



G R E E R
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C O N S U L T I N G
E N G I N E E R S

1620 Wallbridge Loyalist Road
R.R. #5
Belleville, Ontario
K8N 4Z5

Telephone
(613) 966-3068

Facsimile
(613) 966-3087

E-mail
Belleville@greergalloway.com

December 19, 2023

The Corporation of the County of Prince Edward
332 Picton Main Street
Picton, Ontario
K0K 2T0

Attention: Ms. Emily Overholt, Intermediate Planner, Development Services

**Re: Dunes Motel – 2052 County Road 18
Site Plan Comments – First Submission
GGG #21-3-6480**

Dear Ms. Overholt,

In response to the review comments from the County of Prince Edward dated November 2, 2023, Greer Galloway provides the following responses/comments:

Summary of Internal Staff Comments for Site Plan Application

Grading Plan:

- 9) Grading has been designed to provide sheet flow. Adding curb will result in complete regrading of the site. Providing curb will result in concentrated flow which could cause erosion. Additionally, sheet flow will aid improving the water quality during the storm event. Therefore, it would be prudent to not provide curb.
- 10) No existing swales are noted within the vicinity of the site which could receive the flows. Consequently, constructing swales could cause erosion in the downstream properties.

Stormwater Brief:

- 13) 'CxA' values have been updated in the table.
- 14) Composite runoff value has been updated.
- 15) Runoff coefficient values have been selected from MTO Drainage Management Manual.
- 16) Runoff coefficient of 0.90 for asphalt was selected as it is understood that initial abstraction of 5mm will occur during the start of the storm event.

Servicing Study:

- 17) The well record is present on page 15 of our report. There is an error regarding the location of the well as per MECP well record map, but the well record is 5301908. Greer Galloway's statement was that there was less than 1cm of drawdown during the pumping test, this is observable in the hydrograph showing a flat water level during pumping consistent which is consistent with the description in the report.
- 18) Chlorine was not added to the well prior to the 6 hour pumping test. Taking into account the lack of chlorination prior to testing, a result of 7 cfu/100mL may be considered low in the context of a shallow bedrock aquifer. This is an existing water supply system which will be a regulated system under the proposed redevelopment. Therefore Guideline D-5-5 does not strictly apply. The small drinking water treatment system for the proposed development will require treatment for bacteria and should have nitrate removal in order to reduce nitrate to substantially below the 10 mg/L Maximum Allowable Concentration (MAC) as per the Ontario Drinking Water Standards.
- 19) **1.** The property is surrounded to the north and to the east by agricultural fields and the geology of the area is characterized by aeolian sands which have high



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CONSULTING
ENGINEERS

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infiltration and can sustain oxygenated groundwater conditions under which nitrate may persist.

2. The water treatment design is not slated to occur until after the planning phase. The two most likely options would either be nitrate removal by Ion Exchange Filters or removal by Reverse Osmosis at drinking water taps. Both methods are proven and effective.

3. As discussed an existing inground Class 4 septic systems currently services the two existing buildings on site the following is a comparison of Nitrate dilution of the existing daily design flow and proposed daily design flow.

The concentration of nitrate at the property boundary of the proposed severance, in accordance with MECP Guideline D-5-4 for individual onsite sewage systems, is calculated as follows:

$$C_T = \frac{(Q_O \times C_O) + (Q_O \times C_{bk}) + (Q_R \times C_R)}{Q_R + Q_O} \quad [2]$$

Where:

CT = Nitrate concentration at property boundary (mg/L as N)
 QO = Sewage Effluent Volume (L/day)
 CO = Nitrate concentration of sewage effluent (mg/L as N)
 Cbk = Nitrate concentration in background groundwater (mg/L as N)
 QR = Groundwater recharge or precipitation infiltration (L/day)
 CR = Nitrate concentration of groundwater recharge (mg/L as N)

Each of these parameters are discussed as follows:

QO – Daily Existing sewage flows were 4,710 L/day based on OBC, while proposed flows are 4,050 L/day.

CO – For conventional sewage systems for residential developments, an effluent nitrate flux of 40 mg/L per building lot is typically assumed for residential developments.

Cbk – Background nitrate levels of 20.5 mg/L were detected from the sample taken during the pumping test, as indicated in the laboratory analysis report included in the appendix.

QR - A groundwater recharge rate of 270 mm/year and an area of 0.32 ha yields a groundwater recharge of 2,668L/day.

CR – Nitrate levels in groundwater recharge are ignored since precipitation does not typically contain detectable levels of nitrate.

CT - The calculated groundwater nitrate at the property boundary.

Existing Nitrate Dilution

$$C_T = \frac{(4,710L \times 40 \text{ mg/L}) + (4,710 \times 20.5 \text{ mg/L}) + (2,668 \times 0 \text{ mg/L})}{2,668 + 4,710} = 38.6 \text{ mg/L}$$

Proposed Nitrate Dilution

$$C_T = \frac{(4,050L \times 40 \text{ mg/L}) + (4,050 \times 20.5 \text{ mg/L}) + (5,490 \times 0 \text{ mg/L})}{2,668 + 4,050} = 36.5 \text{ mg/L}$$



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Under the proposed development there would be a decrease in the concentration of Nitrate leaving the property. Given the current lot size a tertiary treatment system would have to be installed as part of wastewater treatment, this would further decrease the concentration of Nitrates leaving the property compared to the existing Class 4 Septic System.

4. The proposed development has a 640 L per day decrease in daily design flow compared to the existing food service operation and 2-bedroom dwelling already present at the property. The use of tertiary treatment and nitrate removal from the raw water supply will further decrease downgradient nitrate levels.

- 20) On-site storage of water for fire-fighting is a requirement of buildings governed by Part 3 of the OBC. Buildings under Part 9 are exempt from on-site storage. As per the OBC Vol 1 – DivA – Part 1.1.2.4, The proposed building is two storeys in height which is less than the Part 9 requirement of three storeys, the proposed total building area is 581 m² which is less than the Part 9 threshold of 600 m² and the major occupancy is Group C, residential occupancies. Thus, based on the above stipulated criteria, the site is governed by Part 9 and shall be exempt from the requirement of on-site storage of water for fire-fighting.
- 21) We do not consider every case of imported soil of an unknown quality and quantity to be considered a PCA and result in an APEC. It was interpreted from aerial photography and during site reconnaissance that the imported soil was brought to site and use as a construction material during building of the commercial and residential structure on the subject property. During site reconnaissance the fill appeared to be homogenous, and could be identified as locally sourced sands with no observable debris or contaminated material. It should also be noted that an excavator was brought to site to identify if there was any evidence of gas station prior to the Phase Two ESA investigation as the preference was to identify the location of any USTs prior to the Phase Two borehole and monitoring well drilling. During this test pitting imported sands were observed in great detail and would have been included as a PCA if they were not observed to be locally derived fill.
- 22) The site is completely outside of the Sand Banks Provincial Park, however it is within 30 m of a sensitive area as defined by O.Reg 153/04. Table 6 is appropriate as the motel project will not cause a change to a more sensitive land use as it has been historically and currently used as a commercial and residential land use.
- 23) We understand that the tank and pump island were removed in the late 1980's based on the disappearance of the pump island from aerial imagery. We are not aware of the existence of a report documenting removal. It should be noted that the lines connecting the pump island to the tank were still present during Greer Galloway's test pitting, but were removed and sent to a landfill.
- 24) The soil sample results are representative of both native and imported sand. It should be noted that in the area where the former tank was all native was removed as bedrock was excavated in order to place the tank and only fill was present (MW-4). 57.1% of our samples sampled the fill, 28.6% sampled native soils and 14.3% sampled across the boundary between native and fill.

We trust the above addresses the County's comments. Please let us know if you have any questions.



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Sincerely,

**THE GREER GALLOWAY GROUP INC.
CONSULTING ENGINEERS**

Adele Voldock, P.Eng.
Project Manager

Attachments: Stormwater Report dated



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