

ASTM D5084 - HYDRAULIC CONDUCTIVITY REPORT



TO: Stephen McCabe
 MidCanada Environmental Services Ltd.
 1090 Kenaston Boulevard
 Winnipeg, MB

PROJECT NO: WX0469020
CLIENT: MidCanada Environmental
DATE SUBMITTED: 4-Mar-21

PROJECT: Mid Canada

SAMPLE: Cell 9 Floor
SAMPLE NO.: Cond 01
SAMPLE DEPTH: 0.5-2.5 ft
PERMEANT: De-Aired Tap Water
HYDRAULIC GRADIENT: 27.10

CONSTANT HEAD METHOD (K = cQL/thA)

	Sample Height, L (cm)	Sample Dia. (cm)	Water Content (%)	Dry Density (kg/m ³)	Degree of Saturation (%)	Cell Pressure (kPa)	Back Pressure (kPa)	Differential Pressure, h (kPa)
Initial	7.78	7.22	40.1%	1303	100.9%	241.4	196.5	20.7
Final	7.96	7.28	52.7%	1188	111.7%			

Date & Time		Time, t (seconds)	Flow (Q)		Temp. Corr, c	Hyd. Cond. Corrected, K (cm/s)
Start	End		Influent (ml)	Effluent (ml)		
1/18/21 3:30 PM	1/19/21 8:00 AM	59400	0.25	0.45	1.225	6.51E-09
1/19/21 8:00 AM	1/20/21 8:00 AM	86400	0.40	0.50	0.943	4.43E-09
1/20/21 8:00 AM	1/21/21 8:00 AM	86400	0.50	0.30	0.931	3.88E-09
1/21/21 8:00 AM	1/22/21 8:30 AM	88200	0.40	0.40	0.943	3.85E-09
1/22/21 8:30 AM	1/25/21 8:00 AM	257400	1.20	1.10	0.956	3.85E-09
1/25/21 8:00 AM	1/26/21 8:15 AM	87300	0.40	0.40	0.943	3.89E-09
1/26/21 8:15 AM	1/27/21 8:15 AM	86400	0.40	0.40	0.931	3.88E-09
1/27/21 8:15 AM	1/28/21 8:15 AM	86400	0.35	0.40	0.919	3.59E-09
1/28/21 8:15 AM	1/29/21 7:45 AM	84600	0.35	0.30	0.931	3.22E-09
1/29/21 7:45 AM	2/1/21 8:00 AM	260100	1.10	1.00	0.956	3.48E-09
2/1/21 8:00 AM	2/2/21 7:45 AM	85500	0.30	0.35	0.949	3.25E-09

**Average Temperature
 Corrected Value (cm/s):** 3.39E-09

Wood Environment & Infrastructure Solutions

Per:

Jorden Wiwcharyk, P.Eng.
 Geotechnical Engineer

*Reporting of these results constitutes a testing service only.
 Engineering interpretation or evaluation of the test results is provided only on written request.*

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PROJECT: Mid Canada

SAMPLE: Cell 9 Floor
SAMPLE NO.: Cond 02
SAMPLE DEPTH: 0.5-2.5 ft
PERMEANT: De-Aired Tap Water
HYDRAULIC GRADIENT: 26.88

CONSTANT HEAD METHOD ($K = cQL/thA$)

	Sample Height, L (cm)	Sample Dia. (cm)	Water Content (%)	Dry Density (kg/m ³)	Degree of Saturation (%)	Cell Pressure (kPa)	Back Pressure (kPa)	Differential Pressure, h (kPa)
Initial	7.85	7.24	32.6%	1434	99.6%	241.4	196.5	20.7
Final	8.14	7.40	39.3%	1326	102.4%			

Date & Time		Time, t (seconds)	Flow (Q)		Temp. Corr, c	Hyd. Cond. Corrected, K (cm/s)
Start	End		Influent (ml)	Effluent (ml)		
1/18/21 3:30 PM	1/19/21 8:00 AM	59400	0.25	0.30	1.225	5.12E-09
1/19/21 8:00 AM	1/20/21 8:00 AM	86400	0.40	0.30	0.943	3.45E-09
1/20/21 8:00 AM	1/21/21 8:00 AM	86400	0.40	0.30	0.931	3.41E-09
1/21/21 8:00 AM	1/22/21 8:30 AM	88200	0.40	0.30	0.943	3.38E-09
1/22/21 8:30 AM	1/25/21 8:00 AM	257400	1.00	0.75	0.956	2.93E-09
1/25/21 8:00 AM	1/26/21 8:15 AM	87300	0.30	0.25	0.943	2.68E-09
1/26/21 8:15 AM	1/27/21 8:15 AM	86400	0.40	0.35	0.931	3.65E-09
1/27/21 8:15 AM	1/28/21 8:15 AM	86400	0.25	0.25	0.919	2.40E-09
1/28/21 8:15 AM	1/29/21 7:45 AM	84600	0.25	0.20	0.931	2.24E-09
1/29/21 7:45 AM	2/1/21 8:00 AM	260100	0.90	0.70	0.956	2.65E-09
2/1/21 8:00 AM	2/2/21 7:45 AM	85500	0.25	0.30	0.949	2.76E-09

**Average Temperature
 Corrected Value (cm/s):** 2.51E-09

Wood Environment & Infrastructure Solutions

Per: 

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 Geotechnical Engineer

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DATE SUBMITTED: 4-Mar-21

PROJECT: Mid Canada

SAMPLE: Cell 9 Floor
SAMPLE NO.: Cond 03
SAMPLE DEPTH: 0.5-2.5 ft
PERMEANT: De-Aired Tap Water
HYDRAULIC GRADIENT: 27.52

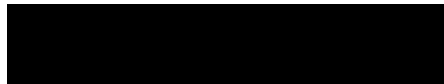
CONSTANT HEAD METHOD (K = cQL/thA)

	Sample Height, L (cm)	Sample Dia. (cm)	Water Content (%)	Dry Density (kg/m ³)	Degree of Saturation (%)	Cell Pressure (kPa)	Back Pressure (kPa)	Differential Pressure, h (kPa)
Initial	7.66	7.25	32.8%	1374	91.7%	241.4	196.5	20.7
Final	7.84	7.39	44.0%	1246	101.7%			

Date & Time		Time, t (seconds)	Flow (Q)		Temp. Corr, c	Hyd. Cond. Corrected, K (cm/s)
Start	End		Influent (ml)	Effluent (ml)		
1/18/21 3:30 PM	1/19/21 8:00 AM	59400	0.30	0.25	1.225	4.99E-09
1/19/21 8:00 AM	1/20/21 8:00 AM	86400	0.45	0.45	0.943	4.32E-09
1/20/21 8:00 AM	1/21/21 8:00 AM	86400	0.35	0.30	0.931	3.08E-09
1/21/21 8:00 AM	1/22/21 8:30 AM	88200	0.50	0.30	0.943	3.76E-09
1/22/21 8:30 AM	1/25/21 8:00 AM	257400	1.10	0.95	0.956	3.35E-09
1/25/21 8:00 AM	1/26/21 8:15 AM	87300	0.40	0.35	0.943	3.56E-09
1/26/21 8:15 AM	1/27/21 8:15 AM	86400	0.40	0.30	0.931	3.32E-09
1/27/21 8:15 AM	1/28/21 8:15 AM	86400	0.30	0.30	0.919	2.81E-09
1/28/21 8:15 AM	1/29/21 7:45 AM	84600	0.30	0.30	0.931	2.90E-09
1/29/21 7:45 AM	2/1/21 8:00 AM	260100	1.00	0.90	0.956	3.07E-09
2/1/21 8:00 AM	2/2/21 7:45 AM	85500	0.30	0.30	0.949	2.93E-09

**Average Temperature
 Corrected Value (cm/s):** 2.93E-09

Wood Environment & Infrastructure Solutions

Per: 

Jorden Wiwcharyk, P.Eng.
 Geotechnical Engineer

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Yazon, Edwin (CC)

From: Yazon, Edwin (CC)
Sent: March 5, 2021 10:16 AM
To: Yazon, Edwin (CC)
Subject: FW: Re: Cell Construction
Attachments: Perm WX0469020 COND-03 @ 0.5-2.5 ft.pdf; Perm WX0469020 COND-02 @ 0.5-2.5 ft.pdf; Perm WX0469020 COND-01 @ 0.5-2.5 ft.pdf

From: Stephen McCabe <smccabe@gflenv.com>
Sent: March 4, 2021 2:26 PM
To: Yazon, Edwin (CC) <Edwin.Yazon@gov.mb.ca>
Cc: Burland Ross, Siobhan (CC) <Siobhan.BurlandRoss@gov.mb.ca>; Boswick, Robert (CC) <Robert.Boswick@gov.mb.ca>; 'Wiwcharyk, Jordan P' <jorden.wiwcharyk@woodplc.com>
Subject: RE: Re: Cell Construction

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ATTENTION: ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.

Good afternoon Edwin,

We have received the hydraulic conductivity results from the liner inspection with Rob on our new Cell # 9 at the RM of Ritchot Waste Disposal Grounds.

The results are attached. All tests have surpassed the conductivity requirement as set out in our license.

I would like to request permission to start placing waste into Cell # 9. As always, our annual construction report (as-built) done by our 3rd party engineers will be submitted to your department.

Any questions or concerns, please let me know.

Thank you very much.

Stephen McCabe | Regional Manager, Landfills and Soil Treatment Facilities

GFL Environmental Inc.

1373 Bernat Road, Grande Pointe, MB, R0A 0T0

T (204) 987-9600 | **F** (204) 987-9601 | **C** (204) 781-7804 | smccabe@gflenv.com | www.gflenv.com

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