

To: Maureen O'Meara, Town of Cape Elizabeth  
From: Judy Colby-George  
Date: January 16, 2014  
Re: Origin and Accuracy of Shoreland Zoning GIS Data

I am writing this memo in response to your questions about the origins and accuracy of the Town of Cape Elizabeth's shoreland zoning GIS data layer. First, I should state, that I did not create this data layer, it was created by Kris Sommers at GPCOG sometime around 1994. All I can speak to is what I know in general about how GPCOG (and most everyone else) created data at that time period. The base layer upon which the shoreland zoning was developed was the parcel data created from the town's tax maps and fit to the USGS 7 ½ "Quad Sheets for road centerlines and water bodies. These parcels were created on uncontrolled aerial photography, meaning that the scale and accuracy of the data changed across the photo depending on elevation shifts and tilt of the plane when the photography was taken. Each individual tax sheet was then updated for any number of years without any control. These individual tax sheets were fit together into a single composite to the best of the cartographer's ability. But, overall, the accuracy of the parcel data was unknown and unknowable; it varies across the town depending on many factors. Once the parcel basemap was created, the shoreland zoning was created using a series of data sets, including Cumberland County Soils, FEMA Flood Zones, and buffers from the parcel edges. It is my belief that at the time of the creation of the Cape Elizabeth shoreland zoning map, all of these data layers were created from existing paper maps and also fit to the basemap.

Understanding the limitations of the data is very important to using it appropriately. Some data layers have specific accuracy. For instance the USGS 7 ½" Quad sheets adhere to National Map Accuracy Standards, which state that 90% of the features must be within 40 ft. of their location on the earth and 90% of vertical features must be within ½ contour interval of their actual elevation. Data layers compiled from multiple and unknown sources it is impossible to list a specific accuracy standard. Taking paper maps and making them digital does not increase their inherent accuracy. It does create the ability to print the data at a variety of scales, which often provides a false sense of accuracy. Any map which shows a variety of layers cannot really be considered more accurate than its least accurate data layer. I cannot provide a specific accuracy representation of the data because I believe it is of variable accuracy.

Accuracy also impacts on the costs of data preparation and maintenance. Sometimes accuracy can't be improved on a particular data layer because of technological restrictions. More often, the accuracy is determined through balancing the needs of the end user and the cost to produce the data. Most communities develop data to an acceptable level of accuracy to accomplish the majority of tasks, assuming that there may be site specific needs for more accurate data. In the case of shoreland zoning, especially the RP zone, most of the data needs to be field verified in order to determine the actual distribution of the natural resources which the community has agreed to protect. The value of this type of data is for providing planning level information which can be used to provide general guidance to the town and landowners that they should be aware of a specific regulation and engage the proper specialists to map their specific property. This type of data must be used in conjunction with the ordinance in order to determine the site specific boundaries of the regulation.