



Using GIS to Illustrate Locational Suitability For Future Library Services

Written by gisuser

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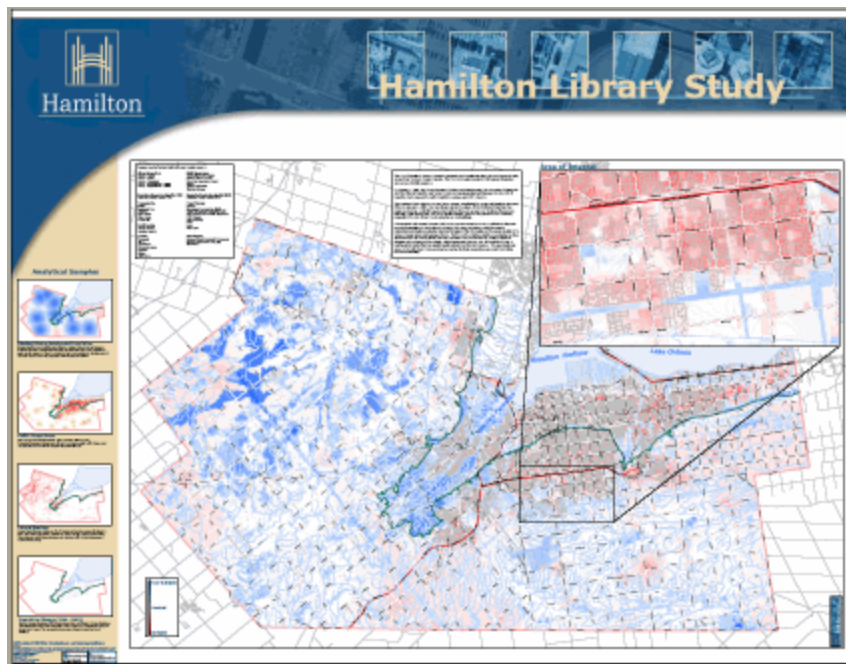
Using GeoMedia Professional and GeoMedia Grid, the City of Hamilton used their GIS to determine and illustrate locational suitability for future library services. The results have been illustrated in this article which is based on a recent entry in the Raster Innovation contest held at Geospatial World 2004 in Miami Beach, FL. The Hamilton Library Study took first place overall in the Innovative Raster Analysis Competition sponsored by Intergraph and Keigan Systems.

The City of Hamilton, Ontario, Canada is situated on the southwest shore of Lake Ontario directly across from Toronto, Ontario, Canada. The City covers approximately 1200 square kilometers and serves 490,000 residents.

On January 1, 2001, the Towns Ancaster, Dundas, and Flamborough, the Township of Glanbrook and the Cities of Hamilton and Stoney Creek were amalgamated and became the new City of Hamilton. Each community within Hamilton is unique and rich in history.

The Hamilton Public Library is a new library system, established by provincial legislation that took effect on January 1, 2001. Our new library was born mature. It has 26 library branches that range in size from a 160,000 square foot Central Library to several rural locations that occupy less than 1,000 square feet. We serve 490,000 people. Some of our patrons live in a densely populated city core. Others live in suburban or rural settings.

A Geographic Information Systems (GIS) study was envisioned as a way to effectively illustrate locational suitability for future library services. GIS raster technology would be used to understand and illustrate suitable locations throughout the City based on the spatial analysis of a variety of geographic and business criteria. Factors such as distance buffers, proximities to other amenities such as existing library services, recreation centres and arenas, roads, population densities and projections, bus routes, natural geographic barriers, etc. all combine to form a mathematical model that can greatly assist planners and decision-makers. This map illustrates some of the individual criteria analyzed as well as the final composite map product indicating locational suitability.



Features used in the GeoMedia Grid raster analysis process.

Library Usage Areas

Library – Central
Library – District
Library – Community
Library - Neighborhood > 50000
Library - Neighborhood < 50000

Public Usage Areas

Ontario Early Years Centres
Municipal Service Centres
Recreation Community Centres
Schools
Colleges Universities
Childcare Facilities

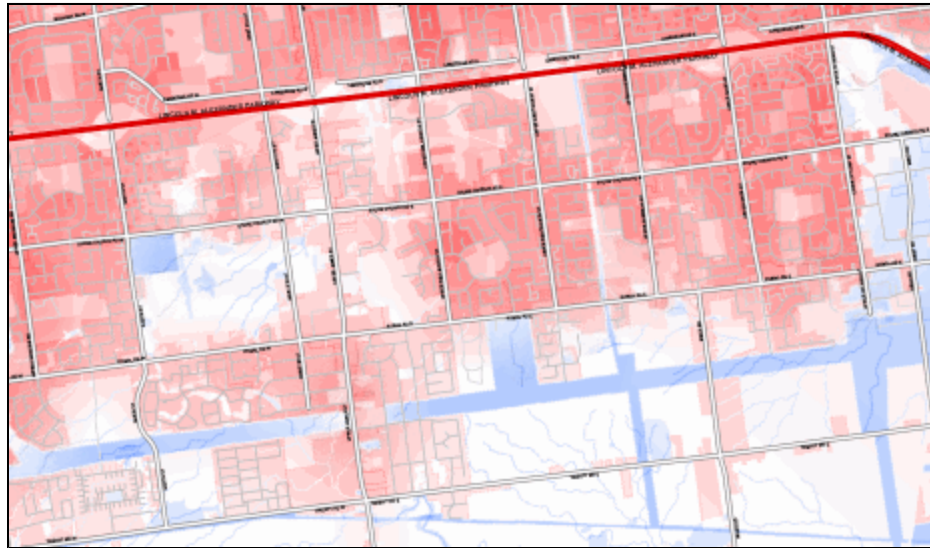
Population Density by sqkm (EA 1996)

Population (census Canada 1996)

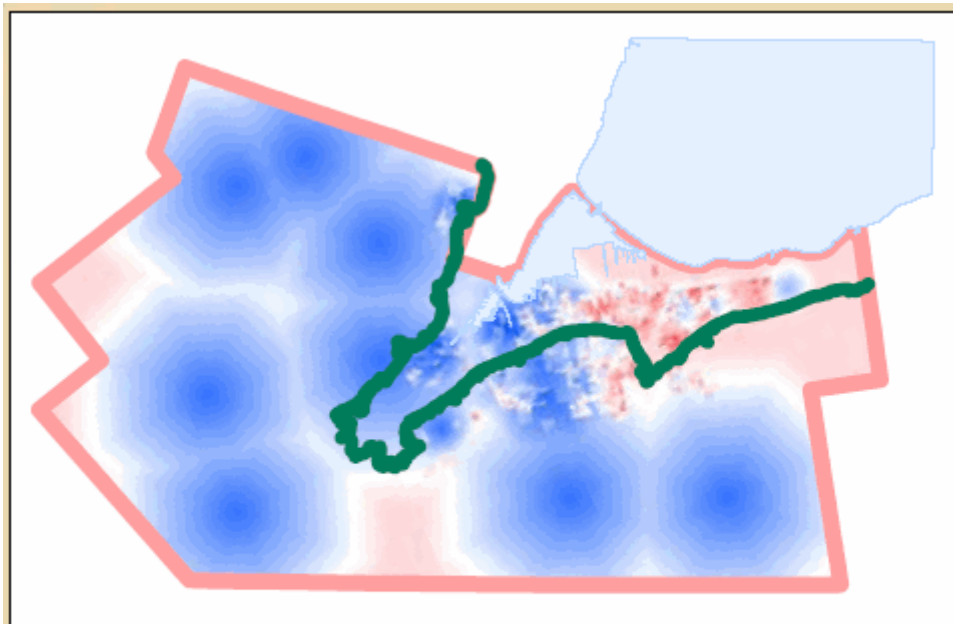
Population Density by sqkm (DA 2001)

Population (census Canada 2001)

<p>Transportation Bridges Residential Care Highways Major streets Minor streets Transit HSR</p> <p>Social Housing Ontario Housing Hamilton Housing</p>	<p>Natural Barriers Railways Environment Sensitive Area (ESA) Niagara Escarpment Commission (NEC) Area of Natural and Scientific Importance (ANSI) MNR Wetlands MNR Woodlands Rivers Lakes Major Lakes</p>
<p>Landuse Residential Office Commercial Wholesale/storage Industrial Utilities Open space</p>	<p>Miscellaneous Proposed Future Residential Development Business Improvement Area (BIA) Settlements</p>

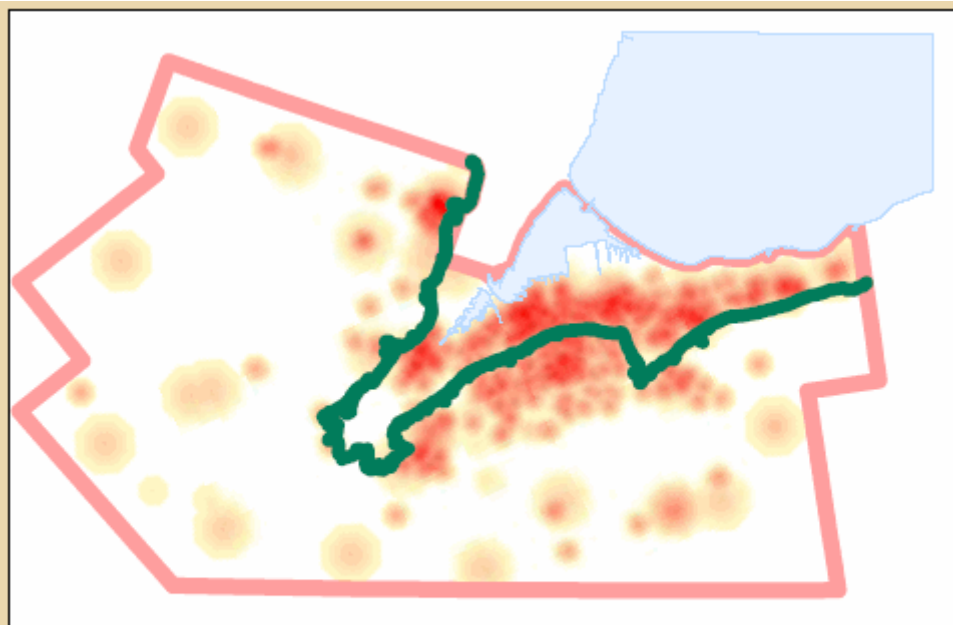


Red areas are highly suitable, blue denotes low suitability



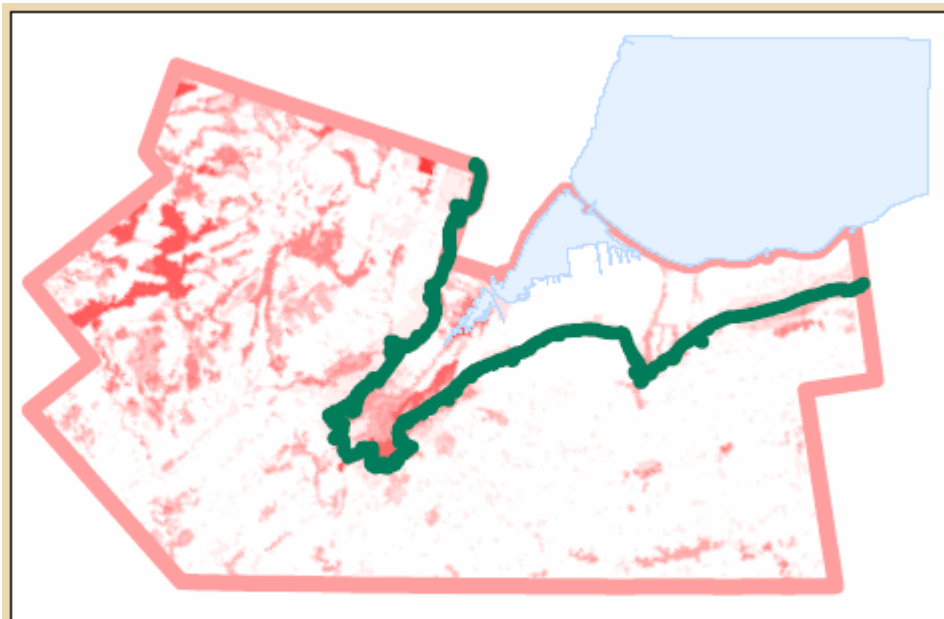
Existing Library Service and Population

Existing Libraries were classified and buffered according to library size and resource circulation. Statistics Canada Population 2001 Dissemination Areas were grouped into equal-ranged categories. These two resulting layers were analyzed to calculate areas of "served" and "non-served" population within the City of Hamilton.



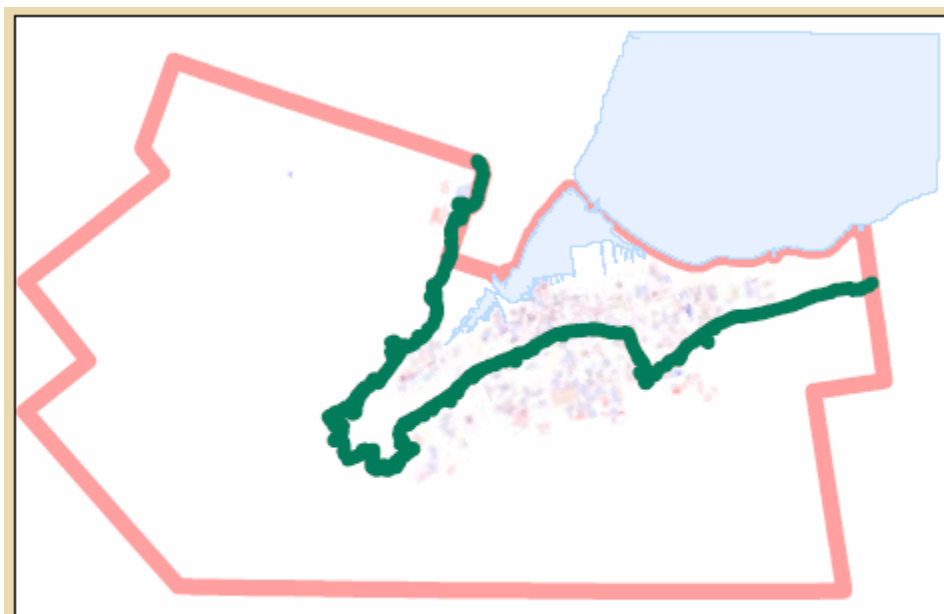
Public Usage Areas

Public usage areas include locations such as Schools, Childcare, and Recreation/Community Centres that will attract or increase public traffic. These areas are especially attractive for development of potential libraries.



Natural Barriers

Various Natural Barriers within the City of Hamilton include Environmentally Sensitive Areas, The Niagara Escarpment, Woodlands, Rivers and other physical land features. These features would hinder pedestrian and vehicular traffic or the development of lands for library usage.



Population Change (1996 - 2001)

Statistics Canada Population 2001 Dissemination Areas and Statistics Canada Population 1996 Enumeration Areas were compared in order to find areas of population change in the previous 5 years. This was used to show areas of growth within the City of Hamilton.

Related Weblinks:

- www.hamilton.ca
- www.map.hamilton.ca
- www.keigansystems.com
- imgs.intergraph.com
- imgs.intergraph.com/ggrid/

Congratulations to the GIS staff at The City of Hamilton for this fine, innovative example of the use of GeoMedia Professional and GeoMedia Grid for raster data analysis... kudos!



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