

## Light House

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CSRD  
ONSITE  
SEPTIC  
SYSTEM  
SURVEY

GARDOM  
LAKE

JULY 10-12, 2012

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## Introduction

As part of its efforts to assess onsite wastewater management practices of property owners, the CSRD retained Light House to conduct an onsite septic system survey of properties in five target communities currently serviced by onsite septic systems. At the request of the CSRD Electoral Area Director through input received from a non-profit society (Friends of Gardom Lake), the CSRD added Gardom Lake to the list of surveyed communities.

The purpose of the onsite septic system survey was to assist the CSRD with wastewater planning and to identify the needs of communities with onsite septic systems. Specifically, the survey was structured to:

- Determine the total number and condition of onsite septic systems and percentages of dry wells, pit privies, septic tanks and fields, and package treatment systems in the area.
- Assess the level of septic system maintenance by property owners.
- Identify any problems with regard to onsite septic systems in the area.
- Assess related household behaviours and source control practices.
- Raise public awareness about good onsite septic system maintenance.

The project was not intended to make recommendations for potential site and system remediation.

Gardom Lake is a small waterfront community approximately 17 kilometres south of Salmon Arm in Electoral Area D of the Columbia Shuswap Regional District. According to the CSRD's property roll, there are 64 developed properties in the Gardom Lake area including the following addresses:

- 643 - 864 Gardom Lake Road
- 871 - 940 Musgrave Road
- 623 - 804 Park Road
- 561 - 783 Glenmary Road

A map of the Gardom Lake area and the entire Gardom Lake property roll is provided in Appendix A.

The community is comprised primarily of single-family homes on rural lots on both the water side and upland side of the bordering roads. A majority of the properties are occupied year round, and the remainder are occupied seasonally. The two notable properties are the Gardom Lake Bible Camp and the Royal Canadian Legion's Campsite. The Bible Camp is occupied year round with significantly higher use in the summer. The Legion's property is only occupied during the summer. All of Gardom Lake is serviced by onsite septic systems and onsite water wells.

## Methodology

As with all other communities surveyed in the CSRD for the larger onsite septic system survey project, the survey was conducted in two phases. The first phase of the survey ran for four weeks from June 18 - July 15, 2012. During this phase, property owners were asked to respond to an online version of the survey. The survey was publicized through a direct mailout and through local media and the CSRD website, and respondents were offered the opportunity to be entered into a draw for a prize.

The second phase involved door-to-door canvassing of property owners who did not respond during phase 1. A list of properties was generated from the CSRD's property roll. Vacant properties were excluded from the list. Three visits were made to each property between July 10 - 12, 2012. During the fieldwork, one additional property was identified that was not on the property roll, and it was added manually.

The survey contained 25 questions covering three broad areas: general demographic information, septic system information and household behaviours (source control). A copy of the survey form is included as Appendix B.

Survey results from phases 1 and 2 were combined, tabulated and analyzed; the findings are detailed in this report. Raw survey response data is included as Appendix C.

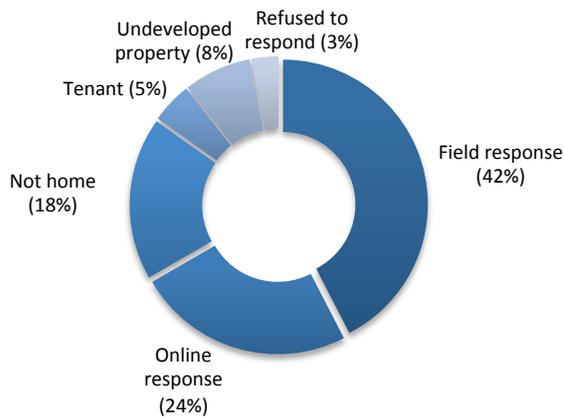
To ensure the most comprehensive and accurate reporting, surveys were completed for each unique septic system. The exception to this was 665 Glenmary Road (the Royal Canadian Legion campsite). This property has 9 cottages each with its own septic system. According to the site supervisor, all the cottages were constructed at the same time with the same type of septic system. Only one survey was completed for all nine systems because it was felt that including nine responses would skew the overall survey results given the relatively small number of properties around Gardom Lake. The final result was that, while 43 properties responded to the survey, there were 47 surveys completed. One online response referenced a vacant piece of land. Accordingly, that response was not included, leaving 46 responses that were used in preparing the survey findings.

The survey also differentiated between waterfront and non-waterfront properties. While all septic systems within the Gardom Lake area could potentially impact lake water quality, properties that border the lake pose a more immediate risk. Of the 46 responses obtained, 29 (63%) were on properties that border Gardom Lake. The remaining 17 (37%) were set back from the lake, generally on the other side of a street.

## Findings

Overall, there was a very strong response to the survey. Of the sixty-four properties in the Gardom Lake area, 43 responded to the survey (67%) with 15 (23%) responding online and 28 (44%) during field surveying. Five properties refused to participate or had tenants residing on the premises, while twelve (19%) were not at home. With a few exceptions, property owners were willing to participate in the survey and forthcoming with responses. Many actually took the time to go and find documentation about their septic systems to ensure data provided was accurate. In general, property owners indicated a desire to properly maintain their systems and expressed concern for the health of Gardom Lake. Table 1 summarizes the survey response rates.

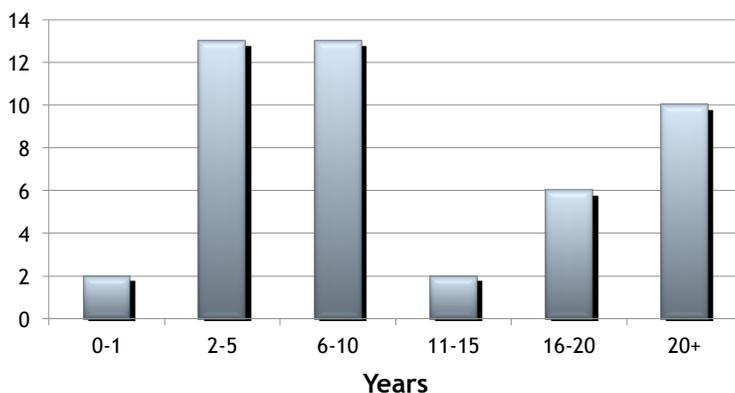
**Table 1: Distribution of responses (n=66)**



## General Demographics

The vast majority of residents have lived in the Gardom Lake area for a long period of time. Two-thirds of all residents have lived there for more than 6 years, with one-third having resided on their properties for more than 16 years. This history may account for the strong interest and support expressed by many residents towards the CSRD’s survey. Table 2 provides a breakdown of the length of time current residents have lived on their properties.

**Table 2: Duration of Property Ownership**



As expected, given the rural character of the community, 80 per cent of respondent properties around Gardom Lake are greater than half an acre in size. However, 31 per cent of waterfront properties that responded are less than half an acre, including 7 out of 9 properties on Park Road. Wastewater concerns have been raised by community members specifically with regard to these small Park Road properties.

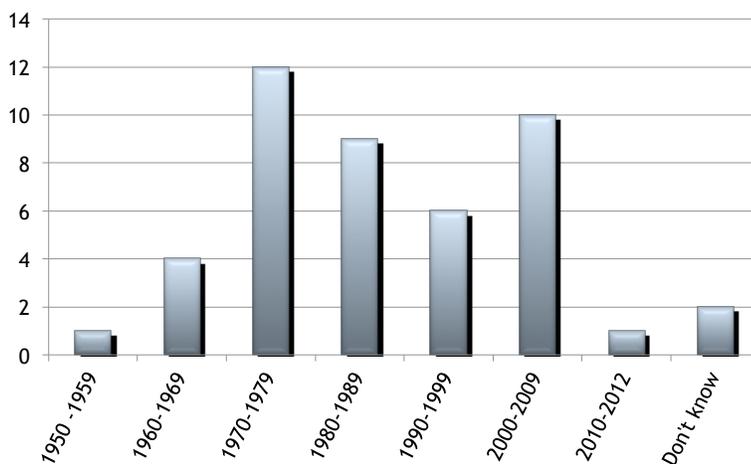
Unlike some other communities in the CSRD, the vast majority of Gardom Lake residents own and live on their property year-round. Eighty-nine per cent of respondents own their properties, and eighty per cent live there throughout the year. A slightly smaller percentage of waterfront properties (76%) are occupied year-round. It is also important to observe that 78 per cent of waterfront properties that are less than half an acre in size are occupied year round.

Of the 20 per cent that are seasonal properties, all remain vacant when the owners are gone. The data may be biased towards permanent residents as it is likely that a significant portion of the 19 per cent of properties with septic systems that did not respond to the survey are seasonal residents.

Nearly 70 per cent of all properties are occupied by only one or two people. With the exception of the Gardom Lake Bible Camp and the Royal Canadian Legion campsite, no more than 5 people reside on any property. This suggests that while concerns persist regarding the state of septic systems on some properties, reasonable household practices are being followed.

The vast majority of houses were built within the last 40 years with approximately one quarter of all building stock less than 10 years old. Table 3 provides a breakdown of the age of primary structures surveyed.

**Table 3: Year primary structure was built**



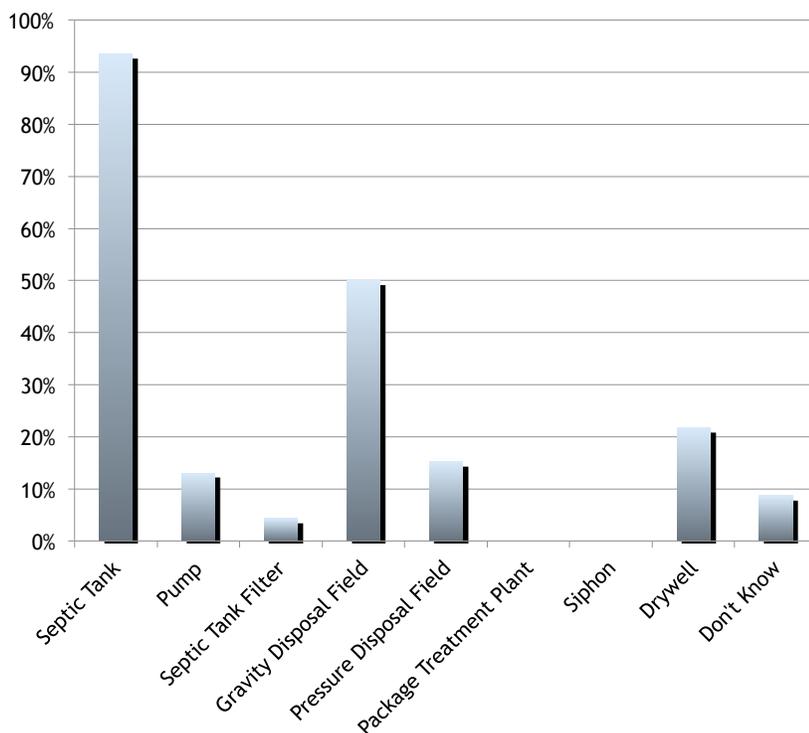
## Septic Systems

The survey polled respondents on the component parts of their septic system. While caution should be exercised in adopting the survey findings regarding the composition of septic systems due to questionable levels of respondent knowledge, the survey results indicate that:

- 96% of properties have septic tanks.
- Three properties indicated that they have nothing other than a septic tank.
- Half of all properties have gravity fed dispersal fields.<sup>1</sup>
- Six properties have pressure dispersal fields.
- 20 per cent (9) of properties have drywells.
- Four property owners (9 per cent) indicated they did not know the components of their septic system.

Table 4 provides a breakdown of the components of onsite septic systems from respondent properties.

**Table 4: Onsite septic system components**

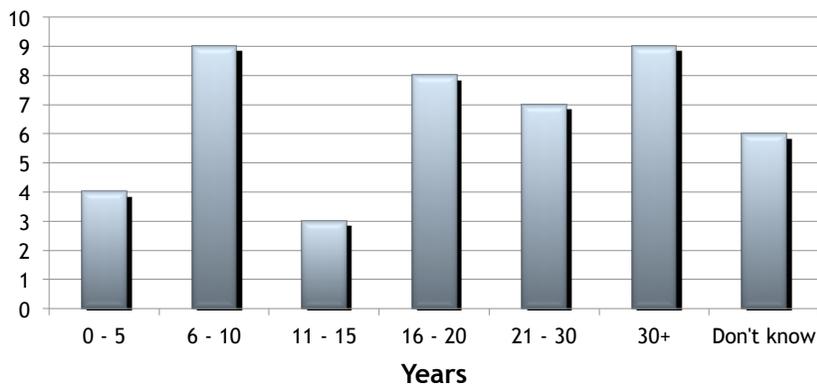


A significant number of septic systems in the area are quite old. The data shows that approximately one-third of all systems are more than 20 years old and 20% are more than 30 years old. This number is actually conservative when you consider that only one survey was completed for the nine septic systems on the Royal

<sup>1</sup> One online respondent indicated that they had a gravity fed dispersal field, but no septic tank. This suggests that they either forgot to indicate that they have a septic tank or are not familiar with their system as a dispersal field would require some form of tank.

Canadian Legion campsite, which are all more than 30 years old. Table 5 provides a breakdown of the age of septic systems around Gardom Lake.

**Table 5: Age of septic systems**



A high concentration of older systems are located on waterfront properties. Of the 28 waterfront properties, 13 (81%) have septic systems that are 20 years or older, and virtually all of the systems (8 of the 9) that are more than 30 years old are found on waterfront properties. Of the nine waterfront properties surveyed that occupy less than half an acre, only one has a septic system that is more than 20 years old, although 5 systems are between 16 and 20 years old.

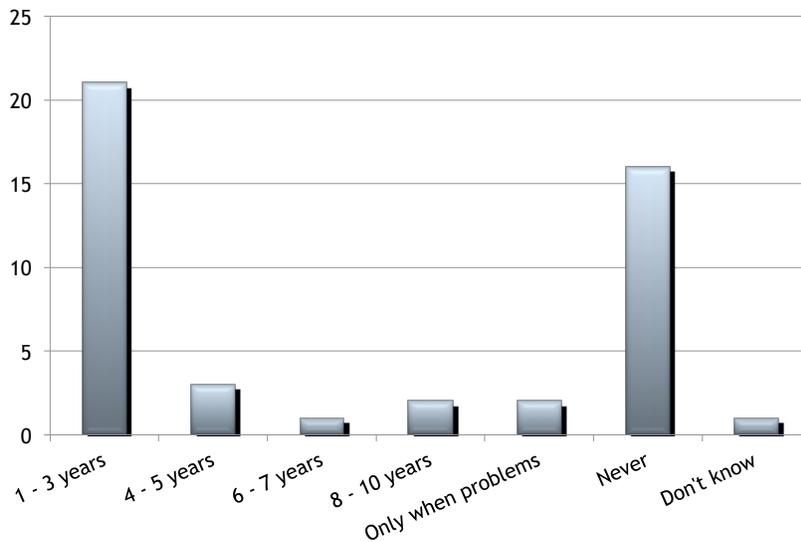
With respect to the nine properties with drywells, all but one of the properties were built prior to 1982 and had the septic systems installed at the same time. Eight of them are waterfront properties, and one of them indicated that they do not have a septic tank. This latter property was surveyed in person, and the owner indicated that the structure was recently renovated with only a toilet, sink and shower.

With regard to the three properties that indicated they only have a septic tank, it should be noted that all three responded to the survey online and may have misinterpreted the question or had insufficient information to complete it. One of the properties is a waterfront property and its “system” is purportedly more than 30 years old.

Only five properties indicated having had problems with their septic system in the past. Most had to do with cracked or plugged pipes. In one instance the pipe was replaced with a drywell. While not officially recorded in the survey, several survey respondents indicated during the course of the survey that they maintain their septic system themselves.

There was quite a diverse range of practices with regard to inspections. Nearly half (45 per cent) of properties indicated that they get inspections every 1-3 years as recommended by industry standards. However, 40 per cent indicated that they have never had an inspection or would only get an inspection when something was wrong with the system. Seventy-eight percent (14 of 18) of these properties were waterfront properties, and three of them had reported problems with their system at some time in the past. Table 6 shows the frequency of septic system inspections by respondent properties.

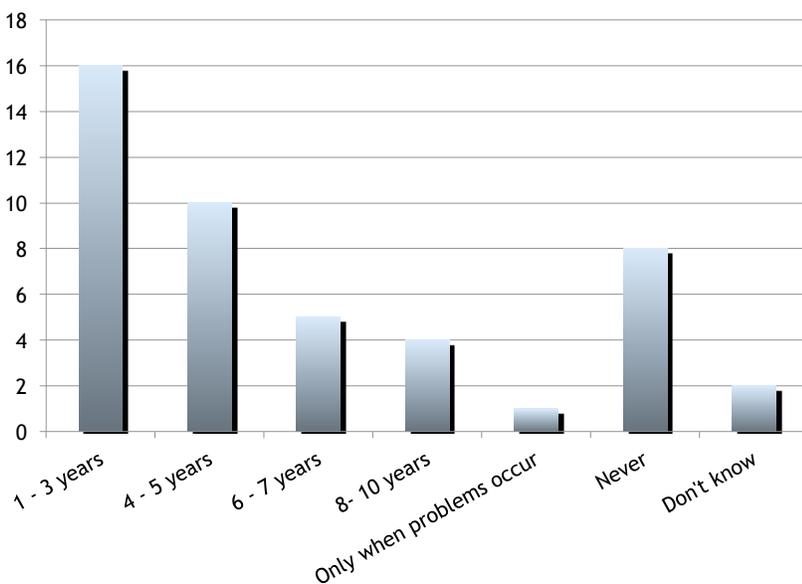
**Table 6: Frequency of inspection**



In many instances, respondents confused inspections with pump outs and reported that they were only done when their tanks were pumped out.

Survey results indicated a more proactive approach to pump outs. Of the 45 properties that reported having a septic tank, 56% indicated that they pumped out their septic tank at least every 5 years, and 34% stated they pumped at least every 3 years. One out of every five (20%) respondents stated that they never had their systems pumped out from the time they had owned their property or only pumped them out when problems occurred. Five of the eight properties that indicated that they never had their system pumped out were waterfront properties. Table 7 shows the distribution of the frequency of pump outs by respondent properties.

**Table 7: Frequency of pump outs**



None of the respondents indicated that they have a maintenance contract with a Registered Onsite Wastewater Practitioner (ROWP). All property owners appear to contact a ROWP as needed.

Based on the survey results, there are several “high risk” septic systems that are located on waterfront properties with a drywell or a type 1 septic system that is more than 20 years old and has never been inspected or pumped.

## Household Behaviours

The survey polled property owners on a number of household behaviours that impact their septic systems. With regard to daily household practices:

- 20% used laundry detergents with phosphates and/or bleaches.
- Only one property indicated that they disposed of medications down the drain and another four indicated that they did not know.
- Only one property stated that they disposed of kitchen oils and greases down the drain.
- No properties reported having a garburator.

Gardom Lake residents are generally responsible in terms of their household behaviours.

## Summary of Findings

The Columbia Shuswap Regional District retained Light House to conduct a survey of Gardom Lake to assess onsite wastewater management practices. The survey was part of a larger onsite septic system survey of six target communities including Anglemont, Malakwa, Swansea Point, Sunnybrae and White Lake as part of their respective implementation elements of the Liquid Waste Management Plan (LWMP).

The purpose of the onsite septic system survey was to assist the CSRD with wastewater planning and education campaigns and to identify the types of onsite septic systems and the frequency of maintenance for future LWMP planning exercises. The project was not intended to make recommendations for potential site and system remediation.

The Gardom Lake catchment area included 64 developed properties with some form of onsite wastewater system. The survey was split into two phases. Phase one involved an online survey delivered to Gardom Lake residents from June 18 - July 15, 2012, and phase two involved three days of field surveying between July 10-12, 2012 of the properties that did not respond during phase 1.

The survey achieved a 63% response rate. Multiple surveys were completed for properties that had more than one septic system. Sixty-three per cent of responses were for waterfront properties; the remaining properties were generally located on the upland side of the streets bordering the lake.

The majority of Gardom Lake properties are owned and occupied year round. Eighty-nine per cent of respondents own their properties and eighty per cent live there throughout the year. Two-thirds of all residents have lived there for more than 6 years, with one-third having resided on their properties for more than 16 years. All the seasonal properties remain vacant when not occupied by their owners. Approximately 70 per cent of all properties are occupied by 1 or 2 people.

Eighty per cent of respondent properties around Gardom Lake are greater than half an acre in size. However, 31% of waterfront properties that responded are less than half an acre, including 7 out of 9 properties on Park Road.

The survey polled respondents on the component parts of their septic system. While caution should be exercised in adopting the survey findings regarding the composition of septic systems due to questionable levels of respondent knowledge, the survey results indicate that:

- 96% of properties have septic tanks.
- Three properties indicated that they have nothing other than a septic tank.
- Half of all properties have gravity fed dispersal fields.<sup>2</sup>
- Six properties have pressure dispersal fields.
- 20 per cent (9) of properties have drywells.
- Four property owners (9 per cent) indicated they did not know the components of their septic system.

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<sup>2</sup> One online respondent indicated that they had a gravity fed dispersal field, but no septic tank. This suggests that they either forgot to indicate that they have a septic tank or are not familiar with their system, as a dispersal field would require some form of tank.

A significant number of septic systems in the area are quite old. The data shows that approximately one-third of all systems are more than 20 years old and 20% are more than 30 years old. A high concentration of older systems are located on waterfront properties. Of the 28 waterfront properties, 13 (81%) have septic systems that are 20 years or older, and virtually all of the systems (8 of the 9) that are more than 30 years old are found on waterfront properties.

With respect to the nine properties with drywells, all but one of the properties were built prior to 1982 and had the septic systems installed at the same time.

There was quite a diverse range of practices with regard to inspections. Nearly half (45%) of properties indicated that they get their septic system inspected every 1-3 years as recommended by industry standards. However, 40% indicated that they have never had an inspection or would only get an inspection when something was wrong with the system.

Survey results indicated a more proactive approach to pump outs. Of the 45 properties that reported having a septic tank, 56% indicated that they pumped out their septic tank at least every 5 years, and 34% stated they pumped at least every 3 years. One out of every five (20%) respondents stated that they never had their systems pumped out from the time they had owned their property or only pumped them out when problems occurred.

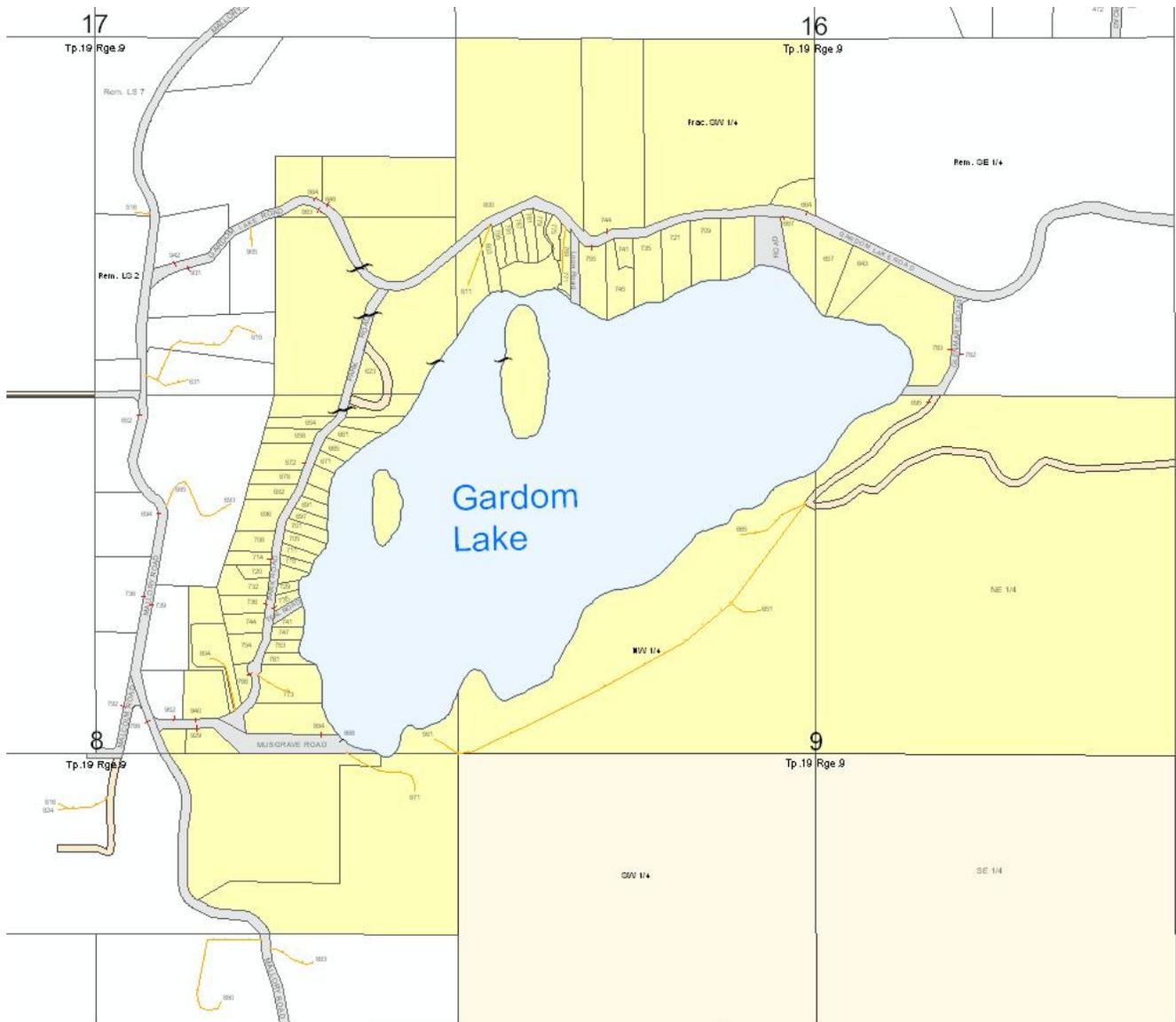
The survey polled property owners on a number of household behaviours that impact their septic systems. With regard to daily household practices:

- 20% used laundry detergents with phosphates and/or bleaches.
- One property indicated that they disposed of medications down the drain and another four indicated that they did not know.
- One property stated that they disposed of kitchen oils and greases down the drain.
- No properties reported having a garburator.

Overall, the survey results suggest that the majority of onsite septic systems in the Gardom Lake area are adequate and that acceptable maintenance is being conducted on these systems to ensure proper functioning. However, approximately 20% of systems, including a number of systems on waterfront properties, are not functioning optimally and are not being properly maintained.

## Appendix A: Property Map of Gardom Lake

The following is a map of the Gardom Lake area. Coloured properties were included in the survey catchment area.



## Appendix B: Survey Questions

The following are the significant questions asked in both the online and field surveys. Qualifying questions and some questions that proved to be immaterial have been excluded.

- 1 How many years have you been living at this address?
  - a) 0 - 1 years
  - b) 2 - 5 years
  - c) 6 - 10 years
  - d) 11 - 15 years
  - e) 16 - 20 years
  - f) 20+ years
  
- 3 How big is the size of your property?
  - a) less than 1/2 acre
  - b) over 1/2 acre
  
- 4 Do you live on the property? (Yes/No)
  
- 5 Do you own or rent the property? (Own/Rent)
  
- 6 Is the property used year round or seasonally?
  - a) Year round (go to question 9.)
  - b) Seasonally
  - c) Don't live there
  
- 7 Is the property occupied during your absence? (Yes/No)
  
- 8 What year was the primary structure (house) built on the property?
  
- 9 How many people live on the property?

### SYSTEM INFORMATION

- 10 Which septic system components do you have (list all that apply)?
  - a) septic tank
  - b) pump
  - c) septic tank filter
  - d) gravity disposal field
  - e) pressure disposal field
  - f) package treatment plant
  - g) siphon
  - h) drywell
  - i) don't know
  
- 11 What is the age of sewage treatment system?

- a) 0 - 5 years
- b) 5 - 10 years
- c) 10 - 15 years
- d) 20 - 30 years
- e) 30+ years
- f) Don't know

### SYSTEM PERFORMANCE

- 12 Do you have, or have you had, a problem with your on-site sewage system? (Yes/No; if no, go to Q18)
- 13 What type(s) of problems are you having or have you had with your sewage system? (check all that apply)
- a) Sewage leaking onto the ground surface
  - b) Sewage backing up into the house
  - c) Water draining too slowly
  - d) Septic or musty odors
  - e) Frequent alarms
  - f) Problems in wet weather
  - g) Other (please specify)
  - h) Don't know/not sure

### SYSTEM MAINTENANCE

- 14 How long has it been since you have had your septic system inspected?
- a) 1 - 3 years
  - b) 3 - 5 years
  - c) 5 - 7 years
  - d) 7 - 10 years
  - e) Never
  - f) Only do it when problems occur
  - g) Don't know
- 14 How often do you pump out your septic tank?
- a) 1 - 3 years
  - b) 3 - 5 years
  - c) 5 - 7 years
  - d) 7 - 10 years
  - e) Never
  - f) Only do it when problems occur
  - g) Don't know
- 16 When was the last year your septic tank was pumped?
- 17 Do you presently have a maintenance contract with an individual or company to maintain your sewage system? (Yes/No; if no, go to Q22)

- 18 Which of the following services are provided by your maintenance contract? (check all that apply)
- a) Monitoring the system
  - b) Inspecting the system annually
  - c) Inspecting the system twice a year
  - d) Cleaning the filters
  - e) Verifying pumps are working
  - f) Pumping the system to remove solids
  - g) Tightening wires that loosen
  - h) Determining the cause of alarms or improper function of alarms
  - i) Replacing parts that break
  - j) Taking samples to the laboratory
  - k) No maintenance contract
  - l) Don't know
  - m) Other (specify)
- 19 How much does your maintenance contract cost per year?
- 20 In your opinion, is this amount...
- a) Very expensive
  - b) Somewhat expensive
  - c) Appropriate
  - d) Somewhat inexpensive
  - e) Very inexpensive
  - f) Don't know/not sure

#### BEHAVIOURS

- 21 Do you use laundry detergents with phosphates or bleaches? Yes/No
- 22 Where do you dispose of medications?
- a) Down the drain/toilet
  - b) Return to the local pharmacy
  - c) Other (specify)
- 23 Where do you dispose of oils and grease from cooking?
- a) Down the drain?
  - b) In the garbage?
  - c) Other
- 24 Do you have a garburator? Yes/No

#### BACKGROUND INFORMATION

Name:

Mailing address:

Physical address (if different from mailing address):

City:

Postal code:

Email address:

Phone number:

Would you like to receive the Septic Smart e-newsletter? (Yes/No)

## **SURVEY ADMIN INFO**

Survey Number (e.g. LE15):

Surveyor:

Date:

Time:

Property location: (Q2 on the online survey)

Electoral Area: