

# Homeward Found

## A Site Suitability Analysis for Ecovillages in Marquette County, MI

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Projected Coordinate System: NAD 1983 StatePlane Michigan North FIPS 2111

Sources: Ducks Unlimited, US Census 2000, Michigan Geographic Data Library, USGS, National Land Cover Database 2001



### Overview + Objectives

The purpose of this analysis is to find land in Marquette County — located in Michigan's Upper Peninsula — that would be a good match for an ecovillage given certain considerations. Though ecovillages embody an alternative way of living, many of their locational requirements are similar to those of a traditional development. Slope, current land use, protected areas and wetlands, as well as proximity to infrastructure, educational institutions, and other towns must all be taken into consideration in a site suitability analysis. The criteria used here are based upon existing ecovillages and the literature on ecovillages and site suitability analyses. The following questions are posed to guide the investigation:

- What are physical constraints to development of ecovillages?
- What are physical facilitative factors for development of ecovillages?

### Variables

For an ecovillage to be sited successfully, it must:

- Be able to be built in the first place — not on barren land, in water/wetlands, in conservation/protected land (Land use/cover, CARL)
- Be on a buildable grade (slope)
- Be close to roads that are maintained and passable throughout the year (Proximity to

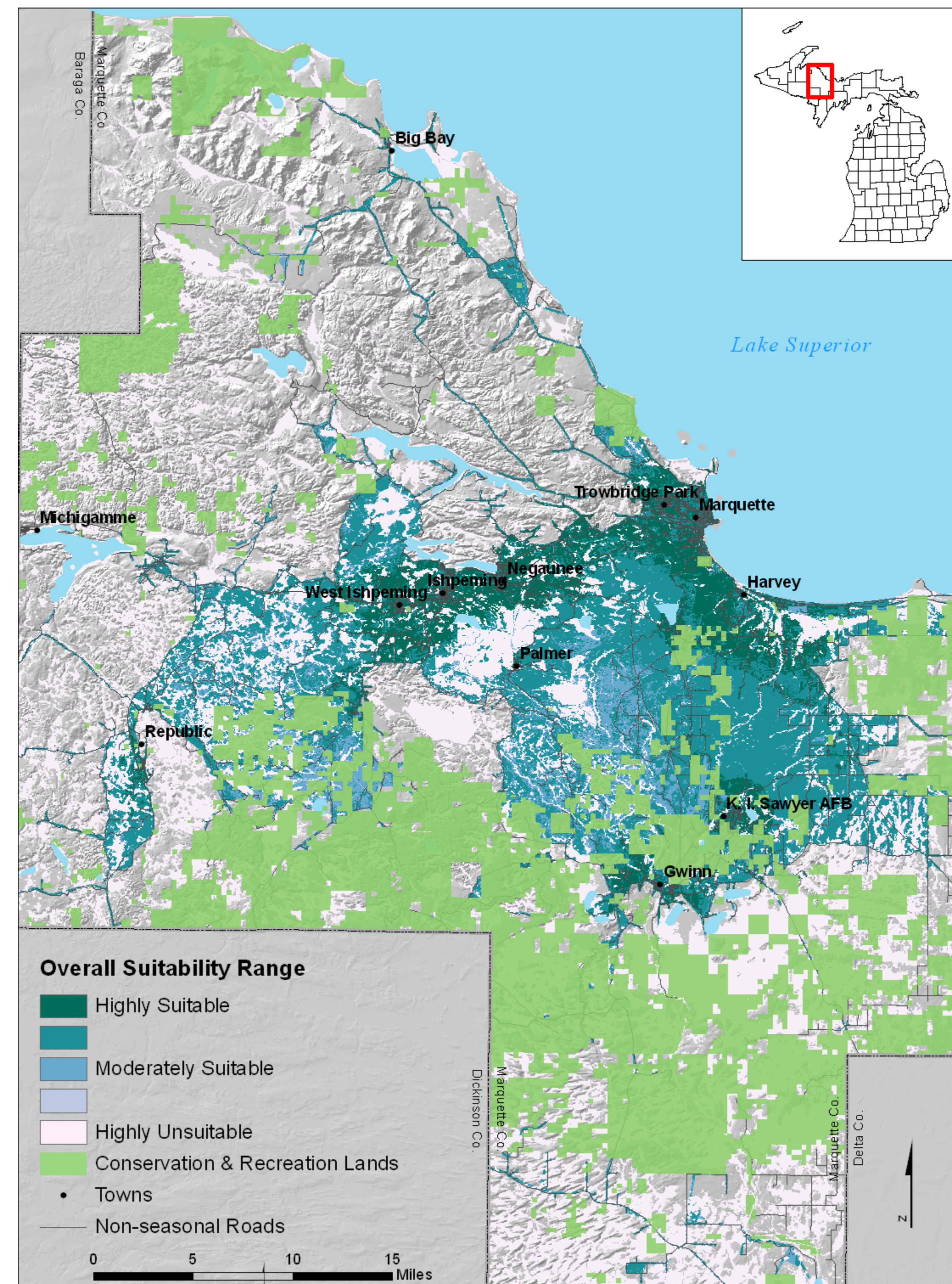
non-seasonal roads)

- Be close to the markets, services, and employment opportunities of population centers as well as accessible to potential visitors (Proximity to population centers)
- Be able to fulfill the educational mission of the ecovillage, potentially serve as a satellite eco-campus (Proximity to educational institutions)

### Methodology

In order to begin the analysis, all input datasets were put into the same coordinate system, NAD\_1983\_StatePlane\_Michigan\_North\_FIPS\_2111. Vector datasets were the conservation and recreation lands (CARL) dataset, the geocoded educational institutions, and the population points by census block. These were converted to raster for analysis. The geocoded educational institutions were converted using network analyst; the population points were converted to a population density map using spatial analyst. The Digital Elevation Model was used to compute hillshade and slope. The next step in the process was to reclassify the inputs on a scale from 1 (least suitable) to 5 (most suitable). After that the datasets could be multiplied using raster calculator, giving certain criteria the following weights.

- Land cover/use: 40%
- Population density: 25%
- Distance to roads: 10%
- Distance to educational

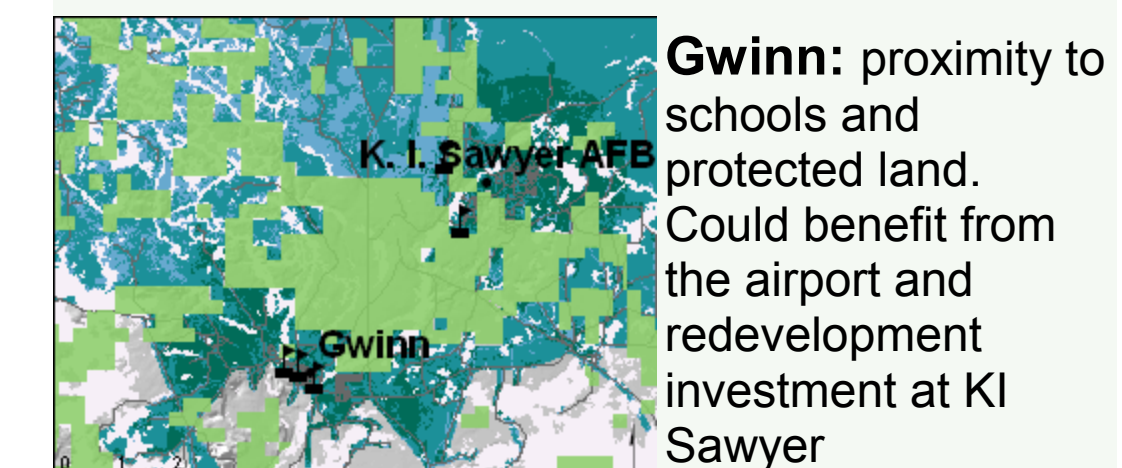


institutions: 15%

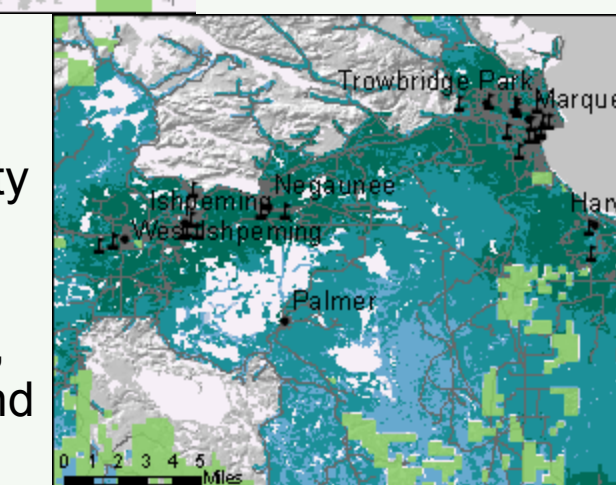
- Slope: 10%
- Binary variables (barren land, water, wetlands, protected land): 0%

### Results

Due to the heavy weighting of population density and the limiting factors of network analysis (i.e., use of roads to get to educational institutions instead of straight line analysis), suitability radiates from population centers. However, highly unsuitable land is found within these rings of suitability in the form of protected land, barren land, and water and wetlands. Further research on-site would complete the analysis, but an informative starting point has been provided here for the development of ecovillages in Michigan's Upper Peninsula.



**Marquette to Ishpeming corridor:** proximity to Northern MI University, population centers, some protected land



### Why Ecovillages?

Traditional development in rural areas favors car-centered, isolated, large lot, environmentally damaging designs and building practices. Ecovillages represent a new way of designing communities with interaction in mind, both of the inhabitants and with the surrounding environment.

Though ecovillages are a relatively recent phenomenon -- the term itself was coined less than 20 years ago -- the concepts behind the movement are not.

These settlements are based on the following three principles:

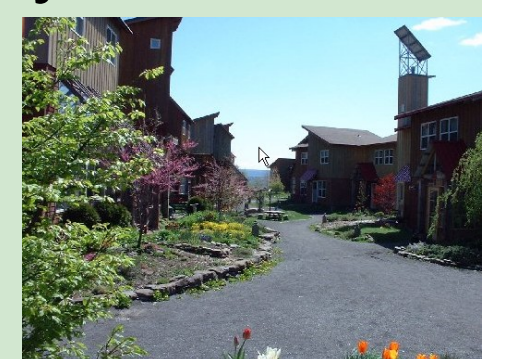
#### Ecology

Dedication to low-environmental-impact living, which may include any combination of waste reduction, recycling, composting, water conservation/greywater reuse, organic food production and/or permaculture, alternative building methods/materials, renewable energy production, Earth restoration projects, and protecting wilderness.



#### Social Community

Striving to create social community through the built environment — how houses are sited, large common areas/structures, people-centered instead of car-centered — and through community traditions, such as weekly meals together, participatory decision-making processes for community governance, and incorporation of non-violent conflict resolution methods. Social community is also supported through the existence of meaningful work within the community; as full-featured settlements, ecovillages may provide employment for many members.



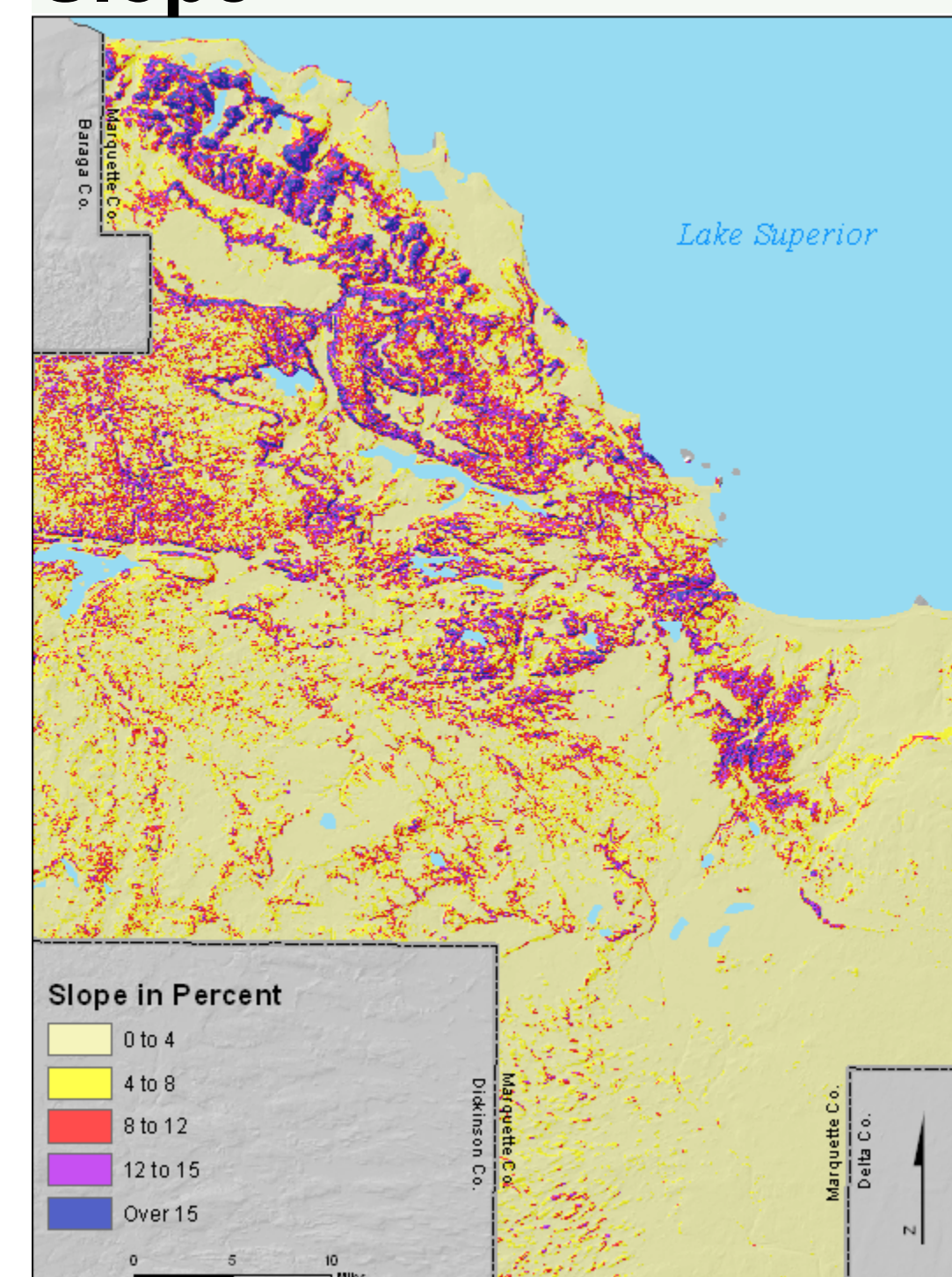
#### Culture-Spirituality

Acceptance of diverse spiritual and cultural traditions as well as creation of new, earth-centered practices. The culture-spirituality dimension is also focused upon the interconnectedness of all living things. Varying in size and membership, ecovillages exist throughout the globe, charting a new, sustainable path for human settlements everywhere.

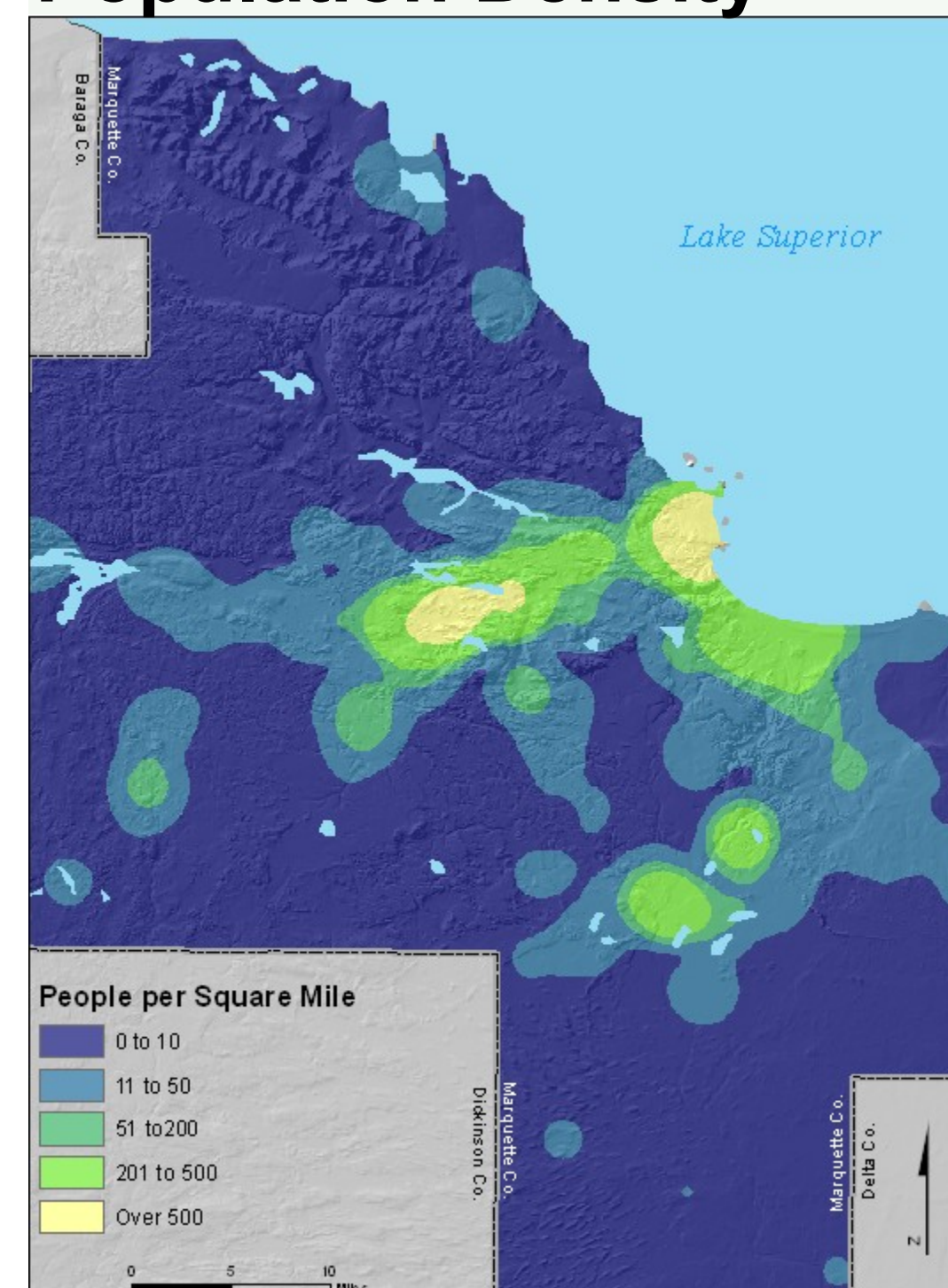


Source: Jackson, H. and Svensson, K. Eds. (2002) *Ecovillage Living: Restoring the Earth and Her People*. Green Books Ltd: Barcelona.  
Photo sources: <http://mytinyurl.net/1ab52e>, <http://mytinyurl.net/1ab52e>

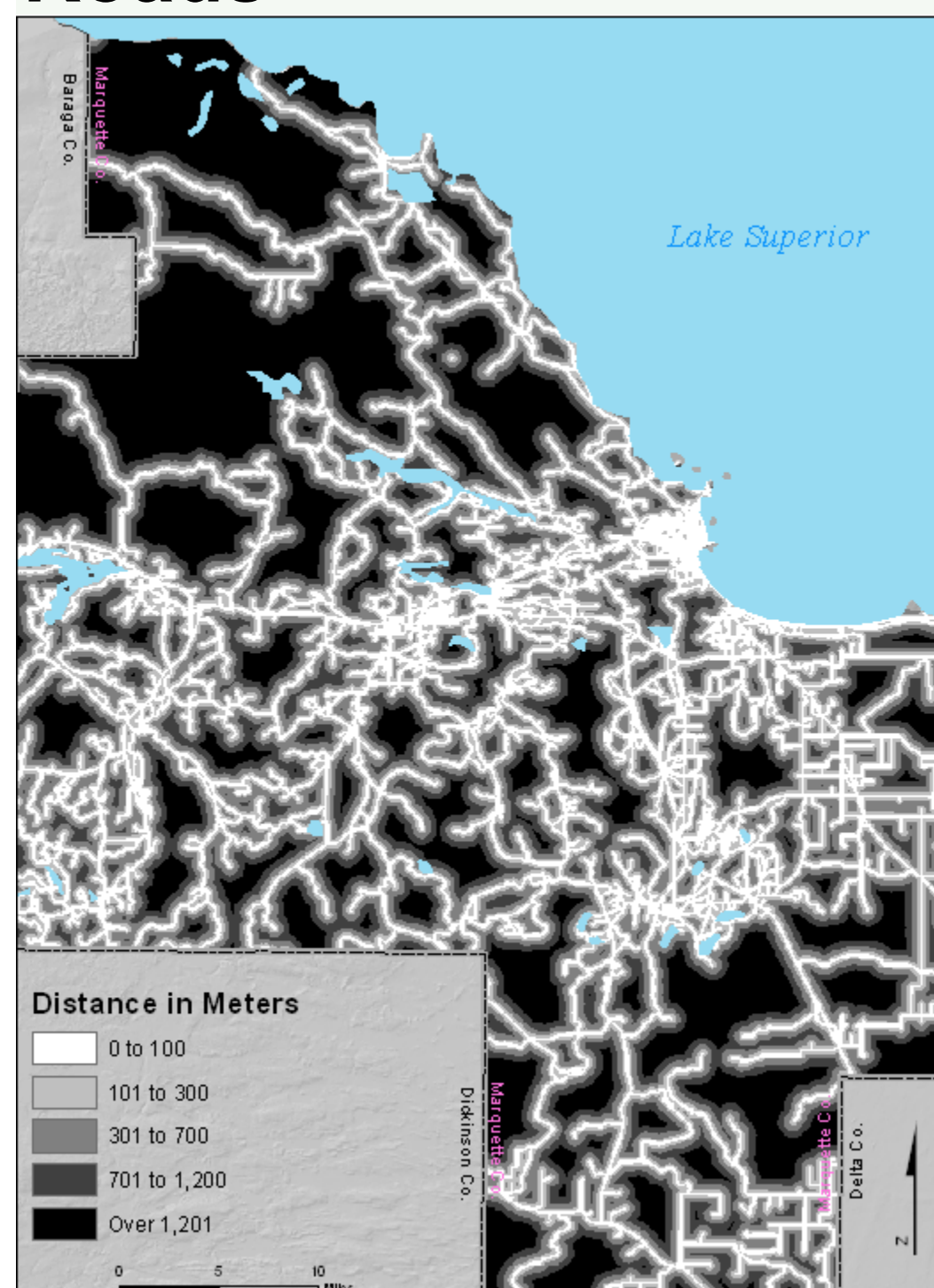
### Slope



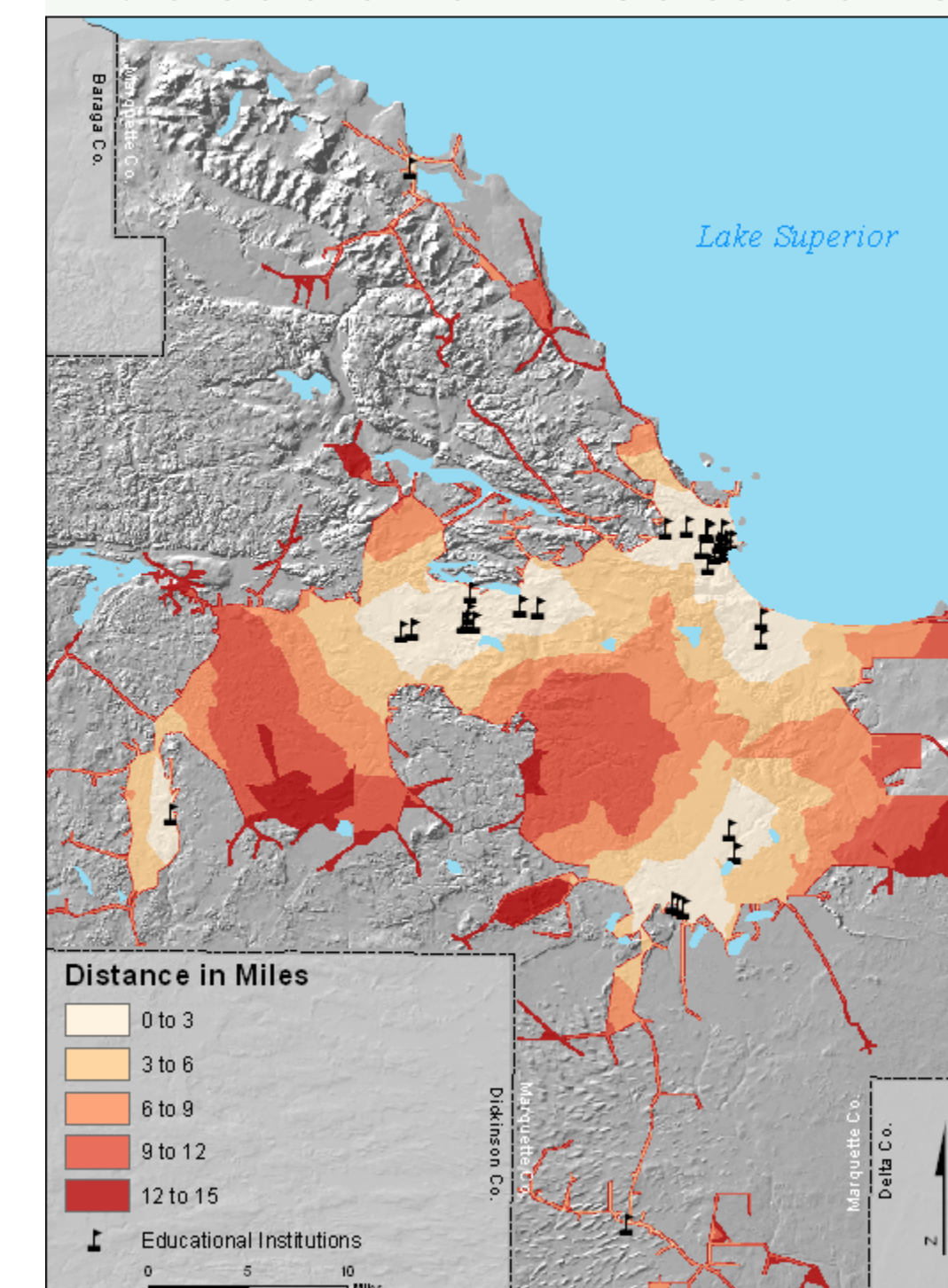
### Population Density



### Roads



### Educational Institutions



### Land Cover + Protected Land

