

Municipal Planning and GIS:

From Best Practice to Leading Edge in the RM of Hanover

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Abstract

Many professional practitioners have suggested understanding of Geographic Information System (GIS) is important in planning. However, GIS tends to be used as a mapping tool to describe or visualize property lines or existing infrastructure. GIS can provide more support for decision making and planning processes than simple visualization or mapping. According to Sieber (2006), GIS facilitates analysis and visualization of spatial information for participants in planning and decision making processes persuasively conveying ideas, often in a convincing manner. The use of GIS in administration of the planning function in one Manitoba Rural Municipality is the focus of this project. The RM of Hanover was one of the first rural municipalities in Manitoba to adopt GIS as a support tool in their decision making processes. The RM has used GIS for analyzing Intensive Livestock Operations (ILOs) and supporting land use management decisions in administrations of the planning function. In this context, this research aims to explore how the RM of Hanover has used GIS as a support tool in planning administration. This should help other practitioners identify ways of using GIS in their planning or decision making processes and demonstrating how spatial data could be shared with the public in planning processes.

Background and Context

Since 1980s, many organizations and local governments have adopted the Geographic Information System (GIS) in order to analyze and support future economic and social growth. GIS provides opportunities to share information and analysis data with decision makers and participants in planning processes. From this perspective, many planners and government

officers have noted the utilizations of GIS in planning practices can be an asset in managing future growth and developments of cities and in persuasively conveying ideas. According to Sieber, GIS allows that “policy-related information can be analyzed and visualized spatially, and the resulting output (mainly maps) can persuasively convey ideas and convince people of the importance of those ideas” (2006, p. 491). The new technology often has been used for simple mapping to visualize existing circumstances, such as amenities and designations of uses of lands, for planning

reports. However, according to Gocmen and Ventura, the planners or GIS users in planning practices tended to think GIS is “an impediment to their tasks rather than a tool to support their work” (2010, p. 173). From these perspectives, the aim of this research explores how the RM of Hanover has used GIS in administration of the planning function so that this research identifies strategies of using GIS in planning and decision making processes.

The Rural Municipality of Hanover is located in south-eastern Manitoba and one of fast growing municipalities in the province. According to the Census Profile of the RM of Hanover (2006), about 10 percent of population has increased between 2001 and 2006. The RM is not only growing fast in population, but its livestock industries are also steadily increasing. According to the 2006 census data of livestock intensity, a large proportion of livestock productions and markets in Manitoba are shared with the RM: about 16 percent of hog population in Manitoba, 26 percent of poultry population in Manitoba, 10 percent of dairy population in Manitoba and 5 percent of beef population in Manitoba. The RM has adopted GIS to manage the growth of livestock industry

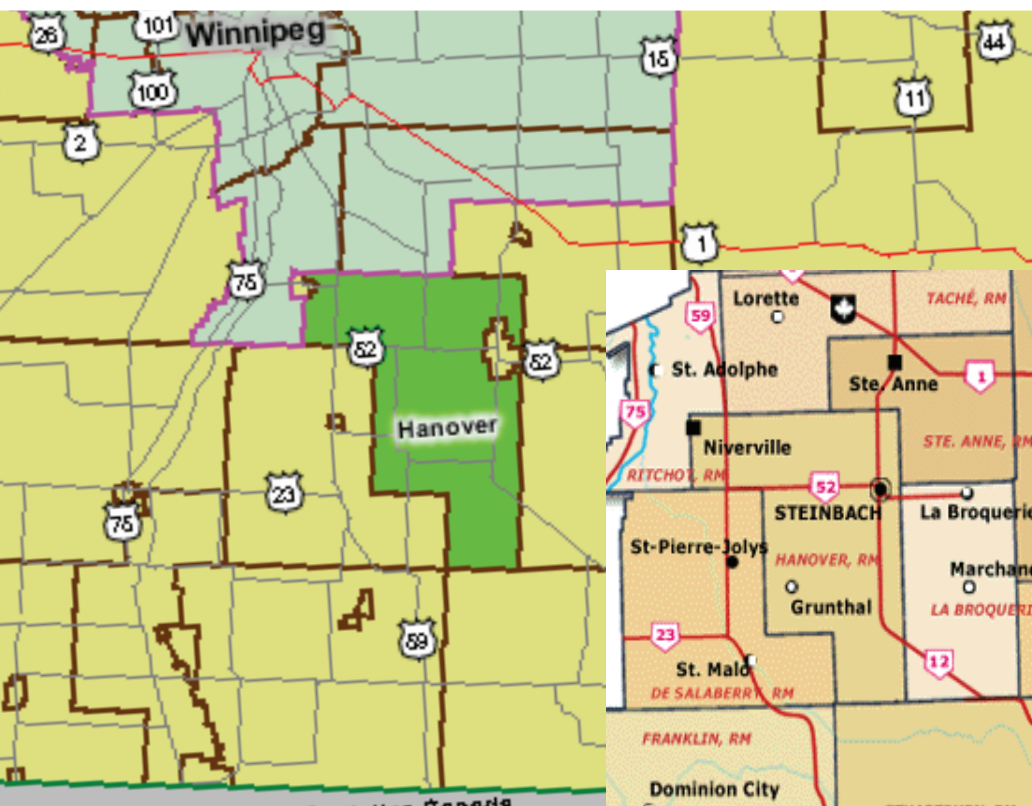


Figure 1: The location and boundary of the RM of Hanover

and the uses of lands: “responding to the challenges of an increased number of intensive livestock operations (ILOs) in the area, Hanover expanded [GIS] system to include agricultural and rural residential information” (Natural Resources Canada, 2011, p.1).

Fact of the Case



Figure 2: Council Chamber



Figure 3: Council Chamber

The RM of Hanover was one of the first rural municipalities to adopt GIS in Manitoba. Since 1994, the municipality has not only built the survey data of livestock, rural residential information, and building on their own GIS system, but they also have used GIS as a supporting tool in their decision making processes. The municipality got help from Natural Resources Canada (NRC) and Agriculture and Agri-Food Canada (AAFC) to establish the GIS system. Through funding from GeoConnections’ Sustainable Communities Initiative (SCI) in NRC, the municipality provided GIS educations and training for their staff and set up the council chamber with the diverse equipment which allows sharing same information with other participants in decision making processes. While SCI provided the financial supports for the municipality, Prairie Farm Rehabilitation Administration (PFRA) in AAFC gave them more technical assistance. PFRA helped the municipality to compile data and analysis of the number and location of livestock through an extensive survey. Furthermore, they developed “the internet mapping site, which is hosted on Agriculture Canada’s web site as a demonstration project” (Natural Resources Canada, 2011, p.2).

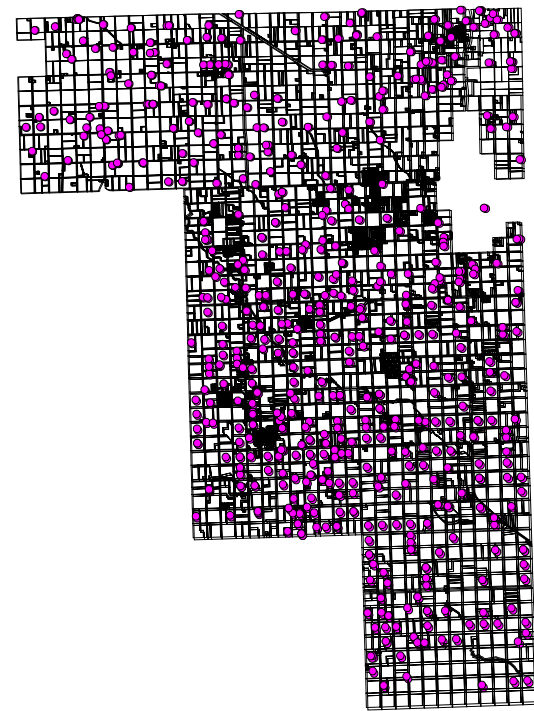


Figure 4: ILOs in the RM of Hanover

The GIS system in the RM of Hanover was not limited to only compiling data and analysis of the Intensive Livestock Operations (ILOs). The system supports land use management and sound management decisions, which is made by the municipal council. In that processes, the system not only supports “councillors to view exact parcels of land, make livestock analyses, and determine the number of residences” (Natural Resources Canada, 2011, p.1), but also help them quickly understand and identify how proposed developments influence adjacent properties and agricultural lands. According to Cavers, who was Chief Administrative Officer

for the RM of Hanover, the GIS system in the municipality not only provides “accurate information to various locations” (2002, slide. 8), but also allows “the council and staffs make accurate calculations, evaluate the data, and provide the public with a level of comfort that the information is being shared with everyone at a meeting” (2002, slide. 8).

Conclusion and Outcomes

The GIS system, created through a variety of partnerships and supports from the other organizations, has been used for a broad range of

administration of the planning function in the RM of Hanover. The system not only allows tracking livestock growth, but also supports the Council’s decisions on public concerns, “actual setbacks, mutual separations, and claimed spread areas in an open forum” (“The Rural Municipality of Hanover”, 2007, slide. 12). That is, if an applicant proposes a development for conditional uses, the system allows showing how the proposed development meets required regulations such as setbacks and separation from existing resources, such as surface watercourses or wells. GIS helps the council identify how the developments would influence the adjacent properties. The GIS system is not only used for visualizing existing facilities, such as ILOs or building, but also allows

to identify how the facilities can interact with designated land uses or proposed developments. Likewise, the RM is using the systems to analyze and support their decision making.

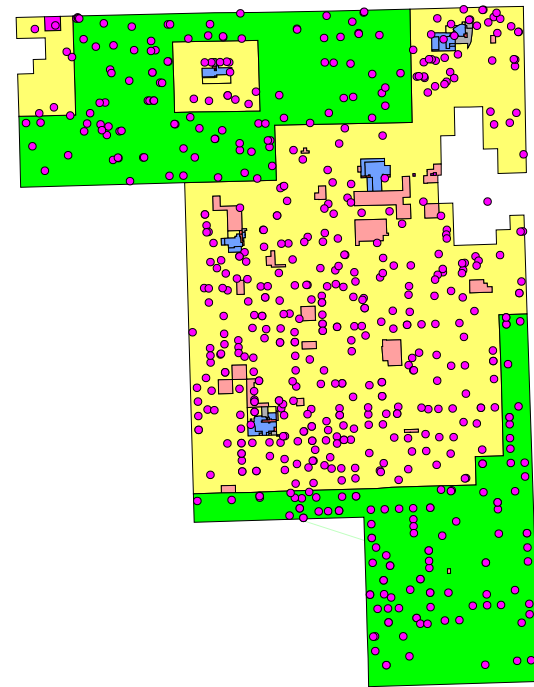


Figure 6: LPO's in relation to Zoning

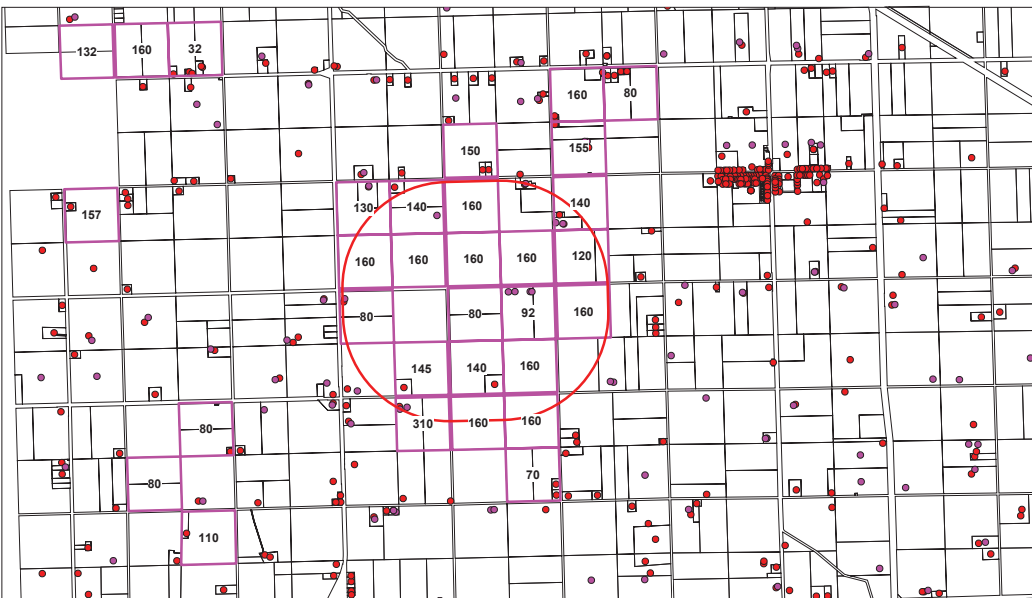


Figure 5: an example of GIS Livestock Analysis

Lessons and Learned

Through the case study, the GIS system in the RM of Hanover shows the possibility of using GIS in planning practices and how partnership with other organizations is important to create the system

and adopt it in administrations of the planning function. For establishing the system, the partnerships between the RM and organizations, such as SCI and PFRA, enabled to invest about 0.1 million dollars in the system. According to Cavers, the municipality was committed to approximately 50,000 dollars toward capital costs over the past 6 years, and additional external funding of another 44,000 dollar was spent for capital costs and training for their staffs (2002, slide. 7). From this perspective, supports from diverse levels of organizations and governments are necessary to adopt GIS in planning practices. Furthermore, if municipalities want to adopt the system in their planning processes, they also need to consider a range of sharing the created and analyzed information and how they can be shared.

Even though the RM of Hanover is using the GIS system to support their decision making, it still has a viability of sharing more information with public. Of course, sharing all types of information with public might not be proper. For example, if the municipality provides all information, such as farmers' livestock operations and the location of manure applications, for public, it might bring another barrier to prevent the farmers' businesses and expansions of their livestock operations.

However, the municipality can manage it through web based data sharing with "using doors with passwords [and] payments for acquiring information" (Cavers, 2002, slide. 9). They can also decide what types of information could be shared with public. From these perspectives, if the municipality provides more opportunities to access the information with

proper management tools, such as log-in system, it could be a way to improve the utilization of the GIS system and show the possibility of data sharing in planning practices.

Resources

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