

March 20, 2013

Parkland County Planning and Development Dept.  
53109A Hwy 779  
Parkland County, AB, T7Z 1R1

Dear Ms. Widmer,

**Re Proposed Bylaw 04-2013**

Thank you for the County's recent letter of March 5, 2013 regarding the public hearing of proposed Bylaw 04-213, whose purpose is to rescind Bylaw No. 6982 pursuant to Part 6 of the Planning Act 1980, as well as the opportunity to have public comment to the County and participate in the public hearing on March 26, 2013. It would be my personal intention to do both activities that is, submit a written submission to the County, as well as briefly speak at this public hearing on March 26, 2013.

In a personal context, my family has had property at Sunset Beach since 1974 and has the opportunity to personally watch and experience the changes at Lake Isle ("the Lake") over that almost 40 year span of time. I recently inherited that property when my father passed away in 2011. The Lake has been, and continues to be very important to myself, my family, as well as my neighbours, many of who have also been long-time property owners at the Lake.

**Lake Isle and Geological Considerations for Cumulative Development Impacts**

Lake Isle is unique for a number of reasons, including geologically. It sits on top of a buried glacial valley known as the Onoway Channel, hence the immense local reserves of sand and gravel. I've attached a figure (Figure 1) taken from the 1998 hydrogeological report prepared for the County by Hydrogeological Consultants Ltd. Figure 1 visually shows the location of these buried glacial valleys, known as talwegs, under Lake Isle, the inter-connection with Lake Wabamun by a glacial meltwater channel, and finally a portion of the talweg known as the Beverly Channel along the North Saskatchewan River south of Lake Wabamun. Talweg geology is significant in that the deposits of sand and gravel, while conducive to groundwater well drilling due to groundwater reserves, also are highly vulnerable to movement of sub-surface groundwater contaminants in that soil structure. This affects local groundwater aquifers, as well as local surface water bodies. Availability of water, both groundwater and surface water, is a critical factor for development. A similar report was prepared by HCL for Lac Ste Anne County,

which is the largest municipality sharing the natural boundary of Lake Isle with Parkland County, in addition to the Summer Villages of Silver Sands and Southview, physically located within the geographic region of Lac Ste Anne County. Figure 2, from the County of Lac Ste Anne hydrogeological report provides the counterbalance, from Lake Isle's perspective, to the Parkland County Lands.

Water enters Lake Isle from the Sturgeon River at the southwest, and water from Lake Isle flows back into the Sturgeon River at the northeast corner, from where it travels onwards to the lake, Lac Ste Anne. Thus, out-going water quality from Lake Isle has direct impacts on incoming water to Lac Ste Anne, and where the anthropogenic effects arising from surrounding development have a net cumulative impact on that lake's water quality.

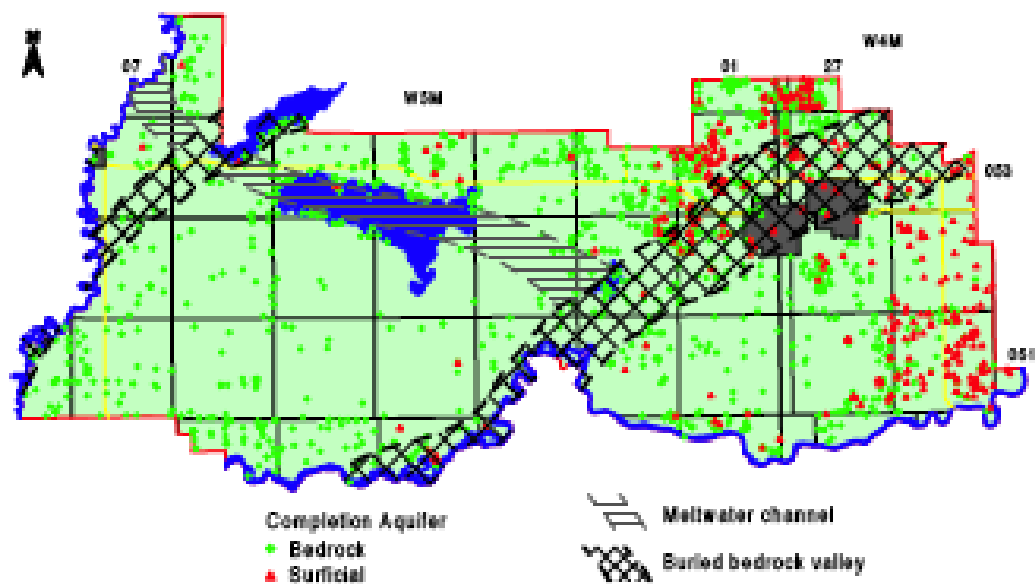


Figure 1      Glacial Talwegs in Parkland County (from HGC Ltd a report File No. 97-202, pg 8).

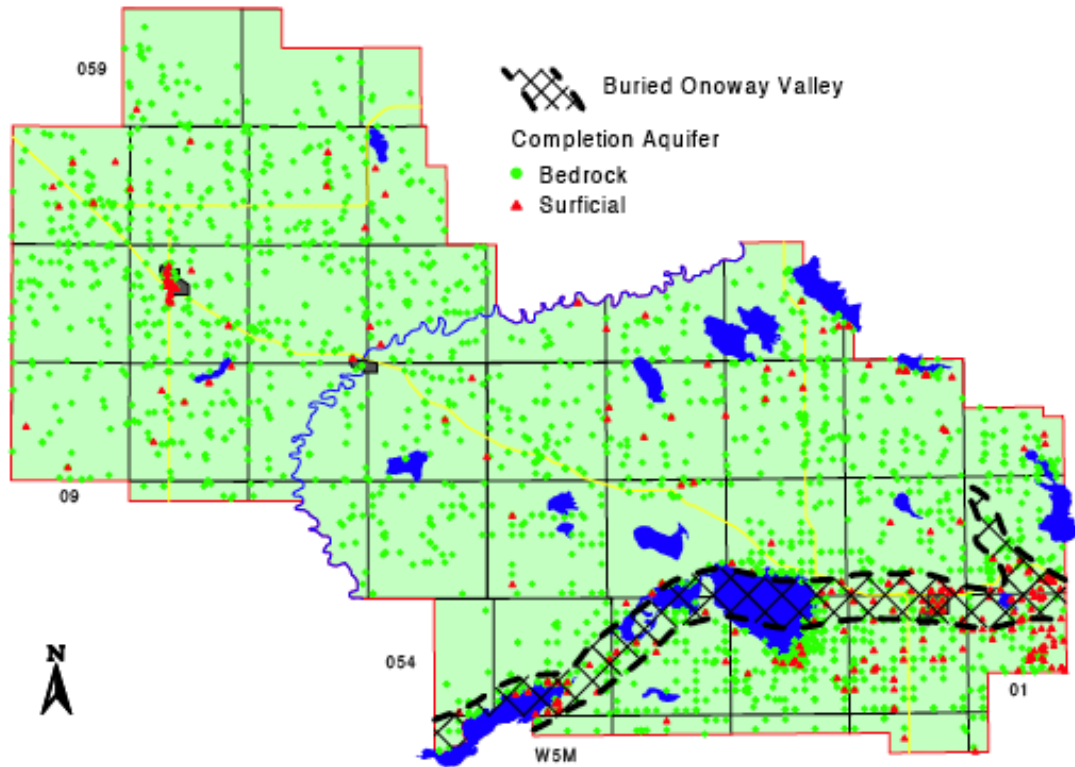


Figure 2      Glacial Talwegs in Lac Ste Anne County (from HGC Ltd *b* report File No. 97-112, pg 4).

This subsurface geology, when coupled with human caused development of lands around surface water bodies, becomes significant when assessing the potential risks of groundwater aquifer contamination. Figure 3, also taken from the HCL report, illustrates this clearly for the south shores of Lake Isle, located in Parkland County. The potential for groundwater contamination on the southern shores of Lake Isle has been assessed as high in the HCL report for the County.

Figure 4 presents the companion picture for the north side of Lake Isle, located in Lac Ste Anne County, and where again the lands around the northern side of Lake Isle have a high geological propensity towards groundwater contamination due to subsurface geology, and where contaminants arising from human activities on the land not only directly affect the groundwater aquifer, but also the lake itself.

In reading both reports (HGC 1998 a,b) from the perspective of total or potential cumulative impacts on Lake Isle, HGC Ltd determined that the general groundwater flow around Lake Isle on the County of Lac Ste Anne side is from northwest towards, and into the Lake,

whereas general groundwater flow on the Parkland County side of Lake Isle is from the Lake towards the southeast. The lands immediately adjacent to the Lake are in a groundwater transition zone, that is groundwater can flow in two directions (i.e. general described flow, or back to the Lake), depending on Lake water levels, as well as draws being made on local groundwater aquifers from human caused activities and development. Thus cumulative impacts of human development on the north shores of the Lake, directly affects Lake water quality and quantity, as well as ultimately groundwater quality for lands on the south side of the Lake, which are located in Parkland County. Development on the south shores of the Lake, also directly and cumulatively impact the Lake itself, as well as lands to the south. Which has direct implications for future development of those lands.

Thus, despite individual municipality Land use Bylaws around the Lake for independent development by and within that municipality, there is ultimately a net cumulative effect of all development around the Lake on groundwater quantity and quality, as well as Lake water quantity and quality. That does NOT appear to be considered in any of the Land Use Bylaws I read to date, but where the Lake itself belongs to the Crown in the right of the Province of Alberta, and where there is provincial and federal environmental and wildlife jurisdiction governing the Lake itself and the wildlife in and around the Lake. Human public health issues arising remain within the jurisdiction of the Alberta Public Health Act and Regulations. So, multiple regulatory jurisdictions to consider when it comes to the actual Lake, in addition to all individual municipal regulatory considerations around the Lake.

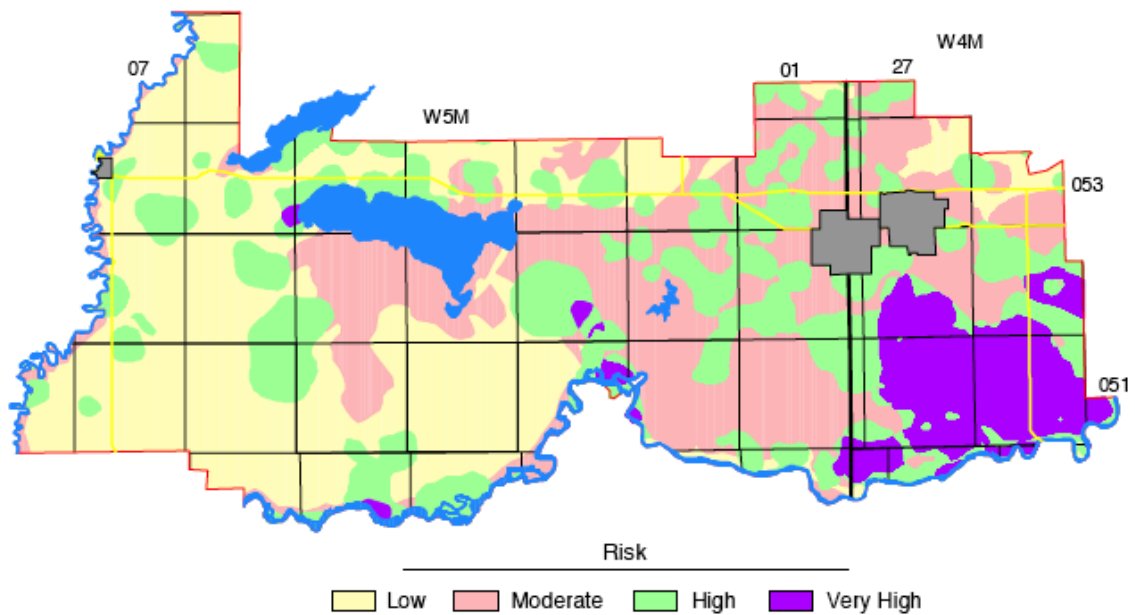


Figure 3 Risk of Groundwater Contamination in Parkland County (from HGC Ltd *a* report File No. 97-202, pg A-42)

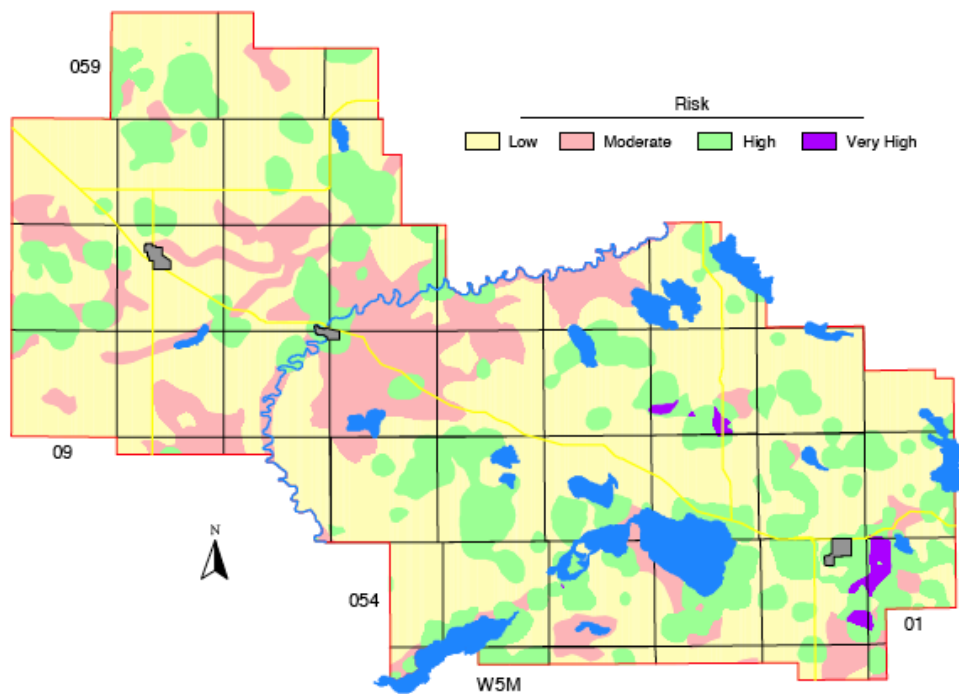


Figure 4 Risk of Groundwater Contamination in Lac Ste Anne County (from HGC Ltd *b* report File No. 97-112, pg A-41)

## **Lake Isle and Impacts of Current and Future Development**

As described in the *Atlas of Alberta Lakes* (Prepas and Mitchell, 1990), the Lake itself has an area of 23 km<sup>2</sup>, with a drainage basin approximately 11 times the size of the Lake, and where the lands comprising the drainage basin form part of the lands of the 4 municipalities around the Lake. Figure 5, taken from the *Atlas of Alberta Lakes*, illustrates the drainage basis for the Lake, for all lands around the Lake irrespective of municipality where those lands are physically located.

Also in 1977, Alberta Environment had a regulation entitled “Regulated Lake Shore land Development Operation Regulation (AR 233/77), which was designed to act not only as an inter-municipal plan for the Edmonton Regional Planning Commission and the Yellowhead Planning Commission for Bylaw 69-83, but had the greater vision of promoting ways to minimize environmental impacts on sensitive areas of the Province (i.e. lakes), minimize conflicts in use of, and development around lakeshores by determining the extent of future land development and allocate land uses, as per the required statutory plans for development around lakes in the Province. This appears to be the originating legislation that required the creation of the Lake Isle Area Structure Plan, as adopted by the two planning commissions of the day, and which resulted in caveats on title for some lands around the Lake.

When the Lake drainage basin map is compared with the land use allocation map of Bylaw 69-83, there are some striking similarities and where it is clear that the original intent of the ASP for By-law 69-82 was to try to ensure orderly development of lands around the Lake, minimize future land use conflicts and finally protect the Lake itself from the cumulative impacts of land development in the Lake’s drainage basin area.

Attachment 1 is a quick summary and diagram of existing development around the Lake, as available from public information sources. The diagram is one of lake bathymetry, or descending elevation into the Lake itself, and which was taken from the *Atlas of Alberta Lakes*. The purpose of using the Lake Isle bathymetry map relative to human surface development around the Lake, was to try to see what the Lake experiences from that human development. It is interesting to note the concentration of human activity and subdivision development at the shallow ends of the Lake, and where there is significant impact on Lake water quality. Table 1 summarizes the existing subdivisions, number of residential lots, potential number of

groundwater wells and private sewage systems, as well as estimates potential maximum groundwater required based on full-time residence and maximum use of the individual riparian right of 1250 m<sup>3</sup> groundwater/year/residence, as well as an estimate of potential sewage generation, based on the “worst” case scenario of a full-time resident and using design numbers as provided in the Alberta Private Sewage Regulation to determine what that number could potentially look like.

There are also a number of existing campgrounds at Lake Isle, primarily on the Lac Ste Anne County side, as well as proposed campgrounds of significant population density in both Counties, which add to the net cumulative anthropogenic impacts to the Lake itself. There are also farms on the fringe of the residential subdivisions adjacent to the lake, but with a much lower population density than in the country recreational and/or Summer Village development that currently exists around Lake Isle.

Given that once the country recreational subdivision is created and individual lots sold, and assuming that the land use meets the permitted land use of the municipal bylaw, one can only assume that at some current or future point in time, there will be maximum human development in the existing subdivisions, which creates a net cumulative impact on the Lake and surrounding lands. And land use conflicts, including groundwater conflicts and deteriorating Lake quality and water quantity issues will most certainly arise and become worse over time, if there is no net cumulative land use planning around this Lake. New developments (e.g. campgrounds, etc), especially if more concentrated in population and development density and on smaller parcels of land than existing commercial developments, will act to exacerbate existing Lake issues. The same holds true for residential development. When the wetlands and drainage basin of the Lake are fully developed, Lake issues will intensify from what they are today. And I believe that the original vision of Bylaw 69-82 was to try to mitigate future issues through the Area Structure Plan developed at that time. It is truly unfortunate that the other three municipalities around Lake Isle didn't consider the real intent of what this Bylaw was trying to accomplish for the future, and chose to disregard it. In reading the current Land Use Bylaws of these other three municipalities, it is clear that the primary focus is on development of the lands around the Lake, but where there is cursory to no consideration of the cumulative impacts on the Lake itself. But where it is the actual Lake that is what drives development and makes the development desirable from the consumer perspective. That will most certainly change as Lake

water quality and quantity deteriorate, and likely at an accelerated rate from that of the past 40 years. Which my family, and friends and neighbours around the Lake have already noted in our short to long time residence at the Lake

Table 1 Summary of Existing Municipal Developments at Lake Isle.

	<b>Parkland County</b>	<b>County of lac Ste Anne</b>	<b>Summer Village of Silver Sands</b>	<b>Summer Village of Southview</b>
No. of Lake Front Subdivisions	7	7	1	1
Total No. of Lots In All Subdivisions	416	370	232	99
Potential No. of Individual Groundwater Wells In Subdivisions	416	370	232	99
Potential No. of Individual Private Sewage Systems in Subdivisions	416	370	232	99
Estimated Annual Sewage Generated (L/residence/year) in all subdivisions	852,400	729,000	469,800	200,479
Estimated Annual Groundwater Consumption (private residence) (L/residence/year) in all subdivisions	520,000	290,000	290,000	123,750
Municipality Land Area (km <sup>2</sup> )	TBD	TBD	2.35 km <sup>2</sup>	0.69 km <sup>2</sup>

There are a variety of sewage systems in these subdivisions that range from outhouses, septic fields, septic holding tanks and of varying age and condition. While septic holding tanks are required to be pumped out and disposed of at an approved septage receiving facility, that becomes another pressure point for existing and future municipal development around the Lake, as these septage receiving facilities have a maximum capacity, and where there have been



reported cases of illegal dumping of septage into ditches/land surfaces, and/or disposal into a Lake itself.

### **Lake Water Quality and Health Effects**

Lake Isle has had three years of consecutive blue-green algae, or Cyanobacteria, public health warnings from Alberta Health Services, and sporadically in previous years from the former Capital Health Authority and the former Aspen Regional Health Authority. Cyanobacteria have short-term human health effects ranging from rash, gastroenteritis, to long-term human health impacts from neurotoxins and hepatotoxins, such as neural damage, liver damage, liver cancers, and so forth, from toxins produced by the Cyanobacterial blooms. These blooms have also resulted in periodic fish kills for Lake Isle, and in other lakes domestic animals/agricultural animals have died after drinking cyanobacterial contaminated lake waters. Health Canada has released the third edition of the *Guidelines for Canadian Recreational Water Quality*, and which is available at [http://www.hc-sc.gc.ca/ewh-semt/alt\\_formats/pdf/pubs/water-eau/guide\\_water-2012-guide\\_eau/guide\\_water-2012-guide\\_eau-eng.pdf](http://www.hc-sc.gc.ca/ewh-semt/alt_formats/pdf/pubs/water-eau/guide_water-2012-guide_eau/guide_water-2012-guide_eau-eng.pdf).

Continued seasonal and/or potentially permanent public health advisories for cyanobacterial blooms at Lake Isle ultimately have a direct, negative impact on property values around the entire Lake, as well as immediate and direct impact on future development potential, as well as existing residential subdivisions, campgrounds, agricultural operations, and other businesses around the Lake. This trend towards yearly public health advisories for Lake Isle is increasing, not decreasing. This is becoming a grave public health concern for all residents around the Lake, and should also be of concern to the four municipalities around the Lake as well, as part of the overarching responsibility for good municipal stewardship and responsibilities, as described by Section 3 of the Alberta Municipal Government Act (MGA).

### **Conclusions**

It would be my sincere hope that if Parkland County does decide to rescind Bylaw 69-82, that the County would take on a leadership and visionary role to create a new Inter-municipal Plan, as described by Section 631 of the MGA with the other three municipalities around Lake Isle to try to coordinate development efforts around the entire Lake and the drainage basins, both into the Lake, and as water exits from the Lake to flow towards Lac Ste Anne.

This ultimately benefits existing and future development of lands around the Lake, but also acts to preserve the Lake as an area recreational and tourist destination, as well as

environmental protection considerations. This is especially true for protected wildlife and migratory bird species that have breeding/nesting grounds in the near lakeshore environment, or around the lake itself from active efforts at land conservation of sensitive lands and active efforts at rehabilitation and restoration of Lake water quality from it's current state.

All municipalities, local businesses, full-time residents, country recreational property owners, agricultural operations, recreational developments, and private developments ultimately benefit from harmonized, thoughtful development strategies and shared vision for the Lake.

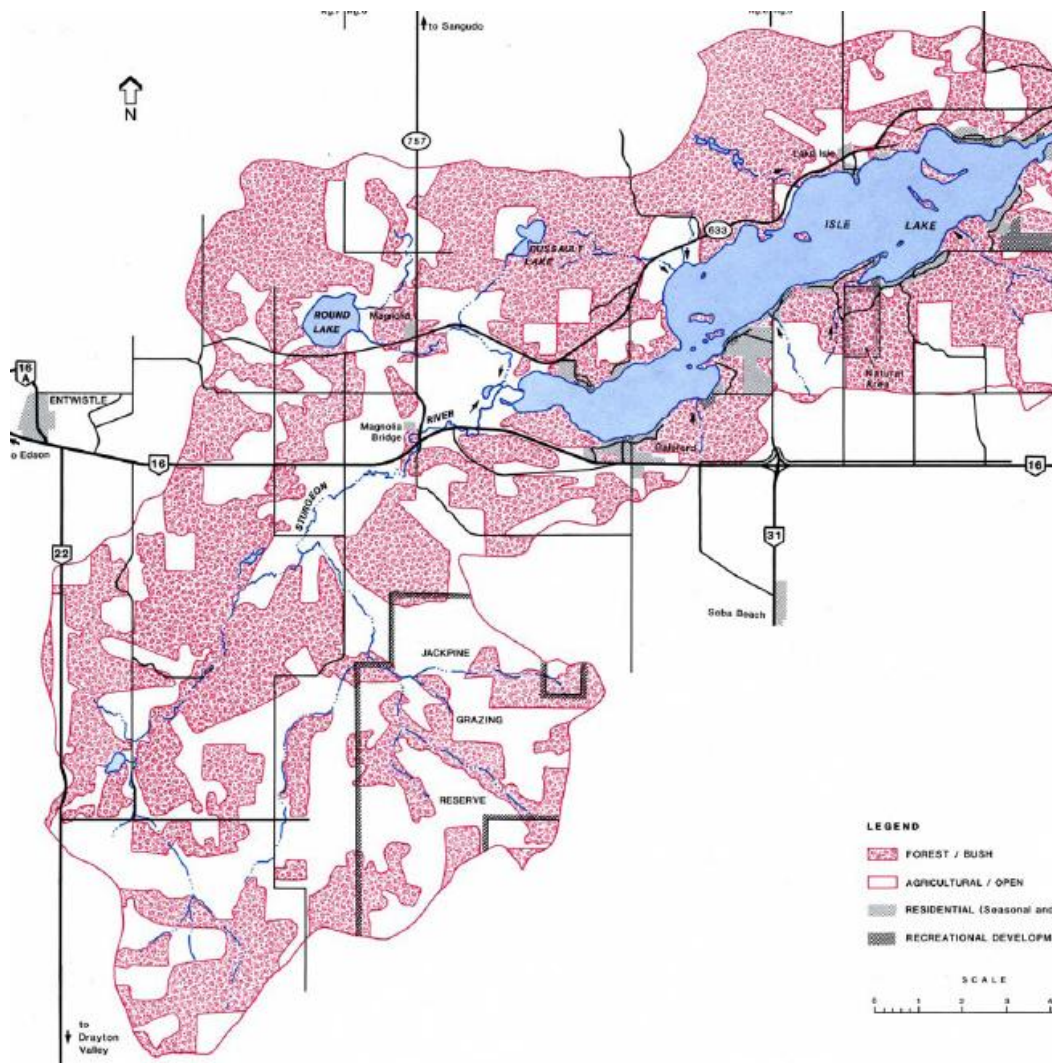


Figure 5 Drainage Basin of Lake Isle (from Prepas and Mitchell, 1990, Figure 1)

It would also be my sincere hope that the County would choose to assume a leadership role in a Lake Isle watershed stewardship group, and work collaboratively with the residents/members to start to develop and organize individual efforts to protect the Lake. The net, cumulative sum of individual efforts does translate into a much larger community program and net benefit to the community itself, as well as larger benefit for the Lake itself.

Respectfully Submitted,

(original signed and sent by fax)

Karen Emde

## **Attachment 1**

## **References**

- Hydrogeological Consultants Ltd (HGC). 1998a. *Parkland County. Part of the North Saskatchewan and Athabasca River Basins Parts of Tp 050 to 054, R25, W4M to R 08, W5M Regional Groundwater Assessment.* Agriculture and Agri-Food Canada. Edmonton, AB. 102 pp.
- Hydrogeological Consultants Ltd (HGC). 1998b. *Lac Ste Anne County. Parts of the North Saskatchewan and Athabasca River Basins Parts of TP 053 to 059, R01 to 09, W5m Regional Groundwater Assessment.* Agriculture and Agri-Food Canada. Edmonton, AB. 100pp.
- Prepas E., Mitchell P. 1990. *Atlas of Alberta Lakes.* University of Alberta Press. Edmonton, AB. (accessed at <http://sunsite.ualberta.ca/Projects/Alberta-Lakes>).