Functional Service Report

Sewage Infrastructure for RV Park

Ahmic Lake Resort

50 Robinson Dr, Magnetawan, ON P0A 1P0

Date:

30 April 2025

Prepared for:

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Background

Ahmic Lake Resort is an established resort with an extensive history going back decades. This resort is located within the Municipality of Magnetawan and has contains cabins, restaurant, primary residence and a seasonal recreational vehicle park. Each of these with their own sewage works. The owner of Ahmic Lake Resort sought to ensure the functionality of the sewage works located for the seasonal portion of the resort was both adequate and safe.

This particular sewage works was installed in 1979 and inspected by the Ministry of Environment on the 14th of September 1979. Since that time no updates or modifications has taken place to either the installed sewage works or the use of the seasonal RV portion of the resort. The system does receive regular maintenance including regular pump outs.

The information contained in this report is based on four sources:

1. An on-site evaluation on the 29th of April, 2026 by Charles Cooper BCIN 511856
2. Information provided by management including daily water usage
3. Original Ministry of Environment inspection documentation from 14th of September 1979
4. 2024 Ontario Building Code and Guide for Sewage Systems.

Scope of Project

Muskoka Hydrovac ltd. was retained by Mr. Prabha Selvadurai, owner of the resort, to provide a Functional Service Report for the onsite RV campground sewage works, located within Ahmic Lake Resort. Muskoka Hydrovac ltd is a licensed septic installer that primarily focus on the rehabilitation of existing sewage systems (septic systems).

Ahmic Lake Resort has four on-site sewage works that are not interconnected. Muskoka Hydrovac was retained to inspect only one sewage works which is utilized by the Recreational Vehicle and Camping area of the resort. This area of the resort is seasonal with guests not allowed during late fall, early spring nor the winter.

Prabha request was to ensure the current system is still functional and meets the requirements of the current resort obligations. These obligations include safety for of the guests, general public, environment and water bodies.

The scope of this project had two phases:

Phase I

Inspect the current sewage system to ensure its functionality, including flow test, identify the leaching fields, check conditions of the leaching beds and confirm all setbacks. Out of scope is actual intrusion in to the leaching field to measure material depths or percolation rates.

Phase II

Review the current resort conditions related to the sewage works that services the RV and camping area of the resort. Calculate its current flow capacity and required load areas as per the 2024 building code. Compare those values with the current installed system. Analysis past performance of this sewage works.

Current Seasonal RV Park

Ahmic Lake Resort has a seasonal RV and camping section that is located adjacent to Robinson Drive. This area of the camp ground contains a mixture of sites with varying degrees of serving and usage. In total there are 70 sites. These sites are then further classified as occupied, transient and unusable.

Occupied

These sites have a recreational style vehicle on the site and are serviced by both water and sewage systems. There is approximately half a dozen with water only, without direct sewage but they have the ability to dispose of their sewage into this sewage works, and therefore will be treated as an equally to a fully serviced lot. There is a total of 40 fully serviced lots (plus one from Transient below for a grand total of 41). Of these lots five have mobile park models. The inspection of these units showed minimal configuration changes from the older existing RV models. No unit had a dishwasher or laundry facility. Therefore, the park models will be treated at par with the other recreational vehicles on site.

Transient

These sites are not occupied for the summer season by a single guest and are designed for transient vacationers to stay for short terms, typically less than 30 days. These sites all are serviced by water but do not have access to the sewage works onsite. There was one transient site that did have access to the sewage works, so it was removed from this category and is included in the occupied classification above. Total transient sites are 26.

The transient sites are not allowed to dispose of the sewage they generate onsite and must have a holding tank within their vehicle. This sanitary waste is the responsibility of those customers and must be disposed of off-site. Therefore, all water consumed by this guest type is contained within their vehicle and disposed of elsewhere. The transient sites will be calculated as having no water or sewage.

Unusable

Ahmic Lake Resort has three sites located within a seasonal flooding area and therefore is unusable for camping of any type. These three sites will not be used in any calculation contained within this report.

Other Structures

Within the RV park is a permanent building that contains, showers, sinks, toilets, laundry and a fish cleaning area, with sink. The total number of fixture units for this building is minimal excluding the laundry is 13.5 fixture units. This value is well below the flow rates calculated for the transient sites, which would be the majority of the users of this facility. Therefore, the fixtures within this building, excluding laundry will not be used in this report.

The laundry area consists of two washing machines and two dryers. The fixture units of the laundry will be calculated as a standalone amount that will be added to the overall flow rate for the RV park.

On-Site Inspection

An inspection of the resort, including the RV portion of the resort took place on the 29th of April, 2026. The personal present during the inspection included. Charles Cooper (BCIN 511856), the General Manager of the property as well as the Operations Director. The inspection included:

1. A survey of each site and documenting its current usage as well determination of water and sanitary service.
2. Examination of the washroom / shower facilities, including scrutiny of each fixture unit.
3. Review of the leaching field, number of fields and condition of the field
4. Physical inspection of the septic tanks, including number of tanks, approx. size, status of the internal baffles and water level within the tanks
5. Visual assessment of the pumping chamber, including distribution pipes and functionality of the pumps
6. Flow test of the septic system.

The findings of the on-site inspection concluded the overall condition of the system is in good shape.

The capacity of the current tanks, leaching fields etc. was determined using the Ministry of Environment (MOE) paperwork, dated 14 September 1979 for this sewage works. I then verified if the data was reasonable by checking the tanks and leaching fields. The onsite inspection confirmed the MOE documentation.

I confirmed this system has two sewage tanks, with internal baffles, one pump chamber and two leaching fields.

Tanks

The MOE stated these two tanks have a capacity of 6000 gallons (22712 litres). There were no markings on the tank to confirm capacity but the overall length, width and depth of each tank is reasonable for a capacity of 22712 litres each. The inlets of the tanks were protected by concrete baffles that exceed the height of the water level by at least 150mm. The tanks are each buried to a depth of 750mm below the surface of the leaching field. The tank lids have wooden risers and one was in poor condition. I suggested these be replaced with better risers (see recommendations).

Pumps

The pump chamber appeared to have two pumps and distribution pipes to each leaching field. The pumps appeared to alternate between the two fields, during the flow test, from one leaching field to the other. No audible or visual alarms were identified for the pump chamber (see recommendation section). Pressure test of the pumps was out of scope and not preformed.

Leaching Fields

The leaching field was found to be the dimensions as stated, with the overall size of each field being 33.2 by 14.7 meters each for a combined loading area of 976 square meters. Within each field is eight runs,

respectively being 100 feet long for a total of 1600 linear length of runs. This is 487.6 meters of runs. The leaching bed construction could not be verified but it appears to be of a fill-based absorption trench design. Evidence, based on grass colour, indicates that each run is 30m in length at approximately a meter of separation between runs. With 4 meters distance between each field.

The original MOE inspection report noted a percolation time of 5 for the added soil and a depth of five feet (1.5 meters). The inspection noted the material onsite had the physical characteristics required to meet this percolation specification.

Physical inspection of the field did not find any pooling, soft spots or other signs of failures. The field is well situated and sloped to avoid storm water or other unwanted runoff. The physical boundaries of the fields are raised (approximately 30cm) and protected sufficiently to prevent any vehicular traffic getting onto the fields. The field did have unsuitable shrubbery on the most western portion of the bed (see recommendations). This improper vegetation being small shrubs with the concern being the roots may enter the leaching pipes. I requested this foliage be removed and replaced with grass (see recommendations).

Flow Test

The system was flow tested by adding approximately 25% of the daily water flow into the inlet portion of one tank. The water level within the tank remain constant for the entire test and the pumps were heard operating. It was hard to determine if the pumps were alternating between the two fields but it felt like there was fluid flow in the distribution pipe to each field. A dye test was out of scope for this project.

Clearances

The location of the tanks, pump chamber and outer perimeter of the leaching field was sufficiently set back for all items as stated table 8.2.1.6 (a) and table 8.2.1.5 (b), this includes the additional set back required due to the additional height of the leaching bed.

Calculations

The total daily flow for the RV sewage works was calculated using the 2024 Ontario Building Code. Each site was classified as per its use. The washroom, showers and fish cleaning sink were not calculated since their value should be reflected in the volume for the sites with no water or sewage service. The laundry services were included in the calculation and added to the total flow.

2024 Building Code Calculations

Item	Description	FU	FU Flow	Flow per Day	# Units	Daily Flow
Unusable Lots	Lots flooded year round			0	3	0
Transient Lots	Water no Sewage, no ability to dispose of on-site			275	26	7150
Seasonal Lots with Sewage	Water no Sewage, ability to dispose of on-site			425	41	17425
Laundry	Two commercial units with 1 1/2 clean out	2	50	100	2	200
Total Design Flow	**Q = Daily Flow in Litres**					**24775**

Based on the Observation at the RV Park within Ahmic Lake Resort on the 29th of April, 2026

The total daily flow was calculated to be 24775 litres of sanitary waste. Based on this value the load area of the field within a fill-based absorption bed must be the daily flow divided by the load rate based on

table 8.7.4.1. For this field design the value of 10 was used indicating a load area of 2478 square meters. Both these calculated values, Daily Flow Rate and load area of the bed exceed the size of tanks and load area installed today.

The current system was installed in 1979 as per the regulations at the time and has adequately served the Ahmic Lake Resort RV park since that time. As of April 2026, the septic system is still functionally adequately for its day to day uses. As such I propose an alternative design as allowed in the 2024 Ontario Building Code as per Division C, Part 1, 2.1.1(1) (a).

Alternative Solution

The 2024 building code allows for alternative solutions as stated in Division C, Part 1, 2.1.1(1) (a). An alternative solution must be demonstrated to provide the functional statements as stated in Division A, Part 3 3.2.1.1. The current installed sewage works for the RV portion of the resort meets the definition for an alternative design and based on past performance, meets the functional statements of the 2024 Ontario Building Code.

Alternative solutions Division C / Part 1 2.1.1 (1) (a)

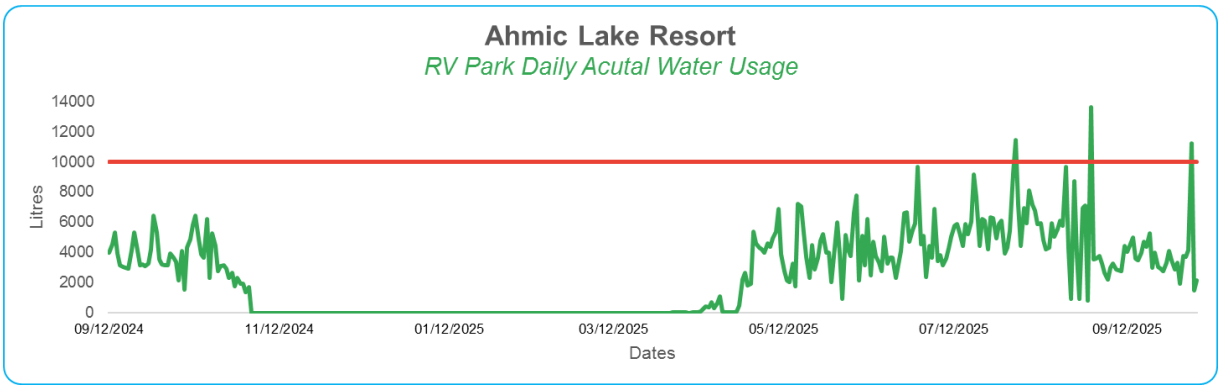
The alternative solution needs to provide applicable objectives, functional statements and acceptable solutions.

Alternative solution 2.1.1.1(1) (b)

Needs to establish reasonable design parameters based on past performance

Proposed solution

The operator of the Ahmic Lake Resort tracks the daily water usage of the water used for this portion of the resort. Daily water usage is a good proxy to determine the actual daily effluent produced. The actual water usage per day for 2024 and 2025 is shown below.



This chart indicates the daily flow rate has only exceeded 10,000 liters per day on three occasions. Due to the variability of this data, using the average of the top 100 days (over both 2024 and 2025) or the median are not realistic, with the respective values being an average of 5872 and a median of 5406 liters. The best way to analysis this dataset is using the 95th percentile calculation. A good practice to control for outliers

is found within Statistics, which captures the flow for the top 100 days of both 2024 and 2025 and then determine the 95th percentile. The result of this calculation demonstrated that the 95th percentile was on Thursday the 21st of August, 2025, the daily rate of water consumption on that day was 9671 litres. For this report I have rounded this value up to 9700 liters per day and will use it for all alternative solution calculations.

Five Largest Volume Days

Date	Day	Daily Usage (Litres)	Notes
08/30/25	Saturday	13623	Saturday of Labour Day Weekend 2025
08/03/25	Sunday	11439	Sunday of August Long Weekend 2025
10/05/25	Sunday	11231	Second last weekend Park is open 2025
06/29/25	Sunday	9689	Canada Day long weekend 2025
08/21/25	Thursday	9671	Weekend leading into labour day 2025

The daily water report did show abnormal peaks, which appear to align with long weekends where guests most likely power washing their units, boats and cars as well operating lawn sprinklers. A recommendation to the owner would be to restrict the use of the water for such activities on weekends. The daily water report also did not indicate if there were any known water or plumbing issues in the RV area of the park on these dates. The following conditions would also generate abnormal usage patterns, such as broken water lines, malfunction fixtures etc.

For this alternative solution I would propose grandfathering the current system, implement the recommendations in this report and use the 95th percentile calculated value of 9700 liters per day as the daily flow rate. This rate is much higher than the average value for the busiest 100-day period which is 5872 liters per day.

Based on the 9700 liters per day the resort needs 19400 liters of tank capacity and 970 square meters of load area. The actual tank capacity is 45424 liters more than double the capacity required for this alternative solution. The current bed area is 976 square meters also exceeding the load area required for this alternative design.

Functional Statements

The current onsite sewage works for the Ahmic Lake Resort passed a physical inspection on the 29th of April 2026 and appears to be in good shape and meeting the needs of the RV seasonal campground. Based on the alternative solution the tanks and area of the leaching fields meet the standards as per Division C, Part 1, 2.1.1(1) (a) based on a daily flow rate of 9700 liters per day. `

Division A, Part3 3.2.1.1 provides functional statements related to on-site sewage works with statement:

- F112 to provide adequate treatment of sanitary sewage and effluent
- F113 to minimize the risk of injury as a result of contact with sanitary sewage or partially treated effluent.

The daily water usage as measured at the Ahmic Lake Resort, using Statistical method for the 95th percentile shows the current sewage works in the RV campground meets the parameters of functional

statement F112. Likewise, the physically inspection of the current sewage works on the 29th of April 2026 showed this system meets the parameters of the functional statement F113.

The current septic system installed at the RV campground within Ahmic Lake Resort ***meets the parks capacity, functions as required and is safe to the public***. The current system has many years of life left in it and should be accepted for an Alternative solution and allowed to continue to operate within the Ahmic Lake Resort.

Recommendations

During this analysis of the sewage works for the RV portion of the resort a few deficiencies were noticed and should be addressed as soon as possible.

Leaching Field

The western 6m of the leaching field has unsuitable vegetation that may allow roots to enter the distribution pipes. This vegetation includes the portion of the leaching field and up to the cress of the ditch. All of this must be removed and replaced with grass. When removing vegetation try to remove the majority of the root system to prevent the shrubs from re-growing, do not use any chemical herbicides to eliminate this foliage, best to remove by hand.

Pumps and Pump Chambers

The pumps did not appear to have audible or visual alarms installed for high water situations. It is highly recommended that both are installed at the earliest opportunity to ensure safe usage of this sewage system.

Tanks

When inspecting both tanks the access to the inlet and outlet sides of the tanks were made of wood and one was in very poor condition. It is recommended that new plastic risers be installed on both inlets and outlets access hatches.

When the tanks are pumped please ensure both the inlet and outlet of both tanks are pumped including the pump chamber between the two tanks.

Signage

It would be helpful for staff and guests of the resort that each leaching field is signed. This signage should include this is a septic field and include information that vehicles, heavy or large items are never to be used on the fields, as well prohibiting the planting of gardens.

Signage within the park advising guests and staff to conserve water on weekends, including banning the washing of trailers, buildings, vehicles or boats. This will help limit the park from exceeding 9700 litres per day of capacity and staying well within the design parameters of the proposed alternative solution.

Daily Reports

Within the daily report should be a notes section for each day a flow value is registered. This note field should be used to document any unusual anomalies such as broken water pipes, malfunctioning fixtures

(either owned by the resort or guests), Flow tests and anything that has high water demand that is not normal.

Conclusion

The current sewage system at the RV campground at the Ahmic Lake Resort **qualifies as an Alternative Solution** and has the capacity to deal with 9700 litres per day of flow. This system functions well, meets the needs of the park and is safe to the public.