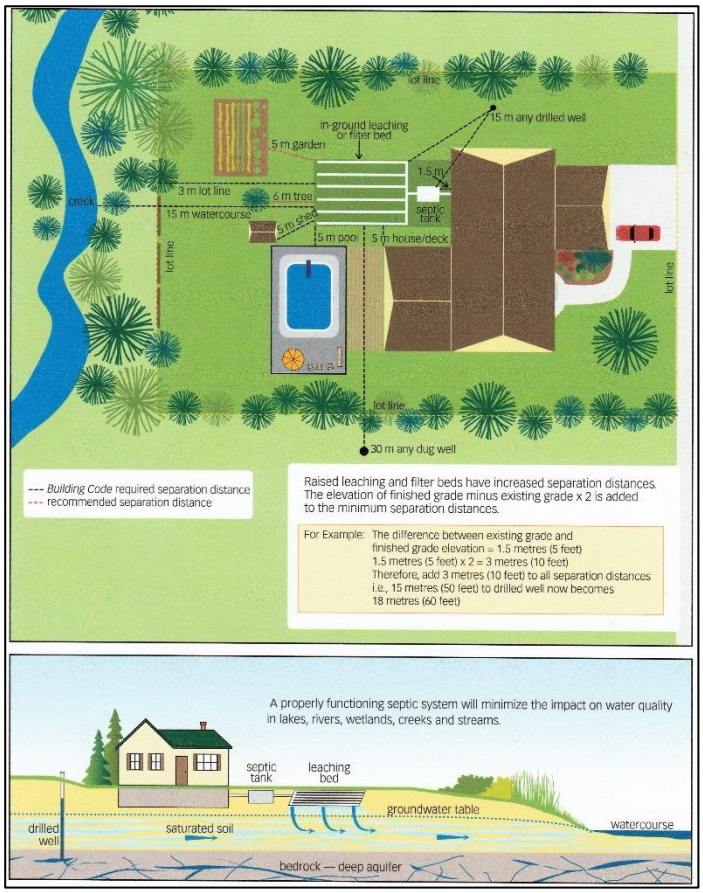
SEPTIC SYSTEM OPERATION AND MAINTENANCE – GUIDANCE FOR KAHSHE AND BASS LAKES

Your septic system is a sewage treatment facility that requires careful attention to design, construction, operation and maintenance. **As a property owner, this is your legal responsibility.** In Ontario, the specifications for construction and maintenance of sewage systems with a flow of less than 10,000 litres per day are regulated under the *Ontario Building Code*, and municipalities are responsible for the inspection and approval of all septic installations. For Kahshe and Bass Lakes, the Building Department of the Town of Gravenhurst is the agency with this responsibility.



A schematic showing separation distances required under the Ontario Building Code and a cross-section of a typical septic system installation are shown in the adjacent figure taken from AgCan&Agri-Food and OMAFRA (2019). While this information is current to 2019, it is presented only to give a general perspective on the installation and design of a typical Class 4 septic system in Ontario. For anyone installing a new or replacement septic system, the Town of Gravenhurst is the agency with authority and responsibility for permitting and installation under the *Ontario Building Code*, and as such, all installation and design decisions must be approved by the Town.

Source: Septic Smart from AgCan&Agri-Food and OMAFRA. 2019

Because most properties on Kahshe and Bass Lakes already have a septic system in place, the more important questions pertaining to these systems and their potential to impact water quality of our lakes have been itemized and discussed below.

How to operate and maintain septic systems to extend longevity and minimize failure?

A septic system is like any other equipment in your house. If you operate and maintain the system responsibly, it will work well and should last a long time. A properly functioning septic system provides a safe, reliable way of treating your household wastes.

If you don't maintain your septic system, you could be endangering your family's health, the integrity of the natural environment and the health of our lake. If something goes wrong with your septic system, the replacement cost can be up to $25,000. This is likely to be significantly higher for waterfront properties on Kahshe and Bass Lakes that do not have road access, as barge rental fees would be extra.

The AgCan&Agri-Food and OMAFRA (2019) publication provides an excellent list of DOs and DON'Ts for optimizing the operation and maintenance of your septic system.

Do:

- familiarize yourself with the location of your system
- keep the tank access lid secured to the riser at all times
- keep an as built system diagram in a safe place for reference
- keep accurate records of septic system maintenance and service calls
- test your well water at least three times a year — spring, summer and fall — for indicator bacteria
- have your tank inspected for sludge and scum buildup on a regular basis (3-5 years) and clean out when a third of the depth of your tank is full of sludge and scum
- have your effluent filter checked and cleaned every year; if you don't have an effluent filter, consider adding one
- divert surface water away from your leaching bed
- conserve water in the house to reduce the amount of wastewater that must be treated
- repair leaky plumbing fixtures
- replace inefficient toilets with low-flush models
- consider installing a lint filter on your washing machine's discharge pipe
- spread the number of loads of laundry throughout the week

Don't:

- enter a tank — gases and lack of oxygen can be fatal
- put cooking oils or food waste down the drain
- flush hazardous chemicals, pharmaceuticals, cigarette butts or sanitary products
- use a garbage disposal unit/garburator unless your system has been designed for it
- use special additives that are claimed to enhance the performance of your tank or system — you don't need them!
- dig without knowing the location of your leaching bed
- drive or park over your tank or leaching bed
- pave over your leaching bed
- allow livestock on the leaching bed
- plant trees or shrubs too close to the septic tank or leaching bed
- connect rain gutters, storm drains, sump pumps or allow surface water to drain into a septic system
- connect leaching bed or greywater system to agricultural field drainage
- discharge water softener backwash to the septic system unless your system has been designed for it
- drain hot tub and spa water to the septic system

Not mentioned in the above list of DOs and DON'Ts is use of phosphate free or low phosphate soaps and detergents in the cottage and for cleaning your boat while it is in the water. The writer addressed the issue of phosphates in cleaners in a 2016 article in the Krier (Pearson, 2016), and this can be found **here**.

The main findings from this article also highlight the need to spread out the operation of high water use operations like dishwashers and washing machines. The main findings from the 2016 article are summarized below:

Legislative action has effectively eliminated phosphorus from laundry and dishwasher detergents. However….

- The increased volume of water from these appliances results in greater and more uneven flow through the septic system and can cause phosphorus to be desorbed from soil and migrate towards the lake.
- The greater volume of water flow also will carry other more mobile contaminants like chloride and nitrates more quickly and in greater quantities to the lake. And…
- Some of the chemicals that have replaced phosphorus in cleaning products have not yet been well studied and may migrate to the lake and adversely affect aquatic life.

Based on the literature that was reviewed, here are a few things each of us can do to minimize the impact of using laundry and dishwashing appliances at the cottage:

- Spread out the use of the washing/dishwashing appliances to better distribute the water flow and increase residence time within the tank so microbial action has time to work;
- Make sure the detergent is labelled as phosphate free (most are, but it doesn't hurt to verify);
- Minimize the amount of pre-washing/rinsing of dishes and avoid flushing of food wastes;
- Avoid the use of powdered/dry detergents as they contain fillers or extenders that may clog your drain system; and,
- Regularly inspect and pump your septic tank, as this removes a major amount of phosphorus that resides in solid wastes.

What are the signs of a failing system?

Based on the Love Your Lake shoreline assessment program *Values Survey Summary Report 2019*, a large number of Kahshe and Bass Lake property owners expressed concern regarding water quality in general and more specifically about faulty or poorly maintained septic systems. As such, it is important to educate owners regarding signs of problems. If you are experiencing any of the following signs or have doubts about the condition of your system, consider having it inspected:

- Slowing or backed up drains in your home/cottage;
- Spongy spots on or near the leaching bed;
- Above normal growth of grass/weeds in patchy areas of the leaching bed;
- The appearance of raw sewage on the ground or close to the tank or leaching bed;
- Septic odours in the basement or outside in the vicinity of the tank or leaching bed; and
- Poor well or surface water quality.

Who conducts inspections and what are they looking for?

Regular inspections are important for the proper maintenance of your sewage system and can identify on-going or potential problems. Inspections can help to ensure a long, useful lifespan for your sewage system.

The Town of Gravenhurst septic re-inspection program takes place on waterfront properties and aims to help keep lakes and ground water free from pollution. Gravenhurst staff work with property owners to provide information and increase awareness about their sewage disposal systems. Each year a summer student is hired to complete visual inspections for existing septic systems. Certain lakes are selected each summer to ensure that there are no repeated properties from previous years. This cycle continues until all applicable properties have been inspected.

The Town's Building Department have advised the KLRA that their re-inspection program was implemented in the year 2000 and has been conducted with the intention of: a) targeting private sewage systems that may be causing pollution; and b) identifying pollution caused by the absence of a sewage system.

Individual properties are selected with the aid of the Town's GIS program and the accumulation of information pertaining to previous sewage system records. The re-inspection student inspector conducts the initial visual site inspection and the following information is noted and recorded:

- Type of building
- Type of tank
- Type of system
- Evidence of sewage effluent visible and/or odour
- Evidence of erosion of septic bed side slopes
- Whether the groundwater flows toward the system
- If the sewage system is properly located on the property
- If the septic tank is properly located on the property
- Whether the sewage system bed has trees/vegetation growth
- Whether the system is located more than 15 metres (50 Feet) from the water
- Whether there is a privy located on the property
- Whether the property is water access
- Whether the sewage system serves more than one building
- If the sewage system uses a pump chamber
- Whether a sewage system approval exists

Following the site visit, the Town's Septic/Building Inspector sends a letter to the owner of the property if any deficiencies are noted and a follow-up is conducted in the form of a phone call, another letter or further inspections, if required.

Is the Town's septic re-inspection program working?

The answer to this question is that we really don't know. The Town informed the KLRA that their septic inspections on Kahshe Lake would be carried out in 2019. However, that has now been pushed back to 2020. It is unlikely whether the hiring of one student for a summer semester to undertake these inspections will enable them to inspect all 700+ road and water access properties on Kahshe and Bass Lakes. And, as they don't release the findings of their inspection program, it's not clear how many properties on each lake have been inspected since the program started or how effective their inspections have been in the abatement of failed systems. The KLRA will attempt to get clarification on the findings of the Town's re-inspection program and will update this document when this information has been provided.

What kinds of failures are common in septic re-inspection programs across Ontario?

In a recent study (FOCA, 2019), the effectiveness of a number of septic re-inspection programs undertaken by septic professionals (paid for by the municipal authority) across Ontario was evaluated.

Their findings are highlighted below:

- 32% had no deficiencies or impediments to function or performance
- 27% had minor deficiencies requiring repairs/upgrades to ensure performance
- 41% had major deficiencies in significant/extreme ways that impeded function and performance

Major deficiencies were found in 75% of all systems over 30 years old and included:

- Leaching bed failure (34%)
- Deficient outlet baffle (21%)
- Saturated leaching bed (15%)
- Heavy tank corrosion and/or structural failure (15%)
- Sludge in leaching bed (15%).

In another re-inspection evaluation summary of over 7,600 properties between 2013 and 2017, the company performing the septic maintenance on behalf of the local municipality reported that:

- 18% of inspected systems had solids in the tank at or greater than one third of the tank volume and as such, were in need of solid pump-out.

As it is highly likely that a large number of the 700+ septic systems on Kahshe and Bass Lake waterfront properties are well beyond 30 years old – i.e. installed before 1990, these re-inspection findings are cause for concern.

What can I do to make a difference?

Based on the information presented above, it is highly likely that a significant number of septic system failures of minor and/or major importance are present on Kahshe and Bass Lake waterfront properties and require attention. The likelihood of this being the case is even greater on systems over 30 years old (installed before 1990).

While the Town of Gravenhurst's septic re-inspection program may eventually identify these problems, this is unlikely to happen in time to prevent a failure from contaminating our lakes, as the Town's program appears to be seriously underfunded. As such, it is recommended that individual property owners take their legal responsibility under the *Ontario Building Code* seriously, and retain a licensed professional to have their tank pumped out and the entire system evaluated.

This report provides property owners with information they can use to visibly inspect their property for signs of system failure.

References Cited

All references cited in this report have been listed in the Septic System overview tab.

Ron Pearson

Kahshe and Bass Lake Steward

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