MAPPING METHODS: PHASE 6 AGRICULTURAL LAND USES

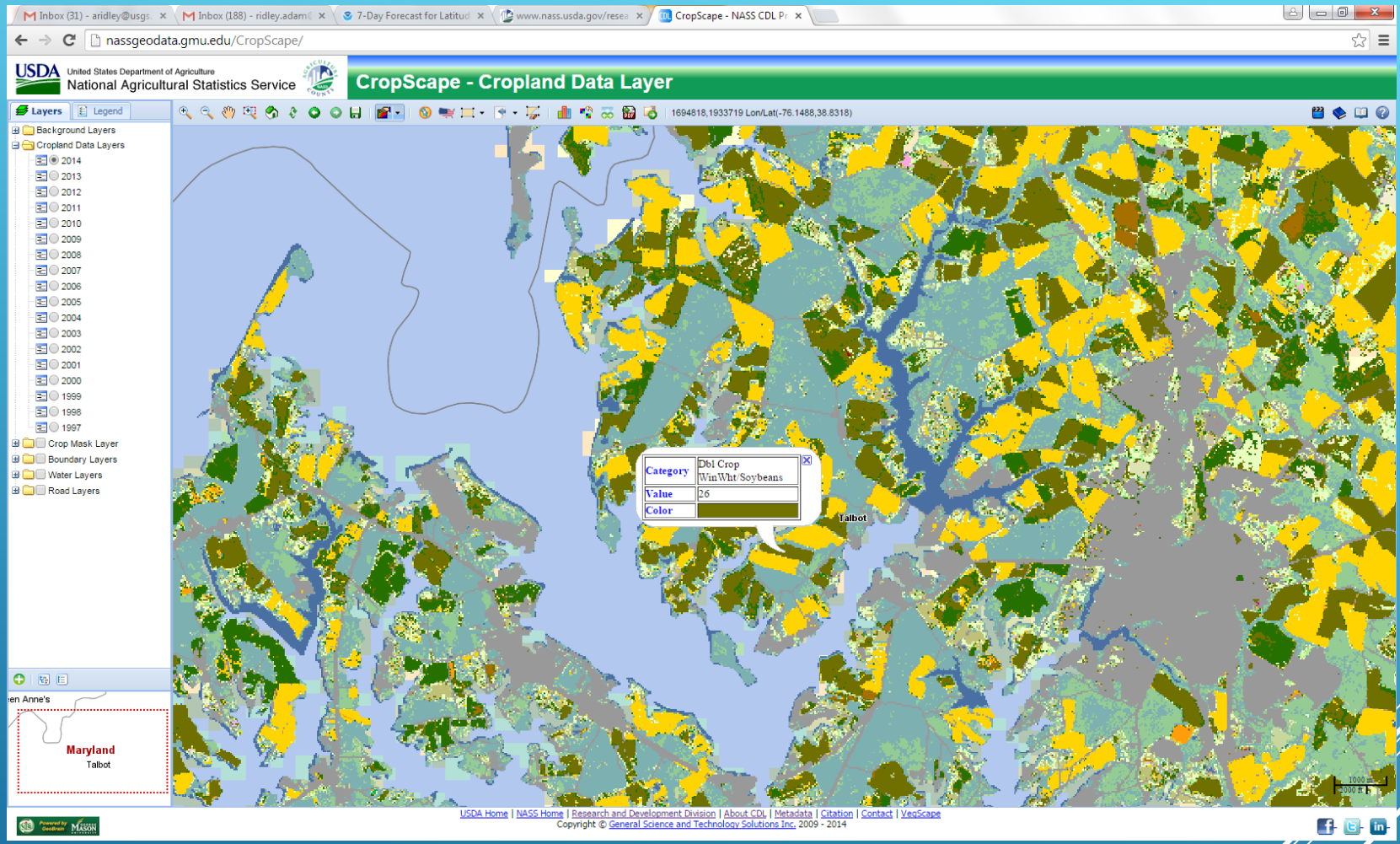
Fitting the Cropland Data Layer to 2012 Ag Census Data

AG CENSUS DATA

- Conducted every 5 years by the National Agricultural Statistics Service (NASS).
- Self-reported data from farmers and ranchers regarding land use and ownership, operator characteristics, production practices, income and expenditures.
- Aggregated to the County and State levels.
- Last conducted in 2012.
- Crosswalked to Phase 6 Agriculture land use type

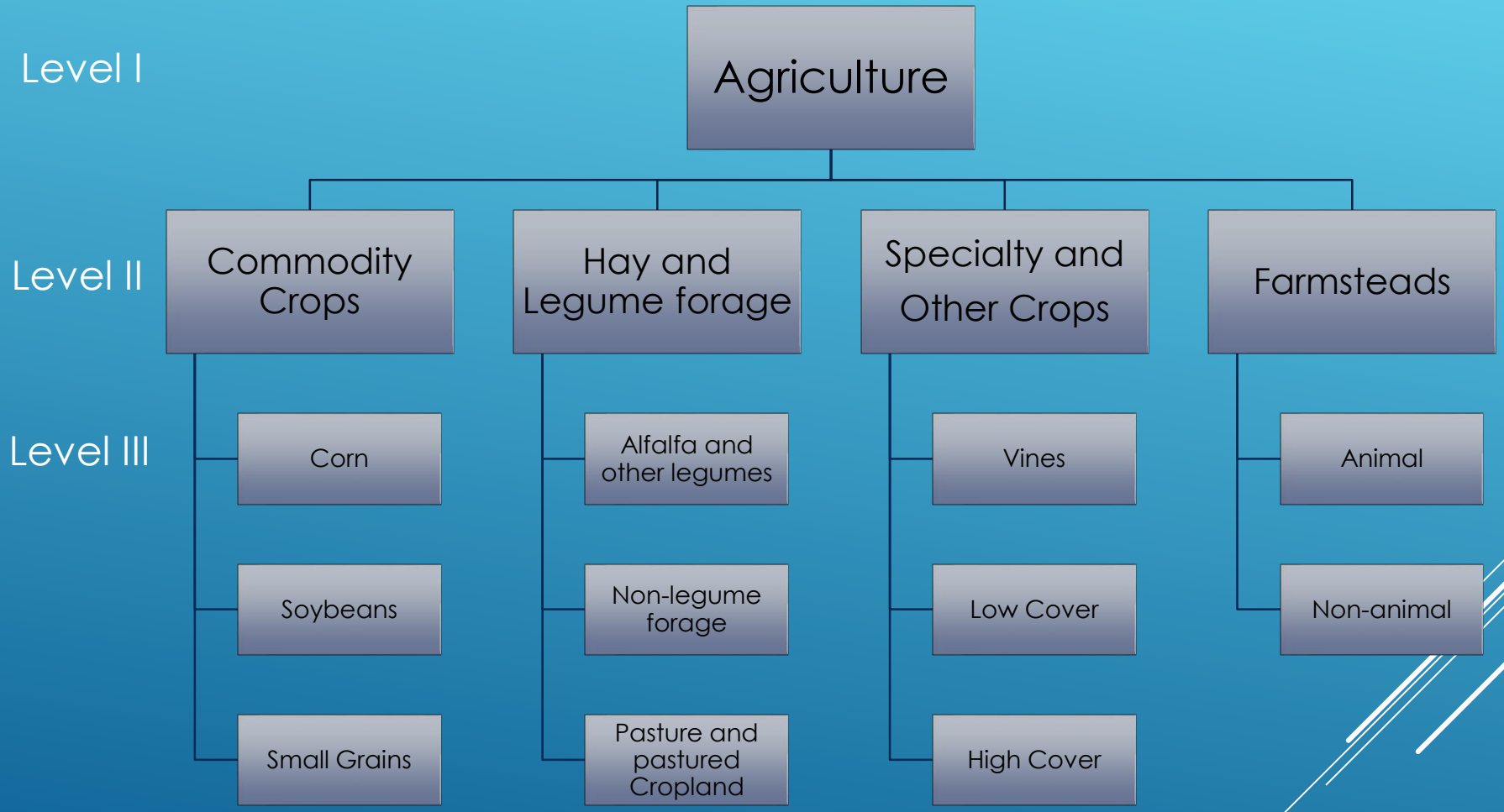
CROPLAND DATA LAYER

- Product of the National Agricultural Statistics Service (NASS).
- Uses satellite imagery to provide acreage estimates to the Agricultural Statistics Board for each state's major commodities.
- Produce digital, crop-specific, categorized geo-referenced output products.
- Developed yearly.



CROPLAND DATA LAYER

Proposed Phase 6 Agriculture Land Uses



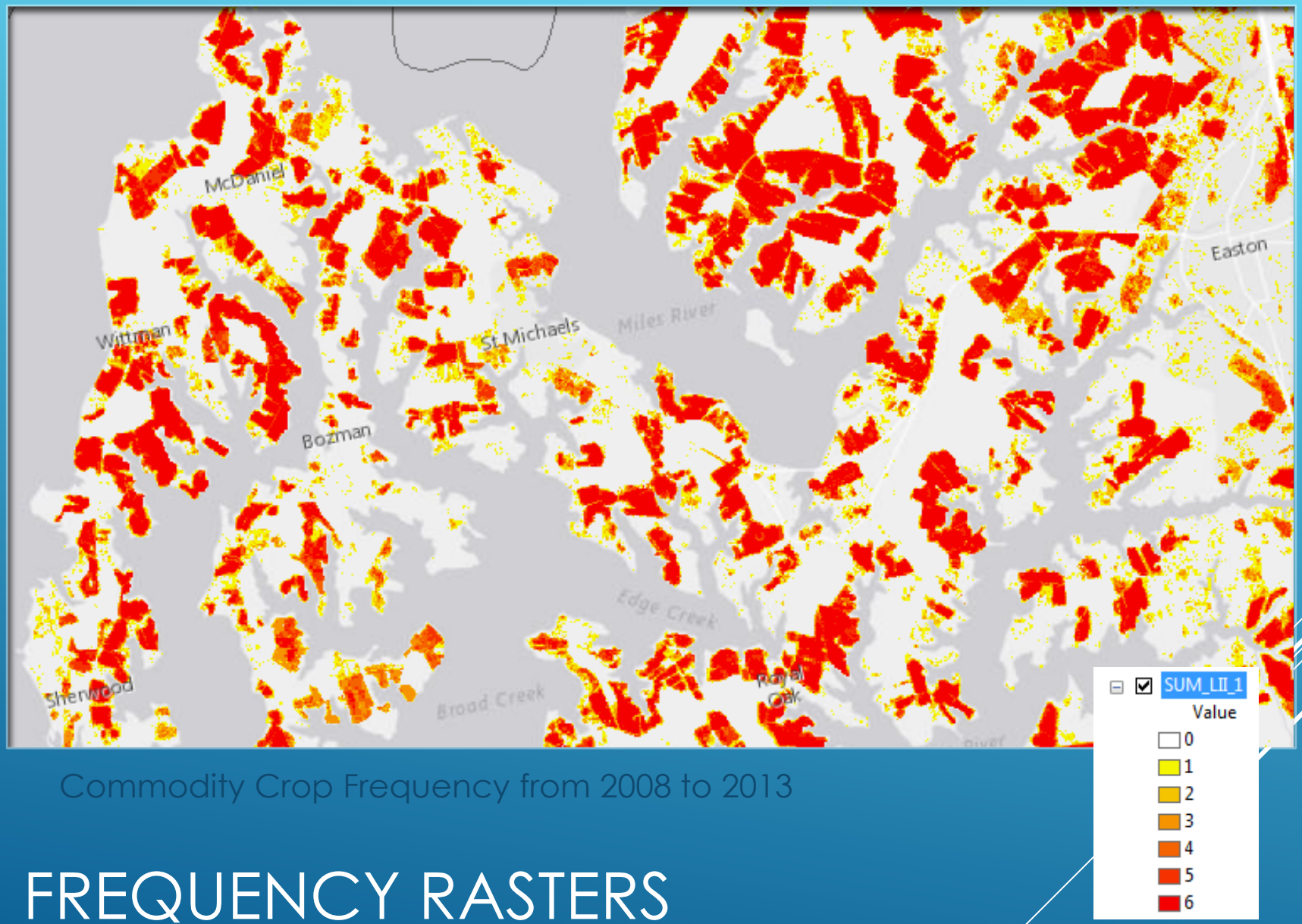
	A	B	C	D	E	F
1	CDL Code	CDL Name	P6_LIII_Code	P6_LI	P6_LII	P6_LIII
2	38	Camelina	2.3.2	Ag	Specialty and Other Crops	Low Cover
3	58	Clover/Wildflowers	2.2.1	Ag	Hay and Legume forage	Alfalfa and Other legumes
4	241	Dbl Crop Corn/Soybeans	2.1.1	Ag	Commodity Crops	Corn
5	239	Dbl Crop Soybeans/Cotton	2.1.2	Ag	Commodity Crops	Soybeans
6	63	Forest	2.5.0	Ag	Adjacent Forest	Adjacent Forest
7	3	Rice	2.1.3	Ag	Specialty and Other Crops	Small Grains
8	221	Strawberries	2.3.2	Ag	Specialty and Other Crops	Low Cover
9	1	Corn	2.1.1	Ag	Commodity Crops	Corn
10	4	Sorghum	2.1.1	Ag	Commodity Crops	Corn
11	237	Dbl Crop Barley/Corn	2.1.1	Ag	Commodity Crops	Corn
12	235	Dbl Crop Barley/Sorghum	2.1.1	Ag	Commodity Crops	Corn
13	226	Dbl Crop Oats/Corn	2.1.1	Ag	Commodity Crops	Corn
14	225	Dbl Crop WinWht/Corn	2.1.1	Ag	Commodity Crops	Corn
15	236	Dbl Crop WinWht/Sorghum	2.1.1	Ag	Commodity Crops	Corn
16	21	Barley	2.1.1	Ag	Commodity Crops	Corn
17	39	Buckwheat	2.1.1	Ag	Commodity Crops	Corn
18	31	Canola	2.1.1	Ag	Commodity Crops	Corn
19	22	Durum Wheat	2.1.1	Ag	Commodity Crops	Corn
20	29	Millet	2.1.1	Ag	Commodity Crops	Corn
21	28	Oats	2.1.1	Ag	Commodity Crops	Corn
22	25	Other Small Grains	2.1.1	Ag	Commodity Crops	Corn
23	34	Rape Seed	2.1.1	Ag	Commodity Crops	Corn
24	27	Rye	2.1.1	Ag	Commodity Crops	Corn
25	30	Speltz	2.1.1	Ag	Commodity Crops	Corn
26	23	Spring Wheat	2.1.1	Ag	Commodity Crops	Corn
27	205	Triticale	2.1.1	Ag	Commodity Crops	Corn
28	24	Winter Wheat	2.1.1	Ag	Commodity Crops	Corn
29	5	Soybeans	2.1.2	Ag	Commodity Crops	Soybeans
30	240	Dbl Crop Soybeans/Oats	2.1.2	Ag	Commodity Crops	Soybeans
31	254	Dbl Crop Barley/Soybeans	2.1.3	Ag	Commodity Crops	Small Grains
32	26	Dbl Crop WinWht/Soybeans	2.1.3	Ag	Commodity Crops	Small Grains
33	36	Alfalfa	2.2.1	Ag	Hay and Legume forage	Alfalfa and Other legumes
34	224	Vetch	2.2.1	Ag	Hay and Legume forage	Alfalfa and Other legumes
35	37	Other Hay/Non Alfalfa	2.2.2	Ag	Hay and Legume forage	Non-legume forage
36	60	Switchgrass	2.2.2	Ag	Hay and Legume forage	Non-legume forage
37	209	Cantaloupes	2.3.1	Ag	Specialty and Other Crops	Vines
38	249	Gourds	2.3.1	Ag	Specialty and Other Crops	Vines

Sheet4

2 Agriculture

- 2.1 Commodity crops
  - 2.1.1 Corn
    - 2.1.1.1 Grain - fallow
    - 2.1.1.2 Grain - fall sm grain
    - 2.1.1.3 Silage - fallow
    - 2.1.1.4 Silage - fall sm grain
  - 2.1.2 Soybeans
    - 2.1.2.1 Fall fallow
    - 2.1.2.2 Fall sm grain
  - 2.1.3 Small grains
    - 2.1.3.1 Sm grain - Dbl Crop Beans
    - 2.1.3.2 Forage
    - 2.1.3.3 Sm grain - fallow
- 2.2 Hay and Legume and forage
  - 2.2.1 Alfalfa and other legumes
  - 2.2.2 Non-legume forage
  - 2.2.3 Pasture and pastured cropland
- 2.3 Speciality & Other crops
  - 2.3.1 Vines
    - 2.3.1.1 High nutrient input
    - 2.3.1.2 Medium nutrient input
    - 2.3.1.3 Low nutrient input
  - 2.3.2 Low cover
    - 2.3.2.1 High nutrient input
    - 2.3.2.2 Medium nutrient input
    - 2.3.2.3 Low nutrient input
  - 2.3.3 High cover
    - 2.3.3.1 High nutrient input
    - 2.3.3.2 Medium nutrient input
    - 2.3.3.3 Low nutrient input
- 2.4 Animals
  - 2.4.1 Animal Impervious
- 2.5 Farmstead
  - 2.5.1 Impervious
  - 2.5.2 Pervious

CDL CROSSWALK



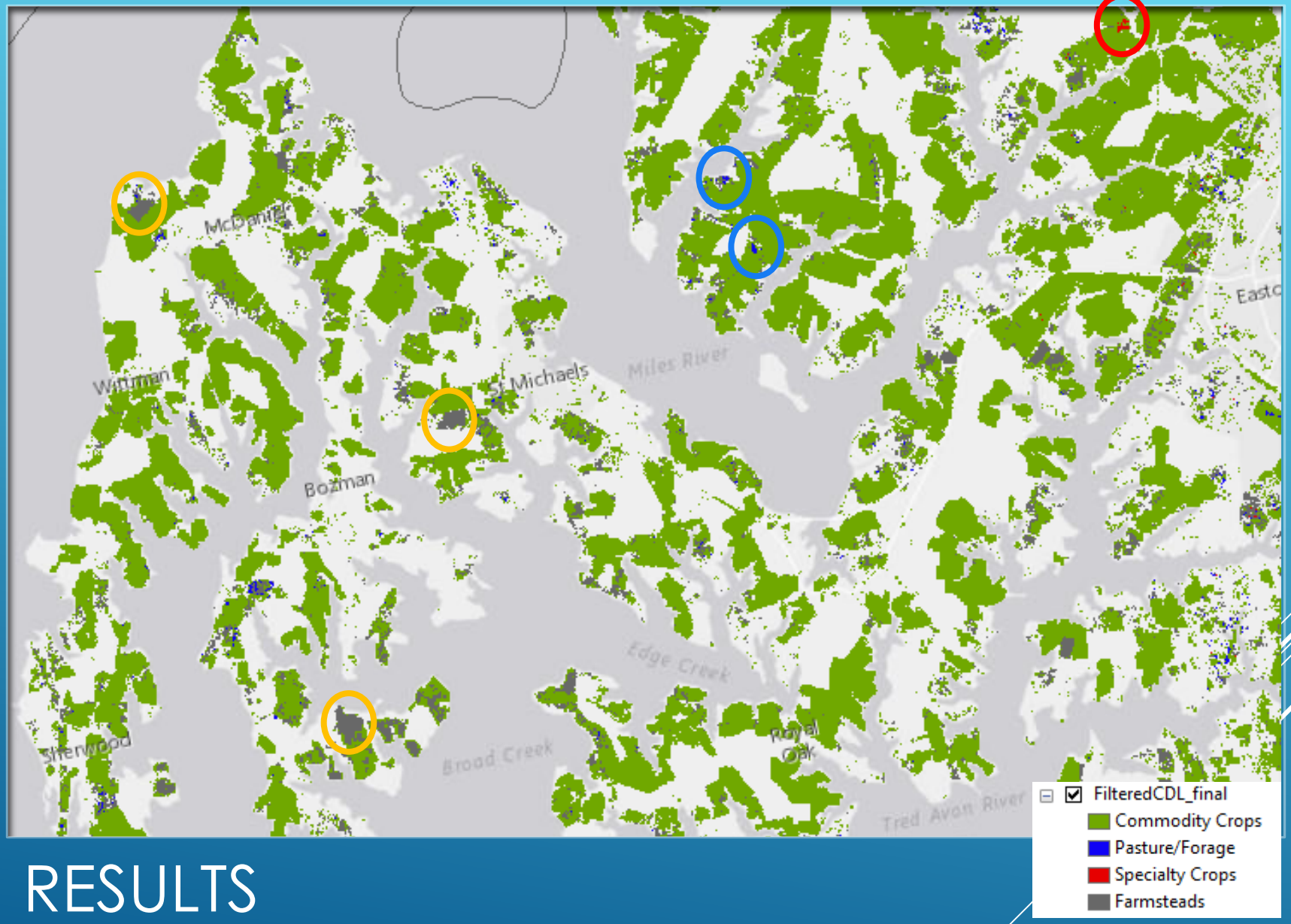
Commodity Crop Frequency from 2008 to 2013

FREQUENCY RASTERS

PROCESS

- Used Ag Census data to develop acreage thresholds for each class by county.
- Filtered frequency rasters to approximate (but not exceed) acreage thresholds.
- Combined results to create a single dataset (Farmsteads > Specialty Crops > Pasture/Forage > Commodity Crops)

RESULTS

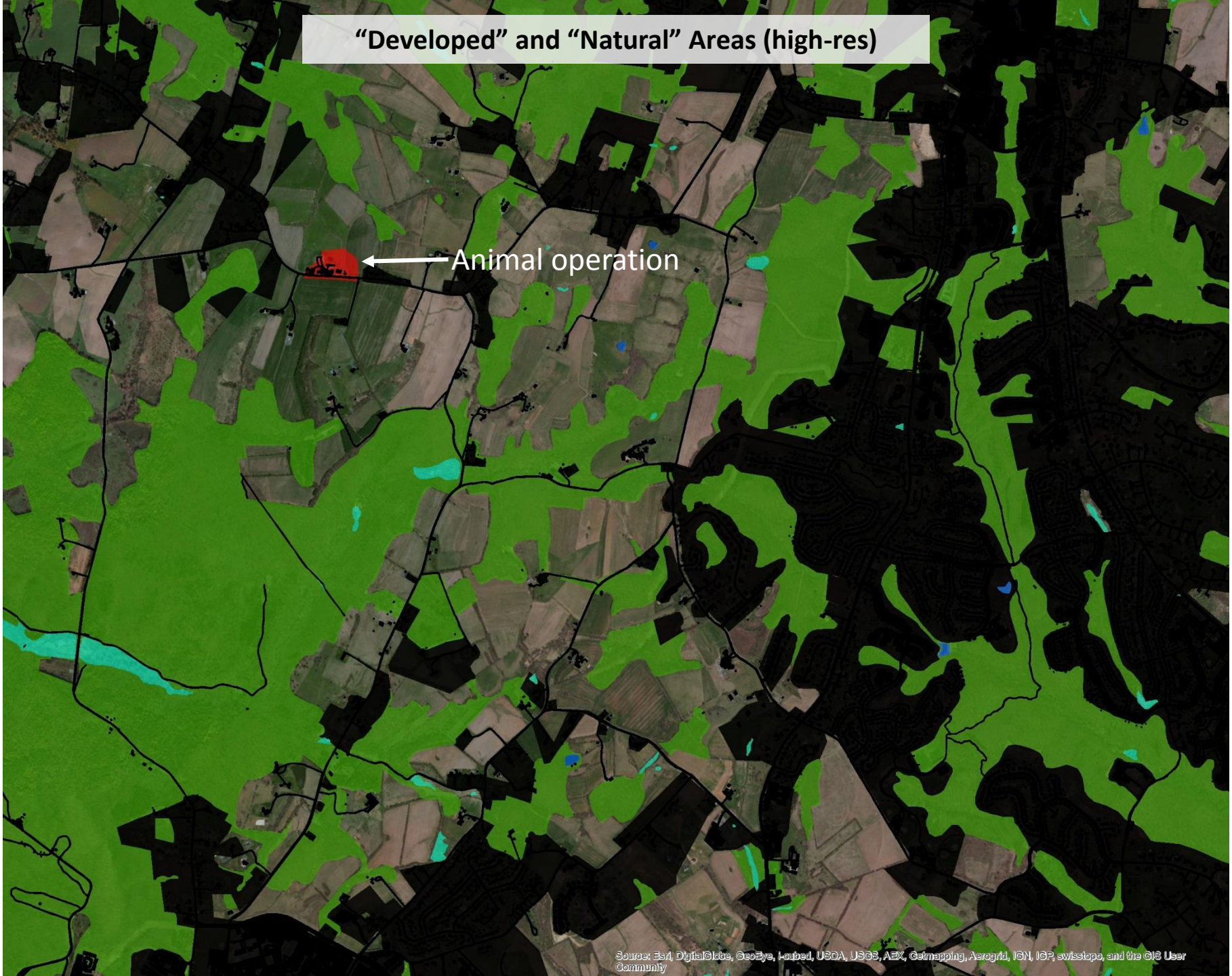

McDaniel
Wittman
St Michaels
Miles River
Bozman
Edge Creek
Broad Creek
Sherwood
Royal Oak
Tred Avon River
FilteredCDL_final
Commodity Crops
Pasture/Forage
Specialty Crops
Farmsteads

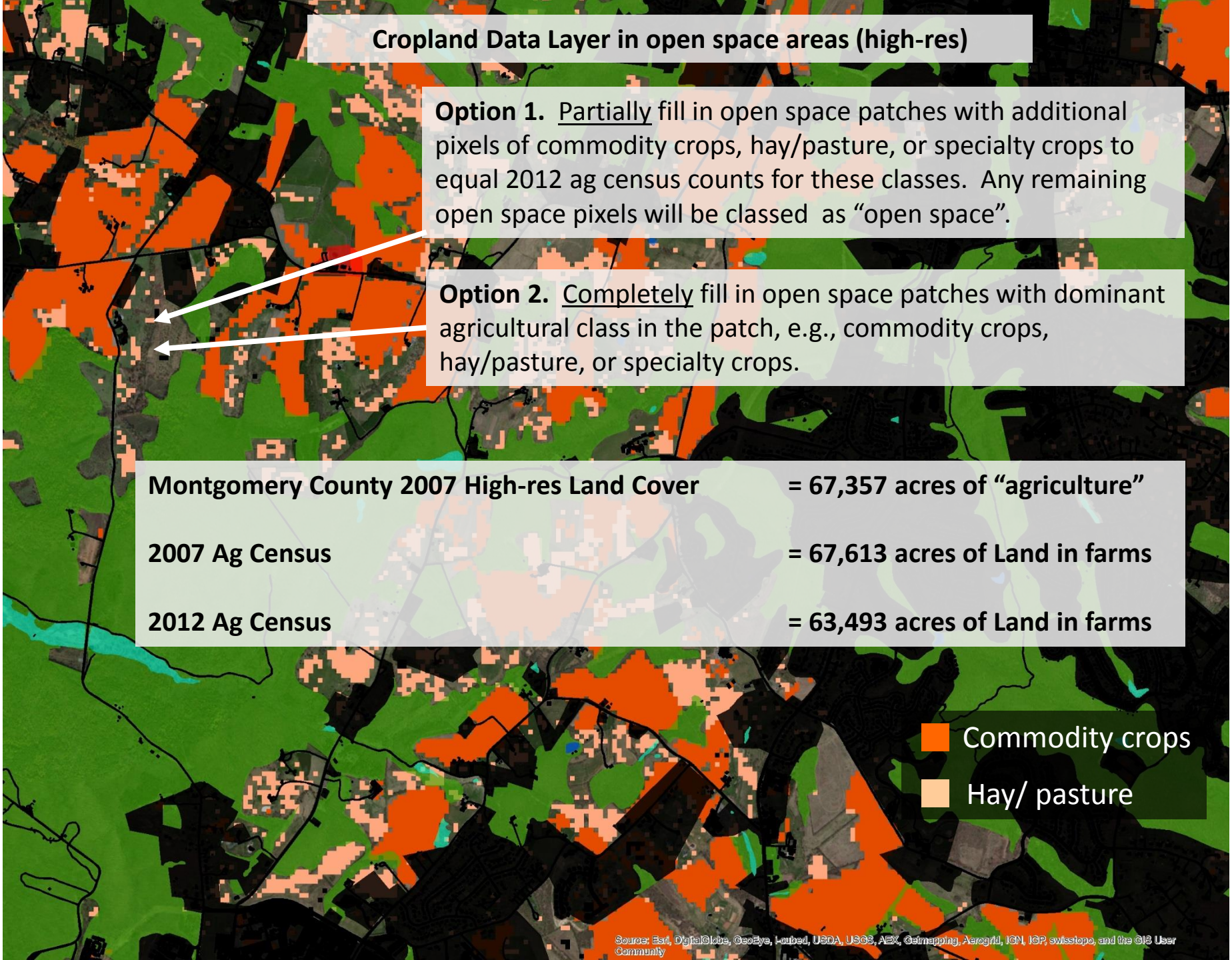
ISSUES

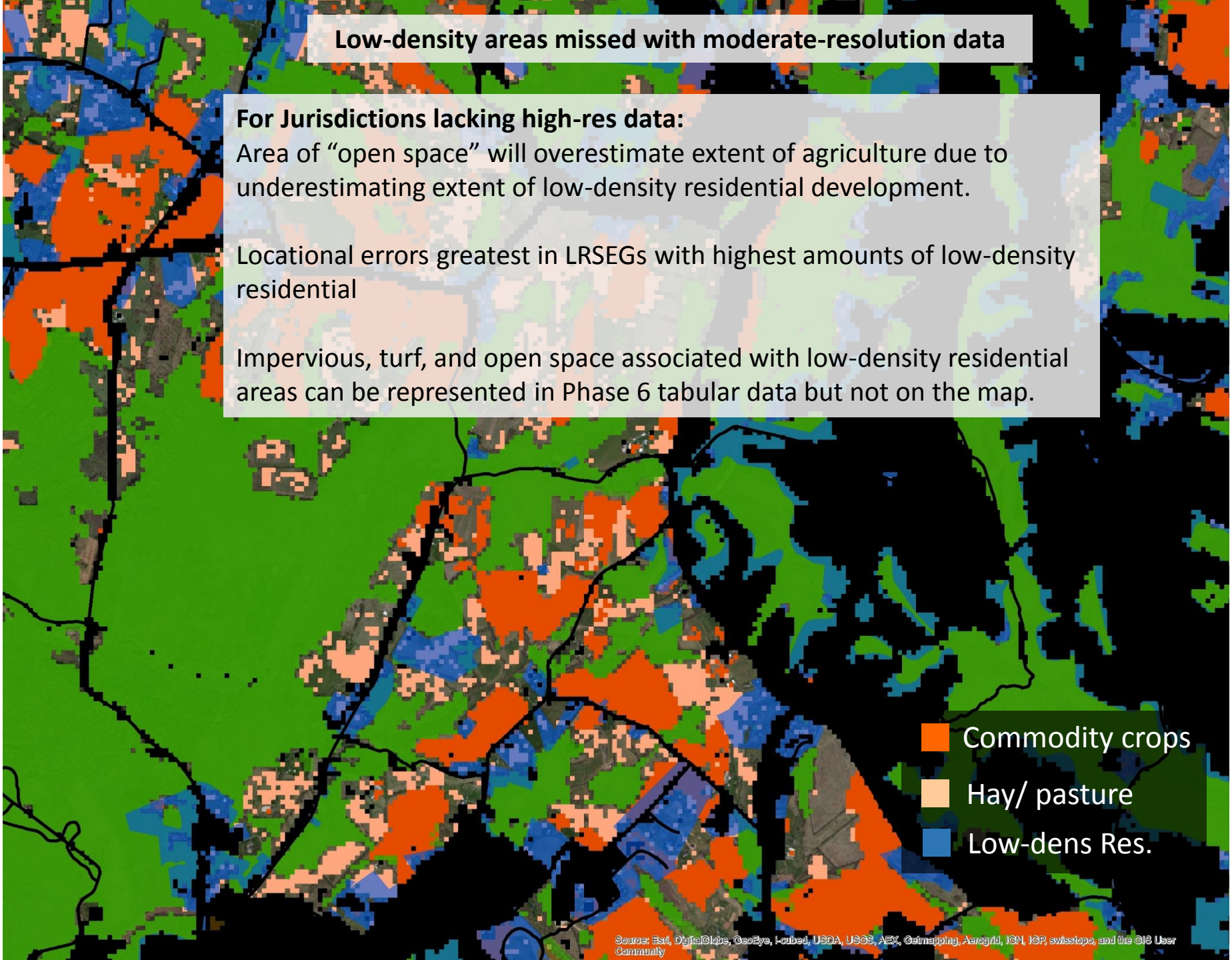
- Farmsteads poorly represented by CDL in both size and location
- How do we address fragmentation within the combined agriculture dataset?
- How do we approach in-fill to meet Ag Census acreages?

Rural Montgomery County Maryland

“Developed” Area (high-res)


“Developed” and “Natural” Areas (high-res)
Animal operation
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


Cropland Data Layer in open space areas (high-res)
Option 1. Partially fill in open space patches with additional pixels of commodity crops, hay/pasture, or specialty crops to equal 2012 ag census counts for these classes. Any remaining open space pixels will be classed as "open space".
Option 2. Completely fill in open space patches with dominant agricultural class in the patch, e.g., commodity crops, hay/pasture, or specialty crops.
Montgomery County 2007 High-res Land Cover = 67,357 acres of "agriculture"
2007 Ag Census = 67,613 acres of Land in farms
2012 Ag Census = 63,493 acres of Land in farms
Commodity crops
Hay/ pasture
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


Low-density areas missed with moderate-resolution data
For Jurisdictions lacking high-res data:
Area of “open space” will overestimate extent of agriculture due to underestimating extent of low-density residential development.
Locational errors greatest in LRSEGs with highest amounts of low-density residential
Impervious, turf, and open space associated with low-density residential areas can be represented in Phase 6 tabular data but not on the map.
Commodity crops
Hay/ pasture
Low-dens Res.
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Don't use Cropland Data Layer to represent farmstead area, instead use the to NLCD impervious dataset.

For jurisdictions with just moderate-res data:

Use Ag Census counts for Number of Farms multiplied by impervious surface and turf grass coefficients derived in areas with high-resolution data.

For jurisdictions with high-res data:

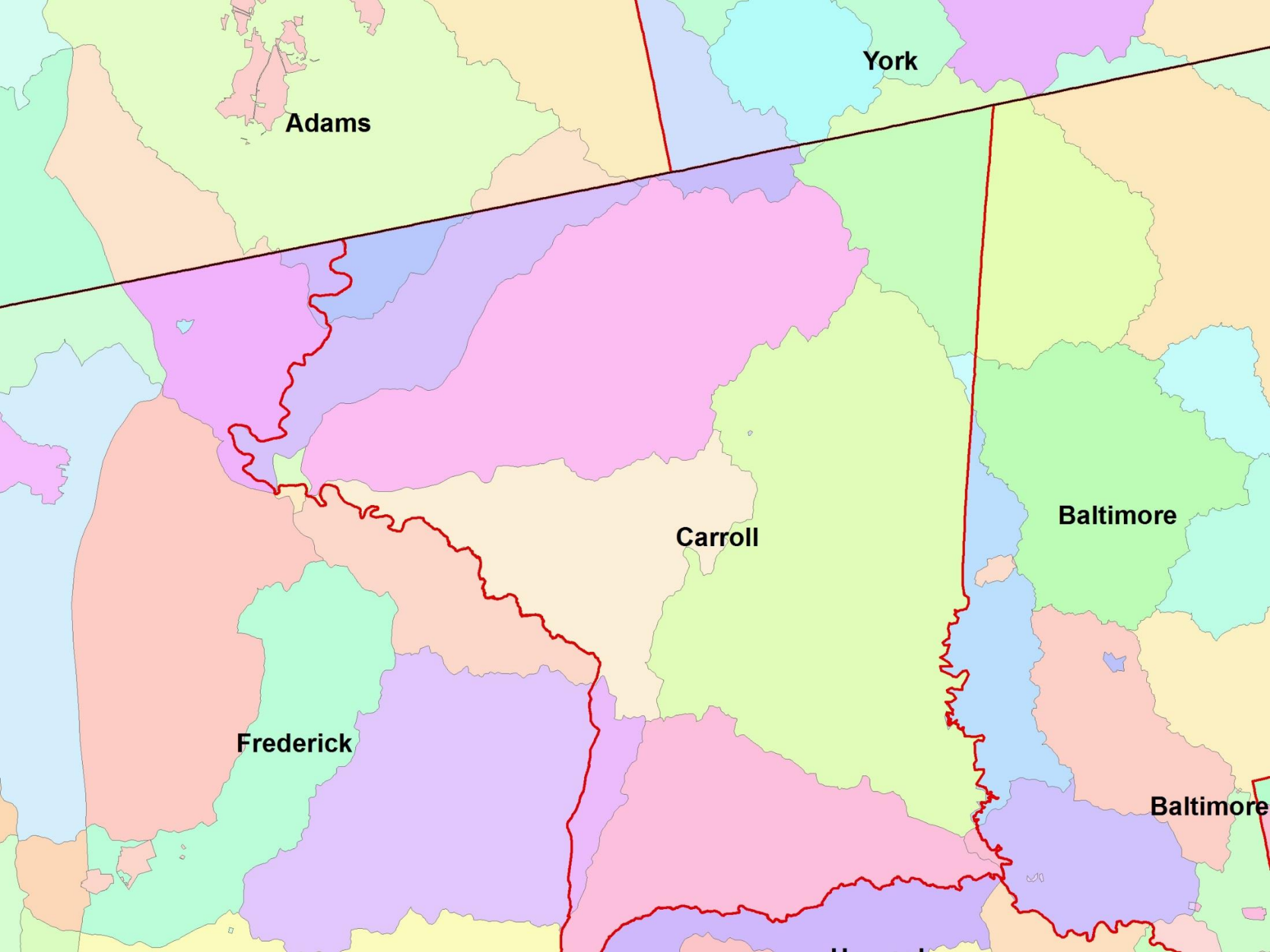
Use impervious cover and buffered impervious cover areas within agricultural parcels or agricultural land uses.

RECOMMENDATION #1

RECOMMENDATION #2

Option 2: Completely fill in open space patches with dominant agricultural class in the patch, e.g., commodity crops, hay/pasture, or specialty crops.

Rationale: Even high-res land use/cover cannot match the Ag Census acreages exactly. Chesapeake Conservancy's high-res land cover data coupled with buffers around rural impervious, non-road, surfaces to account for turf grass should enable a reasonably close approximation of 2012 Ag Census Acres.


Adams
York
Carroll
Baltimore
Frederick
Baltimore