

Problem Set 6: Cartography and Land Use Classification

Exercise One: Metadata for LULC Datasets

Assignment 3.1

- What does MMU stand for? What is the definition of MMU? What is the MMU of the 2020 LU/LC dataset? Is it different for different types of land cover?
 - MMU stands for Minimum mapping unit
 - 1 acre is the MMU of this dataset
 - It is different for water and wetland polygons, at 0.25 acre
- What is the scale and pixel resolution of the 2020 Digital Orthophotography? Be careful, I am asking which scale the digital orthophotography was produced at.
 - The file that is presumably the source of 2020 Digital Orthophotography for NJ, titled "[Basemap/Orthos Natural 2020 NJ WM \(MapServer\)](#)" has a resolution of 1 foot pixel for the entire state
 - Min Scale: 5.91657527591555E8
 - Max Scale: 70.5310735
- What is the definition of the field named CHANGE20?
 - Flag that identifies whether polygon has undergone a land use/land cover change between 2015 and 2020
- Who is the primary contact person for this dataset?
 - GIS Help Desk

Assignment 3.2

- Why is the Anderson Classification System referred to as a "hierarchical" system?
 - The code describes land use in a detailed way.
 - "The four digits represent one to four levels of classification: Level I, general, Level II descriptive, Level III, detailed, and Level IV, most detailed. Therefore the first digit in the code is the Level I general classification. The first two digits reveal the Level II descriptive code, the first three digits a more detailed description, while all four digits represent the most detailed level of classification"
- What is the Anderson code for residential, single unit, medium density?
 - 1120
- What is the Anderson code for deciduous brush, shrubland?

- 4420

Assignment 1.3

- What is the detailed definition for residential, single unit, medium density?
 - This category is comprised of residential urban/suburban neighborhoods greater than 1/8 acre and up to and including 1/2 acre lots.
- What is the detailed definition for Deciduous Brush/Shrubland (>25% Brush Covered with Deciduous Species Predominant > 75%)?
 - This category contains natural forested areas with deciduous species less than 20 feet in height. An area must have greater than 25% brush cover to be placed in this category. This category also contains inactive agricultural areas that have been grown over with brush.
 - There are photographic signature differences between brushland and the pole or saw-timber stage trees (Categories 4100, 4200, 4300). Besides the obvious height difference visible on stereo viewing, larger trees display much larger crown diameters than brushland areas.

Assignment 1.4

- How were the land use/land cover polygons recognized, classified, and delineated in the 2020 LU/LC dataset?
 - The dataset was created by comparing the 2015 LU/LC layer to 2020 color infrared (CIR) imagery. Areas of change were identified, delineated, and coded accordingly. The classification system employed is a modified version of the Anderson et al. classification system. The minimum mapping unit (MMU) is 1 acre for changes to non-water and non-wetland polygons, while changes to these two categories were mapped using a 0.25-acre MMU.
- What are collateral sources and how are they used?
 - While the specific collateral sources utilized in this dataset aren't detailed in the provided metadata, collateral sources in land use mapping typically include ancillary data such as existing maps, land records, field surveys, and other relevant datasets. These sources assist in accurately interpreting and validating land cover features during the mapping process.
- When a road separated two different LU/LC features, what rule was used to delineate the polygons?
 - The metadata does not explicitly state the rule applied when a road separates two different LU/LC features. However, a common practice in land use mapping is to use roads as boundaries between distinct land cover types, ensuring that each polygon accurately represents a homogeneous area of land use or cover.
- How were impervious surfaces measured in this dataset? What attribute field carries this information?

- Impervious surfaces in this dataset were quantified using data from two independent projects, one of which was recently completed by NOAA. The dataset incorporates attributes containing impervious surface estimates for each polygon. These attributes enhance the dataset's utility in various analyses, including urban planning and environmental impact assessments.

Exercise Two: Import Symbolology

Assignment 2.1

Map attached at the end of this document

- When do you think importing the symbology definition from a layer file will be useful? Try to think of multiple examples
 - Importing the symbology from a layer file would be useful in scenarios where there are immensely large datasets with many levels of classification necessary. For example, when using the same classification system for the same region over different years. This helps maintain consistency and allows batch processing and speeds up operations. Similarly, using the symbology for property value classes over multiple towns can be done by importing the symbology layer from a town which has an established classification system.

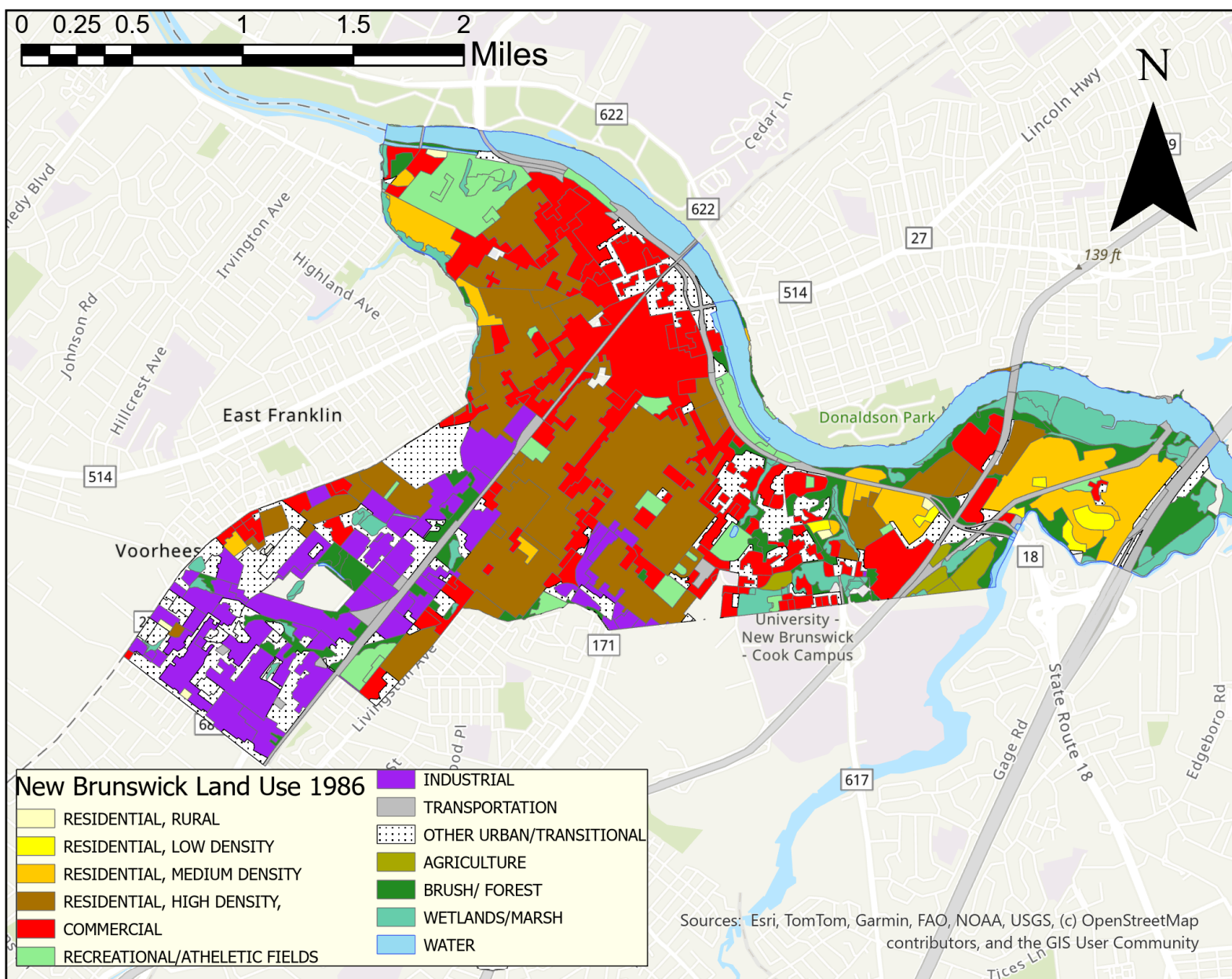
Exercise Three: Land Use Change Mapping

Assignment 3.1

Map attached at the end of this document

- Find a polygon or multiple polygons that is a significant change from a planning perspective. Tell us what was the change and why it is significant? Add labels to your map. Insert your map, here.
 - There are several polygons that have changed from agricultural to residential lands in the township. This is significant because it increases housing inventory in the area and can alleviate the shortage. Conversely, this reduces the lands used for agriculture.
 - Some polygons are observed to change from transitional zones to residential. These plots are seemingly on a natural progression of expanding urban areas that use these allocated lands for development.
 - There's one big plot on the western side of the town that is reverted from urban to cropland. This is significant because it is an unusual change that indicates that land reallocation moved agricultural lands from one side of town to the other.

NEW BRUNSWICK LAND USE IN 1986



Land Use Change Harrison, NJ 2012 ~ 2015

