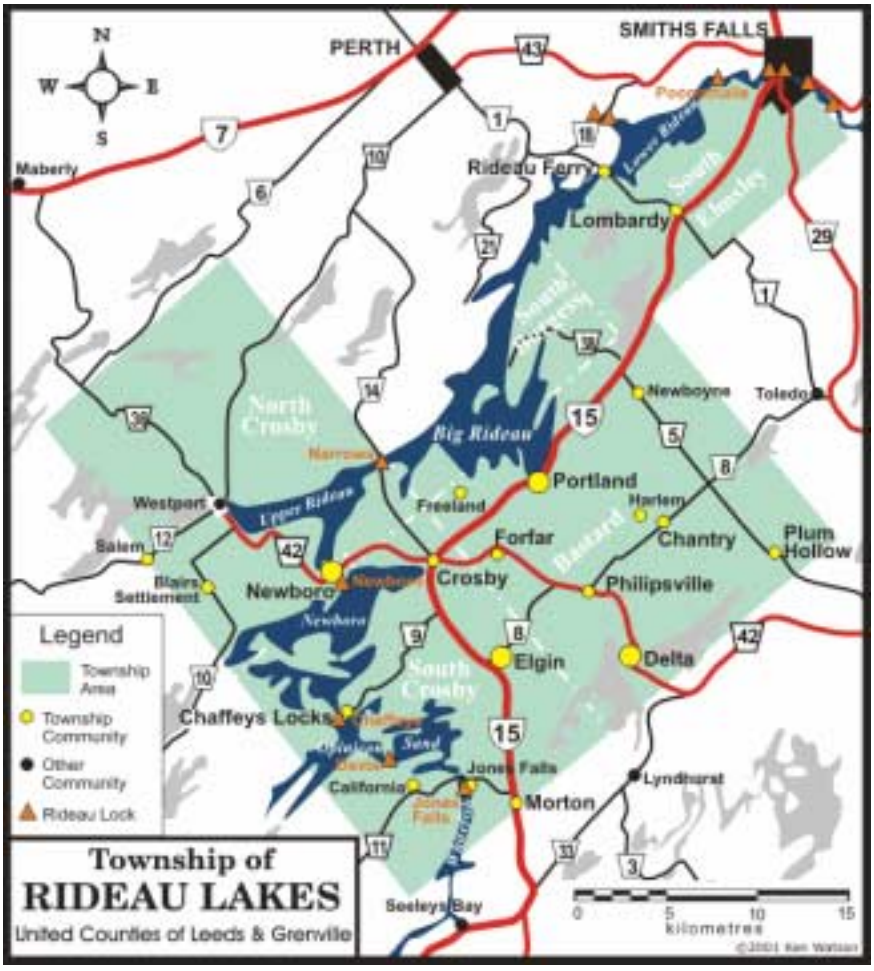
2007

Township of Rideau Lakes
On-site Wastewater Disposal System Re-Inspection Program



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MississippiRideau
SEPTIC SYSTEM OFFICE

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1.0 Introduction

A working sewage system is an integral part of any functioning home or cottage not serviced by a municipal sewer. As such, proper maintenance of the sewage system is integral to the continued life of the system. An on-site wastewater disposal system re-inspection program ensures that the community is aware of how to maintain their system, and holds people accountable for ensuring that their system is not a health or environmental risk to the community.

The improper operation of on-site sewage systems can have both health and environmental impacts beyond the property on which it is located. Nutrient and bacteria rich effluent can travel through soil and rock fractures to surface water bodies, and ground water sources. High nutrient levels can cause excess plant growth, eutrophication and alteration of the natural habitat of fish. This places a responsibility on the homeowner to ensure that their sewage system is working properly, not only for their own health, but also that of the communities.

This year the Township of Rideau Lakes joined Tay Valley and North Frontenac Townships by initiating a septic system re-inspection program managed and operated by the Mississippi-Rideau Septic System Office (MRSSO). 2007, the inaugural year involved the voluntary re-inspection of 100 shoreline properties. Programs such as the septic re-inspection program are excellent initiatives that help to protect and improve shorelines, surface water and groundwater.

The current re-inspection program combines homeowner education about septic system operation and maintenance with an inspection component. A n effective follow-up procedure is essential to insure that the program effectively manages identified sewage system problems.

The *Building Code Act* (BCA)(1992), and Part 8 of the Ontario Building Code (OBC) regulates the design, construction, operation and maintenance of sewage systems. The OBC however, has powers which only extend to those systems with a design flow of less than 10,000 Litres/day, serving no more than one lot. Systems which do not fall within these parameters are regulated by the Ministry of the Environment, under the *Ontario Water Resources Act*.

The authority for the Mississippi Valley Conservation and Rideau Valley Conservation Authority, and other enforcement agencies, to conduct inspections of potentially unsafe sewage systems is provided by BCA s.15.9(1). This act provides inspectors with the right of entry onto land “to determine whether a building is unsafe”, under part 1 of the OBC an on-site sewage system is treated as a building and BCA s.15.9(3) deems a sewage system to be “unsafe” if it is not maintained or operated in accordance with the BCA and the OBC. BCA s.18 outlines the powers that an inspector may exercise for the purposes of carrying out an inspection. If the inspector finds the system to be “unsafe”, he or she may

make an order under BCA s.15.9(4) setting out the steps necessary to render the building safe, and may require that the steps be taken within a certain period of time. This enforcement for the Township of Rideau Lakes will be carried out by their Chief Building Official (CBO) or his/her appointed representative.

Further authority will be given with amendments proposed to the BCA under the *Clean Water Act, 2005*, this act was passed on October 18, 2006 and will help protect drinking water sources for all Ontarians.

A visual inspection of the sewage system can determine if the system is “unsafe”, defined in OBC 8.9.1.2 as a breakout of effluent onto the surface, contamination of a well or of a surface water source. Clearance distances to the well and surface water from the sewage system can also be verified by a visual inspection. To determine if the system is being maintained and operated in accordance with the OBC and the BCA, a thorough inspection of the tank is necessary.

In 2007, 456 homeowners were contacted in the spring with a request to participate in a septic system re-inspection program for 100 volunteers. A site visit was made and a tank inspection and visual inspection of the leaching bed were completed if the property owner returned correspondence to the MRSSO. If the homeowner was insistent that their septic tank should not be excavated only a visual inspection of the property was completed and the septic tank not disturbed. In situations requiring further attention the CBO will be mailed a copy of the notification to the homeowner and will provide enforcement accordingly. The results for the 100 inspections completed in 2007 were compiled and this report is the culmination of those efforts.

2.0 Program Initiation

2.1 Criteria for Selection of Properties

In spring 2007, Township of Rideau Lakes approached the Rideau Valley Conservation Authority and requested a proposal for conducting a 100 re-inspection pilot program for the township. The proposal was accepted by the Township of Rideau Lakes and the initial voluntary re-inspection program was started.

Township of Rideau Lakes requested that it be made very apparent that this was a voluntary program. Township staff provided the Mississippi-Rideau Septic Office (MRSSO) with an initial list of 300 properties selected to receive a re-inspection questionnaire from the septic office. These questionnaires were mailed in the second week of June, 2007. It was hoped that 100 volunteers could be recruited from this list but that was not the case. A further 157 questionnaires were mailed
to property owners in the first week of August 2007.

Areas selected for re-inspection were based on Rideau Valley Conservation Authority data, township identified areas of heavy development pressure and consultation with lake/cottage associations. Township of Rideau Lakes staff ultimately decided on the properties which would receive a re-inspection program questionnaire.

A systematic approach to identifying areas for re-inspection within Township of Rideau Lakes, combined with putting less focus on the voluntary nature of the program would likely decrease the number of mail-outs required and increase the return percentage. This would help to reduce staff time and mailing costs required for the program.

2.2 Re-Inspection Protocol

Once selected, a letter is mailed out to each property owner informing them of the re-inspection program, what their participation would entail, and a description of the inspection to take place. Sent together with the information letter was a two sided questionnaire to be completed by the homeowner and returned to our office.

When the questionnaire was returned to our office, the property was flagged for a full inspection. A full inspection consists of a visual inspection of the bed and property and an inspection of the contents of the septic tank. This was assuming that the sewage system was a Class 4 system with a septic tank and bed. No properties were entered or inspected which had not first granted the MRSSO

permission by way of returning the questionnaire. It was very important for the township of Rideau Lakes that no properties be entered without prior consent from the property owner.

The tank inspection was deemed to be a highly invasive component of the re-inspection program, one which could potentially result in controversy if conducted without the permission of the homeowner. Permission was considered granted by receipt of a completed questionnaire. If explicit permission had not been granted then no inspection of the property was conducted. A detailed description of what a visual inspection and a tank inspection is comprised of can be found in Appendix C. If any doubt remained about the location of the sewage system then more information was requested of the homeowner. If the homeowner indicated that they did not want to be involved in the program then the Mississippi-Rideau Septic Office made note of this fact and proceeded to the next property which had returned the questionnaire.

3.0 Results and Discussion

3.1 Distribution of Sewage System Re-Inspections

The septic re-inspection program completed 100 site visits in 2007. The areas of Bass Lake, Big Rideau Lake, Otter Lake, Sand Lake and Upper Rideau Lakes were involved in the program.

At each site visit, GPS readings are taken where a well, bed or tank is identified. These GPS co-ordinates are entered into a database and will be accessible through the MRSSO if system components need to be located in the future. An additional benefit, which was not anticipated, was that by having more than one site visit on a road, it generated talk among the cottagers and residents on the road, and word of the program spread. People did not feel as though they had been singled out, and couldn't talk about having been selected when many people on one road were selected.

From information collected through site visitations, records of mailing addresses, and observations at the time of the inspection, the 100 properties were designated to be either seasonal, residential, farm or residential/commercial. . While residential properties generate more wastewater, and have the potential to contribute more nutrients to surface water bodies, seasonal properties often have older sewage systems, more likely to be contributing nutrients. Therefore a mix of both seasonal and residential properties is desirable. The 2007 program generated responses from primarily cottage properties. **66%** of the properties inspected were designated cottage (seasonal) and **31%** were designated residential. A property was deemed cottage (seasonal) if the mailing address for the owner was different from the property address.

During the four months of field work we encountered 43 homeowners in 100 inspections. Appointments were arranged with homeowners at their request. During an appointment there is a great deal of time to promote awareness and education of on-site wastewater treatment issues and alternatives. We anticipate that in future years we will be able to meet with even more owners on their properties. A large percentage of property owners would prefer to be present during the septic re-inspection. The system of making appointments worked quite effectively in 2007 but minor changes will be made to hopefully encourage more homeowners to be present during the inspection. We received a very positive response from the majority of property owners we encountered. This is a very encouraging sign and highlights that an increasing number of cottagers and shoreline property owners are learning more about water quality and are interested in the wastewater systems on their properties.

3.2 Class of Sewage System

There are 4 primary classes of wastewater treatment systems identified in Part 8 of the OBC as outlined below.

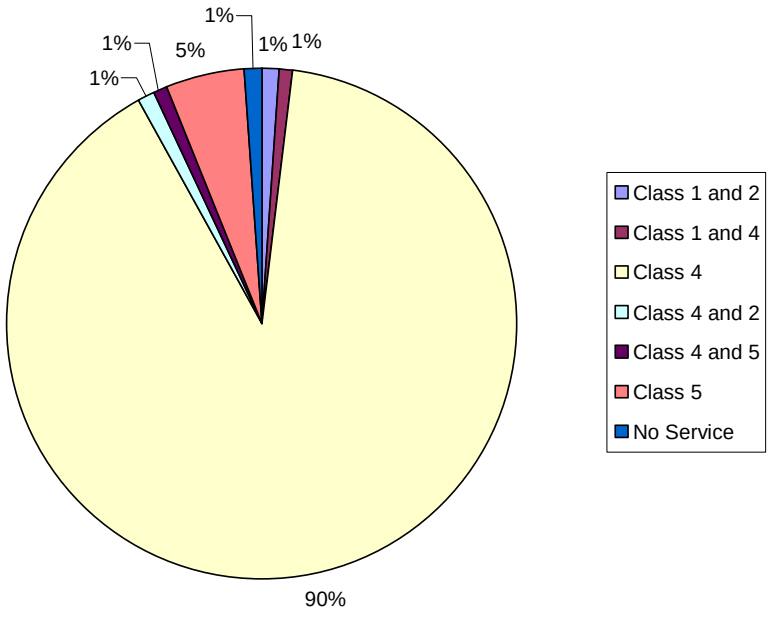
Class 1 - Earth Pit, Vault, Pail and Portable Privies
Class 2 - Greywater Systems
Class 3 - Cesspools
Class 4 - Trench Beds, Filter Media Beds and Shallow Buried Trenches
Class 5 – Holding tanks

Figure 1 displays the primary type of on-site wastewater system for each property where it was known, either from the visual inspection, or from information provided by the homeowner. A Class 4 sewage system was most prevalent; found in 94 of the properties inspected. Due to the difficulty in determining the type of Class 4 sewage system in use, and the lack of homeowner certainty, we did not distinguish between the different types of Class 4 systems in this year's analysis. It is hoped that with assistance from the Development Services Department at the Township of Rideau Lakes, in future years, statistics on the number of filter beds versus trench/conventional beds will become available.

There are very stringent requirements in the OBC for allowing the installation of a Class 5 system (holding tank). One of those requirements is that it can be installed only when no other type of Class 4 system, meeting the OBC requirements, can be placed on the property. **Five holding tanks were identified by the re-inspection program in 2007.** It is promising that in the first years of the program very few holding tanks were identified, however given the number of systems inspected it is likely not representative of the Township as a whole.

In 2007 1 dwelling was serviced by a privy and/or a greywater pit (Class 1 and 2 systems) as their primary means of sewage disposal. These situations can be a risk to the health of the lake. Typically these systems are older and in worse repair and are coupled with greywater sources discharging to the surface or to a greywater pit of undetermined size.

Figure 1: Primary Sewage System Class



3.3 Class 1 & Class 2 Systems

Only 2% of the properties inspected in Township of Rideau Lakes were found to have a privy on the property. The majority of the privies were earth pit privies, where the waste is received by a pit dug into the soil. Composting toilets, vault privies, pail privies or portable privies are also classified as Class 1 systems.

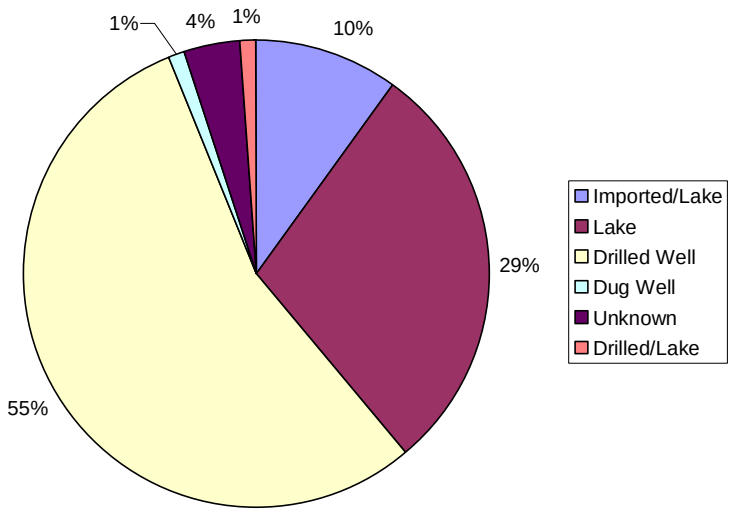
There were fewer greywater pits found during the site visits than privies, and some of the pits, like the privies, were located on a property with a class 4 wastewater system. This greywater waste does not need to be separated from the class 4 waste, and is more likely to receive a higher level of treatment if directed to the class 4 system. Greywater should be directed to a class 4 system wherever possible. It is also very likely that the inspected Class 5 systems also have greywater pits that were not identified. If these pits are located within 15 meters of the shoreline they should be directed into the holding tank on site.

Class 1 and 2 systems are not the best options for protecting lake water quality. Typically these classes of system do very little to treat wastewater, they primarily provide a storage location until the wastewater trickles away. If these systems are located too close to a water body they can have a significant impact on water quality during seasons of peak use.

3.4 Wells and Drinking Water

Information was also collected during the field inspection on the water source, and water testing practices of the homeowners. During the visual inspection, if a pipe pumping water from the water body was visible, and no well was located then the water source was assumed to be the lake (or river) and recorded as such. If no pipe was visible and a well was located, then the water source was recorded as a drilled well. Information provided by the homeowner would be more accurate than that found during the visual inspection, and is preferable to identifying the water source on-site. Figure 2 shows the number of systems for each category of water source. Information was asked for regarding the level of treatment of the water before consumption (water softener, UV filter, reverse osmosis, iron filter, etc.) if the property owner was present on site.

Figure 2: Water Source



The Leeds, Grenville and Lanark Health Unit has free water testing available for residential properties, and water bottles are available for pick up at the office in Smiths Falls. However, even with all of these resources available, many people continue not to test their drinking water regularly.

The Health Unit recommends that a residential property test their water three times a year, each time submitting three separate samples one week apart. For a seasonal property, only two tests are recommended, each time submitting three separate samples. In practice it was found that many people do not test

their water even annually, and some have not had it tested since they had their well installed.

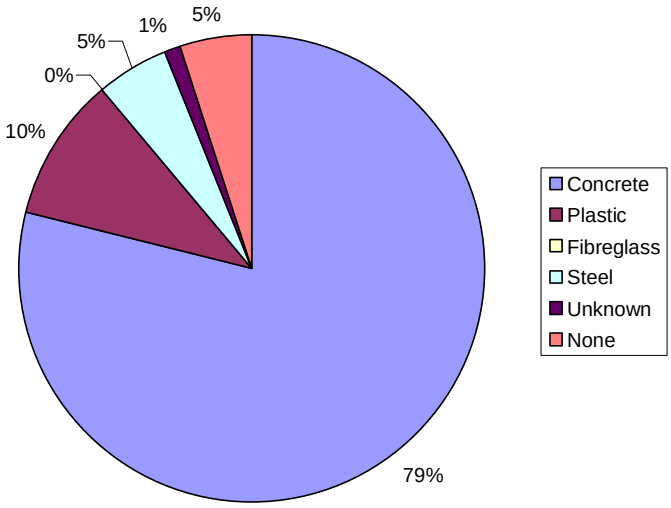
3.5 Tank Inspection

One of the most frequent questions a homeowner asks is “How often should I pump my tank?”. Most government documents and extension publications suggest that a septic tank should be pumped out every 3-5 years.[1] Appendix C has a table which provides the theoretical pumping interval for permanent residential properties, assuming the number of people in the home, and the tank size. For a home with three people and a standard 3600 L (952 US gal) tank, the author recommends a pump out every 3.7 years. This table, however, does not provide direction for seasonal owners, who might only be using their cottage for three months of the year. Another resource is the OBC, which requires that a septic tank be pumped out when the sludge and scum occupy 1/3 of the working capacity of the tank (8.9.3.4.(1)). This will prevent the sewage from traveling too quickly through the septic tank, not allowing the solids and fats to properly separate from the effluent. To give the homeowner, on an individual basis, an estimation of the frequency for pumping out their septic tank, the depth of sludge and scum was measured during the tank inspection.

Of the 94 Class 4 systems inspected, **21%** required a tank pump-out. One of the unforeseen problems with inspecting the tanks is that some people will wait to respond with their questionnaire until they have had their tank pumped. This made it essentially impossible for us to provide the homeowner with any information regarding how frequently they should pump. A side benefit though was that it created an incentive for people to have their tanks maintained, knowing that someone was coming to inspect it.

The material of the tank was determined by using a soil probe to locate the tank and judge the material by the contact with the probe and the sound/feel it created. Tank information was available for 93 of the 94 properties with class 4 septic systems and Figure 3 shows the breakdown for the common tank materials found: concrete, plastic, fiberglass, and steel.

Figure 3: Construction Material of Septic Tank



Information was also collected on the condition of the inlet and outlet baffles in the septic tanks. Roots around the baffle can block the sewage or effluent from entering or exiting the tank. This can cause a sewage back-up in the home, or can lead to a bed failure if the roots find their way to the distribution bed. Missing baffles are also noted, as they serve an important function in the septic tank, and are required by the OBC. Baffles prevent the re-suspension of solids in the tank, which can lead to premature bed failure. A poor baffle typically resulted in a recommendation to the homeowner to watch the condition of the baffle at subsequent pump-outs for failure. Generally the baffles that were inspected were in good condition, with a few exceptions. Typical exceptions included corroded concrete and root intrusion.

Effluent filters are a plastic screen which allows the effluent to pass through large slots that reduce the turbulence as the sewage exits the tank. The reduction in turbulence allows additional solids to settle, reducing the amount of solids entering the bed, and therefore increasing the life of the septic bed. The Ontario Building Code requires an effluent filter in every new system installed, many septic installers will retrofit one into an old tank upon request. These relatively inexpensive additions (~$150) to your septic tank can prolong the life of a septic bed, which is an expensive component of a septic system to replace (~$6,000 - $15,000). Effluent filters were seen in **5** of the inspected septic tanks.

3.6 Visual Problems and Separation Distances

The inspection of a property also involves a visual component identifying any problems such as pipes discharging to the surface or trees growing on the septic bed. Horizontal separation distances are also measured from the well and shoreline, to the sewage system components. There is very little that can be done to remedy existing non-compliant separation distances. It is important that the OBC separation distances are respected on all new installations.

A visual inspection cannot accurately assess the functionality or remaining lifespan of an existing septic system. It can only serve to provide a rough approximation of the infiltrative effectiveness of the wastewater distribution system (drain field).

It is also very difficult to assess the separation distance from the distribution pipes to the water level, bedrock or other confining layer without excavating a hole in the distribution field. Rough approximations can be made using a soil probe but this technique has limitations. The current Ontario Building Code (OBC) requires a minimum of 0.9 meters of fill material (sand typically) between the distribution pipes and the water level, bedrock or other confining layer. Any less material than this can result in inadequate wastewater treatment and contribute to degradation of environmental water quality.

Another crucial element contributing to septic system function is the amount of cover material over top of the distribution pipes. The OBC requires between 0.30 meters and 0.6 meters of cover over the pipes. The purpose of this material is to provide a barrier between the wastewater and the surface. This layer also facilitates the transfer of oxygen down into the distribution pipes. Oxygen is a key component of the treatment of wastewater from septic systems. Too little cover material can result in the premature escape of wastewater to the ground surface while too much cover can lead to premature clogging of the distribution pipes due to the inefficient transfer of oxygen to facilitate wastewater treatment.

Table 1 is an overview of the overall program findings.
Table 2 identifies the system deficiencies found in 2007.
Appendix A shows some pictures typical of septic system deficiencies identified in septic re-inspection programs.

Table 1 – Re-inspection Results

No concerns	41
System Replacement Required	5
Remedial Work Required	51
More Information Required	2
Not on the lake	1
Total	100

Table 2 - System Deficiencies*

Pump out required	21
Non-compliant septic tank	0
Non-compliant GW disposal	3
Baffles require maintenance (broken/roots)	15
Partition wall compromised	1
Effluent above/below operating level of tank	1
Unattached/Exposed/Leaking Distribution pipes	0
Final Grading (erosion/too much/not enough cover)	3
Vegetation	3
Non-compliant privy	3
Tank Corrosion	8
Total	57

*note, some systems have more than one maintenance issue.

3.7 Follow-up and Enforcement

The Tay Valley Septic Office will provide a package to all homeowners whose properties were involved in the 2007 Township of Rideau Lakes Re-Inspection program. This package for this year will include the following:

- Copy of individual property specific re-inspection report for 2007
- Executive Summary of Rideau Lakes Re-inspection Report
- Septic Do's & Don'ts brochure

Properties that the Tay Valley Septic Office feels are of significant threat to the environment and public health have been forwarded to the Rideau Lakes Building Department for enforcement.

Enforcement of violations on the properties identified by the re-inspection report will be at the discretion of the Rideau Lakes Building Department.

3.8 Education Seminars

In 2007 The Mississippi-Rideau Septic Office offered 2 education seminars and attended 3 lake association meetings in Township of Rideau Lakes. The seminars were held on July 6, 2007 and August 11, 2007. The purpose of the workshops was to educate the general public on septic systems and the purpose of the septic re-inspection program in Rideau Lakes. Both seminars were not

well attended with a total of approximately 10 people attending each event. Although the turn out for the seminars was not large, this could be attributed to the timing of the event. Friday evenings are not a good time for an information seminar in cottage country.

Presenting septic system information to lake association meetings is a much more effective method of getting information across to shoreline property owners. In 2007 the MRSSO presented septic workshops to the Upper Rideau Lake Association, the Big Rideau Lake Association and the Otter/Bass Lake Association at their Annual General Meetings.

Some changes are planned to this portion of the program for next year. The importance of an education component is huge. Continual education combined with a consistent re-inspection program will result in improvements to the management of septic systems within Township of Rideau Lakes.

3.9 Program Implementation

2007 was the first year a septic re-inspection program was implemented in Township of Rideau Lakes. The focus was insuring that property owners were aware that re-inspections were voluntary. This resulted in a very poor rate of return for the questionnaires and a significant amount of additional work for the Mississippi-Rideau Septic Office. 23% of all questionnaires mailed to property owners were returned to the Mississippi-Rideau Septic Office. In North Frontenac township, the percentage of questionnaires returned was 68% and in Tay Valley township the percentage was 50%. Property selection was quite difficult, relying solely on volunteer participation. Despite this limitation, the re-inspection program results appear very similar to the results found in other townships.

For future iterations of the program it would be helpful if existing septic permits for the properties to be inspected could be located. It is the assumption of the Mississippi-Rideau Septic Office that this information is available through the Township of Rideau Lakes. Access to this information will need to be negotiated with Township of Rideau Lakes.

Once the re-inspection reports are provided to the Township of Rideau Lakes it is recommended that a copy of these reports be included with the building files for their respective properties. This information should remain easily accessible so that both Township of Rideau Lakes and the Mississippi-Rideau Septic office have the ability to answer re-inspection inquiries by the public. A database is being compiled by the MRSSO of all the re-inspections completed in rideau Lakes to date.

During the 2007 re-inspection program approximately 40 percent of the properties inspected had no on-site wastewater concerns. The rest of the

properties had concerns of some manner. These concerns were detailed earlier on in the report. The majority of these concerns are with the operation and maintenance of existing septic systems. Concerns of this nature are not necessarily of immediate threat to environmental and public health. Failure to address them can result in premature failure of existing septic systems. The OBC does not provide an easy way of following up/enforcing compliance with these maintenance concerns but it should be suggested that some sort of follow-up on the homeowners behalf should be reported to the Township of Rideau Lakes. Continual education is a big help in making property owners aware of the importance of septic system operation and maintenance. Hopefully this will motivate them to address the issues outlined in the individual re-inspection reports that will be mailed to the homeowner. Care should be taken to ensure that any further development on shoreline properties respects OBC and township setback requirements from the high water mark and that renovations to cottages are required to undergo a review under OBC parts 10 and 11 to determine whether system performance will be negatively impacted by proposed renovations.

It is very important that follow-up inspection becomes an integral part of the re-inspection program for the small percentage of properties that require immediate attention. Of the 100 properties inspected in 2007 only 5 systems require immediate attention. These properties have been forwarded to Paul Nixon for enforcement purposes. With the full-co-operation of the Township of Rideau Lakes in following up with properties of concern the re-inspection program can operate as intended. The real benefit of this program is as a public relations and education exercise. If implemented properly the re-inspection program can be a valuable tool for real changes to shoreline development and freshwater protection. Follow-up enforcement should be performed during the late spring/early summer season and results of the inspections should be kept at the township office and a copy forwarded to the Missippi-Rideau Septic Office.

The Mississippi-Rideau Septic Office also would like to suggest an early summer kick-off meeting and wastewater workshop offered to homeowners and cottagers in the township. This would provide an excellent opportunity to explain the program before it begins and increase awareness of water and wastewater issues in the area.

It is hoped that with some changes, the program can become more effective in locating the systems most in need of being found; those causing harm to our water and the environment.

4.0 Recommendations

A major concern with the Township of Rideau Lakes septic re-inspection program is the way it was presented to the property owners. Both Tay Valley township and North Frontenac township run re-inspection programs that are essentially voluntary. The difference is that in the aforementioned townships the fact that the program is voluntary is not directly mentioned in the initial mail-out. If property owners are not aware that it is a voluntary program then they will be more likely to respond to the mail-out. Property owners who are adamantly against the program and decide not to return their questionnaires are not targeted for an invasive re-inspection. They may still be subject to a visual inspection dependent on the location of the property but no site disturbance will take place.

One concern that is consistently mentioned by property owners on-site in the re-inspection program is the necessity of inspecting island properties on the lakes. These properties have the potential to cause significant impact on the environment due to very restrictive site conditions. It is very difficult to service island properties with septic systems. Materials are very challenging to deliver to the site and construction is also very difficult due to the type of machinery required for septic system installation. Because of these challenges it is anticipated that many island properties have insufficient septic systems and should be inspected and then brought up to OBC standards. This also presents challenges to the re-inspection program with regards to transportation to the site. Remaining cost-effective, while spending increased time and money traveling from site to site, will be very difficult.

The Mississippi-Rideau Septic Office has also fielded several requests that more lakes within the township be involved in the re-inspection program.

Many other re-inspection programs in the province require that property owners excavate their own tanks for re-inspection purposes. By requiring that tanks be accessible prior to inspection the re-inspection team could move more quickly from site to site and be more efficient in their work. A system where a surcharge is applied to a re-inspection if Mississippi-Rideau Septic Office staff must excavate the tank should be explored by the township and the MRSSO.
In order to facilitate this change to the program and to increase overall public service a stricter scheduling regiment will be applied to the re-inspection program next year. The weeks that the MRSSO will be inspecting in Rideau Lakes will be identified in the initial mail-out to property owners. By doing this it will enable early scheduling of re-inspection appointments and give property owners the ability to have their tanks prepared for re-inspection before staff arrives on site.

Not everyone who owns waterfront properties has the ability to quickly come up with the money to pay for fixing a sewage system, if theirs is found to require

repairs or replacement. Further promotion of the Rural Clean Water Program offered by the RVCA would be of great benefit to the residents of Township of Rideau Lakes.

The regulation of commercial establishments and rental properties are of extreme importance to the lake environment. These properties tend to have much more traffic and much more of an out-of-sight, out-of-mind perspective on wastewater treatment and water quality issues. Efforts should be made by all stakeholders to identify these high risk properties and any impacts they are making on the waterways of Township of Rideau Lakes. Given the rising popularity of cottage and recreational properties within the township, now is the time to address these issues before they expand into larger problems. A good working relationship with the Ministry of the Environment would be necessary before considering inspections of on-site wastewater systems with a design flow of greater than 10,000 L/d however, as the enforcement of these systems is completed by them.

In 2008, it is recommended that Rideau Lakes address the properties that did not have a thorough inspection completed in the 2007 re-inspection program. Re-sending questionnaires out to the properties not selected for the program would show a commitment to pursuing a complete and consistent re-inspection program. These areas were identified as the highest-risk areas in the township and as such the attempt should be made to cover as many systems in these areas as possible.

One final recommendation would be implementing a 3 strikes rule. If a property owners does not return a questionnaire the first year, they are re-mailed one for a second year in a row. If still no response is received that is a trigger that there is a possibility of an unsafe situation on the site and a MANDATORY re-inspection is required for that property.

5.0 Conclusions

The 2007 on-site wastewater disposal system inspection program was a reasonable success. Other than the property selection process the majority of the program ran smoothly and as anticipated.

Minor changes to the way the program is implemented in Township of Rideau Lakes will go a long way to addressing some of the concerns brought forward by concerned citizens of Township of Rideau Lakes and the Mississippi-Rideau Septic Office. Every effort should be made to increase the response rate to the questionnaire for 2008.

The 2007 program completed an invasive inspection on 99% of the systems inspected. Approximately 40% of these systems had no septic system concerns. It should be noted that age did not appear to be a significant factor in the system deficiencies identified. Of larger impact was the awareness of the operation and maintenance requirements of a septic system.

Only 4 properties were identified with major concerns and these properties were passed on to Paul Nixon in the building department of Township of Rideau Lakes.

Interaction with property owners during the re-inspection program this year was very positive. All of the homeowners encountered were very supportive of the re-inspection program. Some effort needs to be made to made to bring local residents, particularly campgrounds and cottage rental locations, on board with the re-inspection program, these owners seem to have some animosity towards the re-inspection program. Further education will hopefully remedy this.

Recommendations were made to further cooperation with the Township of Rideau Lakes, to make the selection of properties and provision of questionnaires more efficient and improve the accuracy of record keeping and make sure the public has access to septic re-inspection records and permit information.

We would like to take this opportunity to thank those who helped make this years program a success. Otter Lake Association, Sand Lake Association, Upper Rideau Lake Association and Big Rideau Lake Association have provided lots of support helping to get residents to volunteer for the program. Carolyn Mulville and Sheldon Laidman at the Township of Rideau Lakes have provided municipal support and were very supportive when dealing with the challenges encountered during this years re-inspection program. We appreciate the foresight of the Township of Rideau Lakes in striving to protect our important lake and shoreline resources of our historically significant watershed.

We look forward to being involved in the program in 2008. If we can continue to perform septic re-inspections every year, we will begin to have a more complete idea of the status of on-site wastewater treatment in Township of Rideau Lakes. It is anticipated that by implementing the recommendations made, and taking the lessons learned in 2007, that the program will only become more effective in the future. We hope that the momentum of the on-site wastewater disposal system inspection program continues in the coming years, as we believe it is a valuable asset to the health of the environment for our community.

6.0 References

1 Bounds, T.R. Management of Decentralized and Onsite Wastewater Systems *In* ADAE Proceedings of the 9th National Symposium on Individual and Small Community Sewage Systems. March 11-14, Fort Worth, Texas. Pp.435-450, 2001.

2 R.J. Burnside & Associates, City of Ottawa Rural Wastewater Management Study (Document 1) Final Report

Appendix A – Typical System Deficiency Pictures

Appendix B: *Clean Water Act* (Bill 43, 2005)

Excerpts from Bill 43, 2005 the *Clean Water Act, 2005* which was introduced for first reading on December 5th, 2005. The following are proposed amendments to the Ontario Building Act which would be relevant to the Tay Valley Township Re-inspection Program.

Building Code Act, 1992

112. (1) Subsection 1 (1) of the *Building Code Act, 1992* is amended by adding the following definitions:

"maintenance inspection" means an inspection conducted under a maintenance inspection program; ("inspection d'entretien")

"maintenance inspection program" means a program established under clause 7 (1) (b.1) or subsection 34 (2.2); ("programme d'inspections d'entretien")

(2) Clause 1.1 (7) (a) of the Act is repealed and the following substituted:

(a) to exercise powers and perform duties under this Act and the building code in connection with reviewing plans, inspecting construction, conducting maintenance inspections and issuing orders in accordance with this Act and the building code;

(3) Subsection 7 (1) of the Act is amended by striking out "applicable in the area in which" in the portion before clause (a) and substituting "applicable to the matters for which and in the area in which".

(4) Subsection 7 (1) of the Act is amended by adding the following clauses:

(b.1) subject to the regulations made under subsection 34 (2.1), establishing and governing a program to enforce standards prescribed under clause 34 (2) (b), in addition to any programs established under subsection 34 (2.2);

(b.2) subject to the regulations made under subsection 34 (2.2), governing a program established under subsection 34 (2.2);

(5) Clause 7 (1) (c) of the Act is repealed and the following substituted:

(c) requiring the payment of fees on applications for and on the issuance of permits, requiring the payment of fees for maintenance inspections, and prescribing the amounts of the fees;

(c.1) requiring the payment of interest and other penalties, including payment of collection costs, when fees are unpaid or are paid after the due date;

(6) Subsection 7 (6) of the Act is amended by striking out the portion before clause (a) and substituting the following:

Change in fees

(6) If a principal authority proposes to change any fee imposed under clause (1) (c), the principal authority shall,

. . . . .

(7) Section 7 of the Act is amended by adding the following subsection:

Fees may be added to tax roll

(8.1) Section 398 of the *Municipal Act, 2001* or section 264 of the *City of Toronto Act, 2006*, as the case may be, applies, with necessary modifications, to fees established by a municipality or local board under clause (1) (c) and, with the approval of the treasurer of a local municipality, to fees established under clause (1) (c) by a conservation authority whose area of jurisdiction includes any part of the local municipality.

(8) The Act is amended by adding the following section:

Maintenance Inspection Programs

Maintenance inspections

15.10.1 (1) An inspector may enter upon land and into buildings at any reasonable time without a warrant for the purpose of conducting a maintenance inspection.

Order

(2) An inspector who finds a contravention of this Act or the building code may make an order directing compliance with this Act or the building code and may require the order to be carried out immediately or within such time as is specified in the order.

Service

(3) The order shall be served on the person whom the inspector believes is contravening this Act or the building code.

Form and contents

(4) The prescribed form or the form approved by the Minister must be used for the order and it must contain sufficient information to specify the nature of the contravention and its location and the nature of the compliance that is required.

Posting

(5) The inspector may post a copy of the order on the site of the maintenance inspection.e

(9) Subsection 16 (1) of the Act is amended by striking out the portion before clause (a) and substituting the following:

Entry to dwellings

16. (1) Despite sections 8, 12, 15, 15.2, 15.4, 15.9 and 15.10.1, an inspector or officer shall not enter or remain in any room or place actually being used as a dwelling unless,

. . . . .

(10) Clause 34 (2) (b) of the Act is repealed and the following substituted:

(b) establishing standards for maintenance, retrofit, operation, occupancy and repair;

(11) Section 34 of the Act is amended by adding the following subsections:

Discretionary maintenance inspection programs

(2.1) The Lieutenant Governor in Council may make regulations governing programs established under clause 7 (1) (b.1), including regulations,

(a) governing the classes of buildings and area affected by a program;

(b) governing the type and manner of inspections that are conducted under a program and the frequency of the inspections;

(c) authorizing the principal authority that establishes a program, as an alternative to conducting an inspection, to accept a certificate, in a form approved by the Minister, that is signed by a person who belongs to a class of persons specified by the regulations and that confirms that the person has conducted an inspection and is of the opinion that the building that was inspected complies with the standards prescribed under clause (2) (b) that are enforced by the program.

Sewage system maintenance inspection programs

(2.2) The Lieutenant Governor in Council may make regulations establishing and governing programs to enforce standards prescribed under clause (2) (b) in relation to sewage systems, including regulations,

(a) governing the classes of sewage systems affected by the program;

(b) requiring a principal authority that has jurisdiction in the area affected by the program to administer the program for that area and to conduct inspections under the program;

(c) governing the type and manner of inspections that are conducted under the program and the frequency of the inspections;

(d) authorizing the principal authority that administers the program, as an alternative to conducting an inspection, to accept a certificate, in a form approved by the Minister, that is signed by a person who belongs to a class of persons specified by the regulations and that confirms that the person has conducted an inspection and is of the opinion that the sewage system that was inspected complies with the standards prescribed under clause (2) (b) that are enforced by the program.

Appendix C: Description of a Site Inspection

Tank Inspection

The septic tank is located first by visually inspecting the property for signs of a system, using metal probes and information provided by the property owner. Once the tank was located both the inlet and outlet access ports are uncovered, and the soil placed on a tarp for tidiness. The lids are removed using a crow bar to 'crack' it open, or break the seal which forms over time if it is a concrete lid. The lids are lifted off with a 'J-hook'; a long handled hook which allows two people, on either side of the lid to safely and easily lift off the heavy lid.

A visual inspection of the tank condition is made, and a measurement of the solids content is taken. A sludge judge is used for to take the measurement and is essentially a clear plastic tube with a ball valve on the bottom and 1 foot increments marked on the side of the tube. The judge is lowered into the first chamber of the tank and a cross section of the contents in the tank is obtained. The judge is then pulled out of the tank and the depth of the solids is noted. Often the ball valve plugs up and the contents run out of the bottom. In that case the solids in the bottom are felt by a change in density and the depth is noted.

A visual inspection of the baffles is done as well as a check that the partition wall is in working order. If the solids in the second chamber are as high as the first chamber it can be an indication that the partition wall has suffered some damage. We also check for roots in the tank, and look for the presence of effluent filters before replacing the lids and restoring the area to its original condition.

Visual Re-Inspection

The visual re-inspection consists of a walk around the property looking for water sources, sewage systems or any suspicious things such as pipes to the surface. Measurements are taken between the sewage system components and water bodies, as well as to water sources. A GPS reading is taken at the shoreline, all sewage system components, and wells.

The operation or failure of the bed was assessed by looking for conditions of lush vegetation, wet areas, surface discharge, tree or root growth, side slopes and erosion control.

A sketch of the property identifying structures, privies, septic tanks, septic beds, wells, the waterfront and any other items of concern is completed.

Appendix D: Septic Tank Pump-out Frequency Table

Estimated Septic Tank Pumping Interval in Years

Tank Size	Household Size (Number of People)									
(L)	1	2	3	4	5	6	7	8	9	10
1,890	5.8	2.6	1.5	1.0	0.7	0.4	0.3	0.2	0.1	
2,840 (≅2,700)	9.1	4.2	2.6	1.8	1.3	1.0	0.7	0.6	0.4	0.3
3790 (≅3,600)	12.4	5.9	3.7	2.6	2.0	1.5	1.2	1.0	0.8	0.7
4,730	15.6	7.5	4.8	3.4	2.6	2.0	1.7	1.4	1.2	1.0
5,670	18.9	9.1	5.9	4.2	3.3	2.6	2.1	1.8	1.5	1.3
6,620	22.1	10.7	6.9	5.0	3.9	3.1	2.6	2.2	1.9	1.6
7,570	25.4	12.4	8.0	5.9	4.5	3.7	3.1	2.6	2.2	2.0
8,520	28.6	14.0	9.1	6.7	5.2	4.2	3.5	3.0	2.6	2.3
9,460	31.9	15.6	10.2	7.5	5.9	4.8	4.0	4.0	3.0	2.6

Appendix E: Ontario Building Code References

OBC 8.1.2.1. Classification of Systems

Class 1 – all privies (portable, earth pit, vault, chemical, incinerating and composting).
Class 2 – a greywater system
Class 3 – a cesspool
Class 4 – a leaching bed system
Class 5 – a holding tank

OBC Table 8.2.1.5. Clearance Distances for Sewage Systems

8.2.1.5(1)	Horizontal distance (m) from a well with watertight casing to a depth of at least 6m	Horizontal distance (m) from a spring used as a source of portable water or well other than a well with watertight casing to a depth less than 6m	Horizontal distance (m) from lake, river, pond, stream, reservoir or spring not used as a source of portable water	Minimum horizontal distance to property line
Earth Pit Privy	15	30	15	3
Privy Vault Pail Privy	10	15	10	3
Greywater System	10	15	15	3
Cesspool	30	60	15	3

OBC 8.2.1.6. Minimum Clearances for Classes 4 and 5
Minimum Clearances for Treatment Units (m)

Structure	1.5
Well	15
Lake	15
Pond	15
Reservoir	15
River	15
Spring	15
Stream	15
Property Line	3

Minimum Clearances for Distributing Piping (m)

Structure	5
Well with a watertight casing to a depth of 6m	15
Any other well	30
Lake	15
Pond	15
Reservoir	15
River	15

A spring not used as a source of potable water	15
Stream	15
Property Line	3

Minimum Clearances for Holding Tanks (m)

Structure	1.5
Well with a watertight casing to a depth of 6m	15
Any other well	15
Spring	15
Property Line	3