

EnvSci 360 – Computer and Analytical Cartography Spring 2017

- Lab 3 -

Mapping Land Use in the town of Barnstable, Mass., from 1951 to 1999

Task: You are working in the planning department in the town of Barnstable, Massachusetts. The planning board will be considering zoning changes to help shape the look of the town in the years to come. Part of the study includes looking at the past and how the land use of the town has changed from 1951 through 1999. You have been assigned to create a series of maps documenting these changes.

Data:

- Download the **land use data for Barnstable** from <http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/ftplus.html>.
- From the same page download the **Statewide Historical Landuse Table** (a dBase file).

Unzip the data and extract the files to a folder for this lab. Also, you can use the **Mass. Town boundaries** you used in lab 1 so that the town's data won't be just "floating" on the layout and for a locator map.

Layout 1 – Poster showing four years of land use and loss of natural land

The first layout will be used as a poster display (ANSI E size) that the public can view at planning board meetings. Requirements for the layout are as follows:

- Six (6) data frames on the E-size (44"x34") page:
 - Frames 1-4 each should display a single year of land use (1951, 1971, 1985 and 1999).
 - Frame 5 will show the loss of natural land, based on land use change comparing 1951 to 1999. "Loss of natural land" is considered any change from a 1951 code of 1, 2, 3, 4, 6, 14, 20, or 21 to a 1999 code of 10, 11, 12, 13, 15, 16, 18 or 19. Use a Select by Attribute query to select these polygons and export them to a new shapefile (stored on your H: drive).
 - Frame 6 is a locator map showing Barnstable in the context of the entire state and should be smaller than the other 5 frames.
- Note: to set the page size to ANSI E you must go to File > Page and Print Setup and uncheck the box to Use Printer Paper Settings. The Standard Sizes dropdown then becomes activated, from which you can choose ANSI E.
- Tip: Set up one data frame on the layout and then copy and paste it four times and arrange them using guides and/or Drawing > Align choices from the Draw menu.
- For the first data frame (1951 land use), you will need to join a subset of the **LANDUSE_POLY_HISTORY.dbf** table to the **lus20.shp** shapefile. Before you do the join, open the History .dbf table and select the records where YEAR = 1951 and

TILE_NAME = 20. Export the selected records to a new .dbf table and join that to your shapefile. (You need to do this because the History table contains records for other years, not just 1951, for Barnstable and other towns.)

- For maps 1-4, use unique polygon fill symbols based on the 21-class MacConnell land use scheme (nominal/qualitative symbology), using the column for the appropriate year (e.g., LU21_1999 for 1999). Use a combination of solid colors and patterns. Use the same symbolization scheme for each year.
 - Note: The legend should have the full text descriptions, not the numeric or character codes. Details are found at <http://www.mass.gov/itd/lus>.
 - Tip: Create the legend for 1951, 1971 or 1985 (which have the most land use categories represented; 1999 has no land use code 8), then apply that to the three other years by importing the symbology in the layer's Properties > Symbology tab > Import... button.
- Include all supporting elements (title, legend, date, your name, neatline, etc.).
- [See the example](#) on the class web site for a suggested layout design.

Export the layout as a PDF named **Lab3_Map1_yourname.pdf** and email it to michael.trust@umb.edu. If it is too big to email, put it on Dropbox or Google Drive and email me the link or I can copy the file to a USB thumb drive.

Layout 2 – Loss of natural land for report

Using the data you created for the “loss of natural land” map on the first layout, create a map of the same theme using black-and-white (and grays) only – no color – on an 8.5 x 11-inch page layout for use in a report being prepared by the planning board.

Also show:

- Major roads for the town as a reference, with street name labels and, if you wish, route marker shields. You can get the roads data from <http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/ftpeotroads.html>.
- The town outline (use the Mass. Towns from Lab 1)

Include a title, scale bar, north arrow, name, date, legend and neatline.

Export the layout as a PDF named **Lab3_Map2_yourname.pdf** and email it to michael.trust@umb.edu. If it is too big to email, put it on Dropbox or Google Drive and email me the link or I can copy the file to a USB thumb drive.