



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

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August 16, 2024

Project: 2136509

Ms. Emily Overholt  
Department of Development Services  
The Corporation of the County of Prince Edward  
280 Main Street West  
Picton, Ontario  
K0K 2T0

Via email: eoverholt@pecounty.on.ca

**RE: Nitrate in groundwater sampling in support of Dunes Motel County of Prince Edward Peer Review**

Dear Emily,

On July 22, 2024, Greer Galloway staff Adele Voldock, Charles Mitz and David Cooper along with our clients Andrew Walmsley and Brandon Patterson met via teleconference with the County of Prince Edward Planner Emily Overholt, and the County's Peer Reviewer Christopher Rancourt of CCR Environmental in order to discuss the peer review comments regarding our client's Dunes Motel Project. A major outcome of the meeting was that Greer Galloway was to carry out a nitrate groundwater sampling campaign on neighbouring wells to the property as well as the wells located on the subject property. This sampling program was completed to obtain a fuller understanding of the concentrations of nitrates in groundwater in the area surrounding the subject property and determine if the source was agricultural fertilizer application as suspected by Greer Galloway and Mr. Rancourt.

2024 Nitrate Groundwater Sampling Campaign

In addition to the two wells on the property, Greer Galloway identified five neighbouring wells within a 300 m radius. Neighbouring properties that were approached included 2102 County Road 18, 2047 County Road 18, 1558 County Road 11, 1499 County Road 11, and the Sandbanks Provincial Park located to the south. Nitrate samples were successfully collected from the subject property and wells on neighbouring properties along County Road 11 on July 24, 2024. An additional sample was collected from the drinking water well 2047 County Road 18 on August 8 2024. We did not hear back from the property owner at 2102 County Road 18. This property is currently operated as a short-term vacation rental. Nor could a sample be collected from Sandbanks Provincial Park. Greer Galloway had been in communication with the park since July 23<sup>rd</sup> 2024 and met in person with Park Superintendent Curt Morris on August 8 2024. At this time the Sandbanks Provincial Park would not provide approval for sampling of the drilled well located by the eastern gate of the Park.

Results and Discussion

Results are presented in Figure 1 attached to this letter. Nitrate was found to be elevated in every sample collected during the campaign with the lowest concentration on the subject property in monitoring well (MW-2) at 4.51 mg/L and the highest concentration in a drilled well at the residential property at 1499 County Road 11 at 12 mg/L. Based on the pervasiveness of elevated nitrate in groundwater and the absence of any obvious correlation to the distribution of septic systems throughout the study area, the sample results support an agricultural source for the elevated nitrate. The well exhibiting the highest concentration is closely surrounded by agricultural fields. We also observed a significant decrease in the concentration of nitrate in the water supply well on the subject property when comparing the sample collected during the 2021 pumping test (20.7 mg/L) and the sample collected during this campaign (8.7 mg/L). We postulate the difference being that our test in November of 2021 was likely close in timing to fall fertilizer application on the fields.

It is clear that the subject property is not the main source of elevated nitrates in the shallow unconfined bedrock aquifer. We note that the background nitrate sampling was carried out to understand the reasons for the elevated background nitrate as required under MECP Guideline D-5-4. However, D-5-4 does not specifically apply to the Dunes Motel project since this is a change in



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land use rather than the creation of a lot of record. Since sewage flows are not increasing relative to the existing approved property use, the relevant test is one of due diligence: specifically, the application of the best available economically achievable technology (BATEA) to minimize nitrate inputs to an elevated background environment. It will be important to select a tertiary treatment system that maximizes the removal of nitrates while maintaining robust performance. A recirculating biofilter using an endogenous carbon source would be suitable although other technologies could also be considered provided that adequate performance testing results are available.

While the proposed re-development represents no increase in OBC sewage flows relative to the prior delicatessen and residence, we note that the Building Code design sewage flows do not necessarily reflect real conditions. We re-emphasize the need to incorporate water-efficient fixtures and water saving measures (possibly including off-site laundry service) due to the small size of the property.

Please contact us at your convenience should you require additional clarification or have further questions and comments.

Yours very truly,

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

David Cooper, M.Env.Sc.  
Project Hydrogeologist

Attachments:

Figure 1 Well Locations and NO<sub>2</sub>/NO<sub>3</sub> in Groundwater Results

Laboratory Certificates of Analysis

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**NOTES:**

Image from Prince Edward County GIS

**LEGEND:**

-  Site Boundary
-  Drinking Water Well
-  Monitoring Well
-  Septic System Location



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**NITRATE SAMPLING  
2052 COUNTY ROAD 18  
PRINCE EDWARD, ONTARIO**

**FIGURE 1:**

**WELL LOCATIONS AND N02/N03 IN  
GROUNDWATER RESULTS**

Scale: as shown



**C.O.C.: DW**

**REPORT No: 24-020194 - Rev. 0**

**Report To:**

The Greer Galloway Group  
 1620 Wallbridge-Loyalist Road, RR #5  
 Belleville, ON K8N 4Z5

**CADUCEON Environmental Laboratories**

285 Dalton Ave  
 Kingston, ON K7K 6Z1

**Attention: David Cooper**

DATE RECEIVED: 2024-Jul-05  
 DATE REPORTED: 2024-Jul-10  
 SAMPLE MATRIX: Ground Water

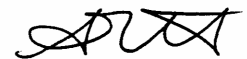
CUSTOMER PROJECT: 2136509  
 P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	PCURIEL	2024-Jul-09	A-IC-01	SM 4110B

R.L. = Reporting Limit  
 NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an \*

Client I.D.	Sample I.D.	Date Collected	Parameter	Nitrate (N)	Nitrite (N)
			Units	mg/L	mg/L
R.L.				0.05	0.05
				-	-
MW-2	24-020194-1	2024-Jul-04		4.89	<0.05



**Steve Garrett**  
**Director of Laboratory Services**

**C.O.C.: DW**

**REPORT No: 24-022776 - Rev. 0**

**Report To:**

The Greer Galloway Group  
 1620 Wallbridge-Loyalist Road, RR #5  
 Belleville, ON K8N 4Z5

**CADUCEON Environmental Laboratories**

285 Dalton Ave  
 Kingston, ON K7K 6Z1

**Attention: David Cooper**

DATE RECEIVED: 2024-Jul-26  
 DATE REPORTED: 2024-Aug-01  
 SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Dunes Motel  
 P.O. NUMBER: P.O# 2136509

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	4	OTTAWA	PCURIEL	2024-Jul-29	A-IC-01	SM 4110B

R.L. = Reporting Limit

NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an \*

Client I.D.	Sample I.D.	Date Collected	Parameter	Nitrate (N)	Nitrite (N)
			Units	mg/L	mg/L
			R.L.	0.05	0.05
			Limits	10.0	1.0
			DWG	MAC	MAC
				-	-
TW	24-022776-1	2024-Jul-24		8.70	<0.05
MW-2	24-022776-2	2024-Jul-24		4.51	<0.05
1499 County Road 11	24-022776-3	2024-Jul-24		<b>12.0</b>	<0.05
1558 County Road 11	24-022776-4	2024-Jul-24		7.86	<0.05

**DWG - Drinking Water Guidelines**

ODWS - Ontario Drinking Water Standards

AO - Aesthetic Objectives

IMAC - Interim Maximum Acceptable Concentration

MAC - Maximum Acceptable Concentration

ODWO - D-5-5 Objective

OG - Operational Guidelines

WL - Warning Level - Sodium Restricted Diets



**Michelle Dubien**  
**Data Specialist**

Summary of Exceedances		
Maximum Acceptable Concentration		
1499 County Road 11	Found Value	Limit
Nitrate (N)	12.0	10.0



**Michelle Dubien**  
**Data Specialist**

**C.O.C.: DW**

**REPORT No: 24-023544 - Rev. 0**

**Report To:**

The Greer Galloway Group  
 1620 Wallbridge-Loyalist Road, RR #5  
 Belleville, ON K8N 4Z5

**CADUCEON Environmental Laboratories**

285 Dalton Ave  
 Kingston, ON K7K 6Z1

**Attention: David Cooper**

DATE RECEIVED: 2024-Aug-02  
 DATE REPORTED: 2024-Aug-06  
 SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Dunes Motel  
 P.O. NUMBER: P.O# 2136509

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	PCURIEL	2024-Aug-03	A-IC-01	SM 4110B

R.L. = Reporting Limit

NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an \*

		<b>Client I.D.</b>	2407 County Road 18
		<b>Sample I.D.</b>	24-023544-1
		<b>Date Collected</b>	2024-08-01
<b>Parameter</b>	<b>Units</b>	<b>R.L.</b>	-
Nitrate (N)	mg/L	0.05	7.86
Nitrite (N)	mg/L	0.05	<0.05



**Michelle Dubien**  
**Data Specialist**