

Using
ArcGIS
To Identify A
Suitable
Location In
The Halifax
Area

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Instructor: Mark Hebert
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Course: GISD 4020

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Plate 1: Basemap

The meaning behind this basemap is to show you the location that I will be working with through out this project. This map also shows what some of the data sets look like before any tools had been run.

The data that was used to create this map are as follows: the forestry layer, the roads layer, the area features layer, the water bodies layer, and finally the rivers layer.

The forestry layer came from the GeoGratis which is a Canadian Government website. It downloaded as a zip file that contained the forestry shapefile. The shapefile was then added to the ArcGIS 10.2.2 file that I was working with and then symbolized by using the Cover Type field. The colours where then changed to show the different types of wood, which are softwood (2), Mixwood (5), Hardwood (8) and then zero stayed as zero.

The roads layer was created by attaching the Nova Scotia Topographic Database (NSTDB) feature table to a copy of the line features. The line features came from the GeoNOVA Datalocator website. The copy of the line features were then renamed to roads and symbolized based upon the legend field. The area features were created the same way only instead of using the line features the polygon features were used. The water bodies also came from the polygon features, but a select by attribute had to be done in order for the water bodies to be symbolized correctly.

The river features were created from the line features. The line features that had NSHN_WA_LINE at the end of that shapefile was a difference section of river. Once all of the parts were brought into ArcMap they were merged and renamed Rivers.

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Forestry Layer:
Compliments of the Nova Scotia Government Website
http://novascotia.ca/natr/forestry/gis/dl_forestry.asp
Halifax West

Base Source: Nova Scotia Topographic Database (NSTDB)
1:10000 Enhanced Topographic Data Base
Compliments of the Nova Scotia Geomatics Centre (NSGC)
Service Nova Scotia and Municipal Relations
160 Willow Street
Amherst, N.S.

Magnetic North
April 2015
Calculated magnetic declination: 17° 34.50'W
Latitude: 44° 36' N
Longitude: 63° 42' W

Projection: Universal Transverse Mercator, Zone 20 North
Datum: North American Datum 1983 (NAD83)
Correction: Canadian Spatial Reference System 1998 (CSRS98)

Source Map Sheets:
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<http://www.nsge.gov.ns.ca/>
Data Locator V 3.2.1

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Meters

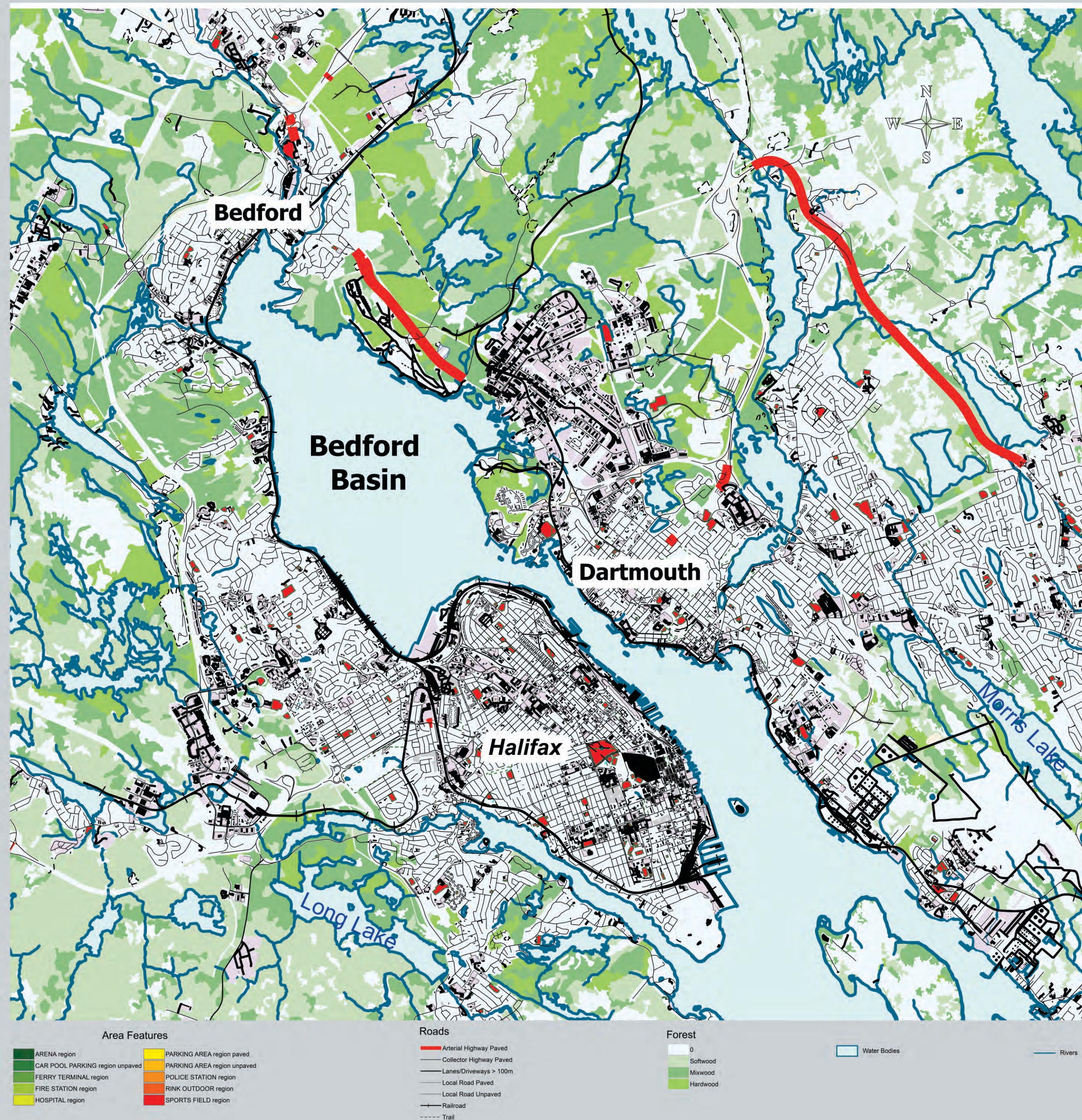
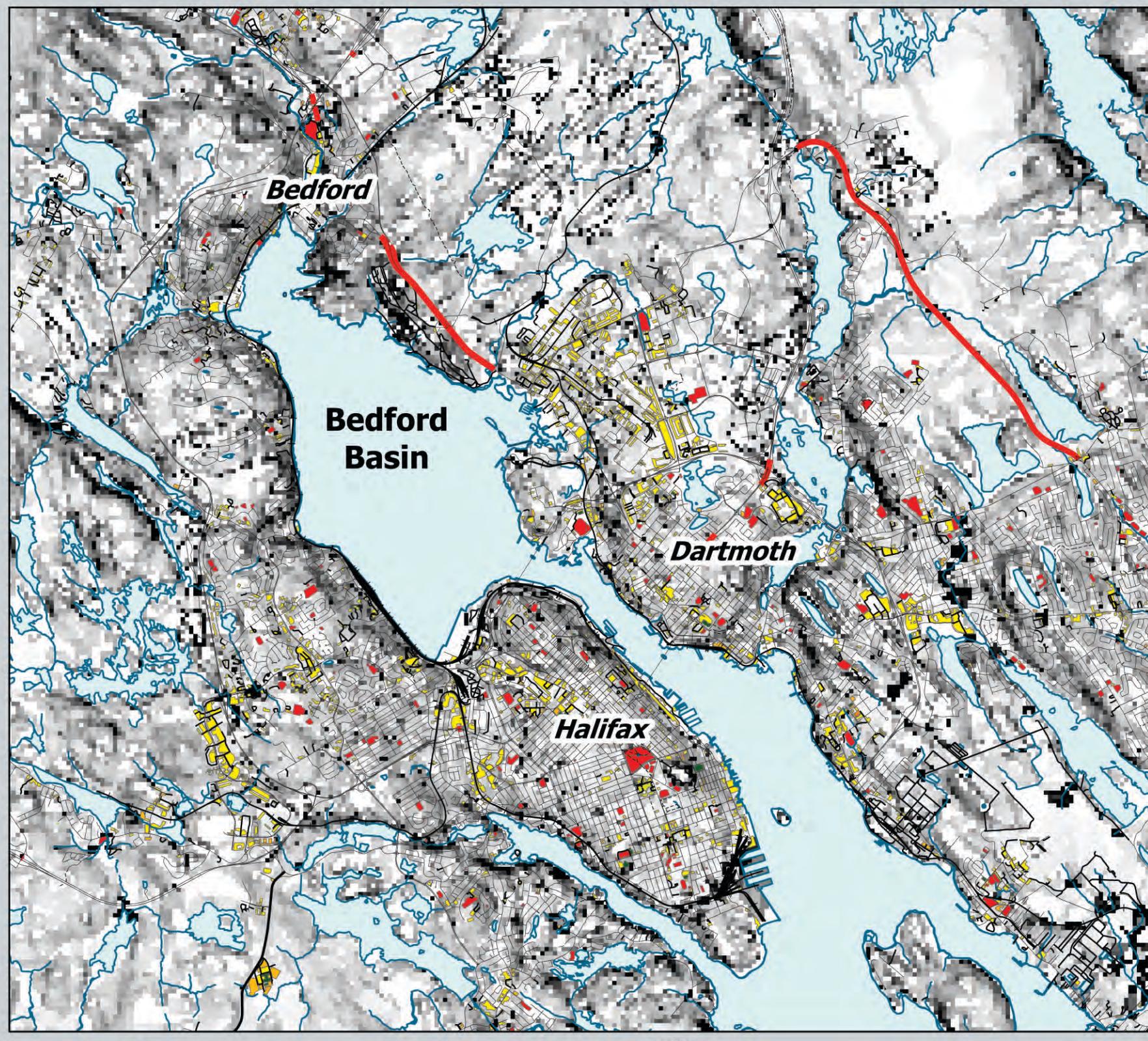


Plate 2: Slope

Magnetic North
April 2015
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This map shows what the slope dataset looks like before any specific tool was run. The other datasets that make up this map besides the slope are the roads dataset, the water bodies dataset, the river dataset and finally the area feature dataset.

This map shows what the slope dataset looks like after the slope tool and the reclassify tool have been run. The first tool that the slope dataset was run through was the slope tool. The slope tool "identifies the slope (gradient, or rate of maximum change in z-value) from each cell of a raster surface. Then the second tool that the slope dataset was run through was the reclassify tool. The way that the reclassify tool works is it takes the old values of the dataset and you change them to whatever scoring system you have chosen. The scoring system that my client chose was give the low percentage values a better score than the higher percentage values. The lower percentage values get a better score than the higher percentage values because the lower the percentage value the flatter the area. So, with that being said any value under 8 would be a good score.

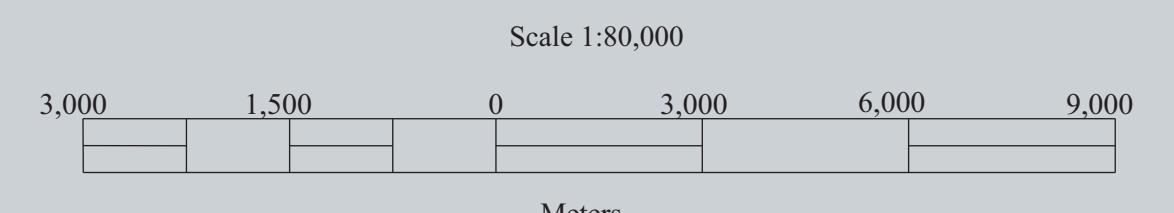


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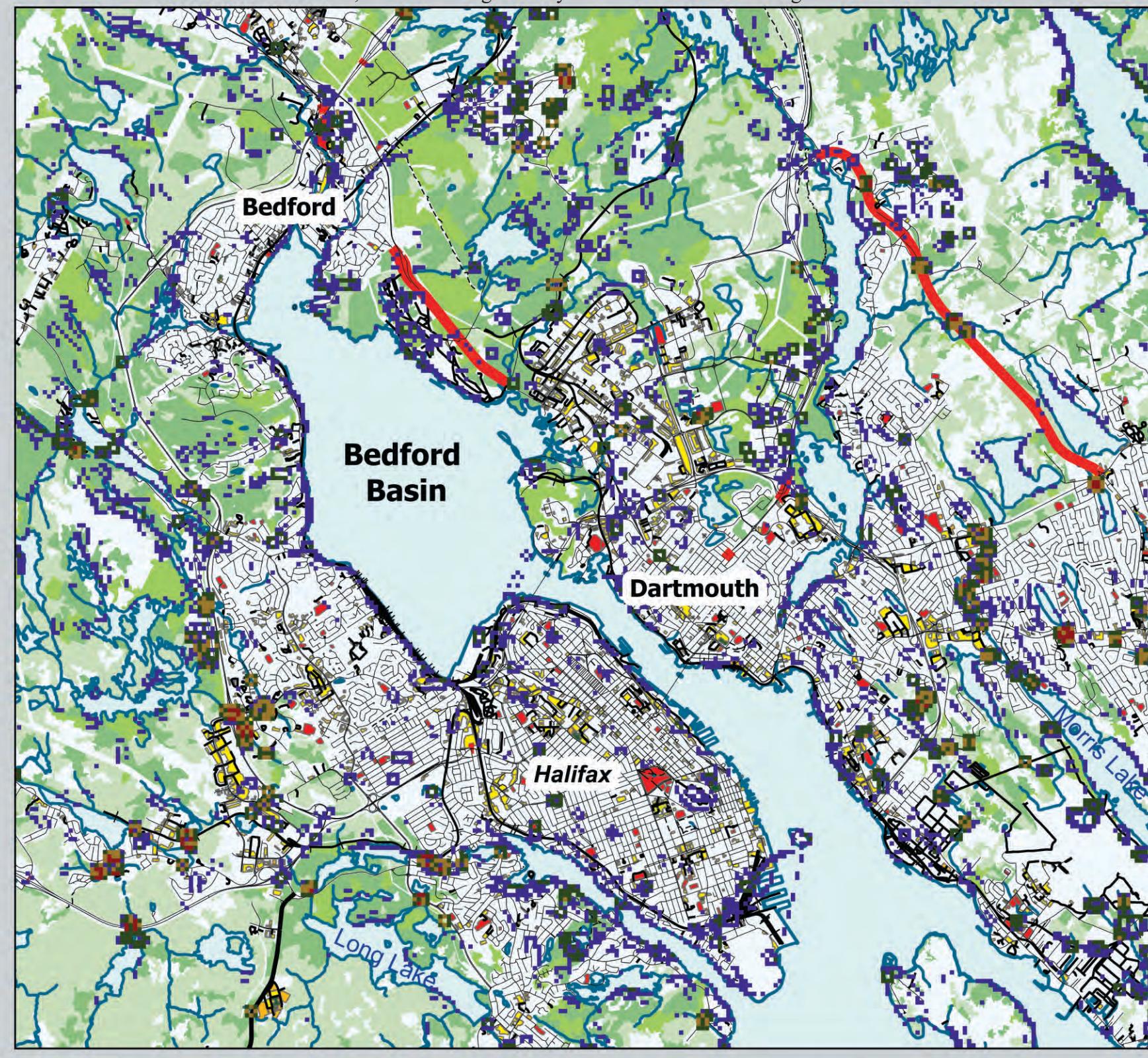
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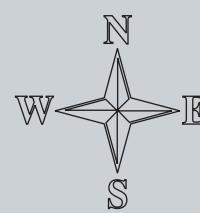


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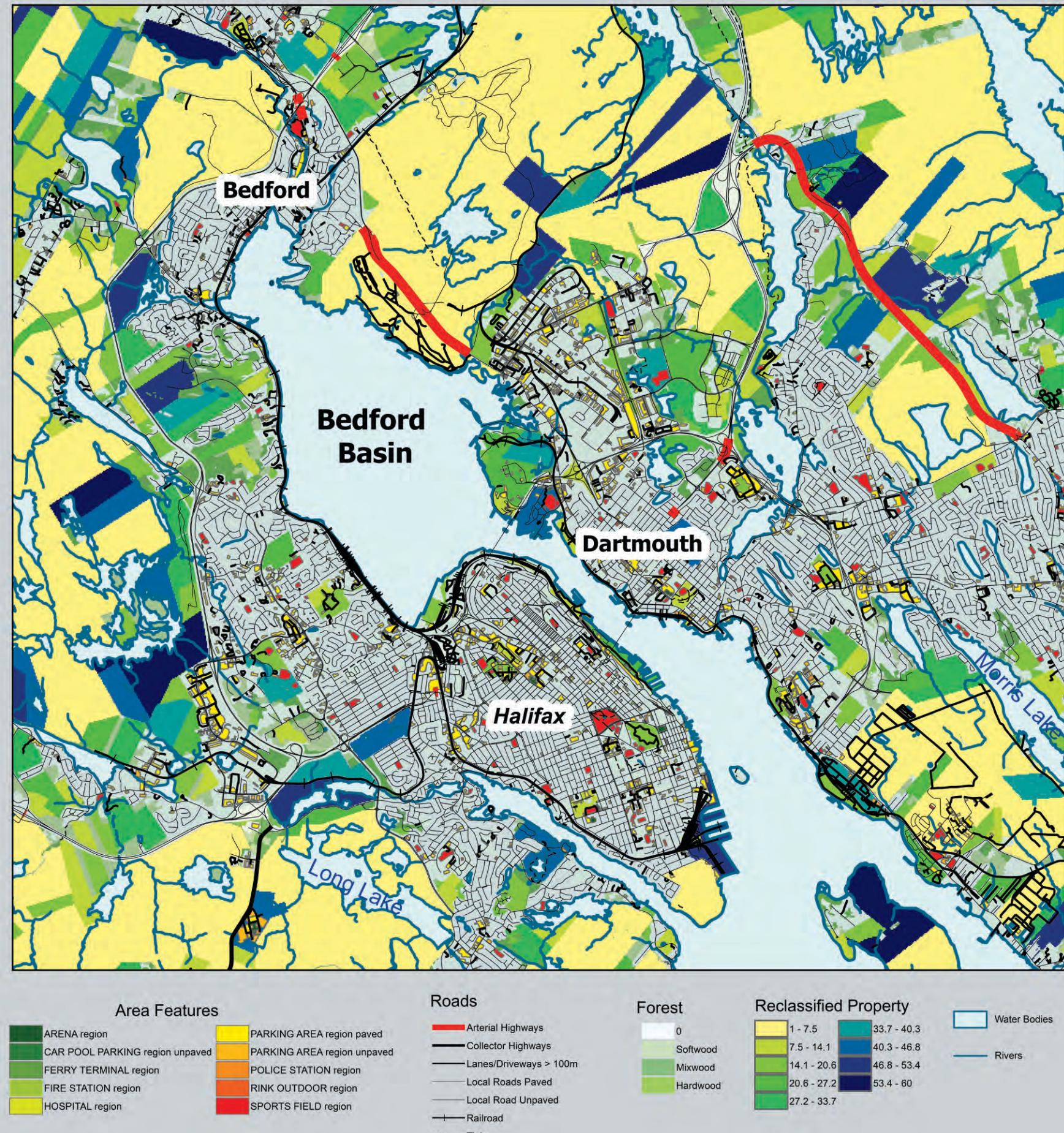
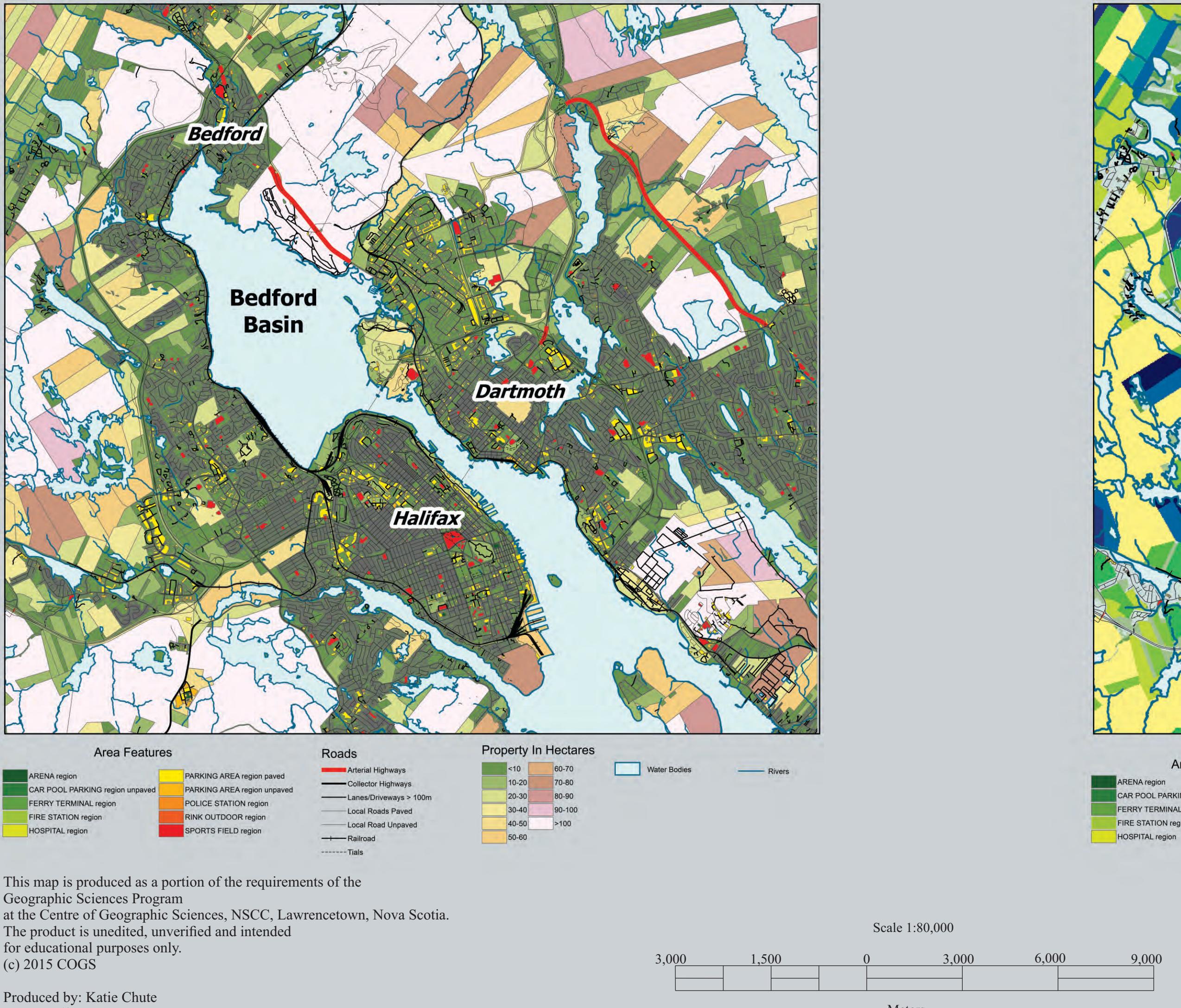
Plate 3: Property

Magnetic North
April 2015
Calculated magnetic declination: $17^{\circ} 34.50'W$
Latitude: $44^{\circ} 36'N$
Longitude: $63^{\circ} 42'W$



This is what the property dataset looks like before it has been run through any tools. The way that the property dataset was symbolized any thing under ten hectares would be the green colour you see throughout the city and then from there it goes up in ranges of ten. So, the next range of values is 10-20, then 20-30 and so on until the last range of values which is shown as another greater than 100 hectares. The other dataset's that were used to create this map were the roads dataset, the river dataset, the water bodies dataset, and also the area features dataset.

This is what the property dataset looks like after it has gone through a few tools. The first tool was the make feature layer which “creates a feature layer from an input feature class or layer file. The layer that is created by the tool is temporary and will not persist after the session ends unless the layer is saved to disk or the map document is saved. Then the second tool that the property dataset was sent through was the select tool which, in this case, selects out all the attributes that are larger than 10 hectares. The third tool is the feature to raster which just converts the features to a raster. Then the final tool that the property dataset is run through is the reclassify tool. The way that this dataset was reclassified was the larger the hectare the better then score.



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Plate 4: Bus Routes

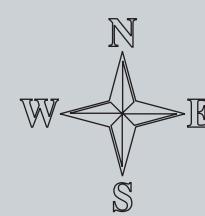
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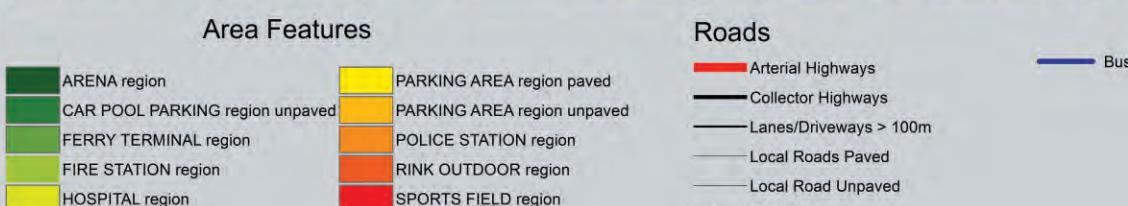
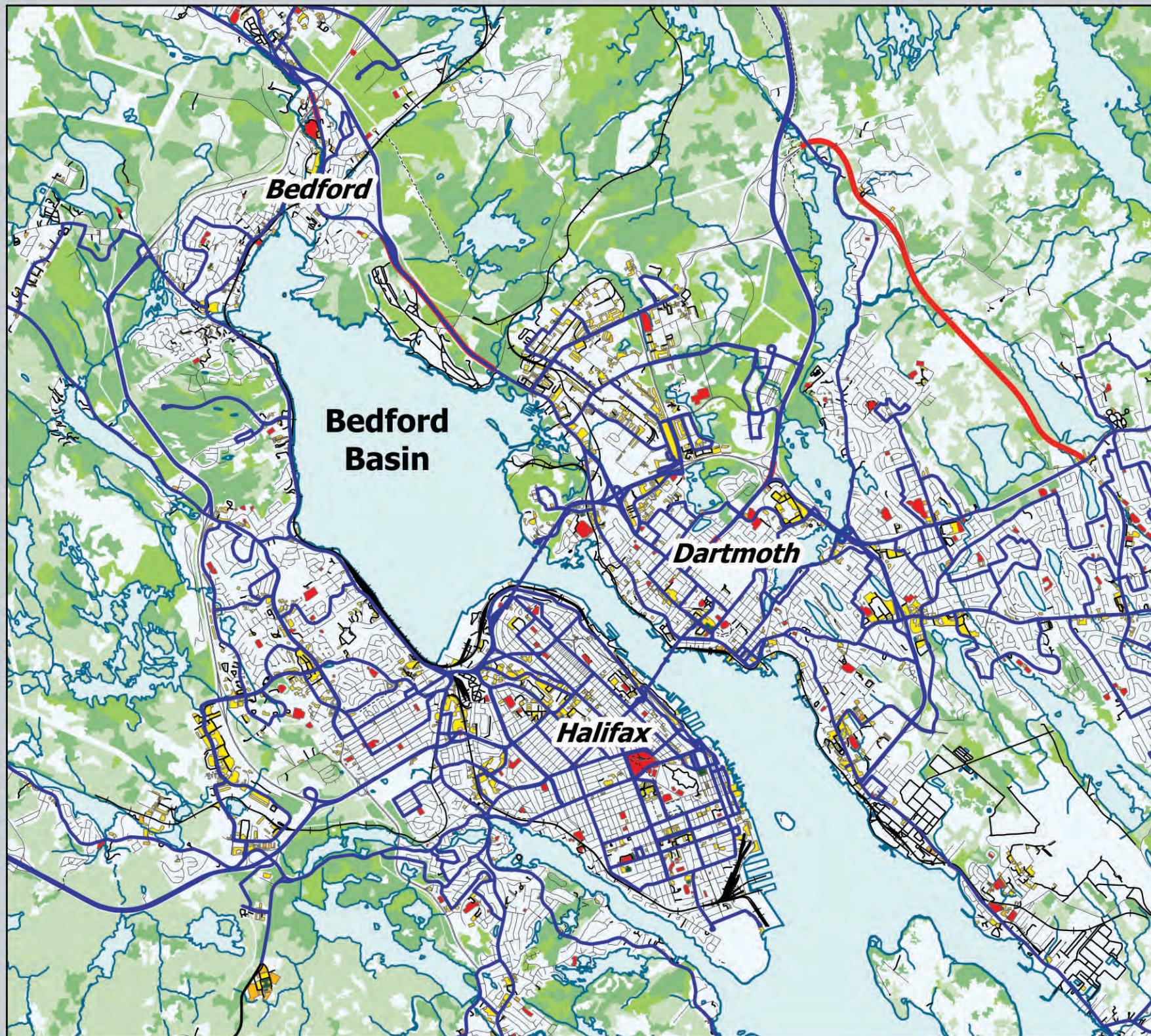
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This map is showing what the bus routes look like before it is put through the reclassification tool. The other dataset's that make up this map are the roads dataset, water bodies dataset, river dataset and also the area features dataset.

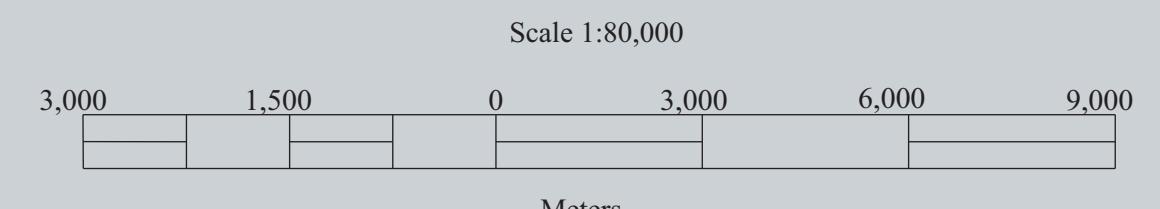


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This map shows the bus routes after it has been put through the reclassification tool. The way that the bus routes have been reclassified is that the closer to the bus route the better. The other dataset's that make up this map are as follows.

The roads dataset, the rivers dataset, the water bodies dataset, and then finally the area feature dataset.



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Data Locator V 3.2.1

Plate 5: Suitable Areas (Final Output)

This map is showing the final output from the model. This shows where the most suitable areas are to build a new stadium. So, this final output was created by using a weighted overlay tool. The way that this tool works is it “overlays several rasters using a common measurement scale and weights each according to its importance.” The weight for each dataset was different. The reclass slope dataset was weighted at 20% ; the reclass roads dataset was weighted at 25% ; the reclass rivers dataset was weighted at 25% ; the reclass bus routes dataset was weighted at 20% and then finally the reclass property was weighted at 10%. So, this tool takes all five of these reclass dataset's and takes into consideration the influence percentage and then finds best areas based upon those influences. The other dataset's that were used to create this map was the river dataset, the water bodies dataset, the roads dataset, also the forestry dataset.

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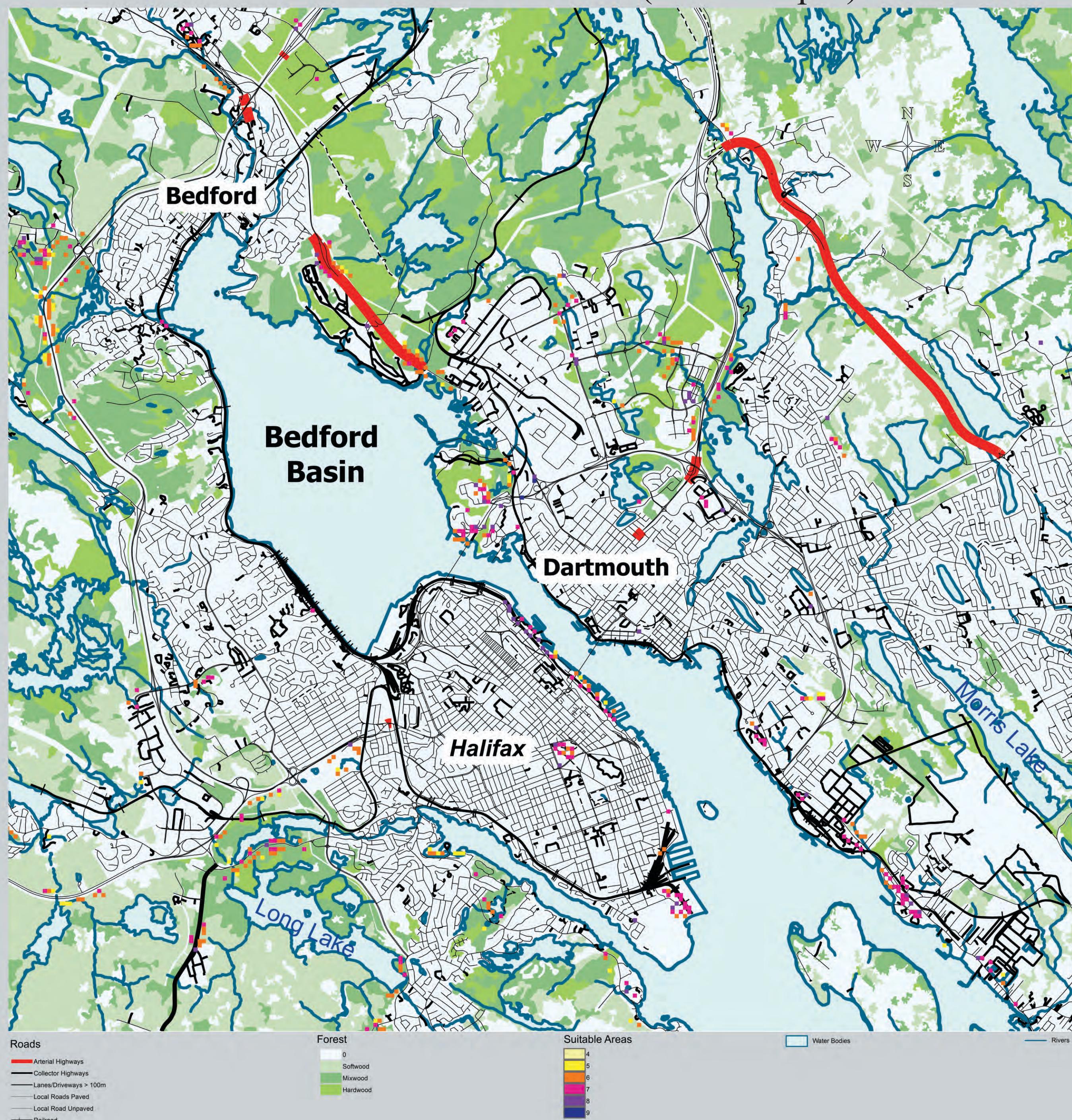


Plate 6: Model

What you see below is a flowchart, charting every step that was taken during the process of this project. So, if you wish to produce any of the maps that you have seen through out this atlas then these are the steps to take to get those maps. This flowchart has had many different looks, but this is the final layout once everything was to the liking of my client.

