Foothills County

Servicing Options Report

Final Report

March 2026

ISL Engineering and Land Services Ltd. is an award-winning full-service consulting firm dedicated to working with all levels of government and the private sector to deliver planning and design solutions for transportation, water, and land projects.

ISL Commitments

We embrace diversity, equity, and inclusion to build thriving teams and deliver the best outcomes for our clients. We are committed to a safe, respectful, and inclusive workplace where every voice contributes to our shared success.

ISL's Permit to Practice reflects our commitment to the highest standards of professional and ethical responsibility—principles that align with our shared values. As a people-first company, we recognize that success in an AI-enabled future depends on exceptional professionals whose expertise informs every decision. We use artificial intelligence to enhance innovation, efficiency, and quality while ensuring human insight, collaboration, and accountability remain central to our work. AI enhances our judgment, but every output is critically reviewed to uphold ISL's standards of technical excellence, accuracy, and client trust.

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Executive Summary

ISL Engineering and Land Services Ltd. (ISL) was engaged by Foothills County to evaluate wastewater servicing options for the residence at 574 Green Haven Estates, located within Phase 2B of the Green Haven Estates subdivision south of the Town of Okotoks, Alberta.

As a condition of subdivision approval, Phase 2B lot owners were required to install a private tertiary wastewater treatment system, as documented through a signed Declaration of Understanding. This requirement applied to all Phase 2B lots, with the exception of three properties identified as exempt in the Level 4 Private Sewage Treatment System (PSTS) report prepared by SD Consulting Group.

The residence at 574 Green Haven Estates was approved on the condition that a tertiary system be installed. However, the dwelling was constructed with two 5,000 gallon septic holding tanks, which do not comply with Foothills County wastewater servicing standards. This non compliance was not identified until September 2024 during a development permit application for a backyard swimming pool, at which time soil disturbance had already occurred within the rear yard.

ISL completed a field review between January 16th and 19th, 2026, including inspection of the existing tanks, site grading, setbacks, drainage features, and surrounding land conditions. The holding tanks were found to be structurally sound and compliant with setback requirements. However, holding tanks do not provide wastewater treatment and cannot be feasibly upgraded to meet tertiary treatment requirements.

ISL's site assessment identified that usable space for a tertiary system is limited due to house footprint, slope, drainage pathways, setback requirements, and previously disturbed soils. Side yards and the front yard were ruled out, leaving a constrained portion of the backyard as the only potential area for a treatment field or mound. Despite these constraints, ISL confirmed that compliant servicing solutions remain feasible.

ISL reviewed all relevant background reports prepared by SD Consulting Group, Groundstar Contracting Ltd., D&S Enterprises, and Township 27. These reports confirm that a tertiary mound system is technically suitable for the site, with soil disturbance identified as the primary constraint. A fully engineered mound system was previously developed by Groundstar, subject to confirmation of site-specific soil conditions. Building on this background, ISL evaluated a range of potential servicing configurations and identified five feasible options, including the previously explored mound system, alternative field system designs, incorporation of an equalization tank, use of advanced or mechanical treatment systems, and a combined approach utilizing advanced treatment with optimized field design, pressure distribution, and timed dosing. Collectively, these options demonstrate that the residence can be brought into compliance while minimizing the tertiary system footprint within the limitations of the site.

Final selection and implementation of a preferred servicing option will be at the discretion of the homeowner and Foothills County. Regardless of the option chosen, engagement of a geotechnical engineer is recommended to address soil disturbance, confirm subsurface conditions, and support detailed design and construction. This report is intended to support decision-making at a conceptual level and does not constitute detailed design or construction documentation.

1.0 Project Overview and Background

Green Haven Estates is a residential development located in southern Alberta, just outside the Town of Okotoks in Foothills County. Established in 2017, as part of Phase 2B of Green Haven Estates, each property owner was required to sign a Declaration of Understanding acknowledging the wastewater servicing requirements for their lot. The servicing standards included installing a tertiary or equivalent package treatment plant to achieve Effluent Level 4 and N-1 N-11 as per table 5.1.1.1 of the current Alberta Standard of Practice. This requirement applied to all Phase 2B lots, with the exception of three households that were previously exempted, as documented in the report prepared by SD Consulting Group. An example of the Declaration of Understanding is provided in **Appendix A.**

The residence located at 574 Green Haven Estates was approved for development on the condition that a tertiary septic system be installed on the property, as acknowledged by the homeowner through a signed Declaration of Understanding. Foothills County administration has confirmed they have a signed copy in their files from this homeowner. However, rather than complying with this requirement, the property was instead equipped with two 5,000-gallon septic holding tanks, which do not meet Foothills County's wastewater standards for this development. This non-compliance was not identified until September 2024, when the homeowner submitted a development permit application for the construction of a backyard swimming pool and pool house. By the time the issue was discovered, excavation for the pool had already begun, resulting in significant soil disturbance within the backyard.

As part of the Level 4 PSTS report prepared by SD Consulting Group, the required effective flow rates were determined to calculate the necessary soil infiltration areas and sand layer depths for treatment mounds. The report also included a plot plan identifying two recommended treatment mound locations for each lot within the subdivision.SD Consulting group's report was completed before development of the subdivision began; therefore, these options should have been considered during the initial development of the residence located on Lot 18.

Subsequent reports prepared by Groundstar Contracting Ltd., D&S Enterprises, and Township 27 evaluated the feasibility of installing a compliant tertiary wastewater system under the site-specific constraints; however, these assessments were limited to two options: installation of a mound system or continued use of the existing dual 5,000-gallon holding tanks. Groundstar's report also included a fully designed septic system intended to meet the requirements of the residence on Lot 18, with the primary concern being the condition of the soil as a result of the disturbance. Please refer to **Appendix B** for the previously prepared reports.

As a result, ISL will review previously identified options and assess their feasibility for implementation, while also considering additional solutions to reduce the required size of the tertiary system. The objective of this report is to identify feasible options to bring the existing residence into compliance with Foothills County's wastewater requirements under Section 13.4.6.4 of the County bylaw by evaluating the condition and configuration of the existing wastewater infrastructure, assessing long-term and sustainable servicing alternatives, and identifying a potential approach that meets all applicable County standards for the development.

2.0 Methodology

The methodology for assessing the wastewater system serving the residence at 574 Green Haven Estates was developed to provide a comprehensive evaluation of the current infrastructure and the surrounding land. This assessment will help ISL determine the available space for implementing a high-efficiency tertiary system. The approach aligns with regulatory and industry standards, including the *Alberta Private Sewage Systems Standard of Practice (2021)*. The following sections outline the assessment templates in detail.

2.1 Field Review

The initial field review for 574 Green Haven Estates began on January 16th during the project kickoff meeting. This meeting included a brief site walk-through and served to introduce the project and key stakeholders. The comprehensive field review was conducted subsequently on January 19th.

Attendees at the January 16th kickoff meeting included representatives from ISL Engineering, Foothills County, the developer, and the homeowner. ISL Engineering was represented by Kevin Denischuk, and Conner Ainscough. Foothills County was represented by Patrick Antle. Timber Creek Homes was represented by Jim Crawford, and the homeowner, Amy Dunham, was also in attendance.

The primary field review was conducted on January 19th, with representatives from ISL Engineering and Timber Creek Homes in attendance. ISL Engineering was represented by Conner Ainscough, and Timber Creek Homes was represented by Jim Crawford. During the site review, field data was collected, including notes, photographs, setback measurements, and GPS coordinates for the septic system. Septic tank components were visually inspected and assigned condition scores using a five-point scale, where 1 represents poor condition and 5 represents excellent condition.

The septic system was visually assessed from ground level and drained to allow for a thorough inspection of all components. The interior of the septic tank was inspected from above by removing the access lids. Measurements were taken for burial depth, above-ground collar height, and setback distances. All measurements were recorded in the field, and the system's geographic location was documented to allow for digital measurements following completion of the field assessment, if required.

The following criteria was used to assess the septic tank and determine its overall condition score.

2.1.1 Septic Tank Assessment Criteria

The septic tank was evaluated based on physical condition and compliance with applicable standards. The overall score reflects the following components:

Site Condition

- **Grading & Compaction:** Site slopes away from the tank to prevent water accumulation. Tank is properly backfilled and backfill is adequately compacted to avoid settlement.
- **Vegetation & Debris:** Vegetation is controlled and there is Minimal debris surrounding the tank.

Tank Installation

- **Setback Distances:**
    - **Water source/well:** ≥ 10 m (33 ft)
    - **Water course:** ≥ 10 m (33 ft)

    - **Building:** ≥ 1 m (3.25 ft)
    - **Property line:** ≥ 1 m (3.25 ft)
- **Burial Depth:**
    - Tank installed at approximately **1.2 m (4 ft)** below ground to prevent freezing
- **Above-Ground Collar Height:** Collar extends above grade to prevent surface water ingress and allow maintenance access.

Structural Integrity

- **Cover Condition:** Cover is secure, airtight, structurally sound, and free of cracks or corrosion. Cover allows access for servicing and clean-out.
- **Collar Condition:** Collar and extensions provide watertight connections and proper alignment. Collar joints are properly sealed.
- **Interior Condition:** No cracks, corrosion, infiltration, or debris; internal components (separation wall, pump, pipework) inspected.

For further details on septic tank installation and specifications, please refer to the *Alberta Private Sewage Systems Standard of Practice 2021.*

2.1.2 Land Assessment criteria

The land surrounding the septic system was evaluated based on topography, site condition, drainage patterns, relative location to structures and property boundaries, and suitability for supporting a tertiary septic system. The key assessment criteria is discussed further below.

Flatness and Slope of Site

- Determine whether the terrain provides sufficient level ground for system installation.
- Identify areas where slopes may affect stability, drainage patterns, or system performance.

Condition of Disturbed or Altered Land

- Evaluate the extent of ground disturbance and its impact on soil structure and suitability for supporting a tertiary septic system.

Vegetation, Overgrowth, and Debris

- Assess the presence of vegetation, debris, or obstructions that may impact the implementation of a tertiary system

Proximity to Drainage or Watercourses

- Identify all drainage pathways, low-lying areas, and water features that may influence required setbacks.
- Confirm compliance with regulatory separation distances from natural or constructed drainage systems.

Relation to Buildings and Property Boundaries

- Verify that proposed system locations meet required setbacks from dwellings, structures, property lines, and other critical features.
- Determine whether sufficient space exists to accommodate all components of a tertiary system.

For further details on the land requirements and setback requirements, please refer to the *Alberta Private Sewage Systems Standard of Practice 2021.*

3.0 Results

This section presents the results of ISL's field review of the residence located at 574 Green Haven Estates. It provides a summary of asset condition ratings, risk classifications, and estimated remaining service life, supported by detailed tables and figures. Key considerations include compliance with regulatory standards, common deficiencies affecting system performance, and implications for long-term sustainability.

3.1 Septic Tank Condition

The existing septic tank at 574 Green Haven Estates was assessed from multiple perspectives, including site, cover, collar, piping, electrical components, interior, and overall conditions. Based on a thorough inspection and review of 360-degree photographic documentation, ISL was able to determine that the existing 2x5000 gallon holding tanks are in excellent overall condition. The breakdown of condition rating can be seen in **Table 3.1.**

Table 3.1: Condition Ratings

Condition Ratings	
Site Condition	5
Cover Condition	4
Collar Condition	5
Interior Condition	5
Piping and Electrical Condition	5
Overall Condition	5

The site conditions are excellent, with all required setbacks met and appropriate grading observed. The tank interior exhibits little to no concrete corrosion, and the PVC collars are properly installed with no evidence of deterioration or infiltration. Electrical components, including alarms and floats, are functioning as intended, and no concerns were identified with the tank piping. If the tanks are retained, they are expected to have many years of remaining service life before replacement is required.

However, ISL observed that one of the fasteners on the north lid was damaged and no longer securing the lid properly. A second fastener on the same lid was also nearly stripped, which ISL believes is likely the result of frequent cleanouts. To reduce future wear on the fasteners and collar during routine maintenance, ISL recommends installing a cleanout access port on the north lid, similar to the port on the south lid.

Overall, based on the observations noted above and the photos provided below, the two existing 5,000-gallon holding tanks at 574 Green Haven Estates are considered low risk and have been assigned an overall condition score of 5. However, the tanks are not designed for tertiary treatment and will need to be upgraded or replaced to support a tertiary system.

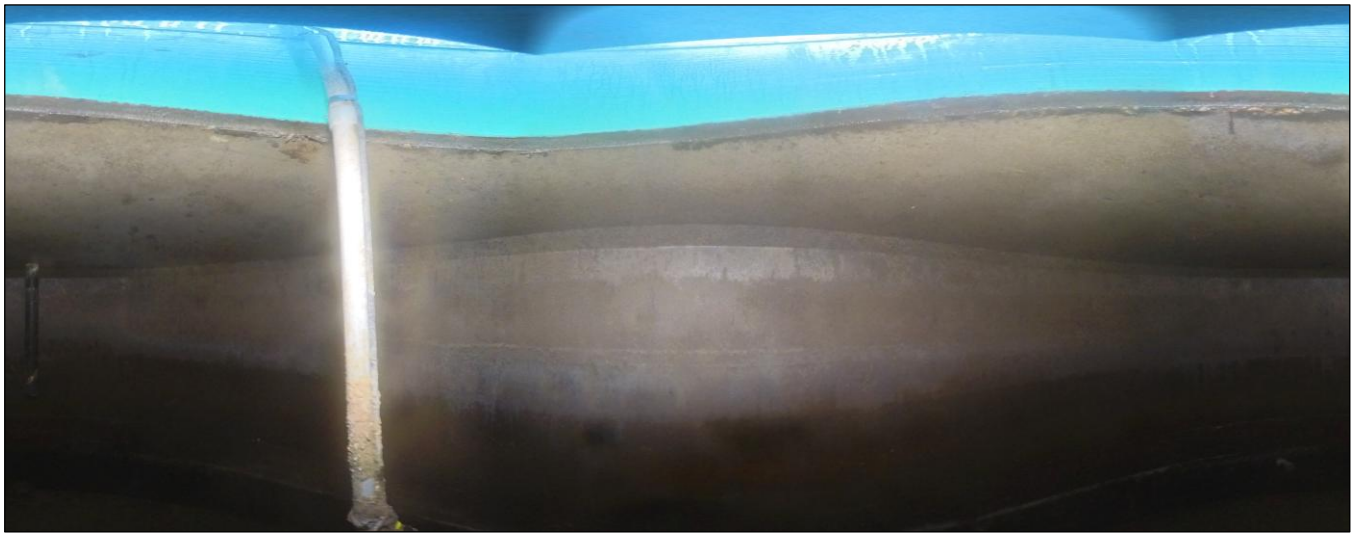
Refer to **Figures 3.1** through **3.4** for detailed photographs of the tank.

Figure 3.1: Septic Tank Layout

Figure 3.2: Damaged Bolt

Figure 3.3: Inside of North Tank

Figure 3.4: Inside of South Tank



3.1.2 Tank Type

As outlined in all reports provided to ISL and confirmed during ISL's site review, the two existing 5,000-gallon holding tanks would require significant modification or complete replacement to accommodate a tertiary outfall system.

It is important to note that septic holding tanks and tertiary treatment systems operate in fundamentally different ways and produce substantially different outcomes. **Table 3.2** below summarizes some of the key differences between these two options.

Table 3.2: Holding Tank and Tertiary System Comparison

System Functionality Comparison						
System / Tank Type	**Purpose**	**Level of Treatment**	**Typical Use Case**	**Cleanout Frequency**	**Regulatory preference**	**Limitations**
Holding Tanks	Temporary wastewater storage	None	Primarily for remote, seasonal, or temporary facilities; seldom used for permanent residences.	Typically, every 2-4 weeks	Often restricted or discouraged by Alberta Environment and Protected Areas (AEPA) and other governing bodies	Risk of overflow, high operating cost, environmental concerns
Primary Treatment Tank With Septic Field	Wastewater treatment and dispersal	Primary treatment in tank, plus biological treatment in soil	Permanent residences and commercial facilities	Typically, every 1–3 years	Widely accepted and preferred by environmental agencies	Requires suitable soil and adequate land area
Primary Treatment Tank With Septic Mound	Wastewater treatment and dispersal in areas with limited native soil capacity	Primary treatment in tank, plus enhanced soil treatment in mound	Sites with high groundwater or poor native soils with limiting layers	Typically, every 1–3 years	Widely accepted when field not feasible by environmental agencies	Larger footprint, higher installation complexity and requirements

3.1.3 Bury Depth and Setbacks

ISL measured the bury depth and setbacks for the existing holding tank at 574 Green Haven Estates. ISL determined that the tank has a bury depth of approximately 2.6 meters, which clearly exceeds the required minimum depth. The above-ground collar height was approximately 0.43 meters, which is greater than the 0.3 meters that ISL recommends as best practice.

Additionally, it was evident that all required setbacks to the house, water sources, and property lines have been met for the existing tank. Overall, ISL is satisfied with the current setbacks, bury depth, and above-ground collar height.

3.2 Potential Tertiary System sites

During ISL's visit to the residence at 574 Green Haven Estates, the team assessed the existing site conditions, including land characteristics, potential drainage patterns and watercourses, defects, and areas of disturbed or damaged soil. The purpose of this assessment was to identify suitable locations for a septic field or mound that comply with all required setback distances. The following sections will outline the findings, identify key constraints and issues, setbacks and ultimately present several potential sites for a tertiary treatment system.

3.2.1 Key Findings

ISL observed during multiple site visits that excavation for the proposed pool has already commenced in the backyard of the subject property, consistent with observations documented in previous reports. The yard also contains extensively overgrown vegetation and several soil stockpiles. While the vegetation and stockpiled soil do not present constraints for installing a tertiary field system, the disturbed soil conditions may pose potential challenges for the implementation of a tertiary septic system.

ISL also identified a drainage easement at the rear of the lot, along with a secondary drainage pathway leading into the environmental reserve, rendering this portion of the property unsuitable for a tertiary treatment system. Although the house footprint significantly limits the remaining usable space on the lot, installation of a tertiary system remains feasible within the site constraints.

3.2.2 Potential Sites

ISL assessed the property for potential tertiary system locations. The front, side, and rear portions of the lot were examined; however, both side yards were ruled out due to their existing slopes. The front yard was also evaluated, but limited space, slope constraints, and lot-specific setback requirements prevented its use. As a result, only the backyard remained as a potential area to support a tertiary system.

Even within the backyard, suitable space is limited due to drainage pathways, slope, and setback restrictions. Therefore, ISL has concluded that only the section of the yard shown in **Figure 3.5** can be utilized for a tertiary field.

It is also important to note that the majority of the soil in this area has been previously disturbed, which may present additional challenges.

Figure 3.5: Potential Tertiary System Site

Note: The indicated locations of existing tanks are approximate and may vary from their actual locations.

4.0 Potential Servicing Options

After reviewing all background information provided by Foothills County and the findings from ISL's site visits, ISL began evaluating a wide range of potential septic system configurations to support the installation of a tertiary treatment system and ensure the residence met Foothills County's requirements and the previously signed declaration from the homeowner. To assess the feasibility of these options, ISL completed preliminary calculations to estimate potential field and mound sizing, as well as potential reductions in size based on various upgrades and configuration choices. It is important to note that ISL did not collect soil samples or peak daily flow measurements. Therefore, all values used in the calculations were based on previously submitted reports, lot development plans, average flows from houses of similar size, and the additional geotechnical information provided by Foothills County.

For these calculations, a peak daily flow of 521.5 imperial gallons was used. Site slope was assumed to fall within the 4–9% range, and based on Phase 2B geotechnical reporting, groundwater was not expected to pose a concern for field or mound design. Soil conditions were assumed to be silty clay loam with a blocky, grade 2 structure, consistent with earlier reports and geotechnical data. These assumptions formed the basis for all supporting calculations.

The design options evaluated included mechanical and advanced treatment systems, equalization tanks, non-standard field and mound configurations (such as curved, multi-level, and segmented layouts), increased field depths, pressure chambers with timed dosing, maintaining the existing system, and several other conceptual configurations. ISL primarily focused on identifying options that could provide the residence with a tertiary treatment system while also reducing the overall size of the field or mound. Following this review, ISL identified five potential solutions for the site.

4.1 Option 1: Previously Explored Mound Option

Based on the previously provided reports from Groundstar, D&S Enterprises, and Township 27, it has been determined that an appropriately sized and specified existing mound system can be designed to meet the needs of the residence. The provided reports indicate the size and location of the field which takes up the majority of the backyard with the mound. This approach will provide a long-term solution and bring the property into compliance with Foothills County subdivision requirements.

The previously designed tertiary system incorporates a package treatment plant and uses pressure distribution, as mounds cannot utilize gravity distribution. The mound layout has already been optimized to reduce its footprint as much as the site constraints allow. However, due to the existing site conditions and the slope of the backyard, the mound still occupies a significant portion of the available yard area.

The only remaining consideration is that the soil in the proposed area has been previously disturbed. A geotechnical engineer will provide guidance on reconditioning the soil to be able to accommodate the mound system for long term use. This geotechnical consideration will need to be part of the mound system design and construction.

4.2 Option 2: Alternative Field Design

Previous reports evaluated mound treatment systems, and did not explore field treatment systems. As part of this assessment, ISL reviewed field systems alongside the mound system design for the residence. Based on the documented soil conditions in the previously completed geotechnical and feasibility reports, a field system is expected to perform adequately at the site.

Given the space constraints within the site, it is important to note that field systems can generally be designed smaller than mound systems because they do not need to account for slope requirements, nor do they create a large above-ground obstruction. Field systems also allow for more flexible configurations, which may help further reduce the overall footprint of the system.

4.2.1 Chamber sizing / Distribution

Several design options were considered to reduce the required septic field size, including the use of chambers and adjustments to chamber sizing. When chambers are selected instead of traditional gravel-filled weeping lateral trenches, the SOP allows a higher hydraulic loading rate, which can slightly reduce the overall field area required. Field length can also be reduced further by using wider chambers, although this typically results in a modest increase in trench width. Evaluating chamber widths such as 32", 34", or 36" can help optimize the design and minimize the total field length.

4.2.2 Pressure distribution / Timed Dosing

The use of pressure distribution increases the Soil Effluent Loading Rate (SELR) by a factor of 1.1, allowing for a modest reduction in the required field size. When pressure distribution is combined with timed dosing, the SELR increases by a factor of 1.2 instead of 1.1, which provides an additional decrease in field area. Both approaches therefore contribute to a reduction in the overall field size.

4.2.3 Sand Filters

Sand filters can be used when native soil conditions are unsuitable for a standard septic drain field. This type of system involves removing a specified depth of existing soil and replacing it with sand placed beneath and around the laterals. The added sand layer improves both treatment performance and soil absorption. For the residence at 574 Green Haven Estates, incorporating a sand filter, along with proper rehabilitation of the previously disturbed area, could offer an effective and reliable solution.

Additionally, sand filters produce secondary-treated effluent, which can allow for a modest reduction in the required disposal field size compared to a standard lateral system. However, sand filters should not be combined with mechanical or advanced treatment systems, nor with re-circulating gravel filters, as they provide no additional treatment benefit in these configurations.

4.2.4 Re-circulating Gravel Filter

Re-circulating gravel filters treat effluent by pumping it through a gravel bed that supports microbial growth. These micro-organisms break down pollutants as the effluent passes through the system. The effluent is recirculated through the gravel bed multiple times to improve treatment efficiency. After sufficient recirculation, the treated effluent is pumped into the tertiary system.

Because this recirculation process improves effluent quality to a secondary treatment level, the required disposal field can be smaller. Higher-quality effluent reduces the loading rate on the field, allowing for a more compact

design. However, it is important to consider that re-circulating gravel filters require space themselves, which may offset any reduction in disposal field size.

Additionally, since the filter provides primary treatment before the effluent enters the tertiary system, it should not be used in combination with advanced or mechanical treatment units. In such cases, the gravel filter would provide no added benefit.

4.2.5 Field shape and Design

In addition to the information provided above, it is important to note that fields can be designed and configured in a variety of ways, including curved or segmented layouts. These design options can create a more aesthetically pleasing appearance while also maximizing the usable area on the property. Fields can also be installed at different elevations when a distribution box is used, allowing them to be placed on slopes or uneven terrain. This flexibility may make it possible to position the field further back on the lot at 574 Green Haven Estates.

4.3 Option 3: Equalization Tank

ISL has completed a detailed review of the Alberta Private Sewage Systems Standard of Practice and identified that the primary factors influencing the required size of a treatment field or mound system are Hydraulic Linear Loading Rate (HLLR) of the soil, Soil Effluent Loading Rate (SELR), and Peak daily wastewater flow of the residence

The SELR cannot be modified, as it is determined strictly by the soil's structure and composition. Similarly, the HLLR is controlled by site constraints such as slope, infiltration distance, and overall soil characteristics. Therefore, the only variable with potential flexibility is the peak daily flow; however, this value is defined by the number of plumbing fixtures within the home and generally cannot be directly reduced.

ISL proposes installing an equalization tank upstream of the primary treatment tank (whether this is a separation chamber or a mechanical/advanced treatment unit). The equalization tank must be sized to hold at least the peak daily flow, or 1.5 times the average daily flow. If a larger capacity is provided, it can offer additional effluent storage, which helps further equalize daily flows. With sufficient storage volume, most influent can accumulate in the equalization tank and be time-dosed into the primary treatment stage at a consistent, controlled rate.

Using this approach, the system could be designed based on a seven-day peak average flow rather than the standard peak daily average flow, resulting in a modest reduction in the size of the tertiary treatment system. However, a seven-day peak average flow may only be used if there is sufficient variability in daily peak flows. Given that this is a residential household, it is unlikely that the seven-day peak average approach would be applicable. That said, if daily peak flows are monitored and demonstrate adequate variation, this method could potentially provide a reduction in the overall tertiary system size.

Beyond sizing benefits, the equalization tank would also enhance overall treatment performance by functioning similarly to a small lagoon system, supporting anaerobic, facultative, and tertiary treatment processes within the tank.

By using an equalization tank and timed dosing, the primary treatment tank would no longer receive the full peak daily flow of 521.5 Imp. gallons per day in a single surge. Instead, it would receive controlled, smaller volumes over time. This reduction in instantaneous hydraulic loading may allow for a decrease in the required size of the treatment field or mound system, providing what may be the only practical method for achieving a meaningful reduction in field size.

4.4 Option 4: Advanced / Mechanical Treatment Systems

ISL has also determined that improving the quality of effluent can reduce the required size of the disposal field. If a mechanical or advanced treatment unit is used, the effluent will be treated to Level 3 or Level 4 standards. This higher-quality effluent allows for an increased Soil Effluent Loading Rate (SELR), as it will contain less than 30 mg/L of $cBOD_5$. As a result, the tertiary system infiltration area can be reduced as the system can utilize a higher SELR.

However, the main drawback of using a mechanical or advanced treatment system is the increased property line setback requirement. The setback distance rises from 1 m to 6 m, which can make it more challenging to find a suitable location for the treatment tank on the property.

In the case of this private residence, however, the 6m requirement can be waived if the septic tank is equipped with odour-control mechanisms**,** the system serves a peak daily flow of less than 1,250 Imperial gallons**,** and the wastewater strength does not exceed typical residential levels**.** All of these conditions should be achievable for this residence, allowing the original setback distances to remain unchanged.

Implementing an advanced or mechanical treatment system allows the size of the field or mound to be reduced. This is because the effluent receives primary treatment before leaving the tank, meaning the field provides secondary treatment and serves primarily for dispersion rather than for significant additional treatment. Although the tertiary system size can be reduced, advanced or mechanical treatment systems still require a larger footprint than a standard primary treatment tank.

4.5 Option 5: Combination

This option combines several of the previously discussed methods to achieve the greatest possible reduction in disposal field size while still meeting the requirements of the *Alberta Private Sewage Systems Standard of Practice (2021)*. The proposed system would include an advanced/mechanical treatment unit, and an optimized field system that uses chambers with pressure distribution and timed dosing. When used together, these components can reduce the required field area by at least one third, minimizing the portion of the backyard that must be allocated to the system.

Although these technologies significantly reduce the overall field footprint, the system still occupies a relatively large area. This is primarily due to the residence's higher peak daily flow, which is based on the number and type of plumbing fixtures.

This option also tends to be more costly, as advanced and mechanical treatment systems typically have higher upfront costs and require more long-term maintenance than a standard separation-wall tank.

4.6 Summary

ISL identified five potential servicing options for the residence at 574 Green Haven Estates. Each option was evaluated at a conceptual level to assess its ability to accommodate a tertiary treatment system while minimizing the footprint of the associated tertiary field or mound within the constraints of the site. These options demonstrate that feasible servicing solutions are available to bring the residence into compliance with Foothills County servicing requirements. Final selection, approval, and implementation of the preferred option will be at the discretion of the homeowner and Foothills County. Regardless of the option selected, engagement of a geotechnical engineer is recommended to support design and implementation, as well as to confirm proper site restoration.

5.0 Disclaimer and Limitations

This report has been prepared by ISL Engineering and Land Services Ltd. (ISL) solely for the purpose of identifying and evaluating potential wastewater servicing options for the residence at 574 Green Haven Estates. The scope of this work is limited to conceptual-level assessment and option development based on information available at the time of preparation, including site observations, publicly available standards, and documentation provided by Foothills County and the property owner.

This report is not a detailed design, not a construction document, and not intended to provide sufficient information for permitting, installation, or regulatory approval of any wastewater system. The options presented herein are preliminary in nature and are intended only to support decision-making regarding next steps. Prior to proceeding with any implementation, a qualified professional must complete detailed engineering design, site-specific testing, code compliance evaluation, and coordination with the applicable regulatory authorities.

ISL makes no representation or warranty, express or implied, regarding the long-term performance, suitability, regulatory compliance, or constructability of any option described in this report. Subsurface and site conditions may vary from those observed or reported, and such variations may materially affect the feasibility or performance of any servicing option. ISL assumes no responsibility for conditions that were not apparent, accessible, or disclosed at the time of assessment.

This report is intended solely for the use of Foothills County and the property owner for the specific purpose stated above. Any use, redistribution, or reliance on this report by a third party, or for a purpose other than evaluating servicing options, is strictly at their own risk. ISL accepts no responsibility or liability for any consequences, damages, or losses arising from such unauthorized use or from decisions made based on this conceptual-level information.

Corporate Authorization

This document entitled “Servicing Options Report” has been prepared by ISL Engineering and Land Services Ltd. (ISL) for the use of Foothills County. The information and data provided herein represent ISL’s professional judgment at the time of preparation. ISL denies any liability whatsoever to any other parties who may obtain this report and use it, or any of its contents, without prior written consent from ISL.

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Manager, Construction Services, Municipal & Community Development

Conner Ainscough, T.T.
Municipal Technologist

APPENDIX A
Declaration of Understanding

DECLARATION OF UNDERSTANDING
Wastewater Servicing
Green Haven Estates - SE 27-20-29 W4

Foothills County
309 Macleod Trail, Box 5605, High River, AB T1V 1M7. Tel: 403-652-2341 Fax: 403-652-7880

Landowners are required to review this Declaration of Understanding and then sign it before a Commissioner for Oaths. Commissioners are available at the County Office by appointment with the Planning Department.

REGISTERED OWNER(S) DECLARATION

This is to certify that the Landowner(s) namely:

_____ _____

Landowner Name Landowner Name

I/(we) understand:

a. A **tertiary or equivalent package treatment plant to achieve Effluent Level 4 and N-1 N-11 as per Table 5.1.1.1. of the current Alberta Standard of Practice** must be the type of system installed to service our lot in Green Haven Estates. Further, for lots within the Phase 2B subdivision, the septic system must meet the requirements of the Level IV Assessment Report completed by SD Consulting Group – Canada, Inc. on August 12, 2019 (attached), and for lots within the Phases 3, 4 and 5 subdivision, the septic system must meet the requirements of the Level IV Private Sewage Treatment System Assessment for Subdivision Report completed by Groundwater Resources Information Technologies Ltd. on September 8, 2022 (attached);

b. **Only applicable for Plan 2210304, Block 6, Lots 8-10 in the Phase 2B subdivision**: the number of bedrooms within the Single-Family Dwelling shall not exceed 3, and the septic system must meet the requirements of the Level II Private Sewage Treatment System Assessment completed by Groundwater Resources Information Technologies Ltd. on August 26, 2021;

c. Where an existing private sewage treatment system is being used for the proposed development, a certified septic designer/installer must confirm that the existing system can adequately manage the additional waste;

d. Where a new private **tertiary or equivalent package treatment plant is being proposed,** or an addition to the existing system is proposed to service the proposed development, a certified septic designer/installer must confirm that the new or expanded system has been adequately sized to accommodate the additional waste, that the location is suitable, and that the proposed system meets the requirements of the reports noted above in points a. and b., if applicable. **Effluent Level 4 and N-1 N-11 as per Table 5.1.1.1. of the current Alberta Standard of Practice must be achieved.**

I/(we) declare to have read and understand the above requirements and have exercised due diligence to ensure that we meet these above noted requirements prior to making application for approval of the proposed development in Foothills County.

Sworn before me at the _____

of _____ in the Province

of Alberta this _____ day of _____, 20_____ _____

Landowner (Print Name Below)

_____

A Commissioner for Oaths in and for the Province of Alberta

Sworn before me at the _____

of _____ in the Province

of Alberta this _____ day of _____, 20_____ _____

Landowner (Print Name Below)

_____

A Commissioner for Oaths in and for the Province of Alberta

APPENDIX B
Previous Reports

APPENDIX B:

GROUNDSTAR CONTRACTING ONSITE WASTEWATER EVALUATION REPORT

GROUNDSTAR
CONTRACTING LTD

Onsite Wastewater Evaluation Report

Assessment completed by: Royce Neigum of Groundstar Contracting Ltd. PSDS #9609

Customer: Timber Creek Homes

Project Address: 574 Green Haven View

Project Details: Septic system suitability assessment

An evaluation of the above property was completed to assess the suitability of an onsite wastewater treatment system. Based on the size of the property and soil type, as well as the conditions of the development, holding tanks have been chosen as a suitable onsite wastewater system.

The proposed development served is a 2498 square foot 4 bedroom detached home. A preliminary fixture unit count was taken and an additional flow volume of 71.5 Imp Gal was added to design considerations. After initial review of the plans, we could assume this system is to be designed based on a peak daily flow of 521.5 Imp Gal. This development will require a higher than normal effluent treatment due to site constraints so a packaged treatment plant delivering effluent to a sand mound or concrete holding tanks would be suitable here. Calculations for sizing are provided below.

Option 1: The first option would be installation of a CSA approved packaged treatment plant supplying a secondary treated effluent to a sand mound as tertiary treatment for this development will consume an area of approximately 2,719.5 square feet. The sand layer will be 115 feet in length and 6.5 feet wide and covering approximately 751 square feet. The overall width of the completed sand mound will be 21 feet wide and 129.5 feet long. These measurements are calculated based on a Clay Loam soil type and applicable effluent loading rates related to this soil type.

Option 2: The second option for this development would be installation of CSA approved concrete holding tanks.

Wastewater Treatment Design Details

Option 1:

The calculations are below for this development with a packaged treatment plant delivering secondary treated effluent to a sand mound treatment area where effluent will be evenly disbursed via pressure distribution piping.

Treatment Mound Sizing Calculations

The soil type that exists below the sand mound area is Clay Loam with a secondary treated effluent loading rate of 0.45 Imp. Gal./Day/Square Foot. The development is assumed to have a peak daily wastewater flow volume of 521.5 Imp. Gal.

In Situ Soil Infiltration Area:

Required:	1158 Square Feet
Provided:	3318 Square Feet
Slope of area:	<1%
Total toe to toe mound width:	21(6.4m) Feet
Total toe to toe mound length:	157 (48.17m) Feet

Sand Layer Details:

Maximum wastewater flow volumes:	521.5 Imp. Gal.
Hydraulic linear loading rate:	3.7 Imp. Gal/Day/Linear Foot
Sand layer area provided:	628 Square Feet
Sand layer effluent loading rate:	0.83 Imp. Gal./Day/Square Foot
Sand layer width:	4.49 Feet
Sand layer length:	140 Feet

Required Separation Distances:

A packaged treatment plant shall not be located within:

10m (33ft) from a water course
10m (33ft) from a water source or water well
6m (20ft) from a property line
1m (3.25ft) from a building

Note: A packaged treatment plant may be located 1m (3.25ft) from property line if;

a) **It is equipped with odour control mechanisms**
b) **The development has peak flows of less than 5.7m^3 per day**
c) **The wastewater strength does not exceed typical levels of residential effluent strength**

Treatment Mounds:

15m (50ft) from a water source

100m (330ft) from a licensed municipal water well

15m (50ft) from a water course, except as provided in Article 2.1.2.4

2.1.2.4.
Separation from Specific Surface Waters
1) The soil - based treatment component of an on -site wastewater treatment system shall be located not less than 90 m (300 ft.) from
the shore of a1
a) lake,
b) river,
c) stream, or
d) creek.
1Intent: Sentence (1) —The terms "lake," "river," "stream," or "creek" are used specifically to separate them from other types of water courses to which this article does not apply. The purpose is to cause the location of the soil -based treatment component to be far enough from the body of water that upon a failure of surfacing effluent the effluent will not quickly and directly flow into the body of water. Alternatively, as set out in Sentence (2), the soil-based treatment component can be positioned on the lot, away from the body of water and in a location that will make a failure more easily noticed and upon failure will create an immediate inconvenience for the owner. This should result in a faster repair of the system. To achieve the intent of Sentence (2) the building does not have to be directly between the system and body of water. A water - tight septic tank or similar water tight initial treatment component does not need to meet the requirements of this Article.

3m (10ft) from property line

10m (33ft) from a basement, cellar, or crawl space

10m (33ft) from a building that does not have a basement, cellar, or crawl space

3m (10ft) from a septic tank

Option 2:

Maximum daily flow:	521.5 Imp. Gal/Day
Average daily flow:	250 Imp. Gal/Day
Holding Tank Volume:	10,000 Imp Gal
Days of holding based on peak flow	19 Days
Days of holding based on average flow	40 Days

Holding tanks shall not be located within:

10m (33ft) from a water course

10m (33ft) from a water source or water well

6m (20ft) from a property line

1m (3.25ft) from a building

In closing, calculations were completed and measurements were done to fit the tertiary treatment system on this site. With the constraints of the drainage right of way to the South and the West side of the proposed installation area the maximum area was taken and the minimum area for setback from the home could not be achieved. The plot plan is attached to show measurements for reference. Also, with the system situated directly against the drainage swales to the South and the West the risk of effluent breakout was of great concern. If there was ever a failure within the system the effluent would escape directly into the drainage swale and potentially contaminate the downstream components leading to unknown environmental hazards. Although holding tanks are not ideal for the system owner this is the only design that would be able to serve this particular development. Two 5000 Imp. Gal tanks would serve this property with an approximate once a month pump out schedule.

574 GREEN HAVEN VIEW

D&S Enterprises Wastewater Design

Residential Onsite Wastewater Treatment System (OWTS)
Timber Creek Homes/Amy Dunham
574 Green Haven View

[redacted]

Date: April 7, 2025

Legal Description of Property: SE ¼ Sec 27 Twp 20 Rge 29 W4M
Lot 18; Blk 8; Plan: 221 0304
574 Green Haven View – Green Haven Estates Phase 2B

To Whom It May Concern,

It is understood that Foothills County Council rejected a variance request for the home located at 574 Green Haven View, to continue using the septic holding tanks that were installed at the time of the home build. It is further understood that Council recommended that the applicant explore additional options for the septic treatment system, to bring the home into compliance with the applicable bylaws. D&S Enterprises was subsequently retained by TimberCreek Homes, to provide an independent review of the lot, along with the septic holding tanks that were installed and to determine if there are any viable options for an on-site soil-based treatment system.

D&S Enterprises reviewed all of the relevant background information provided including the Level 4 PSTS Document for Green Haven, building design information, along with the information contained in the Council agenda packet dated February 19, 2025. On March 5, 2025, at approximately 1:15pm, D&S Enterprises visited the site to view and evaluate the disturbed portions of the back yard and determine if there were any remaining areas of the yard that would be conducive to a soil-based treatment system. A portion of the backyard of the property was observed to have undergone extensive excavation for the future installation of a private swimming pool and the area surrounding the pool excavation was significantly disturbed by heavy equipment. The property currently appears to have 2-5000 Imperial Gallon holding tanks installed for collection of the wastewater from the home. There is a 12.0m overland drainage right of way on the south portion of the property and a 3.5m overland drainage right of way on the west portion of the property according to the supplied plot plans. It is understood that the overland drainage right of way cannot be used for a soil-based treatment component. The required setbacks for a soil-based treatment system were measured and it was determined that there was very limited space for a soil-based treatment system to be installed that would meet the minimum requirements of the Alberta Private Sewage Systems Standard of Practice 2021 (SOP) or the Level 4 PSTS that was completed for the Green Haven subdivision. Additionally, the finished grade plot plan for the lot indicated that the side yard will have a final slope ranging from 13.2% to 18.3%, in order to meet the requirements of the storm water management plan for the subdivision.

The Level IV Assessment Report for Green Haven Estates completed by SD Consulting Group, dated August 12, 2019, stated that Lots 8, 9, and 10 (Block 6) were “entirely covered with disturbed fill soils” and “these lots will require holding tanks for onsite wastewater management.” It would appear as though the only compliant option for the Green Haven subdivision would be a holding

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tank, in the event that the soils have been disturbed and the lot was not conducive to an on-site soil-based treatment system. Soil-based treatment systems are all based upon soil structure, texture and depth to a restrictive condition as defined in the SOP. Heavy equipment used for excavation disturbs the soil structure and can cause compaction of the soils and often the area becomes unsuitable due to the inability to determine an infiltration loading rate on the soils as outlined in the SOP.

The excavation of the pool and surrounding area has created disturbance to the soil inventory that is problematic for a soil-based treatment system. Furthermore, filling the excavation in with any fill material potentially can cause a "bathtub" scenario. This means that the system may work initially however over time there is significant potential for the excavated area to fill up to the point that effluent surfaces and the system is deemed to have failed. Soils typically cannot be rehabilitated once they are disturbed, in regard to soil-based treatment systems. The projected peak daily flow volume from the home is approximately 3,137 liters per day and Silty Clay Loam textured soils with a Grade 2 Blocky structure (assumed from similar sites in the area) has a secondary treated soil effluent loading rate of 22L/m2/d. Based upon the projected peak daily flow volume from the residence at 574 Green Haven View and the assumed soils of Silty Clay Loam texture and Grade 2 blocky structure an area of approximately 290m^2 (approximately 150m^2 for the actual trenches and approximately 140m^2 for the minimum trench separation area). In D&S Enterprises' opinion based on the information provided at this time, there is insufficient undisturbed area on the property to accommodate a soil-based treatment system and achieve all the required setback distances as per the SOP.

Required setbacks as per the SOP:

Packaged Sewage Treatment Plant / Pre-aeration Settling Tank
- 10m (33ft) water source or water well,
- 100m (330ft) from a licensed municipal water well,
- 10m (33ft) water course,
- **1m (3.25ft) a building, and**
- **6m (20ft) property line.** [1]

[1] ***(May be 1m (3.25ft) from property line if odour control mechanisms exist AND peak flow is less than 5.7m3 (1,250 Imp.Gal) AND effluent does not exceed typical strength wastewater.***

Treatment Fields
- 15m (50ft) water source or water well,
- 100m (330ft) from a licensed municipal water well,
- 15m (50ft) water course, except as provided in Article 2.1.2.4.,[2]
- 1m (3.25ft) building w/ no foundation,
- **5m (17ft) building w/ foundation but no basement, crawl space or cellar,**
- **10m (33ft) building w/ foundation w/ basement, crawl space or cellar,**
- 5m (17ft) septic tank or packaged sewage treatment plant, and
- 1.5m (5ft) property line.

Treatment Mounds
- 15m (50ft) water source or water well,
- 100m (330ft) from a licensed municipal water well,

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15m (50ft) water course except as provided in Article 2.1.2.4., [2]
10m (33ft) a building,
3m (10ft) septic tank, and
3m (10ft) property line.

[2] The soil based treatment component of an on-site wastewater treatment system shall not be less then 90m (300 ft.) from the shore of a lake, river, stream or creek. The 90m (300 ft.) setback does not apply to watercourses or water bodies that are not a lake, river, stream or creek. And where a principal building or other development feature is situated between the soil-based treatment component and a lake, river, stream or creek, such that a failure of the system causing effluent on the ground surface will be obvious and create undesirable impact on the owner, the distance may be reduced to the minimum distance requirement set out in the SOP for the particular type of treatment system being used.

The area of disturbed soils combined with the minimum required setbacks, leaves insufficient space for a soil-based treatment system that will meet the requirements of the SOP and the Level 4 PSTS. When there is less than the required space for a soil-based treatment component a variance can be requested, for a deviation from the Alberta Private Sewage Systems Standard of Practice 2021 (SOP). This is not recommended for this home, as it could increase the likelihood of the system failing in the future. In summary, D&S Enterprises is of the opinion that with the information provided and reviewed at the time of the investigation, the property in its current state will not be conducive to installing a soil-based treatment system and is limited to holding tanks as the only viable option that would be SOP compliant.

If you have any questions or concerns, please feel free to contact me at the number below.

Regards,

D&S Enterprises Wastewater Design
403-652-0348
"Designs - It's a *Dirty* Secret"
Daniel Morris
dswastewaterdesign@gmail.com

Digitally signed by Daniel A. Morris
Date: 2025.04.07 13:53:05 -06'00'
Adobe Acrobat version:
2025.001.20435

Daniel Morris

Certified Onsite Wastewater Designer and Installer in the Province of Alberta PS 8518
Alberta Onsite Wastewater Management Association member in good standing since 2002
Alberta Onsite Wastewater Management Association Instructor for certified Private Sewage Installers Training Program (2007-present)
Private Sewage Working Group Member for Alberta Private Sewage Systems Standard of Practice 2015 Third Edition and 2021 Fourth Edition and currently a member of the Private Sewage Sub-Council for the proposed 2026 Fifth Edition

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APPENDIX D:

TOWNSHIP 27 INC. SITE REVIEW

Township 27 Inc.
20105 Township Rd. 274 Rocky View County, AB T4B 5A3
Ph: 403 830 1093

SITE REVIEW

Date: May 20, 2025

Project: 574 Green Haven View
Ptn. SE 27-20-29 W4M; Plan 2210304, Block 8, Lot 18

Client: Timber Creek Homes

Distribution: Mr. Jim Crawford, Mr. Blair Hann

Purpose:

The undersigned has been requested to review the history, pertinent documentation and facts relating to the sewer system at 574 Green Haven View, Foothills County and to provide a professional opinion as to potential installation of a compliant PSTS.

Background:

The subject parcel is located in Phase 2B of the Green Haven Estates ASP.

A conditional approval for the Development Permit Application for construction of a single family dwelling with oversized garage was provided on September 7, 2022. This application included a stamped plot plan, executed lot building/grading plan and a signed declaration of understanding for wastewater servicing to include a PSTS.

A tertiary septic system was not installed as per the recommendations of the August 2019 Level 4 PSTS report authored by SD Consulting Group – Canada Inc. (See Appendix A). Rather, a double holding tank system was installed by Groundstar Contracting Ltd. This system consisted of 2 each 5,000 Imp. Gallon holding tanks, with no packaged sewage treatment system.

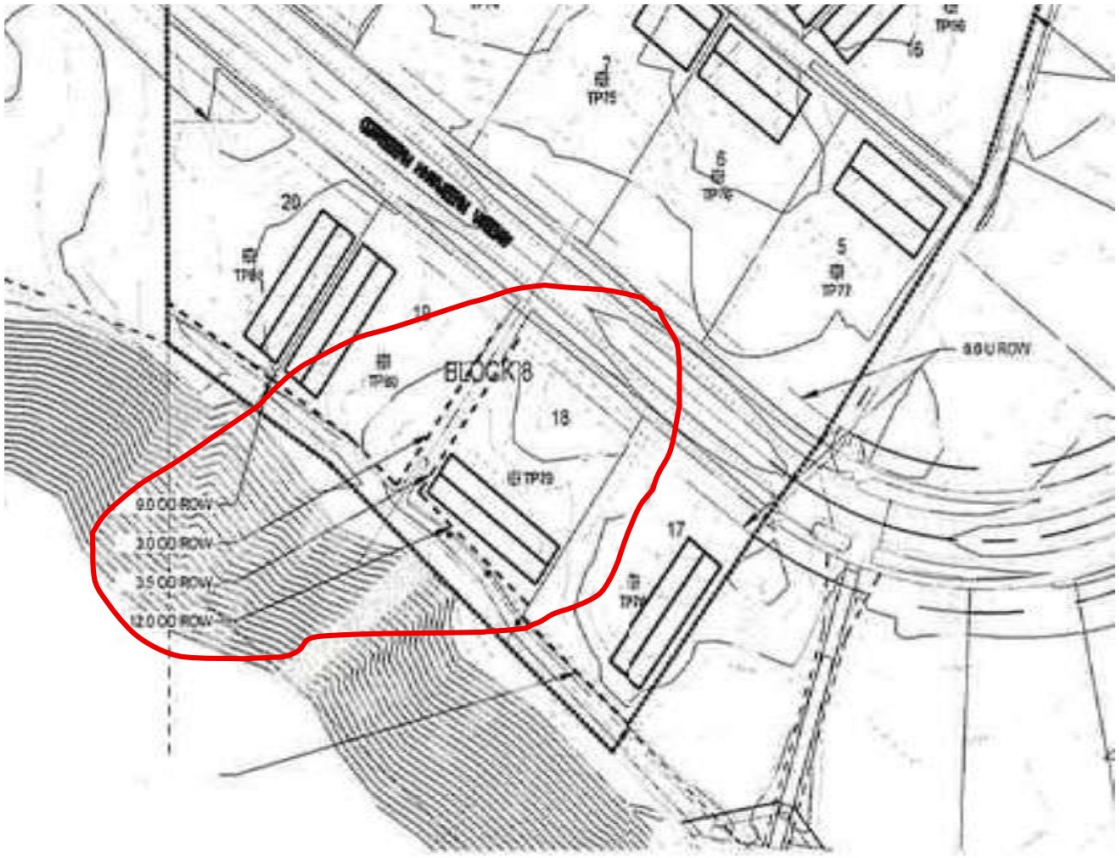
In September 2024 a new Development Permit was submitted for the addition of a pool, pool house and other landscape improvements for the property. The new development permit is currently deemed incomplete until the matter of the septic system has been fully addressed.

Factors and Considerations:

The Level 4 Assessment report identified above by SD Consulting Group provided analyses of the various soil conditions found in phase 2B and defined effective flow rates for calculation of required soil infiltration areas and sand layer areas within the treatment mounds.
Along with this data, a plot plan of phase 2B was provided within this report identifying recommended areas within each lot where these treatment mounds could be located.

2 reports were issued for Phase 2:
The first report dealt with all lots except Block 6, Lots 8 to 10.
The second report dealt with Block 6, Lots 8 to 10. These lots were located in areas of fill and disturbed native soils.

Page 21 of the SD Consulting group report included the following area map, identifying potential PSTS locations for lot 18:

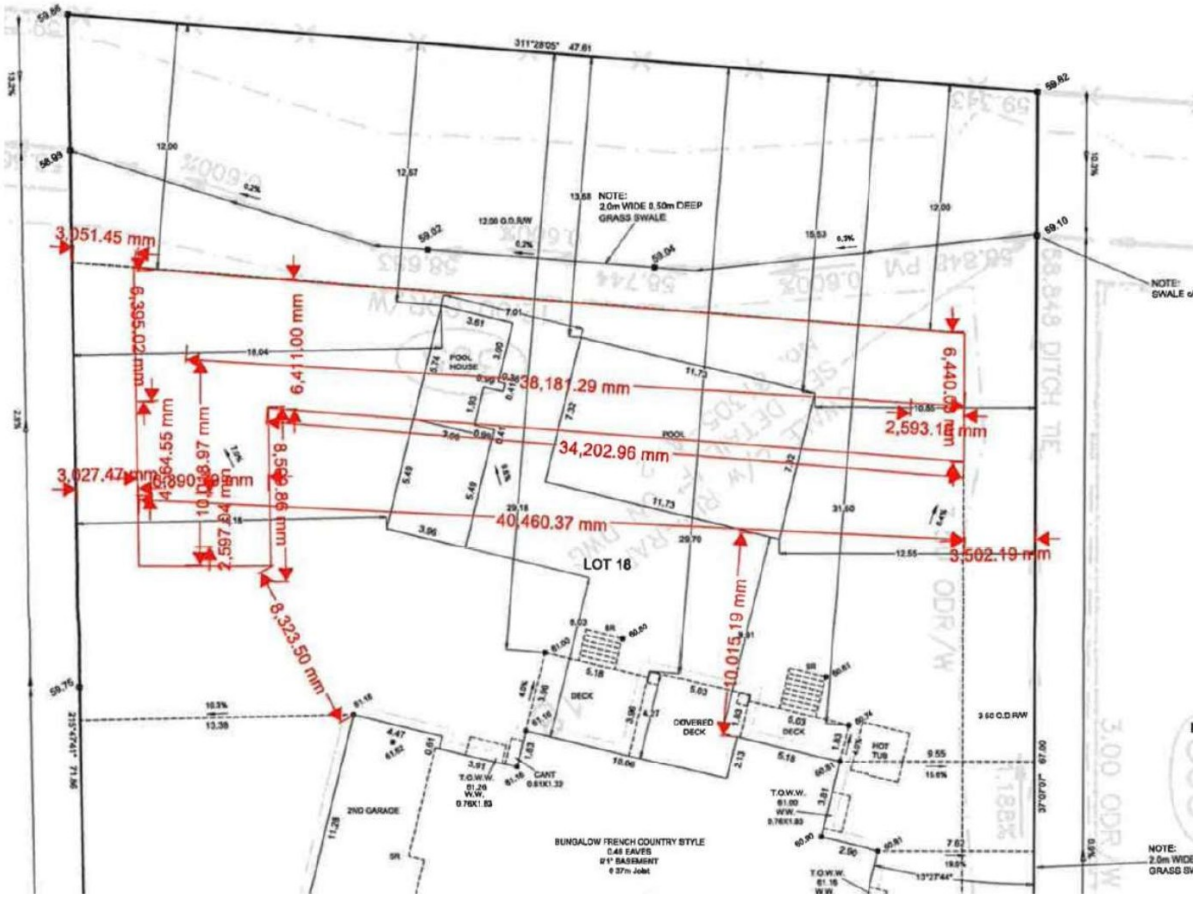


The proposed location for the PSTS was at the south edge of the property, in an east/west alignment. ROW's are identified along the west and south edges of the property to provide for subdivision drainage swales. As a result of these swales, there are significant slopes on the west side and rear yard grades along the boundaries of the proposed PSTS location.

Groundstar Contracting Ltd. prepared a report on their installation, included herewith as Appendix B.

Groundstar included area calculations for the required treatment mound size. We concur with Groundstar's calculations for a required PSTS treatment mound and clay loam classification of the soils.

Groundstar also included a copy of the lot plan, with dimensions regarding setback requirements for the PSTS and available sizes:



Given the calculated area requirements and the available areas for construction of this mound, it becomes apparent that locating a sufficiently sized mound would be problematic, given setback requirements and the steep slopes on the south and west periphery of the lot.

An independent review report was prepared by D&S Enterprises Wastewater Design, dated April 7, 2025, for this property. It is included herewith as Appendix C.

In general terms, the D&S Enterprises report corroborates the Groundstar design calculations for the required treatment mound size. We agree with both the D&S and Groundstar methodology and calculations for the size of required treatment mound.

The D&S report goes on to address the current existing site conditions and provides commentary regarding suitability of the existing soils for construction of a PSTS on the site.

Excavation has commenced for the proposed pool area, and the soils that presently exists have been both disturbed and mixed. This creates significant uncertainty in determining the consistency and content of available soils for the treatment system.

A solution has been suggested that would consist of providing an "Engineered fill" to the excavated area, then placing the treatment mound on top of this area. This solution is problematic from a number of standpoints:

- An "Engineered fill" solution can be designed to backfill the excavated area. However, "Engineered fill" only addresses the area filled. The interface between the fill area and existing soils is not addressed, effectively creating an boundary of dissimilar soils along the perimeter of the areas that are backfilled. The D&S Enterprises report identifies a "bathtub effect" risk for Engineered fill to the excavated area, whereby effluent can accumulate in the engineered fill areas, and build up to the point where itnt can overflow the filled area. There is a risk of this occurring with an Engineered fill solution for this property, given the extent of the disturbed soils at the site.

- The setbacks and inclusion of the ROW's for the swales does not allow for enough area for an effective "Engineered fill" solution for this Lot.

- There are significant grades along the south edge of this lot to accommodate a drainage swale. These range from 16% to 30% along the edge of what would be the "Engineered fill" solution for the PSTS. These grades reduce the effective lateral soil support for this edge of the treatments area. With a lack of sufficient lateral support, surcharges of system effluent could create enough lateral force to "breakout" of the slope. To exacerbate this risk, the disturbed nature of the soils adjacent to the engineered fill area could create conditions whereby effluent follows through the dissimilar soils adjacent to the filled area. This would result in significant safety risk and ecological damage to the swale downstream of this lot, risks that would be deemed unacceptable.

There is insufficient area along the eastern edge of the property to accommodate sufficient PSTS treatment area given the required setbacks.

The level 4 report prepared by SD Consulting Group – Canada Inc. addressing Block 6, Lots 8 to 10 identifies disturbed soils on those lots. The findings by SD identify a potential solution for holding tanks being installed in lieu of a full PSTS for these lots. This would not be dissimilar to the conditions that presently exist at lot 18.

Recommendation and Conclusions:

We recommend retaining the existing 2 holding tanks. Our reasons for this recommendation are as described above and are summarized as follows:

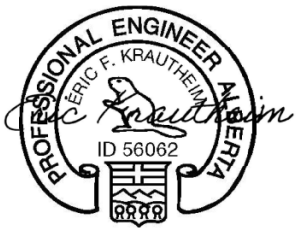
- The severely disturbed condition of the soils within the proposed PSTS location.
- Insufficient area available for an adequate Engineered fill solution.

- The proximity of the drainage swale at the southern edge of the proposed treatment mound, where significant grades are present – see above.
- Locational challenges given the ROW's and the required setbacks for the PSTS and its associated treatment mound.

Our review, findings and recommendations are based on the documentation provided including:

- SD Consulting Group – Canada, Level 4 reports for Phase 2A
- D&S Enterprises Wastewater Design report dated April 7, 2025
- On Site Wastewater Evaluation Report by Groundstar Contracting Ltd.
- Schaeffer Andrew Ltd. Letter dated January 17, 2025 with Plot Plan
- Potion of Agenda Package – Council meeting Feb. 19, 2025
- Notice of Public hearing dated January 29, 2025

Best regards
TOWNSHIP 27 INC.



APEGA PERMIT#16807 MAY 20, 2025
Eric Krautheim, MMC., P.Eng.

Appendix A: SD Consulting Level 4 PSTS reports
Appendix B: Groundstar Contracting Ltd. Report
Appendix C: D&S Wastewater Design report dated April 7, 2025