Adolphus Reach Resort
Preliminary Site Servicing Report

Prepared for:

2522082 Ontario Inc.

Mr. Del Terrelonge
c/o Stallion Financial
3800 Steeles Avenue West Suite 400
Woodbridge ON. L4L 4G9

Prepared by:

FOREFRONT Engineering Inc. **613.634.9009 tel**
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Kingston, ON, Canada K7P 0L8

Date: October 2026

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3. may be based on information provided to Consultant which has not been independently verified;
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Forefront Engineering Inc

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May 20, 2026

Mr. Del Terrelonge
2522082 Ontario Inc.
c/o Stallion Financial
3800 Steeles Avenue West Suite 400
Woodbridge ON. L4L 8M9

Dear Mr. Terrelonge

Regarding: Adolphus Reach Resort
Preliminary Site Servicing Report

The enclosed report details the infrastructure upgrades required and recommendations for the proposed Adolphus Reach Resort development. The proposed Adolphus Reach Resort will feature a variety of lodging options onsite, including two to three-bedroom Pod Villas with onsite parking.

Potable water supply for the development will be provided through a screened surface-water intake located along the northwest shoreline of the site. Raw water is to be pumped uphill via a 200 mm diameter watermain along the service road to a treatment building. Treated water will be distributed to the Pod Villas and Main Building through a looped 200 mm watermain, with individual 25 mm services to each unit.

As the development will withdraw more than 50,000 L/day, a Category 1 Permit to Take Water (PTTW) is required. The water supply system is expected to be regulated by the Public Health Unit (PHU) via O.Reg. 319/08 under the Health Protection and Promotion Act (HPPA) as a small, non-municipal, non-residential (SNMNR) drinking water system. A PHU Water System Risk Assessment and Directive will be required for the proposed system. Final confirmation of regulatory authority will be determined at the site plan stage.

Wastewater from all units will be collected from a proposed 200 mm diameter gravity sanitary sewage system and directed to a packaged membrane bioreactor (MBR) treatment unit located onsite. The treated effluent will be discharged to Lake Ontario (Adolphus Reach). An Environmental Compliance Approval from the MECP is required for the wastewater system and is to be designed in accordance with MECP Procedure F-5-1.

Electrical and communications servicing is to be from the existing overhead utilities located on County Road 7. All electrical and communications works will be coordinated with the respective utility providers at the detailed design stage.

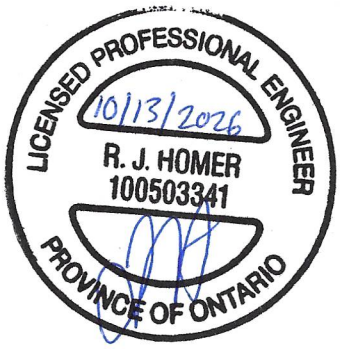
The Report demonstrates that adequate servicing is available for the proposed development. If you have any enquiries or wish to discuss further, please contact this office.

Sincerely,
FOREFRONT Engineering Inc.



Jeff Homer, P.Eng.

FOREFRONT Signatures



Report Prepared By:

Jeff Homer, P.Eng.

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1. Introduction

Forefront has assembled relevant supporting information for the proposed development at Part of Lots 61 and 62, Front Concession, Bay of Quinte, Township of North Marysburgh, in the County of Prince Edward.

The proposed Adolphus Reach Resort by 2522082 Ontario Inc. is located on the south shore of Adolphus Reach, in the Township of North Marysburgh in the County of Prince Edward, on the north side of County Road 7. The property is bounded by existing dwellings along County Road 7 to the east and west, agricultural lands and residential dwellings to the south, and Adolphus Reach to the north. The subject site includes Civic addresses 1315, 1329, and 1357 County Road 7. Refer to Figure 1: Location Plan for the site location.

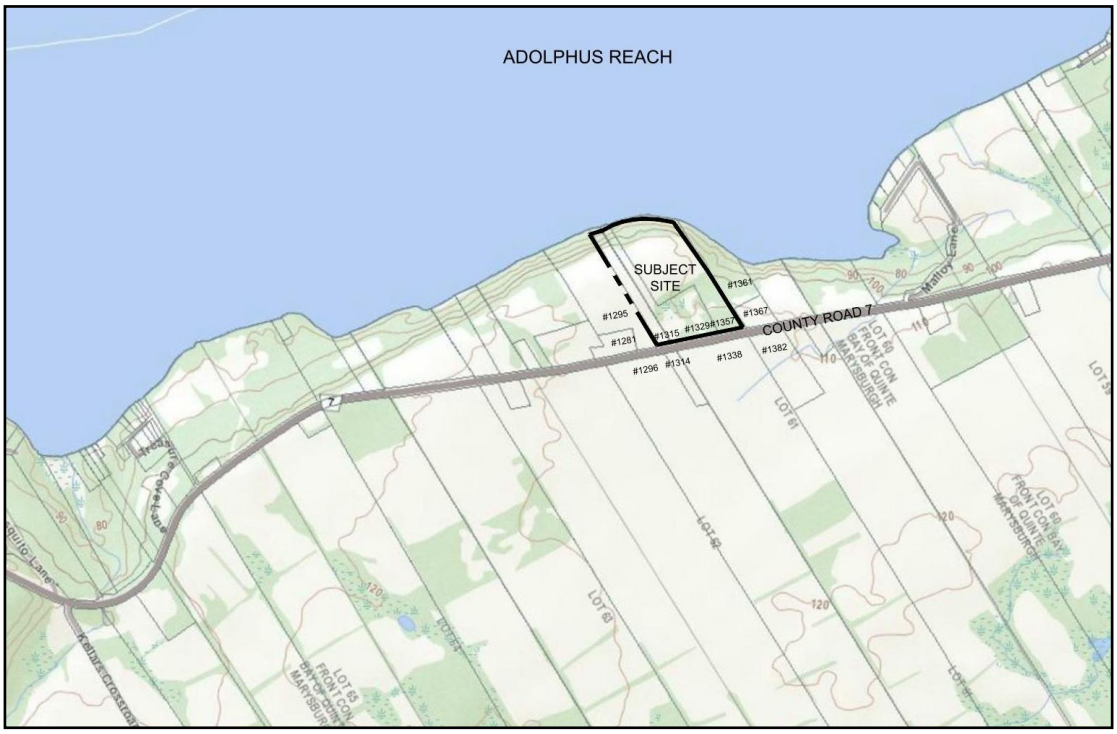


Figure 1: Location Plan

The subject site is approximately 9.99 hectares and is currently zoned Rural (RU1), Rural Residential (RR1), Rural Residential (RR2), and Environmental Protection (EP).

The proposed development will comprise approximately 32 accommodation units, including 30 two-bedroom villa units, 2 three-bedroom villa units, a main entrance building, a water treatment building, and a pump house. The villas will function similarly to cabin accommodations, consisting of bedrooms, a bathroom, a kitchen, and shared spaces. A private lane is proposed, with an entrance located on County Road 7.

The proposed Adolphus Reach Resort will require the establishment of communal water supply and wastewater treatment systems to service the development. This Servicing Report outlines the proposed approach for meeting potable water and sanitary servicing requirements for the site.

Refer to Appendix A, **Concept Plan** for the proposed development plan.

Water and Wastewater Demand

A summary of the design basis for the water and wastewater demands is provided in Table 1 below. Water and wastewater demand calculations assume a domestic consumption rate of 250 L/person/day, which is considered appropriate for the proposed Pod Villas. An average occupancy of 2.5 persons per unit has been applied to the two- and three-bedroom units, resulting in an equivalent population of 80 persons for water and wastewater sizing.

A maximum day factor of 2.75 has been applied, along with a peak hour factor of 4.25, which is considered appropriate for a tourist commercial zoning. Wastewater peak instantaneous flows have been calculated using the Harmon formula.

Table 1 – Water and Wastewater Demands

Units	Population	Average Day Demand (m^3/day)	Maximum Day Demand (m^3/day)	Peak Hour Demand (L/s)	Peak Instantaneous Wastewater Flow (L/s)
32	80	20	55	0.98	1.15

Typically, for commercial developments, the Ministry of the Environment, Conservation and Parks (MECP) guidelines specify a minimum commercial flow of 28 m^3/ha/gross ha for planning purposes. The proposed Adolphus Reach Resort operates as a small accommodation resort with clearly defined occupancy and water-use characteristics. Water demand can be more accurately and appropriately calculated using per-capita consumption rates and the actual expected occupancy of the Pod Villas.

The selected demand aligns with MECP guidance for hotels of approximately 225 L/bed/day. The Ontario Building Code (OBC) identifies a design sewage flow of 500 L/person/day for resort hotels. The proposed development includes a single pool but does not offer the combined scale and intensity of amenities associated with a full-service resort hotel, such as multiple pools, spas and large commercial kitchens. A per capita design basis has been adopted to reflect the proposed accommodation and expected water use characteristics, with demands associated with the pool and other ancillary uses included in the per capita rate.

2. Water Supply

Existing Water Infrastructure

The subject site is located along County Road #7. The existing site is currently vacant and is not serviced by any water supply infrastructure.

Proposed Development

The proposed development will comprise a total of approximately 32 accommodation units, including 30 two-bedroom villa units, 2 three-bedroom villa units, a main entrance building, a water treatment building, and a pump house. The villas will function similarly to cabin accommodations, consisting of bedrooms, a bathroom, a kitchen, and shared spaces.

A preliminary review of local hydrogeological conditions suggests that groundwater wells are not a viable option for development. The overburden is too thin to support a productive aquifer, and the underlying bedrock has very low hydraulic conductivity, leading to low and unreliable well yields. Deeper wells in the area often encounter poor-quality water with elevated salinity and sulphur. As a result, groundwater cannot provide a dependable long-term potable supply, and a surface water intake from Lake Ontario is the alternative.

In accordance with the Prince Edward County, Ontario Building Code and MECP Guidelines, the following criteria have been applied.

Design Flow Parameters

Average per capita Flow:	250 L/cap/day
Max Day Factor:	2.75
Peak Hour Factor:	4.25

Population Density

Pod Villa (2-Bedroom):	2.5 People/unit (30 Units)
Pod Villa (3-Bedroom):	2.5 People/unit (2 Units)

Water Supply and Treatment Facility

Water supply for the subject site is proposed to be drawn from Lake Ontario (Adolphus Reach) via a screened shoreline intake and intake pumps. The submerged intake pipe will extend to a pre-engineered pumping structure located at the shoreline. Pumps housed within the pre-engineered structure will convey raw water uphill to the treatment facility through a 200 mm diameter water main. The pumps will operate on an on-demand basis and will be equipped with duty/standby configuration, check valves, isolation valves, and pressure/flow monitoring.

Treatment for surface water supply requires chemically assisted filtration and disinfection. Pre-conditioning will include sediment filters and possibly activated carbon (GAC) if dissolved organic carbon concentration is high in the water supply. Surface water treatment will be required to achieve minimum log-removal credits for pathogens in accordance with the MECP Design Guidelines for Drinking-Water Systems (2008). A modular pre-engineered treatment unit is proposed (Newterra PWT-12/50 and supplementary MSU-38 unit or equivalent). The treatment process will remove fine particles and microorganisms. To achieve this, the system will include a series of filters and disinfection steps, typically involving media filtration, fine cartridge filtration, ultraviolet (UV) disinfection, and chlorination.

A Permit to Take Water (PTTW) is required for any water taking exceeding 50 m^3/day. The projected maximum day demand for the proposed development is approximately 55 m^3/day, and a PTTW will be required. Given the modest

volume and anticipated low potential for environmental impact, the water taking is expected to be classified as a Category 1 application by the MECP.

The water supply system will be regulated by the Public Health Unit (PHU) via O.Reg. 319/08 under the Health Protection and Promotion Act (HPPA) as a small, non-municipal, non-residential (SNMNR) drinking water system. A PHU Water System Risk Assessment and Directive will be required for the proposed system.

Distribution System

Pressure is applied to the system at the pre-engineered treatment building. No storage is required for the domestic supply, and it will operate on demand, using a pressure tank and automatic pump controls to maintain consistent pressure throughout the resort. All equipment can be housed in the pre-engineered treatment building.

A 200 mm diameter looped watermain is proposed to service the site. 25 mm diameter PEX services are proposed to serve individual units.

Prince Edward County, the Ontario Building Code, and the Ministry of the Environment, Conservation and Parks (MECP) require the system to be assessed at the critical locations for peak-hour flow. MECP requires the system to maintain an operating pressure of 280-700 kPa under peak flow conditions.

The maximum daily demand for this development is approximately 55 m^3/day based on a peak day factor of 2.75, and the peak hour flow is 0.98 L/s, assuming a peak hour factor of 4.25.

Figure 2 – Preliminary Servicing Plan by Forefront Engineering in **Appendix A** details the existing and proposed water servicing.

Water Supply Approval and Regulatory Classification

The proposed drinking water system will be a private, non-municipal system serving a tourist commercial resort accommodation use. The system is expected to have a peak flow of less than 2.9 L/s and is not proposed to serve a designated facility. The operating season, whether three season or four season will be confirmed at the detailed design stage.

Based on the current proposal, the drinking water system does not appear to be regulated under O. Reg. 170/03. Section 4.1 of O. Reg. 170/03 provides that the regulation does not apply to non-municipal seasonal residential systems, large non-municipal non-residential systems, or small non-municipal non-residential systems unless the system serves a designated facility. Since the proposed system is non-municipal and does not serve a designated facility, O. Reg. 170/03 is not expected to be the governing regulatory framework.

The proposed system is expected to be reviewed as a “small drinking water system” under O. Reg. 319/08. O. Reg. 319/08 captures non-municipal drinking water systems that do not serve a major residential development (> 6 private residences), do not serve a year-round trailer park or campground with more than five service connections, and do not serve a designated facility. The regulation also includes a seasonal provision for non-municipal systems that serve a large residential development or a trailer park/campground with more than five service connections, provided the system does not operate to supply water for at least 60 consecutive days in each calendar year.

The proposed development is intended to function as a tourist commercial resort accommodation use, rather than a large residential development, trailer park, or campground. O. Reg. 319/08 also distinguishes between *campgrounds* and *places operated primarily for the purpose of providing overnight accommodation to the travelling public*.

If seasonal operation is advanced, the system will be reviewed with consideration for the seasonal provisions under O. Reg. 319/08, including the 60-consecutive-day shutdown provision where applicable. If year-round operation is advanced, the final classification will be confirmed with the Public Health Unit, including whether the site is considered transient resort accommodation or another regulated use under the regulation. In either case, the final operating season and associated servicing requirements will be confirmed through consultation with the Public Health Unit and/or MECP, as applicable, during detailed design. The water and wastewater systems will be designed to meet the requirements of the approval authority.

Fire Protection

OBC requirements for suburban and rural fire protection are outlined in OBC section A-3.2.5.7.(1), which states that onsite storage for firefighting is not required where the fire department can respond with a transportable water supply of sufficient quantity to support search and evacuation, in accordance with applicable guidelines or standards (e.g., NFPA 1142 Standard on Water Supplies for Suburban and Rural Fire Fighting).

In Prince Edward County's rural areas, firefighting relies on a Fire Underwriters Survey (FUS) accredited tanker shuttle service. The proposed development is understood to lie outside the FUS accreditation boundary.

The proposed pod villa buildings and main entrance building are anticipated to be single-storey, with an area of less than 600 m² and constructed from combustible materials. The calculated minimum recommended fire flow for the development, per the OBC, is 30 L/s (1,800 L/min) for 30 minutes.

It will be necessary to store water onsite for fire protection in a quantity of 54,000 Litres (14,000 USG) with a dry hydrant ([1,800 L/min] × 30 minutes = 54,000 Litres). This can be done with surface storage or two 7,000 USG tanks.

Refer to the **Fire Flow Calculations** in **Appendix B.** Fire flow demands are based on the OBC Fire Flow Calculation**,** based on Division B 3.2.5.7 Water Supply. Fire supply for the site is to be provided by the Prince Edward County Accredited Tanker Shuttle Program.

3. Sanitary Sewer System

Existing Sanitary Infrastructure

The subject property is currently vacant and is not located within an area serviced by municipal sanitary sewer infrastructure. No public sanitary services are available in the vicinity of the site, and connecting to a municipal system is not feasible.

Proposed Development

The proposed development will comprise a total of approximately 32 accommodation units, including 30 two-bedroom villa units, 2 three-bedroom villa units, a main entrance building, a water treatment building, and a pump house. The villas will function similarly to cabin accommodations, consisting of bedrooms, bathrooms, kitchens, plumbing, and shared spaces.

As the site is located outside the municipal service area, there is no connection to the municipal sanitary sewer infrastructure. An onsite communal treatment system is required to meet MECP regulatory requirements for communal developments.

Subsurface disposal is considered impractical for the site due to the potential challenges and risks. A raised leaching bed with a mantle would require significant fill, as the overburden is thin, and a relatively substantial area would be required for the leaching bed, along with other risks associated with shallow bedrock.

Surface discharge to Lake Ontario (Adolphus Reach) is proposed for the treated effluent. A centralized onsite wastewater treatment system, such as a pre-engineered membrane bioreactor, is required to treat the wastewater and meet MECP effluent standards.

Under the Ontario Building Code (OBC), individual or private onsite sewage systems (such as septic tanks and leaching beds) are permitted up to a total daily design sanitary flow of less than 10,000 L/day. For demands greater than 10,000 L/s, the system requires an Environmental Compliance Approval (ECA). For the proposed resort, the wastewater flow from all accommodation units and amenities exceeds the 10,000 L/day OBC threshold.

In accordance with the Prince Edward County, Ontario Building Code and the MECP guidelines the following design criteria have been used.

Design Flow Parameters

Average per capita Flow:	250 L/cap/day
Peak Residential Factor:	Harmon Formula
Infiltration Allowance (Existing):	0.14 L/s/ha

Proposed Development Population Density

Pod Villa (2-Bedroom):	2.5 People/unit (30 Units)
Pod Villa (3-Bedroom):	2.5 People/unit (2 Units)

Wastewater Treatment

Sanitary sewage from all buildings will be collected through a 200 mm diameter gravity sanitary sewer system and directed to a packaged membrane bioreactor (MBR) treatment unit located on site.

A representative wastewater treatment option for the proposed development is the Newterra Clear MBR.ST-35, or approved equivalent. The MBR.ST-35 is a pre-engineered, modular membrane bioreactor package treatment plant intended for decentralized sewage treatment applications, including recreational, commercial, institutional, and residential-type developments. The system combines biological treatment with membrane filtration within a compact modular unit, producing a high-quality effluent with low BOD and suspended solids. The unit footprint is approximately 2.4 m by 6.1 m. For the proposed development, the MBR unit would be supported by flow equalization, sludge storage, disinfection and any additional treatment required by the MECP ECA. Final unit selection, treatment configuration, seasonal operating procedures, and effluent criteria will be confirmed during detailed design. Refer to **Appendix B** for **Newterra MBR.ST-35 Pre-Engineered Modular MBR Sewage Treatment System General Specifications.**

The MBR system will provide complete primary, secondary and tertiary treatment within a modular pre-engineered enclosure. The process includes primary screening, biological treatment, membrane filtration, and disinfection, producing a high-quality effluent with BOD_5 and TSS concentrations in accordance with Table 1, Effluent Criteria of MECP Procedure F-5-1. Treated effluent will be discharged to the lake under an Environmental Compliance Approval (ECA) and designed in accordance with MECP Procedure F-5-1.

The MBR system is expected to be supported by a below-grade equalization tank and a separate sludge storage tank. For planning purposes, each tank is assumed to have a capacity of approximately 18 m³. The equalization tank would receive wastewater from the sanitary collection system and provide short-term storage to smooth out variations in flow before wastewater is pumped to the MBR at a controlled rate. The sludge storage tank would receive waste sludge from the treatment process and provide temporary storage prior to periodic removal by a licensed hauler for offsite disposal at an approved facility. A representative precast concrete or FRP tank of this size would typically require a footprint in the order of 2.5 m (w) by 4.5 m (l) by 2.3 m (h), with final dimensions, burial depth, access risers, loading rating, anchoring, and service connections to be confirmed by the selected tank supplier during detailed design.

The system will be installed as a modular pre-engineered unit (Newterra MBR ST-35 or equivalent) with a rated capacity of approximately 55 m³/day to accommodate maximum daily flows from the development. The treatment unit will be equipped with duty/standby blowers and pumps, process instrumentation, and automated control with alarm notification. A licensed hauler will periodically remove sludge for offsite disposal at an approved facility. The treatment unit will include provisions for standby power and remote monitoring.

Treated effluent is discharged from the MBR unit to an outfall pipe that extends to the shoreline of Lake Ontario (Adolphus Reach). The outfall is designed to release treated effluent, protected against ice and wave action. A sampling point will be provided upstream of the outfall connection to allow routine compliance monitoring.

Sanitary Sewer System

200mm diameter gravity sanitary sewer mains with individual 125 mm sanitary services are proposed throughout the site to service all proposed buildings and direct wastewater to the proposed packaged membrane bioreactor (MBR) treatment unit located in the northeast portion of the site. Wastewater will be treated in a proposed Newterra MBR ST-35. Treated effluent will be discharged to a proposed 200mm diameter gravity sanitary main, where the treated effluent is discharged into Lake Ontario (Adolphus Reach) via a 200mm diameter gravity sanitary outflow pipe.

The proposed development at Adolphus Reach Resort is expected to generate peak sanitary flows in the order of 1.15 L/s

Figure 2 – Preliminary Servicing Plan and **Figure 3 – Sanitary Catchment Area** by Forefront Engineering in **Appendix A** details the proposed sanitary sewer servicing. Refer to the **Sanitary Sewer Design Sheet** in **Appendix B** for further calculations.

4. Utilities

The proposed development will be serviced by existing fibre optic, telephone, and cable television services on County Road #7.

Above-ground transformer vaults onsite are proposed with access from the proposed electrical facility located onsite. Service size will be confirmed prior to site plan approval. Electrical servicing is anticipated from the existing overhead hydro and is to connect to the proposed electrical building located next to the proposed water distribution facility.

The size of the electrical and gas services will be confirmed prior to site plan approval.

5. Conclusions

Calculations indicate that the proposed infrastructure is capable of and will effectively serve the demand created by this development.

Potable water supply for the development will be provided through a screened surface-water intake located along the northwest shoreline of the site. Raw water is to be pumped uphill via a 200 mm diameter watermain along the service road to a treatment building. Treated water will be distributed to the Pod Villas and Main Building through a looped 200 mm watermain, with individual 25 mm services to each unit.

As the development will withdraw more than 50,000 L/day, a Category 1 Permit to Take Water (PTTW) is required.

The proposed water supply system will be a private, non-municipal system serving a tourist commercial resort accommodation use. If the resort operates on a three-season basis, the system is expected to be regulated by the Public Health Unit under O. Reg. 319/08, made under the Health Protection and Promotion Act, as a small drinking water system. A PHU Water System Risk Assessment and Directive will be required to establish the applicable treatment, sampling, monitoring, operational, and reporting requirements. If year-round operation is advanced, the final regulatory classification will be confirmed with the PHU, including whether the site is considered transient resort accommodation, a campground-type use, or another regulated use. The water supply system will be designed and operated in accordance with the final regulatory framework confirmed through the PHU and, where applicable, MECP approvals process.

Wastewater from all units will be collected from a proposed 200 mm diameter gravity sanitary sewage system and directed to a packaged membrane bioreactor (MBR) treatment unit located onsite. The treated effluent will be discharged to Lake Ontario (Adolphus Reach).

An ECA from the MECP is required for the wastewater system designed in accordance with MECP Procedure F-5-1.

Electrical and communications servicing is to be from the existing overhead utilities located on County Road 7. All electrical and communications works will be coordinated with the respective utility providers at the detailed design stage.

Appendix A

Concept Plan
Figure 2 – Preliminary Servicing Plan
Figure 3 – Sanitary Sewer Catchment Areas



POD VILLA 2BDRM	30
POD VILLA 3BDRM	2
MAIN ENTRANCE BUILDING	1
WATER TRTMNT BUILDING	1
ELECTRICAL BUILDING	1
SEPTIC BUILDING	1
PUMP HOUSE	1
TOTAL	37
SHED	1
LAKE HOUSE	1

LEGEND

- PROPOSED ROAD
- BUTTERNUT TREE BUFFER
- 15 m FLOOD LINE SETBACK
- ESCARPMENT SET-BACK
- PROPERTY LINE
- AREA OF PROPOSED RESORT
- 1280 + 1296 COUNTY ROAD 7 239 m SETBACK
- 1338 COUNTY ROAD 7 284 m RADIUS SETBACK
- MAIN ENTRANCE BUILDING 279 m²
- PUMP HOUSE
- 2 BEDROOM CABIN (30) EACH 89 m²
- 3 BEDROOM CABIN (2) EACH 118 m²
- W — WATER TREATMENT BUILDING
- E — ELECTRICAL BUILDING
- SEPTIC BUILDING
- POOL
- SHED
- LAKE HOUSE
- U.G. SEPTIC TANK

Benchmark

No.	Revision/Issue	Date
R10	AS PER CLIENT REQUEST	JUNE 2026
R9	AS PER CLIENT REQUEST	FEBRUARY 2022
R8	UPDATED FOR STM REPORT	JUNE 2021
R7	AS PER CLIENT REQUEST	APRIL 2021

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Client: 2522082 ONTARIO INC.

Project: ADOLPHUS REACH RESORT

Drawing: CONCEPT PLAN - OPTION 3

Drawn by: EG	Checked by: KMN	Project No.
Designed by: KMN	Approved by: KMN	Drawing No. C4
Date: SEPT 2025		
Scale: 1:750		

ADOLPHUS REACH

POD VILLA 2BDRM	30
POD VILLA 3BDRM	2
MAIN ENTRANCE BUILDING	1
WATER TRTMNT BUILDING	1
ELECTRICAL BUILDING	1
SEPTIC BUILDING	1
PUMP HOUSE	1
TOTAL	37
SHED	1

100 YEAR FLOOD LINE + WAVE UPRUSH
SANITARY OUTFLOW PIPE
15m FLOOD LINE SET-BACK (ELEVATION TO BE DETERMINED)
EXISTING SHED
EXISTING COTTAGE
PUMP HOUSE (MAX. SIZE <15m²)
3.5m
4.0m
14.9m
200mmØWTR
6.0m
EXISTING SERVICE ROAD
EMBANKMENT SETBACK
ESCARPMENT SETBACK
OVERHEAD UTILITY LINES
36.63m
OUTLET 3A (AS PER DETAIL FIG. 4)
TOP OF BANK
SA10
16.32m-200mmØ SAN
23.09m-200mmØ SAN
SA9
28.43m-200mmØ SAN
SA8
18.55m-200mmØ SAN
SA7
200mmØWTR
68.90m-200mmØ SAN
SA6
11.80m-200mmØ SAN
SA5
21.99m-200mmØ SAN
200mmØWTR
105.21m-200mmØ SAN
STREET A
CONCRETE SIDEWALK
1.0m
9.0m
6.0m
DRY POND
DRY POND (AS PER DETAIL ON FIG.4)
SUBDRAIN
WWTP
PROPOSED MBR.ST-35 SEWAGE TREATMENT SYSTEM
MAIN ENTRANCE BUILDING
FLUSH HYDRANT
WATER VALVE
ELECTRICAL BUILDING
WATER TREATMENT BUILDING
E
W
POOL
EROSION HAZARD LIMIT
6m EROSION HAZARD LIMIT SETBACK
AREA OF PROPOSED RESORT
SA4
SA3
SA2
SA1
90.77m-200mmØ SAN
60.18m-200mmØ SAN
41.34m-200mmØ SAN
200mmØWTR
15m
OH
82.00
89.00
91.00
97.00
102.00
101.00
108.00
109.00
111.00
104.00
96.00
113.00
112.00
115.00
116.00
117.00

LEGEND

- PROPERTY LINE
- PROPOSED STORMWATER
- PROPOSED SWALE
- PROPOSED SANITARY
- PROPOSED WATERMAIN

0 8 16 m H=1:400

Benchmark

No.	Revision/Issue	Date
RK0	AS PER AGENCY COMMENTS	OCTOBER 2025

Forefront Engineering Inc
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613.634.9009 tel.
1.888.884.9392 fax.

Client: 2522082 ONTARIO INC.

Project: ADOLPHUS REACH RESORT

Drawing: PRELIMINARY SERVICING PLAN

Drawn by:	Checked by:	Project No.
EO	KMN	
Designed by:	Approved by:	Drawing No.
KMN	KMN	FIG.2
Date: JUNE 2026		
Scale: 1:400 ANSI D		

SANITARY OUTFLOW PIPE
INV: 75.15m

16.32m-200mmØ SAN

23.09m-200mmØ SAN

28.43m-200mmØ SAN

18.55m-200mmØ SAN

30.77m-200mmØ SAN

60.16m-200mmØ SAN

41.34m-200mmØ SAN

105.21m-200mmØ SAN

66.90m-200mmØ SAN

11.80m-200mmØ SAN

21.99m-200mmØ SAN

125mmØ SAN

SA1 SA2 SA3 SA4 SA5 SA6 SA7 SA8 SA9 SA10

WWTP

0.71 ha
35 | 4-3

0.45 ha
30 | 2-3

0.40 ha
15 | 1-3

AREA (hectares)
#.## ha
#.## | ##
POPULATION | ID

0 15 30 m H=1:750

Benchmark

No.	Revision/Issue	Date

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Client
2522082 ONTARIO INC.

Project
ADOLPHUS REACH RESORT

Drawing
SANITARY CATCHMENT AREAS

Drawn by:	Checked by:	Project No.
CB	KMN	
Designed by:	Approved by:	Drawing No.
KMN	KMN	FIG.3
Date: NOVEMBER 2025		
Scale: 1:750 (11X17)		

Appendix B

Fire Flow Calculations
Sanitary Sewer Design Sheet
Newterra MBR.ST-35 General Specification

Forefront Engineering Inc

OBC Fire Flow Calculation

Calculations based on Ontario Building Code
Division B A.3.2.5.7 Water Supply

Project Name: The Reach Resort
Date: October 2026
Data Input by: Jeff Homer
Review by: Kyle Nielissen

Fire Flow Calculation #: 1
Building Description: Main Entrance Building
Building Occupancy Group: Group C
Construction Type Combustible
Area = ±279m²
Max Height = 3.8 m
Number of Storeys = Single Storey
Exposure Distance = ±8 m

Water Available for Fire Fighting Purposes $Q = K \cdot V \cdot S_{tot}$

Where

Q = Minimum Supply of Water in Litres
K = Water Supply Coefficient from Table 1 (below)
V = Total Building Volume in Cubic Metres
S_{tot} = Total of Spatial Coefficients Values from Property Line Exposures on All Sides
$S_{tot} = 1.0 + S_{side\ 1} + S_{side\ 2}$-....etc., S_{tot} not to exceed 2.0
Refer to the Office of the Fire Marshal (OFM) Fire Protection Water Supply Guideline for Part 3

Table A: Ontario Building Code Determination of Required Fire Flow

Step	Task	Term	Options					Value Used	Units	Total Fire Flow (L/min)
1	Determine Water Supply Coefficient K from Table 1	**Type of Construction**	**Classification by Group or Division in Accordance with Table 3.1.2.1**							
			A-2, B-1, B-2, B-3, C, D	A-4, F-3	A-1, A-3	E, F-2	F-1			
		Building is of non-combustible construction with fire separations and fire resistance ratings provided in accordance with Subsection 3.2.2. including loadbearing walls, columns, and arches	10	12	14	17	23	**23.0**		
		Building is of non-combustible construction or of heavy timber construction conforming to Article 3.1.4.6. Floor Assemblies are fire separations but no fire-resistance rating. Roof assemblies, mezzanines, loadbearing walls, columns and arches do not have a fire-resistance rating	16	19	22	27	37			
		Building is of combustible construction with fire separations and fire-resistance rating provided in accordance with Subsection 3.2.2. Including loadbearing walls, columns, and arches. Non-combustible construction may be used in lieu of fire-resistance rating where permitted in Subsection 3.2.2.	18	22	25	31	41			
		Building is of combustible construction. Floor assemblies are fire separation but with no fire-resistance rating. Roof assemblies, loadbearing walls, columns and arches do not have a fire resistance rating.	23	28	32	39	53			
2	Determine V, the Volume of the Building	**Total Volume of Building (Including Basement) measured to the underside of the roof**	**Main Entrance Building**					**1,060**	**m^3**	
			# Floors: 1							
			Gross Floor Area: 279 m^2							
			Avg Height = 3.8 m							
			Total Volume = 1,060 m^3							
3	Determine S_{tot}, the total Spatial Coefficient from Figure 1	**Exposure Distance to Property Limit (Minimum of 1.0, Maximum of 2.0)**	**Side**			**Distance**	**Coeff.**	**1.8**		
			Side 1			8m	0.2			
			Side 2			8m	0.2			
			Side 3			8m	0.2			
			Side 4			8m	0.2			
4	Calculate Q	$Q = K \cdot V \cdot S_{tot}$	Q = K V S = 23.0 × 1060.2 × 1.8 =					**43,892**	**L**	
5	Determine Minimum Water Supply Flow Rate from Table 2	1,800 One Storey Building with Area less than 600 m^2								**Required Fire Flow: 1,800 L/min**
		2,700 L/min (if Q≤ 108,000 L)								
		3,600 L/min (if Q> 108,000 L and ≤135,000 L)								
		4,500 L/min (if Q> 135,000 L and ≤162,000 L)								
		5,400 L/min (if Q> 162,000 L and ≤190,000 L)								
		6,300 L/min (if Q> 190,000 L and ≤270,000 L)								
		9,000 L/min (if Q> 270,000 L)								
6	Summary							**Minimum Supply of Water in L**		**43,892**
								Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:		**1,800**
								Total Required Fire Flow (above) in L/s		**30**
								Required Duration of Fire Flow (Min)		**30.0**

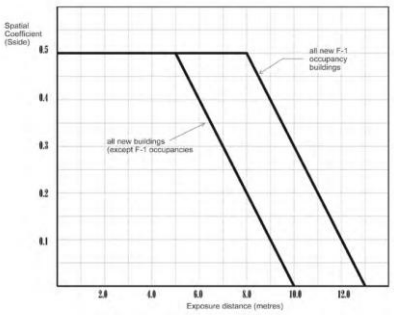


Figure 1
Spatial Coefficient vs Exposure Distance

Notes from the OFM Fire Protection Water Supply Guidelines for Part 3

V = all spaces below and above grade within a building, measured to the underside of the roof deck.
S_{tot} is a minimum of 1.0, and increases for each exposure, but need not exceed 2.0
Firewalls that divide a structure into two or more buildings can be considered to have a Sside of 0

Summary

Based on Table 2 of OBC A-3.2.5.7, the minimum required flow rate for fire protection is 1,800 L/min for 30 minutes.

Prince Edward County has an FUS Water Tanker Shuttle Accreditation. The proposed development is outside the FUS Tanker Shuttle Accreditation area.

It will be necessary to store water onsite for fire protection, in a quantity of 13,500 Litres (1,800 L/min) x 30 minutes = 54,000 Litres).

SANITARY SEWER DESIGN SHEET
Adolphus Reach Resort
PROPOSED SEWERAGE

Date: October 2026

Client: 2522082 Ontario Inc.

Municipality: County of Prince Edward

Drainage Area: 1.56 ha

Guidelines : MECP, OBC, Prince Edward County

Residential

q=Apartment, Condominiums , Multi Residential	250	L/Cap. d (MECP)
Pod Villa 2BR	2.5	PPU
Pod Villa 3BR	2.5	PPU

I=unit of peak extraneous flow (L/ha. s) 0.14

M=peaking factor 1+14/(4+(P/1000)^0.5) 4.0 MAX
Q(p)=peak population flow (L/s)
Q(i)=peak extraneous flow (L/s)
Q(d)=peak design flow
Minimum Velocity (m/s) 0.6

DESCRIPTION	FROM	TO	INDIVIDUAL					Peaking factor M	Pop. flow Q(p) (L/s)	Peak Extraneous flow Q(i) (L/s)	Peak design flow Q(d) (L/s)	PROPOSED SEWER							
LOCATION			Dwelling Units (Pod Villas)	Pop.	Area A (hectares)	Pop.	Area A (hectares)					Length (m)	Pipe size (mm)	Type of Pipe	Grade %	Pipe Capacity (L/s) n=0.013	Full flow velocity (m/s)	Actual velocity (m/s)	Utilized Capacity (%)
Onsite	SA1	SA3	6	15	0.40	15	0.40	4.00	0.17	0.06	0.23	41.3	200	PVC	0.50	23.2	0.74	0.24	1%
Onsite	SA2	SA3	14	35	0.45	35	0.45	4.00	0.41	0.06	0.47	90.8	200	PVC	0.50	23.2	0.74	0.28	2%
Onsite	SA4	SA3	32	80	0.71	80	0.71	4.00	0.93	0.10	1.03	60.2	200	PVC	0.50	23.2	0.74	0.37	4%
Onsite	SA3	SA5	32	80	1.56	80	1.56	4.00	0.93	0.22	1.14	105.2	200	PVC	0.50	23.2	0.74	0.38	5%
Onsite	SA5	Prop. Septic Building	32	80	1.56	80	1.56	4.00	0.93	0.22	1.14	22.0	200	PVC	1.00	32.8	1.04	0.47	3%
Onsite	Prop. Septic Building	SA6	32	80	1.56	80	1.56	4.00	0.93	0.22	1.14	11.8	200	PVC	1.00	32.8	1.04	0.47	3%
Onsite	SA6	SA7	32	80	1.56	80	1.56	4.00	0.93	0.22	1.14	66.9	200	PVC	2.00	46.4	1.48	0.59	2%
Onsite	SA7	SA8	32	80	1.56	80	1.56	4.00	0.93	0.22	1.14	18.6	200	PVC	8.00	92.7	2.95	0.94	1%
Onsite	SA8	SA9	32	80	1.56	80	1.56	4.00	0.93	0.22	1.14	28.4	200	PVC	8.00	92.7	2.95	0.94	1%
Onsite	SA9	SA10	32	80	1.56	80	1.56	4.00	0.93	0.22	1.14	23.1	200	PVC	8.00	92.7	2.95	0.94	1%
Onsite-Offsite	SA10	Lake Ontario Outflow	32	80	1.56	80	1.56	4.00	0.93	0.22	1.14	16.3	200	PVC	8.00	92.7	2.95	0.94	1%

MBR.ST-35

Pre-Engineered Modular MBR Sewage Treatment System

The Clear^3 *(Clear-Cubed)* MBR.ST-35 is a pre-engineered stand-alone decentralized modular treatment plant capable of treating sewage and waste water from residential, recreational, institutional and commercial developments up to **9,200 gallons per day**. The rugged, self-contained system is housed in a single modular building enclosure, built to meet local **weather conditions from extreme heat to extreme cold**. The Clear^3 MBR.ST-35 is built on Newterra's years of membrane bioreactor experience and utilizes world class proven ZeeWeed® membranes for exceptional permeate quality that meets the **most stringent regulatory requirements** for reuse applications or discharge to sensitive receptors.

Influent & Effluent Limits

Designed for a range of wastewater strengths and the ability to meet the most stringent discharge and reuse requirements.

Flow Parameter	Influent From…	Effluent Limits
Biological Oxygen Demand **(BOD^5)**	200 to 400 mg/L	5 mg/L
Total Suspended Solids **(TSS)**	150 to 350 mg/L	5 mg/L
Total Kjeldhal Nitrogen **(TKN)**	35 to 70 mg/L	–
Total Ammania Nitrogen **(TAN)**	25 to 50 mg/L	1 mg/L
Total Nitrogen **(TN)**	–	5 mg/L *
Total Phosphorous **(TP)**	5 to 10 mg/L	0.1 mg/L *
Fat, Oil, and Grease **(FOG)**	Less than 30 mg/L	–
Fecal Coliform	–	2.2 MPN/ 100 mL**
Water Temperature	10 to 25ºC	–
Turbidity	–	0.5 mg/L

*With nutrient reduction option(s) selected
**With disinfection option(s) selected

Efficient Modular Design

- 20' long x 8' wide x 9.5' high
- Fully functional building including, but not limited to insulation, heating, ventilation, lighting, operator work space, and eyewash station
- Optional exterior finishings (color, siding, and/or roofing)



Design Flow Parameters

With robust biology and a broad turn-down capability the Clear^3 MBR.ST-35 is designed around the following flow conditions.

Flow Parameter	Up To…
Average Daily Flow **(ADF)**	9,200 gal/day
Maximum Monthly Flow **(MMF)**	11,000 gal/day
Maximum Daily Flow **(MDF)**	18,400 gal/day



Clear^3 Design Advantages

- Pre-fabricated modular facilities
- Rapid deployment
- Compact footprint
- Scalable
- Operator-friendly
- High-quality effluent
- No odor
- More discharge options
- Sound attenuation
- Reuse-ready effluent

About Newterra

Newterra offers a broad portfolio of reliable, trouble-free technologies and outsourcing support for global municipal and industrial customers across diverse applications, including drinking water, industrial process water, wastewater, stormwater and remediation.

What's Your Unique Water Question?

For just about any water problem, Newterra has you covered. Our temporary ownership and rental solutions can save precious capital while solving a critical need. Newterra offers flexible terms and conditions to suit any customer.

Contact us today at +1 800.420.4056 or visit us online at **newterra.com**

Clear³ MBR.ST-35

Pre-Engineered Modular MBR Sewage Treatment System

Base Unit Features

- Pre-treatment
- Flow equalization
- Aerobic biological treatment
- Membrane filtration with industry leading ZeeWeed® 500S membranes
- Sludge storage and thickening
- Advanced telemetry for remote control, monitoring & diagnostics
- Equipment or treatment train redundancy
- Low power, sludge production, and chemical consumption
- Pre-engineered for fast delivery
- Quality controlled factory assembled and tested
- MET/MET certified

Adders & Options

- ☐ Customized process design, tankage and equipment sizing
- ☐ Biological nutrient reduction, MLE process for denitrification
- ☐ Biological nutrient reduction, 4-stage bardenpho process for denitrification
- ☐ Coagulant dosing for phosphorous reduction
- ☐ UV disinfection
- ☐ Critical spare parts package
- ☐ Turbidity monitoring
- ☐ Sludge dewatering
- ☐ Increased chemical storage
- ☐ Building exterior finish (selection of colors, siding, roofing)
- ☐ Annual newtN™ service agreement

Flexible Tankage

The Clear³ MBR.ST Series is designed for use with a variety of in-ground tank configurations. This flexibility allows the benefits of a pre-engineered product, while using the best available tank configuration based on project specific site conditions and availability of labour and materials.



Fiberglass

- 10’ diameter FRP tanks provided by Newterra
- All in-tank components are factory installed prior to delivery
- Minimal mechanical and electrical site-work
- May not be suitable for all flow/ loading conditions



Pre-Cast Concrete

- Pre-cast concrete tanks provided by Newterra or supplied locally
- Some mechanical and electrical site work
- All in-tank components are shipped loose for installation at site



Poured Concrete

- Poured in place concrete tanks supplied locally
- Smallest footprint of the tankage options
- More civil engineering and on-site civil, mechanical, and electrical work required
- All in-tank components are shipped loose for installation at site

Basin	Required Volume
Trash Trap	5,600 gal
Equalization	5,600 gal
Aerobic	6,100 gal
Sludge Holding (30 days)	5,400 gal

SiteLink Advanced Remote Monitoring & Control

- Advanced cloud-based data acquisition and control
- Bank-level security
- A real-time link to the treatment system familiar HMI screen
- Email/text out upon alarm and a daily system status report
- Operating data is collected and available for download from the customer portal or locally at the HMI
- The customer portal also includes other useful information at your fingertips including manuals, troubleshooting guides, parts lists, etc.

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