 - Turf Grass
 - Suspended Succession- Barren
 - Suspended Succession- Herbaceous
 - Suspended Succession- Scrub/shrub
 - Tree Canopy over Turf Grass
 - Forest
 - Tree Canopy in Agriculture
 - Harvested Forest- Herbaceous
 - Natural Succession- Barren
 - Natural Succession- Herbaceous
 - Natural Succession- Scrub/shrub
 - Cropland- Barren
 - Cropland- Herbaceous
 - Cropland- Scrub/shrub
 - Orchard/Vineyard- Herbaceous
 - Pasture/Hay- Herbaceous
 - Solar- Herbaceous
 - Wetland
 - Tidal Wetlands- Barren
 - Tidal Wetlands- Herbaceous
 - Tidal Wetlands- Scrub/shrub
 - Tidal Wetlands- Forest
 - Riverine (Non-Tidal) Wetlands- Barren
 - Riverine (Non-Tidal) Wetlands- Herbaceous
 - Riverine (Non-Tidal) Wetlands- Scrub/shrub
 - Riverine (Non-Tidal) Wetlands- Forest
 - Terrene/Isolated Wetlands- Barren
 - Terrene/Isolated Wetlands- Herbaceous
 - Terrene/Isolated Wetlands- Forest
 - Bare Shore

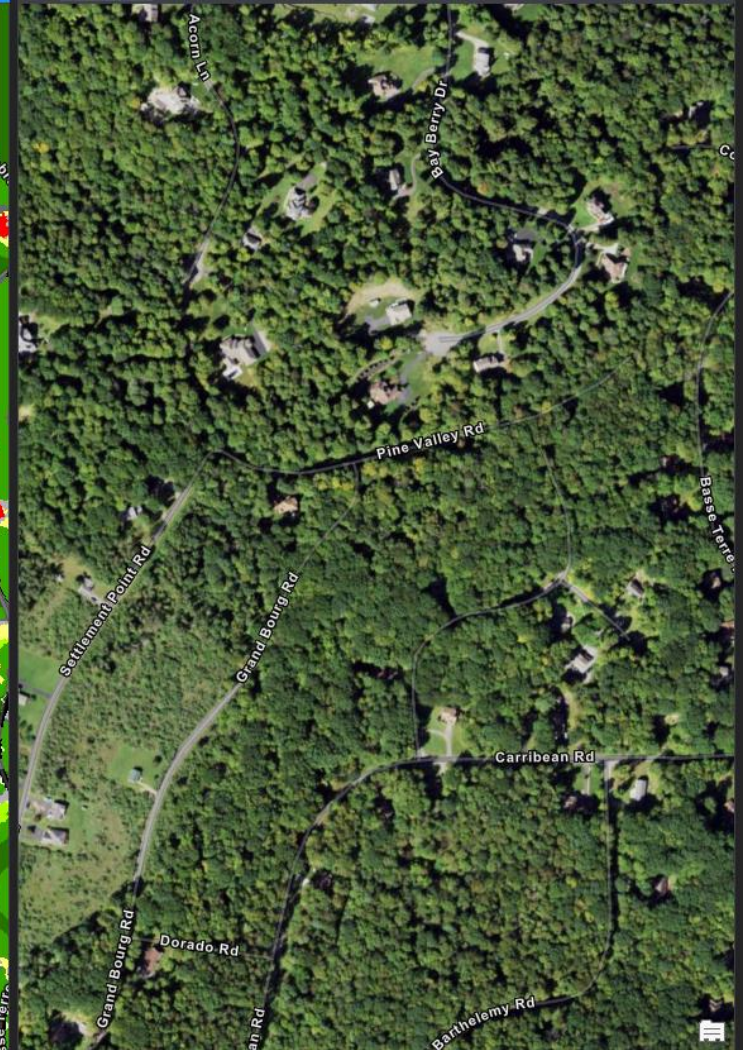
Draft LU



Revision 1 LU



2017/2018 NAIP



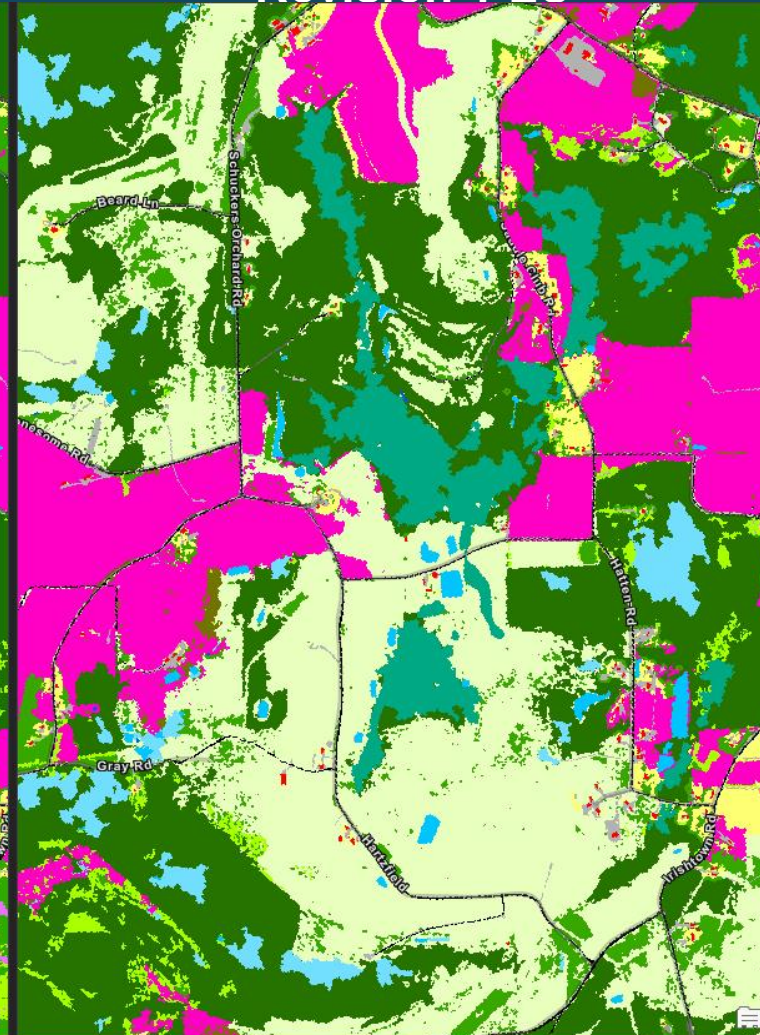
Revision 1 LU: Fixed overclassification of Agriculture by adding in abandoned mines dataset

- LandUse
- Water
 - Emergent Wetlands
 - Tree Canopy
 - Scrub-Shrub
 - Herbaceous
 - Bare Developed
 - Other Impervious
 - Impervious Roads
 - Lakes/Ponds
 - Structures
 - Tree Canopy over Roads
 - Tree Canopy over Structures
 - Tree Canopy over Other Impervious
 - Turf Grass
 - Suspended Succession- Barren
 - Suspended Succession- Herbaceous
 - Suspended Succession- Scrub/shrub
 - Tree Canopy over Turf Grass
 - Forest
 - Tree Canopy in Agriculture
 - Harvested Forest- Herbaceous
 - Natural Succession- Barren
 - Natural Succession- Herbaceous
 - Natural Succession- Scrub/shrub
 - Cropland- Barren
 - Cropland- Herbaceous
 - Cropland- Scrub/shrub
 - Orchard/Vineyard- Herbaceous
 - Pasture/Hay- Herbaceous
 - Solar- Herbaceous
 - Wetland
 - Tidal Wetlands- Barren
 - Tidal Wetlands- Herbaceous
 - Tidal Wetlands- Scrub/shrub
 - Tidal Wetlands- Forest
 - Riverine (Non-Tidal) Wetlands- Barren
 - Riverine (Non-Tidal) Wetlands- Herbaceous
 - Riverine (Non-Tidal) Wetlands- Scrub/shrub
 - Riverine (Non-Tidal) Wetlands- Forest
 - Terrene/Isolated Wetlands- Barren
 - Terrene/Isolated Wetlands- Herbaceous
 - Terrene/Isolated Wetlands- Forest
 - Bare Shore

Draft LU



Revision 1 LU



2017/2018 NAIP



All Agriculture Classes Highlighted in Pink

Remaining Development

- New data (T2V1) from UVM
- Address additional workgroup feedback
- Continue to Correct known issues
- Further spatial analysis optimization
- Streamline data preparation
- Develop more error handling
- Build out existing cloud infrastructure for more robust batching
 - Automate: VM creation, execute code, transfer outputs to central data repository, detailed reporting (runtimes, parameters, errors) to central tracking.
- Update and share model diagram

Known Issues & Potential Corrections

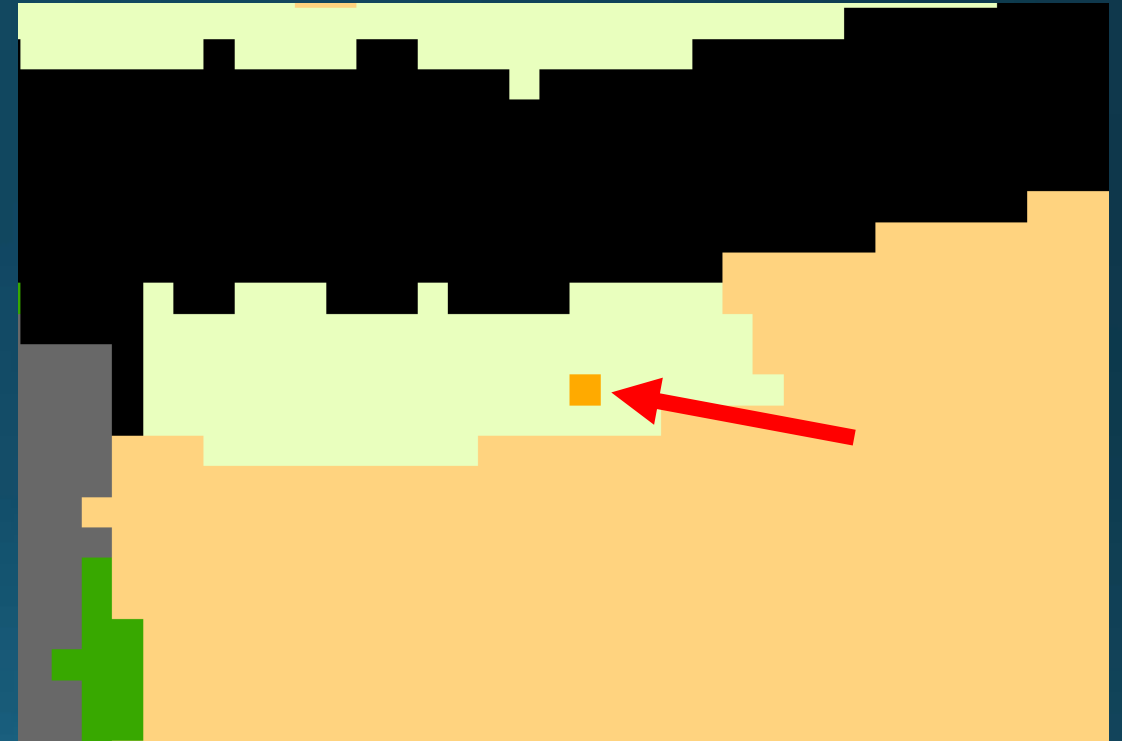
- **Suspended Succession in small parcels**
 - Source: Area thresholds and inconsistencies in parcel data topology
 - Fix: apply adjacency analysis to exclude these areas
- **Incomplete coverage in Open Water areas**
 - Source: Draft land cover data
 - Fix: UVM will include full coverage in V1 LC



Suspended is recolored to brown in this example for clarity

Known Issues & Potential Corrections

- **Single pixels with differing classification from adjacent similar LC**
 - **Source:** differing LC and segmentation versions and the combination of parcel and segmentation boundaries
 - **Fix:** Matching LC and segmentation in V1 data, “attach” single pixels to parent segment in data prep



Land Use Change Web Application

- <http://cicapps.org/obj1lu/>

